

**Project Summary**  
**Rocky Mountains Cooperative Ecosystem Studies Unit**

**Project Title:** learnR: Data Management, Manipulation, and Analysis of Ecological Data Using R

**Discipline:** Natural

**Type of Project:** Technical Assistance

**Funding Agency:** USGS

**Other Partners/Cooperators:** Utah State University

**Student Participation:**

**Effective Dates:** 04/15/2016 - 04/14/2017

**Funding Amount:** \$51,647.00

**Investigators and Agency Representative:**

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**Project Abstract:** Existing PowerPoint presentations will be ported to Adobe Presenter formats. Adobe Presenter allows for audio and animation to be directly incorporated into the course material. R markdown, a process for simultaneously creating .html- and .pdf-based output with the R environment, will be used to create static representations of course output. Shiny1, a web application framework for interactive R analyses, will be incorporated into courses where considered appropriate. "Appropriate" includes dynamic analytical exercises where end-users could, as part of an R exercise, interpret different statistical outcomes as a function of changing underlying data assumptions or desired output. A simple example would be to see outcomes of different binning widths for a continuous scale variable. Such teaching examples will be directly embedded in the R markdown code, thereby allowing students to directly interact with course exercises.

The USGS will aid in conversion to online formats, ensuring the developed online courses meet DOI standards for delivery; the USGS will ensure that course content is reviewed for quality, following all applicable FSP procedures and the USGS will ensure that all PowerPoints, code, and associated exercises are Rehabilitation Act Section 508 compliant, where applicable.

**Keywords:** R, ecological data, management, manipulation, analysis, USGS, Utah State University