

## Wyoming Reclamation and Restoration Center

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The Wyoming Reclamation and Restoration Center (WRRC) provides a focal point at the University of Wyoming bridging the academic needs of the institution to those of the State of Wyoming. The Center is primarily funded externally and with foundation dollars with no direct funding from the University block grant.

Dr. Peter Stahl, the Director of the Center, retired in 2021 and with this, a committee was formed to reevaluate the mission and direction of the Center to prepare it for future success to restore, reclaim, and rehabilitate disturbed ecosystems based on sound ecological, agricultural and economical practices. This created challenges for immediate management. The committee proposed to Academic Affairs a plan to reorganize the Center to emphasize ecological restoration to more widely reflect the activities of the Center and its current active participants. The proposal would be for the new director to engage with a broader range of faculty, staff and students. This will increase research, education and extension activities across campus and the state and to intentionally build partnerships to facilitate interdisciplinary activities, and catalyze research across Wyoming. This would be done through engagement, to build stronger connection between stakeholders in the state. One of the mandates given to the incoming center director will be to raise nontraditional extramural funding to support student projects as well as research and extension activities

A new director was to be appointed in 2022, with Dr. Jay Norton being identified as a likely candidate. Unfortunately, Dr. Norton died in a tragic accident in March 2022 and with his death, progress with finding a director for the Center has been temporarily curtailed. Changes in leadership in the Department of Ecosystem Science and Management with the departure of Scott Miller as Department Head in August have also slowed progress with this appointment. And now going forward, emphasis needs to be associated with the reorganization of the College to incorporate the departments of Botany, and Zoology and Physiology.

The WRRC was originally formed to address the significant gaps in science needed to effectively restore ecological functions of disturbed lands. Center-affiliated faculty and students have made large contributions to this discipline and take pride by facilitating recovery of Wyoming landscapes but it remains clear that much work remains to be done in the field of drastically disturbed lands for reclamation and restoration. It is also evident that significant opportunities for restoration-related research should be added to the Center's portfolio, and by refocusing on emerging issues the Center will be well positioned for success in competitive grants and securing foundation funding from regional patrons. Specifically, we aim to broaden the Center to come into alignment with the College and University's emerging research initiatives by highlighting ecological restoration and the assessment, management and restoration of healthy soils and plant communities in Wyoming's managed ecosystems.

The WRRC has served, and will continue to serve, a valuable role in increasing the scientific knowledge and technical transfer relating to the reclamation and restoration of disturbed lands. The proposed changes are intended to increase interdisciplinary activities on campus, increase opportunities for extramural funding, and support student learning as Wyoming is an optimal field laboratory for restoration research with industry partners. The University intends to provide leadership in a revitalized Center that will

magnify impact and serve an important role in facilitating partners in the sustainable management of natural resources.

With respect to funding and research activities in 2022, research activities were primarily focused on soil amendments derived from coal and the potential of these to improve soil and ecosystem health in degraded lands. This project received approximately \$100k from a grant from the School of Energy Resources. Field research was started in 2021 following the pandemic at the UW R&E Centers in Powell and at Lingle (SAREC) supporting the work of three graduate students, Resham Thepa, Bouzeriba Alnuse, and Samir Budathoki. The objectives of this research are to study pyrolyzed coal or coal char as a soil amendment and to compare their activity with biochar. Studies compared response of soil and plant responses in rangeland soils. In other studies, the growth of corn, sugar beets treated with pyrolyzed coal and coal char, and in conjunction with terrestrial algae and manure were evaluated in addition to soil quality following these treatments. As these studies are only at the end of their first year, only preliminary data are available, however positive increases in forage production on rangeland plant species have been observed to date and crop production data is promising as well.

A faculty position was awarded through the central position management (CPM) in September 2022 for the Ecosystem Science and Management (ESM) program to hire a tenure track assistant professor with expertise in soil science to support Center activities and to support teaching and research in the School of Energy Resources (SER). This position will provide some coverage in the teaching and research from the loss of the Norton position. This individual would work with the SER undergraduate program in Energy Resource Management and Development.