Request for Statements of Interest
Funding Opportunity Announcement

Federal Awarding Agency:
US Army Corps of Engineers,
Walla Walla District
201 3rd Ave
Walla Walla, WA 99362

Funding Opportunity No: W912EF-21-2-RFP-0002
CFDA No: 12.630
Statutory Authority: 10 USC 2358
Project Title: Winter Habitat Assessment and Modeling for Rocky Mountain Elk around Dworshak Reservoir.
Announcement Type: Initial announcement
Issue Date: 9 August 2021
Statement of Interest/Qualifications Due Date: 9 September 2021 2:00 PM PST
Full Application Package Due Date, if Invited: 16 September 2021 2:00 PM PST.
Estimated Award Ceiling: $50,000.
Estimated Total Program Funding **(optional)**: $150,000
Expected Number of Awards: 1.

Section I: Funding Opportunity Description

Background:

Add background information.
Dworshak Dam near Orofino, Idaho was built in 1973 by the US Army Corps of Engineers (COE). It created a 55 mile reservoir (at full pool) and inundated 16,000 acres of forested land considered to be important elk winter range. In the mid 1970's The Idaho Department of Fish and Game (IDFG) and The United States Fish and Wildlife Service (USFWS) worked with the COE to develop a plan to mitigate for the lost elk habitat, "Plan For Development of Rocky Mountain Elk Habitat, Dworshak Dam and Reservoir". The plan established the Grandad Elk Mitigation Area consisting of 6,900 acres at the confluence of the North Fork and Little North Fork of the Clearwater Rivers. Although the measurable goals and objectives outlined in the 1977 plan have largely been dismissed, winter habitat conditions in the lower North Fork of the Clearwater drainage may be an important factor for the proliferation of the North Fork elk herd. The COE continues to have a mandate to manage the Grandad Elk Mitigation Area for the purpose of improving winter habitat for elk.

The COE has managed the mitigation area for elk winter range since the late 1970s with varying success. The original north-facing, clear-cut and burn treatment units, designed to produce elk winter forage, are now almost exclusively young overstocked forest stands that are producing little winter forage. The south-facing units have largely been eaten down by elk and are also producing little winter forage. Within the last 20 years new strategies have been employed to improve elk winter habitat within the Grandad Elk Mitigation Area. The success of these strategies and how they may have worked to improve the North Fork Elk Herd are unknown. Research to determine the winter forage potential on varying sites within the lower North Fork drainage, if and to what extent past and current treatments have reached forage potentials and how important these conditions are to the proliferation of the North Fork Elk Herd is critical to establishing future elk management goals and objectives for the Grandad Mitigation Area.

Brief Description of Anticipated Work:

This research is will consist of the following goals:
1) Estimate mean annual production (lbs/acre) of key forage species for elk in the elk mitigation area.
2) Combine data from goal #1 with detailed data on nutritional requirements of elk to estimate nutritional carrying capacity (i.e., the number of elk that the landscape can support above a specified threshold of nutritional condition) of the elk mitigation area during winter.
3) Identify key spatial (e.g., soil type, potential vegetation type, tree canopy cover) and temporal (e.g., precipitation, temperature) drivers of variation in forage production within the elk mitigation area.

4) Experimentally evaluate the relative importance of environmental versus density-dependent (i.e., herbivory by elk) factors in limiting forage production in the elk mitigation area.
5) Develop a model-based, spatiotemporally dynamic map of the nutritional landscape available to elk in the elk mitigation area that can be updated annually using remotely sensed data layers (e.g., NDVI, topography, canopy closure, PRISM climate data, etc.).
6) Use the model developed under goal #4 to evaluate the potential outcomes of alternative management scenarios (e.g., additional planting, fuels reduction, herbivore exclusion, etc.) with respect to forage production in the elk mitigation area.

1) Estimate mean annual production (lbs/acre) of key forage species for elk in the elk mitigation area.
Prior to this endeavor, the COE categorized lands within the lower North Fork drainage into Land Type Associates (Figure 1) based on vegetation, soils, aspect and slope. Of these 17 categories only five occur within the lower North Fork drainage:

3- High Energy Thin Soil Breaklands
4 – High Energy Deep Soil Breaklands
5 – Low Energy Breaklands
10 – Colluvial Midslopes
15 – Low Relief Rolling Hills

Figure 1: Land Type Associations

LTA Group	LTA Group Description	Primary Fire Regime	Patch Size	Age Class Distribution (% of landscape)				
				0-40 yrs	40-60 yrs	60-100 yrs	100-150 yrs	150+ yrs
1	Low Elevation Stream Bottoms, Alluvial Deposits, Meadows, and Glacial Terraces	Lethal 300+ years	Variable Linear	5-20%	5-10%	5-15%	5-15%	55-75%
2	High Elevation Stream Bottoms and Glacial Terraces	Lethal 150-300 years	Variable Linear	10-25%	10-15%	10-20%	10-20%	45-65%
3	High Energy Thin Soil Breaklands	Mixed, lethal/non-lethal 26-50 years	<100 ac Patchy mosaic	15-30%	5-15%	15-25%	25-35%	15-30%
4	High Energy Deep Soil Breaklands	Mixed, lethal/non-lethal 50-100 years	<200 ac Patchy mosaic	25-40%	10-20%	10-20%	15-25%	10-30%
5	Low Energy Breaklands	Lethal 76-150+ years	200-500 ac Uniform	20-40%	5-15%	15-30%	15-25%	5-30%
6	Alpine Glaciated Ridges	Lethal 76-150+ years	100-500 ac Patchy mosaic	30-60%	10-20%	10-30%	20-40%	10-30%
7	Scoured Alpine Glaciated Troughs	Lethal 76-150+ years	100-500 ac Variable mosaic	30-60%	10-20%	10-30%	20-40%	10-30%
8	Plastered Alpine Glaciated Troughs	Lethal, 150-300 years	500-1000+ ac Even age patches	20-40%	10-20%	10-20%	20-30%	15-35%
9	Alpine Icecap Uplands and Basins	Lethal, 150-300 years	500-1000+ ac Even age patches	20-50%	5-15%	10-20%	20-30%	10-30%
10	Colluvial Midslopes	Lethal 76-150+ years	200+ ac Variable mosaic	30-55%	10-20%	10-20%	15-25%	10-30%
11	Extremely Dry, Basalt Colluvial Midslopes	Non-lethal 0-25 years	200-500+ ac Variable mosaic	35-60%	5-15%	15-25%	25-35%	40-60%
11A	Dry, Basalt Colluvial Midslopes	Non-lethal 50-100 years	100-200+ ac Patchy mosaic	25-40%	10-20%	10-20%	20-30%	30-50%
12	High Elevation Frost Churned Ridges	Lethal 150-300 years	Variable Patchy	20-40%	10-20%	10-20%	20-30%	15-35%
13	Dry Frost Churned Ridges	Lethal 76-150+ years	100-500 ac Even age patches	25-55%	10-20%	10-30%	20-40%	5-20%
14	Moist Frost Churned Ridges	Lethal 150-200 years	500-1000 ac Even age	20-50%	5-15%	10-20%	20-30%	10-30%
15	Low Relief rolling Hills- Non-Umbric	Lethal 150-300 years	1/4-1000+ ac Even age	25-45%	5-15%	10-20%	20-35%	20-40%
16	Low Relief Rolling Hills-Umbric or Fragipan	Lethal 300+ years	1/4-1000+ ac Even age	30-50%	5-15%	10-20%	20-35%	20-40%
17	Mass Wasted Sites	Lethal 150-300 years	Variable Linear	Same as adjacent LTAs				

These Land Type Associations or other criteria such as potential vegetation types (PVTs) will be used to stratify the lands within the Grandad Elk Mitigation Area. It is predicted that each strata will have different potentials for producing winter forage for elk. Past vegetative surveys, other regional surveys, additional vegetation surveys and

pertinent literature will be used to estimate the biomass of key forage species for elk during winter within each of the land or vegetation types occurring within the mitigation area.

2) Combine data from goal #1 with detailed data on nutritional requirements of elk to estimate nutritional carrying capacity (i.e., the number of elk that the landscape can support above a specified threshold of nutritional condition) of the elk mitigation area during winter.
The COE desires to better understand the importance of the Grandad Mitigation Area for the North Fork Elk Herd and the impact that existing conditions may have on the herd. Determining the carrying capacity for any given year is critical for this understanding.

Nutritional carrying capacity is defined as the number of animals that a landscape can support above a specified threshold of nutritional condition. Estimating this capacity requires three key pieces of information: 1) biomass of available forage; 2) nutritional quality (primary digestible energy and digestible protein content) of available forage; and 3) the nutritional requirements of the study species for attaining a specified level of condition and/or productivity (e.g., the requirements for supporting lactation to rear a calf). Elk are a well-studied species and the nutritional requirements for supporting gestation and lactation are well-known. Thus, combining forage biomass estimates collected under goal #1 with data on nutritional quality of key forage species (primarily woody shrubs, data to be collected as part of this study) will allow us to estimate how many reproductive female elk can currently be supported in the elk mitigation area during winter.

3) Identify key spatial (e.g., soil type, potential vegetation type, tree canopy cover) and temporal (e.g., precipitation, temperature) drivers of variation in forage production within the elk mitigation area.
Both future (i.e., collected under goals 1 and 2) and previous data on forage biomass and quality to be included in this study are spatiotemporally explicit (i.e., the time and location at which those data were obtained is known). As a result, both the forage data themselves and the corresponding estimates of nutritional carrying capacity can be directly linked to a variety of readily available data layers for variables likely to drive variation in forage production and/or quality across space (e.g., soil type, potential vegetation type, tree canopy cover) and time (e.g., precipitation, temperature). Once those links are established then sophisticated statistical approaches (e.g., generalized additive models) can be used to develop models capable of predicting variation in forage biomass and quality across landscapes and through time. Such approaches have recently been referred to as ‘nutritional landscape mapping’ and will be used in this study to understand how and why forage biomass and quality within the elk mitigation area and the lower North Fork drainage varies across the landscape and through time (see goal #5), and how various future management actions are likely to influence forage availability (see goal #6).

4) Experimentally evaluate the relative importance of environmental versus density-dependent (i.e., herbivory by elk) factors in limiting forage production in the elk mitigation area.

Factors to be measured under goal #3 as potential drivers of variation in forage biomass and quality do not include the effects of elk herbivory, which are typically challenging to quantify in the absence of an experimental approach. However, existing elk exclosures (large, 7+ acre, areas where elk are fenced out) at different stages of plant development within the elk mitigation area provide a unique opportunity to study the relative influence of environmental factors versus elk herbivory on forage production. For example, new leaders of all winter forage plants within a section of an elk exclosure can be marked and measured during initial vegetation survey efforts. That section can then be opened up, allowing elk to access and forage on those plants for a pre-determined period of time. Remote cameras can be used to identify the number of elk utilizing the exclosure and the time spent foraging by those elk. Plants within the exclosure can then be re-sampled at the end of the experimental period to determine how much biomass has been removed by elk. Current exclosures are (1) large enough to be divided into at least two experimental sections as part of this study, (2) distributed across a range of different stages of plant development, and (3) can be manipulated to allow access by elk for varying amounts of time. As a result, it will be possible to rigorously evaluate the degree to which elk herbivory versus environmental factors limit forage productivity within the elk mitigation area, and how long herbivory must be excluded for key forage plants to reach an age at which they can sustain herbivory while still maintaining a reasonable level of productivity. Experimental data on relationships between herbivory and plant productivity are rare, and this study will not only help us to determine what constitutes high quality winter foraging areas, but will also assist us in determining if winter habitat conditions are likely to be a limiting factor for elk survival. Such information has broad implications for elk population and habitat managers.

5) Develop model-based, spatiotemporally dynamic maps of the nutritional landscape available to elk in the elk mitigation area that can be updated annually using remotely sensed data layers (e.g., NDVI, topography, canopy closure, PRISM climate data, etc.).

Models developed under goal #3 can be used to produce predictive maps of the nutritional landscape in the elk mitigation area. These maps can take a number of different forms depending upon the goals of the COE management team. For example, models developed under goal #3 could be used to map variation in total forage biomass (without reference to plant species), species-specific forage biomass, forage quality (digestible energy, digestible protein, or both), or nutritional carrying capacity (an integrated measure of forage biomass and quality). One major advantage of a model-based approach is that the models can be updated to reflect predictions for any time period–past, present, or future–for which data on model covariates (e.g. slope, aspect, canopy coverage, elevation, snow depth, etc.) are available (or can be estimated, in the case of future scenario-based modeling; see goal #6). The COE desires to have the ability to frequently re-assess habitat quality within the elk mitigation area, and this approach will provide a direct, quantitative, and repeatable means of accomplishing that goal. Results will be used to prioritize programs (elk habitat vs. other COE programs) elk habitat treatments (size, location and types) and prepare annual plans and budgets. It is

also hoped that the models developed can be useful in a broader landscape such as the entire Clearwater drainage.

6) Use the model developed under goal #4 to evaluate the potential outcomes of alternative management scenarios (e.g., additional planting, fuels reduction, herbivore exclusion, etc.) with respect to forage production in the elk mitigation area.
Models developed under goal #5 can be used to generate quantitative predictions (in units of forage biomass, nutritional carrying capacity, etc.) of the potential outcomes of various management actions that influence vegetation (e.g., additional planting, fuels reduction, herbivore exclusion). As part of this project the COE will provide the contractor with potential management scenarios of interest (e.g., planting 5000 high quality forage seedlings) and the contractor will provide (1) model-predicted results of implementing each of those scenarios, (2) management recommendations stemming from those results, and (3) a detailed description of the procedures necessary to implement the model so that COE personnel can apply it to additional scenarios as needed in the future.

Public Benefit:

This project proposes to improve our knowledge and understanding of elk winter habitat by developing predictive models that will allow for more effective treatments to improve the quality of elk winter range. The primary public benefit is to improve elk numbers in the North Fork of the Clearwater drainage for the citizens of Idaho. The health and abundance of the Clearwater elk herd has significant social and economic public benefits. Idaho's Clearwater elk herd has historically been one of the most popular and publicized elk populations in the lower 48 states for both hunting and wildlife viewing. People from out of state and out of country commonly travel to the region to hunt and view elk in the Clearwater drainage. Increased visitation for these reasons provides an economic boost to the local economy, another critical public benefit.

The predictive models developed during this project may be employed by other elk population managers (Idaho Department of Fish and Game) and habitat managers (e.g. US Forest Service and the Nez Perce Tribe) regionally, and potentially in other states. Thus, elk population improvements and the associated public benefits likely will extend well beyond the Corps of Engineers boundary.

Section II: Award Information

Responses to this Request for Statements of Interest will be used to identify potential investigators for studies to be sponsored by the Walla Walla District and the Engineer Research and Development Center to provide elk winter habitat research on Dworshak Reservoir located in north central Idaho. The estimated level of funding for FY21 is approximately $50,000. Additional funds of $50,000/year for two additional years may be available, providing the potential funding of $150,000 over three years to the successful Recipient/Awardee. Depending on findings in the early years of this effort,

funding needs may increase above the anticipated $50,000/year in subsequent years of this project; however, total funding will not exceed $200,000 over the life of this cooperative agreement.

Government Involvement:

The Dworshak Wildlife Biologist will work directly with the university's wildlife staff to develop and finalize the research project goals and objectives and will lend site specific technical assistance to the project. The government will provide access to the Grandad Mitigation Area and if requested access to the Long Creek Work Center. So long as funds are available, the government will plan to provide funds for the entire three year study. Funds will come from both O&M dollars and timber sale proceeds. The Dworshak Wildlife Biologist will also be very involved in coordinating work and providing technical assistance and at the request of the university, act as a project committee member.

Section III: Eligibility Information

1. Eligible Applicants – This opportunity is restricted to non-federal partners of the Pacific Northwest Cooperative Ecosystems Studies Unit (CESU).

2. Cost Sharing – This action will be 100% funded by USACE.

Section IV: Application and Submission Information – Two Phase Process

Phase I: Submission of a Statement of Interest/Qualifications.

1. Materials Requested for Statement of Interest/Qualifications:
    a. Please provide the following via e-mail attachment to: sara.edwards@usace.army.mil (Maximum length: 2 pages, single-spaced 12 pt. font).

        1. Name, Organization and Contact Information

        2. Brief Statement of Qualifications (including):
            - Biographical Sketch,
            - Relevant past projects and clients with brief descriptions of these projects,
            - Staff, faculty or students available to work on this project and their areas of expertise,
            - Any brief description of capabilities to successfully complete the project you may wish to add (e.g. equipment, laboratory facilities, greenhouse facilities, field facilities, etc.).

        Note: A proposed budget is NOT requested at this time.

The administrative point of contact is Sara Edwards, 509-527-7216; sara.edwards@usace.army.mil

2. Statement of Interest/Qualifications shall be submitted NO LATER THAN 9 September 2021 2:00 PM PST

Based on a review of the Statements of Interest received, an investigator or investigators will be invited to move to Phase II which is to prepare a full study proposal. Statements will be evaluated based on the investigator's specific experience and capabilities in areas related to the study requirements.

Phase II: Submission of a complete application package to include a full technical proposal including budget, if invited.

1. Address to Request Application Package

The complete funding opportunity announcement, application forms, and instructions are available for download at Grants.gov.

The administrative point of contact is Sara Edwards, 509-527-7216; sara.edwards@usace.army.mil

Content and Form of Application Submission

All mandatory forms and any applicable optional forms must be completed in accordance with the instructions on the forms and the additional instructions below.

a. SF 424 R&R - Application for Federal Assistance
b. Full Technical Proposal – Discussion of the nature and scope of the research and technical approach. Additional information on prior work in this area, descriptions of available equipment, data and facilities, and resumes of personnel who will be participating in this effort should also be included.
c. Cost Proposal/Budget – Clear, concise, and accurate cost proposals reflect the offeror's financial plan for accomplishing the effort contained in the technical proposal. As part of its cost proposal, the offeror shall submit cost element breakdowns in sufficient detail so that a reasonableness determination can be made. The SF 424 Research & Related Budget Form can be used as a guide. The cost breakdown should include the following, if applicable:
    1. Direct Labor: Direct labor should be detailed by level of effort (i.e. numbers of hours, etc.) of each labor category and the applicable labor rate. The source of labor rates shall be identified and verified. If rates are estimated, please provide the historical based used and clearly identify all escalation applied to derive the proposed rates.
    2. Fringe Benefit Rates: The source of fringe benefit rate shall be identified and verified.
    3. Travel: Travel costs must include a purpose and breakdown per trip to include destination, number of travelers, and duration.
    4. Materials/Equipment: List all material/equipment items by type and kind with associated costs and advise if the costs are based on vendor quotes and/or engineering estimates; provide copies of vendor quotes and/or catalog pricing data.
    5. Subrecipient costs: Submit all subrecipient proposals and analyses. Provide the method of selection used to determine the subrecipient.
    6. Tuition: Provide details and verification for any tuition amounts proposed.
    7. Indirect Costs: Currently the negotiated indirect rate for awards through the CESU is 17.5%.
    8. Any other proposed costs: The source should be identified and verified.

2. Application package shall be submitted NO LATER THAN 16 September 2021 2:00PM PST

3. Submission Instructions
Applications may be submitted by e-mail or Grants.gov. Choose ONE of the following submission methods:

a. E-mail:
Format all documents to print on Letter (8 ½ x 11") paper. E-mail proposal to sara.edwards@usace.army.mil

b. Grants.gov: https://www.grants.gov/:
Applicants are not required to submit proposals through Grants.gov. However, if applications are submitted via the internet, applicants are responsible for ensuring that their Grants.gov proposal submission is received in its entirety.

All applicants choosing to use Grants.gov to submit proposals must be registered and have and account with Grants.gov. It may take up to three weeks to complete Grants.gov registration. For more information on registration, go to https://www.grants.gov/web/grants/applicants.html.

Section V: Application Review Information

1. **Peer or Scientific Review Criteria:** In accordance with DoDGARs 22.315(c), an impartial peer review will be conducted. Subject to funding availability, all proposals will be reviewed using the criteria listed below (technical and cost/price). All proposals will be evaluated under the following two criteria which are of descending importance.

    a. **Technical (items i. and ii. are of equal importance):**
        i. Technical merits of proposed R&D.
        ii. Potential relationship of proposed R&D to DoD missions.

    b. **Cost/Price:** Overall realism of the proposed costs will be evaluated.

2. **Review and Selection Process**
    a. **Categories:** Based on the Peer or Scientific Review, proposals will be categorized as Selectable or Not Selectable (see definitions below). The selection of the source for award will be based on the Peer or Scientific Review, as well as importance to agency programs and funding availability.

    i. **Selectable:** Proposals are recommended for acceptance if sufficient funding is available.

    ii. **Not Selectable:** Even if sufficient funding existed, the proposal should not be funded.

Note: The Government reserves the right to award some, all, or none of proposals. When the Government elects to award only a part of a proposal, the selected part may be categorized as Selectable, though the proposal as a whole may not merit such a categorization.

b. No other criteria will be used.

c. Prior to award of a potentially successful offer, the Grants Officer will make a determination regarding price reasonableness.

Section VI: Award Administration Information

1. Award Notices

   Written notice of award will be given in conjunction with issuance of a cooperative agreement signed by a Grants Officer. The cooperative agreement will contain the effective date of the agreement, the period of performance, funding information, and all terms and conditions. The recipient is required to sign and return the document before work under the agreement commences. **Work described in this announcement SHALL NOT begin without prior authorization from a Grants Officer.**

2. Administrative Requirements

   The cooperative agreement issued as a result of this announcement is subject to the administrative requirements in 2 CFR Subtitle A; 2 CFR Subtitle B, Ch. XI, Part 1103; and 32 CFR Subchapter C, except Parts 32 and 33.

3. Reporting

   See 2 CFR Sections 200.327 for financial reporting requirements,
   200.328 for performance reporting requirements, and 200.329 for real property reporting requirements.

Section VII: Agency Contact

Sara Edwards, Grants Specialist
US Army Corps of Engineers, Walla Walla District
201 3rd Ave
Walla Walla, WA 99362
sara.edwards@usace.army.mil
509-527-7216