FEB-MARCH 2022

NAU FORESTRY PROGRAM

The NAU forestry program is a vibrant, diverse and active place of learning and research and a feeling of community. Here are just some of the activities this month of our internationally distinguished faculty and researchers.

UPCOMING EVENTS

March 14-18 – Spring Break
April 22 – Honors Convocation
May 2-5 – Fnal Exam Week
May 6 & 7 - Commencement

NAU SCHOOL OF FORESTRY

The School of Forestry is a gateway to a fulfilling forestry career; it's also an invitation to create sustainable solutions for the natural world and outdoor enjoyment for years to come.

For more information visit
nau.edu/forestry

PUBLICATIONS: [NAU Authors in Bold, * Undergraduate Student]

Allen, James A. 2021. Creating an Urban Oasis in Tucson, Arizona. Forestry Source 26(12)

Bowker, M.A., ***Doherty, K.D.**, **Antoninka, A.J.**, Ramsey, P.W., DuPre, M.E., Durham, R.A. 2022. Biocrusts influence community plant development, promoting native plant dominance. *Frontiers in Ecology and Evolution* 10:840324

Edgeley, C.M. (In press). Exploring the social legacy of frequent wildfires: Organizational responses for community recovery following the 2018 Camp Fire. International Journal of Disaster Risk Reduction. https://www.sciencedirect.com/science/article/abs/pii/S2212420921007330

Gibson, K.S., N.C. Johnson, C. Laturno, R.R. Parmenter, and **A. Antoninka**. 2022. Abundance of mites, but not of collembolans or nematodes, is reduced by restoration of a Pinus ponderosa forest with thinning, mastication, and prescribed fire. Trees, Forests and People, 100190: https://doi.org/10.1016/j.tfp.2022.100190

Grover, H.S., **Bowker, M.A.**, **Fulé, P.Z.**, Sieg, C.H., **Antoninka, A.J**. 2022. Pelletized inoculation of fire mosses in severely burned conifer forests overcomes initial barriers to *Bryum argenteum* establishment but does not increase cover. *Ecological Engineering* 176: 106513.

Li, S.L., **Bowker, M.A.**, Chamizo, S., Xiao, B. 2022. Biocrust effects on near-surface moisture are underestimated in drylands: insights from a heat-pulse soil moisture sensor. *Geoderma* 413:115763.

Mpanga, I.K., **J.A. Allen**, and U.K. Schuch. 2021. Agroforestry as a sustainable ancient agriculture practice: potential for small-scale farmers and ranchers in dry regions. University of Arizona Cooperative Extension, az1918.

Patton. D. R. and B.E. Fox. 2021. Basal area: a forest wildlife habitat attribute. Forestry Source. 26(11): 6-7. November

Tiffany, B.J., T. Chaudhry, R.W. Hofstetter and **C. Aslan**. 2022. The impact of administrative partitioning on the regional effectiveness of forest pest management in protected area-centered ecosystems. Forests 13(3), 395-410.

Uhey, D. and **R. Hofstetter.** 2022. From pests to keystone species: ecosystem influences and anthropomorphic perception of harvester ants (*Pogonomyrmex*, *Veromessor*, and *Messor* spp.). Annals of the Entomological Society of America XX(X): 1-14 https://nau.edu/wp-content/uploads/sites/140/UheyHofstetterAnnalsEntSocAmer2021.pdf

NEW AWARDS:

Amanda De La Torre received National Science Foundation CAREER grant ($1.2 million) titled, Temporal and Transgenerational Genomic and Epigenetic Effects of Hybridization in Long-generation Tree Species.

PRESENTATIONS/OUTREACH:

Catrin Edgeley 's research on rural community recovery after wildfire was used in a new US GAO report on disaster recovery, which recommends federal interagency executive action to more equitably serve disaster survivors. US GAO report: https://www.gao.gov/assets/gao-22-104039.pdf

Anita Antoninka made media appearance.

- She was interviewed by a reporter for Eos (AGU outlet) to discuss her perception of biocrust "helper bacteria" in restoration efforts. https://eos.org/articles/biocrust-probiotics-can-aid-dryland-restoration-efforts
- Anita with Dr. Catherine Propper, Biology, Dr. Angelina Castagno, Education and Dine Institute Dr. Monica Brown, English was covered by NAU news https://nau.edu/nau-research/news/ for the A. P. Sloan MITSI Grant, titled "Catalyzing systemic change: Team will use $1.3 million in funding to reduce racial disparities in STEM graduate programs".

The biocrust restoration by **Drs. Antoninka and Bowker** was featured in a National Geographic article https://www.nationalgeographic.com/environment/article/disappearing-desert-ecosystem-can-now-be-saved-in-a-lab

Drs. Antoninka and Bowker's work was featured in a newspaper article from Arizona Center for Investigative Repotting. This article describes what's known about the ecology of Valley Fever and work by **Dr. Bridget Barker, Anita Antoninka, Helen Rowe and grad student, Marieke Ramsey** to determine if biocrust restoration can help suppress the causative agent of Valley Fever, Coccidioides. https://azcir.org/news/2021/09/28/valley-fever-ecology-unknown-fungus-expanding-throughout-west/

Matthew Bowker gave an Invited talk,

- Bowker, M.A. 2021. Establishing artificially grown biocrusts in the field: several obstacles and a few possible ways forward. Society for Ecological Restoration - Southwest Chapter Annual Meeting. https://sersw2019.wixsite.com/2021 Research by SOF students and former students was highlighted: Kyle Doherty, Henry Grover, Lydia Bailey, Jasmine Anenberg

Kristen Waring an overview of southwestern white pine research and management implications at a recent virtual cross-border meeting of US and Mexican foresters at the SAF-AMPF Biennial Reunion

- **Waring, KM,** S Cushman, A Eckert, L Flores-Renteria, R Sniezko, C Still, C Wehenkel**, A Whipple,** M Wing, J Bagley, **E Bucholz,** M Haagsma, **J Hartsell,** C Garms, J Johnson, E Landguth, A Leal Sáenz, M Menon, **E Moler**, G Page, A Shirk, and **J Swenson**. 2021. Interdisciplinary research in southwestern white pine: results and management implications. Society of American Foresters and Asociación Mexicana de Profesionales Forestales XXVIth Reunión. Virtual. October 21-22, 2021. https://youtu.be/Lflm-MzsJBs List of co-authors above includes former NAU graduate students (Ethan Bucholz, Jessica Hartsell, Forestry and Ehren Moler, Jared Swensen, Biology), Bio faculty Amy Whipple and former forestry postdoc and current adjunct faculty Jeremy Johnson

STUDENT HIGHLIGHTS:

There is a new display by **the Forestry Club** (advisor Cat Edgeley) in the School of Forestry lobby: What it means to be a forester (with pictures).

- *"Being a forester to me is to want to generate change and be that change in the future. It's about protecting our mother earth and giving back after she has given so much, and we have taken so much. It's about that connection to nature, and how it makes all of us feel. We're all here because of some passion or strong feeling, and that makes us all connected. Being a forester to me is being that revolutionary change and having that strong connection to nature" -**Emmie Vander Pluym***
- *" Being a Forester, is being a caretaker to a forested ecosystem. They have a sense of love and loyalty to the land and the many services they provide, and they are protectors of this land and their services provided" . -**Megan King***
- *"Being a Forester to me is protecting our forest so we can pass it down onto future generations. It means making sure our kid's grandkids will be able to enjoy the forest in ways we did growing up. Foresters are meant to take care and protect the forest to their best abilities". -Kaitlin Swang*
- *"A forester to me means giving back to the beautiful environments we get to visit or live in. It means preserving and aiding these environments to have them thrive. This means getting involved with the plants and animals on a large and small scale as well as doing what you can to help or prevent damages". -**Sabrina Cardenas***
- *"A forester to me means someone who is passionate about all aspects of the forest and its overall health. They look at the current state while taking under consideration its historical state and the changing climate. We do the best we can while there being no guarantee that we will get to see the results of our actions or choices in management within our lifetime. I believe my ideal forester is selfless". -**Elena Rodriguez***

Connor Crouch (Ph.D. student) and **Kelsey Pemberton (M.S. student)** with **Kristen Waring** and **Richard Hofstetter** were on the front page of the Arizona Republic (January 22, 2022). They are collaborating with the U.S. Forest Service to further understand the effects of oystershell scale (OSS), an emerging and invasive insect, killing quaking aspen and other softwood trees. Learn more here: https://www.azcentral.com/story/news/local/arizona-environment/2022/01/22/wave-tiny-insects-threatens-survival-arizonas-aspens/8833242002/

Ph.D. Student **Jack Burnett** has published his MF project research. It provides an overview of the Forest Fridays program he worked on with Kinsey Elementary, which was housed on our Centennial Forest.

- Burnett, J., & Edgeley, C. (2021). Forest Fridays: Leveraging Land Manager-Educator Partnerships to Overcome Barriers to Outdoor Environmental Education. Children, Youth and Environments, 31(3), 148–157. https://www.jstor.org/stable/10.7721/chilyoutenvi.31.3.0148?refreqid=excelsior%3A856544821f17ec77318a3a36d989e7c4