



## **Color country natural resource camp – teaching high school students about natural resource career opportunities**

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### **Abstract**

The overarching goal of Color Country Natural Resource Camp (CCNRC) is to give participants an opportunity to learn, in a hands-on environment, about career paths in the natural resource field. At the five-day camp, participants spend four hours every day in “Investigations” over the period of five days, these investigations facilitate learning about the areas of vegetation, soils, land use, aquatics, and wildlife with an instructor who works in these fields. This camp has been evaluated every year, with results showing positive youth development in all the investigation areas with a greater appreciation for recreational activities. In 2024, participants were evaluated on their intent to pursue a natural resource career and revealed significant increases in campers’ understanding of natural resource topics and familiarity with career paths in the field. However, there was no significant change in immediate career interests, with the exception of increased interest in soil-related careers.

### **Introduction**

CCNRC was created in 1993 and currently just completed its 31<sup>st</sup> year. This camp is managed by Utah State University (USU) Extension in partnership with the Utah Division of Natural Resources, Red Cliffs Desert Reserve, local Bureau of Land Management and Forest Service representatives, and other specialists at USU Extension from around the state of Utah. The purpose of this camp is to help participants explore career fields in natural resources in the areas of land use, aquatics, wildlife, soil, archaeology, soil, and vegetation. Currently in the United States, these careers are not taught or highlighted in our high schools (secondary schools). The National Science Board (2014) noted that the number of college students enrolled in the sciences has been steadily declining since 2010. Conversely, the demand for more scientists and experts in natural resources, particularly renewable energy, continues to grow (Frey and Parent 2019). From our work in other fields and youth camps, we know that youth’s interest in a subject matter often improves once they have hands-on opportunities in those areas. CCNRC also educates participants on outdoor recreation opportunities, depending on the year and location, can include archery, rifle shooting, horseback riding, rock climbing, rappelling, hiking, wilderness survival, mountain biking, and orienteering. This camp hosts up to 35 high school-aged youth and is held at one of three remote campsites for five days each year.

The objectives of the program, starting in 2024 are:

1. Evaluating changes in participants’ knowledge of natural resources before and after attending the camp.

2. Measuring the level of interest in natural resource-related higher education and careers among campers.
3. Determining the influence of camp experiences on career and educational decisions.

## Methods

To evaluate the camp's effectiveness, we implemented a Pre- and Post-Camp Survey Design. Surveys were administered at two points: (1) before the camp began (pre-camp survey) to establish a baseline and (2) after completing all camp activities (post-camp survey) to assess changes in knowledge, interest, and career aspirations.

The **Pre-Camp Survey** measured participants' initial understanding, interests, and aspirations in natural resources using a Likert scale to gauge agreement with key statements. The **Post-Camp Survey** mirrored this structure, enabling direct comparisons to identify shifts in attitudes and knowledge.

Both surveys combined quantitative and qualitative methods. The Likert scale responses provided measurable data, while open-ended questions captured deeper insights into participants' interests and experiences. Example questions included: "What specific natural resource fields interest you?" and "What did you hope to gain from the camp experience?"

Data analysis involved descriptive statistics (means, standard deviations) and inferential statistical tests (p-values) to determine significant changes over time. A **95% confidence interval** was used to assess statistical significance. Qualitative responses underwent thematic analysis to identify recurring themes in participants' interests and career aspirations.

The study aimed to determine whether the camp significantly influenced participants' understanding of natural resource topics, interest in higher education, and career aspirations. Survey questions were categorized into three areas: **(1) Personal Statements, (2) Subject Understanding, and (3) Interest in Natural Resource Careers.**

## Results

**Personal Statements** The interest in pursuing higher education showed a slight increase from a pre-camp mean of 3.83 to a post-camp mean of 4.04, with a mean difference of 0.21. However, this change was not statistically significant (p-value: 0.4264), suggesting that the camp did not substantially impact this aspect. Similarly, the interest in a career in natural resources increased marginally from a pre-camp mean of 3.50 to a post-camp mean of 3.57, with a mean difference of 0.07, and this change was also not statistically significant (p-value: 0.77). In contrast, there was a significant increase in familiarity with career paths in natural resources, from a pre-camp mean of 3.46 to a post-camp mean of 4.13, with a mean difference of 0.67 and a p-value of 0.014. This indicates that the camp effectively enhanced campers' awareness and understanding of career opportunities in this field.

## Qualitative Data Analysis

**Summary of Pre- and Post-Survey Results** To assess the impact of the camp on participants' knowledge and interest in natural resources, we compared pre- and post-survey responses. Statistical significance was determined using a **p-value threshold of 0.05**, indicating meaningful changes in participants' understanding and interests. (See Table 1).

**Key Findings:** Several areas showed statistically significant increases in knowledge:

- Familiarity with career paths in natural resources ( $p = 0.0139$ )
- Environmental science ( $p = 0.0074$ )

- Natural resource conservation principles ( $p = 2.201E-05$ )
- Outdoor recreation management ( $p = 0.0041$ )
- Soil ( $p = 0.0306$ )

**Table 1**

Comparison of Pre-Survey and Post-Survey Responses on Campers’ Knowledge and Interest in Natural Resources

Question	Pre-Survey	Post-Survey	Difference	P-Value
I want to pursue higher education	3.83	4.04	0.21	0.4263
I am interested in a career in the field of natural resources.	3.50	3.57	0.07	0.7682
I am familiar with the various career paths available in the field of natural resources.	3.46	4.13	0.67	0.0139
Environmental science	3.12	3.88	0.76	0.0074
Natural resource conservation principles	2.84	3.96	1.12	2.201E-05
Outdoor recreation management	3.04	3.92	0.88	0.0041
Water	3.76	3.92	0.16	0.4493
Wildlife Biology	3.76	3.96	0.20	0.4285
Plants/Vegetation	3.52	3.58	0.06	0.8362
Soil	2.84	3.54	0.70	0.0306

The survey also assessed campers' interest in natural resource activities (e.g., clubs, volunteering) and careers, with responses categorized as Yes, No, or Unsure. Results showed a significant post-camp increase in participation interest: campers interested in natural resource activities such as volunteer work, clubs, camps, and recreation, doubled from 8 to 16, while those uninterested dropped from 13 to just 1, indicating a strong positive impact (Figure 1).

However, career interest followed a different trend. The number of campers interested in natural resource careers decreased from 4 to 2, while those uninterested dropped from 8 to 4. Notably, the number of "Unsure" responses increased from 12 to 17, suggesting that while the camp deepened awareness and understanding, it also exposed the complexities of these careers, prompting some campers to reconsider their options (Figure 2).

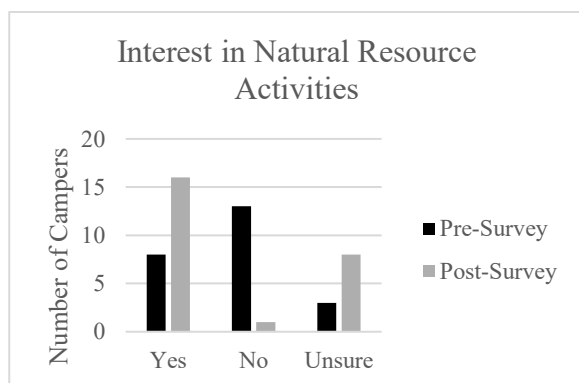


Figure 1: Evaluation results for interest in natural resource activities, such as volunteering, clubs, and recreation.

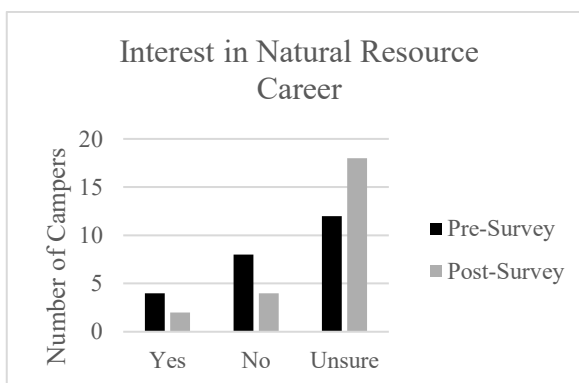


Figure 2: Evaluation results for interest in natural resource careers

**Discussion**

These results suggest that the camp effectively enhanced participants' understanding in these subject areas. However, changes in interest in higher education, career aspirations in natural resources, and knowledge of water, wildlife biology, and plants were not statistically significant ( $p > 0.05$ ). While some areas showed slight increases, the results indicate that further engagement or long-term exposure may be needed to influence career and educational aspirations. Some ideas that we have had about camp as we move it forward is to involve more

public speakers/demonstrations at camp that would showcase the various public land management organizations in the United States and incorporating more engaging hands on activities for the areas that scored lower.

Overall, the findings suggest that the camp successfully improved participants' knowledge in key natural resource topics, reinforcing its educational value. It is exciting to see that participation in this camp helps to change perceptions on natural resource careers in an overall positive way.

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