

Describing red tree vole demographics in younger forests FY 2023-2024

Lead Investigator:

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Collaborators and roles:

Mackenzie McCoy, NCASI. Crew lead and new graduate student

Jason Piasecki, OSU master's student under Dr. John Bailey

Brendan Pate, NCASI. Field technician

Salix Scoresby, NCASI. Temporary field technician.

Katie Dugger, USGS/Oregon State University co-advising student



Red tree vole male resting on a branch. Photo by Jason Piasecki.

Background:

The north Oregon coast Distinct Population Segment (DPS) of the red tree vole (*Arborimus longicaudus*) was found to be not warranted for listing under the federal Endangered Species Act in 2019. In April 2020, the Service was sued over the finding. The litigants cite timber harvest and catastrophic fire as their concerns, which contributed to an estimated 18% habitat loss through recent time series modeling since 1994 (Linnell et al. 2023).

Red tree voles are often associated with older forests and complex canopy structure, often found in >80-year-old, and especially >200-year-old, Douglas-fir (*Pseudotsuga menziesii*) stands. However, our research indicates tree vole nests are also regularly found in younger forests, including managed forests 20-40 years old that are close to old forest patches (e.g., <1.4 km) (Piasecki 2023). The capacity of young forest to provide habitat for red tree voles is not well-understood. Individual young forest stands may provide habitat ephemerally, but it is not clear if this is sustained for multiple generations of tree voles, and if connectivity is facilitated among patches of older forest. A more comprehensive examination of whether young forests expand availability of habitat for red tree voles will provide needed information for conservation and management decisions. NCASI and Oregon State University, with multiple private and public landowners, are collaborating to complete an ambitious tree vole research project spanning private and public forests in the Oregon coast range.

Here, the WCI provided an opportunity to expand our current study to focus on vole reproduction and survival by supporting a new master’s student (starting September 2023) - Mackenzie McCoy.



Figure 1. We surveyed young stands 20-40 years within 1.5-hours of Corvallis using methods described in Piasecki (2023). In nests with recent sign, we attempted to capture and radiocollar voles that were large enough for the weight of a radio collar. Radio collars weighed between - 0.42g and 2.0g.

Summary of Efforts:

During 2023, the field team ground-surveyed 12 stands and climbed 458 trees with arboreal nests. We captured 33 voles: 14 adult females that were lactating or with kits, 5 adult males, and 14 juveniles. We were able to collar 30 individuals.



Figure 2. Adult female red tree vole with collar and unique marking on her pelage for remote camera identification.



Figure 3. Each vole had a clipped pattern on their dorsal back as their outer pelage is red and underfur black. Within a stand, each individual had a recorded pattern in one of 4 locations.



Figure 4. We both provided a unique tree tag at the base of all trees with arboreal nests and a unique tree tag at each nest within the canopy (subset image). By doing so, we will be able to quantify nest survival and colonization/extirpation over time building on work by Piasecki (2023). In addition, at nests

with recent tree vole sign, we installed remote cameras facing the nest. When the infra-red camera detects motion or heat, it will take a picture and collect images for approximately a year. The main photograph is an observer looking up at the bottom of a tree vole nest with a rectangular camera on the right portion of the tree bole.

Literature Cited:

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