**Title: Sugar Pine Status, Trends, and Vulnerability**

Reference Code: (Added later)

PNW Lead Scientist: Harold Zald, RMA VMARS

**Description/Justification:**

* Describe the project’s alignment with the station’s research Initiatives, station core capacities, or an existing station commitment (25 words max).

Project aligns with two priorities (forest resilience, monitoring and predicting outcomes), the westside fire initiative, and two core capacities (monitoring and assessment, ecology and management)

* Brief description of work
  + What is the purpose and character of the project (50 words max)?

Quantify the status (current conditions), demographic trends (recruitment, growth, mortality), of sugar pine. Develop empirical models of sugar pine mortality as a function of tree size, stand density, and climate, then apply mortality models to GNN maps and future climate projections to predict mortality probabilities across the species range.

Who is interested in having the work conducted (10 words max)?

SPF, FHP, NFS R5 and R6.

* + What is the geographic or community scope of inference and scope of relevance?

Entire native range of sugar pine (Oregon and California)

* Partner engagement
  + Who are you working with and in what capacity (15 words max)?

State & Private Forestry, Forest Health and Protection, R5 & R6 Ecology Groups.

* + How will your partners use this work (25 words max)?

Will be used to assess vulnerability of sugar pine to tree mortality and recruitment failure, prioritize areas for management (I.e. density reduction, planting sugar pine).

* Does this project contribute to a longer-term line of work that supports the science mission of the station and Forest Service R&D (25 words max)?

Leverages GNN, analytical methods developed for station supported subalpine fir decline project, ongoing and in development silvicultural experiments at Teakettle and South Umpqua Experimental Forests

* Are you aware of others doing similar work in other locations or contexts (Y/N)? N
* Importance/impact (25 words max).

Information on sugar pine status, trends, and vulnerability will support local forest decision-making, the 10-year fire plan (FS-1187b), and recent old forest Executive Order 14072.

**Deliverables/Outcomes**

* What are the specific project outputs – tools, publications, network, communication, data/information, etc. (10 words max)?

Publications, mapped old tree vulnerability and recruitment risk

* Are there distinct outcomes for resource management or policy envisioned (20 words max)

Assessment of threats to old growth sugar pine and recruitment failure, especially in within high-risk firesheds under 10-yr plan.

**Project Status**

* Is this a new project (Y/N)? Y
* If this is a continuation of an ongoing project:
  + When was the project started (FY)? NA
  + Is there an approved study plan on file (Y/N)? NA
  + What is the status with respect to objectives and deliverables (25 words max)?
  + What is the projected fiscal year of conclusion (FY)? FY23
* For new or continuing projects, are there previous station investments to consider (25 words max)?

Previous station investment of $65,500 towards ORISE fellow developing subalpine fir analytic methods to be leveraged, XX towards GNN

**Urgency**

* On a scale of 1 (urgent, cannot wait) - 3 (can wait) what is the urgency (not importance) of this work? Please explain (25 words max).

1-2. ORISE fellow developing methods will have completed his fellowship in 1 year without additional funding. High WO priorities within FS-1187b and EO 14072 timelines

**Station funding**

* Amount requested (can be ‘None’ or a Dollar amount):

$100,000

* Used for (10 words max):

Supporting ORISE post-doctoral fellowship, additional GNN work.

**Personnel Requirements - P&T, temp/term requirements**

* Other PNW personnel involved (10 words max):

David Bell, Andrew Gray

* External personnel capacity (10 words max):

Daniel Perret, ORISE post-doctoral fellow.

* What new personnel capacity is needed to complete this work?

None, increased support for ORISE post-doctoral fellow.

**Leverage**

* What external resources and existing station lines of work are amplifying the project?

$105,000 from WWETAC to support one ORISE post-doctoral fellow.

$65,500 from Station for continued support of ORISE post-doctoral fellow.

**Associated agreements:**

* Provide specific numbers for existing agreements related to this project (incoming or outgoing funds, memoranda of understanding etc).

21-IA-11261959058

21-IA-11261959058 Mod 1