



July 25, 2023

MEMORANDUM

TO: Forest Practices Board

FROM: John McEntyre, Region-Operations Outreach Support Analyst, Washington State Department of Natural Resources
Darrin Masters, Senior Forest Habitats Wildlife Biologist, Washington State Department of Fish and Wildlife

SUBJECT: 2022 Annual Report on the Board's Voluntary Cooperative Protection Approach for Western Gray Squirrel (WGS)

On November 12, 2013, the Board directed the Washington Department of Natural Resources (DNR) and Washington Department of Fish and Wildlife (WDFW) to annually report on the status of Forest Practice Applications (FPAs) that may need WGS management plans, and the success of the voluntary protection approach. DNR and WDFW will present this report at the August 9, 2023, board meeting.

This report is the ninth annual report to the board and covers the period from January 1, 2022, through December 31, 2022. It includes the results of WDFW's tracking data for FPAs and voluntary WGS conservation actions, which help with evaluation of how well the voluntary protection approach for WGS is working. The report also includes WDFW's research efforts for information on the distribution and habitat status of the squirrel, other forest landowner activities addressing WGS conservation, and protection by counties.

We look forward to discussing the 2022 report with you at the August meeting. In the meantime, please do not hesitate to contact us: john.mcentyre@dnr.wa.gov or (360) 280-2712; darrin.masters@dfw.wa.gov or 360-764-9942.

Attachment

Cc: Tom O'Brien (WDFW), Hannah Anderson (WDFW), Taylor Cotten (WDFW), Theresa Ann Ciapusci (DNR), Karen Zirkle (DNR), Saboor Jawad (DNR), Marc Engel (DNR)



2022 Annual Report to the Forest Practices Board

The Status of a Voluntary Protection Approach for the Western Gray Squirrel

July 25, 2023

SPECIES BACKGROUND

The Washington Fish and Wildlife Commission listed the western gray squirrel (WGS) as state threatened effective November 14, 1993.

In Washington State, the species occurs in three primary areas: oak and conifer forests of Klickitat and southern Yakima Counties; low to mid-elevation dry conifer forests in Okanogan and Chelan Counties; and oak and conifer forests on Joint Base Lewis-McChord (JBLM) in Pierce and Thurston Counties.

The WGS inhabits transitional forests of mature Oregon white oak, Ponderosa pine, Douglas-fir, and various riparian tree species (Linders and Stinson 2007). Habitat quality in Washington is assumed to be relatively poor compared to other parts of the species' range due to lower numbers of oak species and degradation of pine and oak habitats. Cumulative effects of land conversion, logging, sheep grazing, and wildfire suppression largely eliminated open-grown stands of mature and old growth pine and have degraded oak woodlands (Linders and Stinson 2007). The most recent population estimate for Washington was based on data gathered over seventeen years ago (1994 to 2005 by Linders and Stinson, 2007). At that time, the population was estimated to be between 468 and 1,405 squirrels. However, squirrel population size can fluctuate dramatically due to predation, disease, and variation in food supply. This along with the somewhat secretive nature of this animal makes abundance difficult to assess range wide.

HISTORY OF FOREST PRACTICES BOARD ACTIONS

In 2013, staff from the Department of Natural Resources (DNR) and Washington Department of Fish and Wildlife (WDFW) collaborated on administrative and operational improvements to facilitate voluntary WGS conservation measures as part of approved Forest Practice Applications/Notifications (FPA/N). DNR staff incorporated these improvements into FPA/N processing, which has since been applied to all FPA/Ns potentially having WGS present within the proposal area or within proximity to areas exhibiting suitable WGS habitat characteristics. Key components of this guidance include:

- DNR notes the presence of WGS or their habitat on the DNR *Office Checklist Page #2*, which becomes part of the FPA/N.

- DNR provides WDFW a courtesy email that an FPA/N has triggered a “hit” for potential WGS presence within the vicinity of the FPA/N. This provides notification on all new FPA/Ns sent out for review to DNR forest practices foresters, WDFW biologists, and interested stakeholders that WGS or their habitat may be present within the proposed forest practices activity area.
- DNR includes a “note” on the FPA/N *Notice of Decision* page acknowledging the presence of WGS or their habitat within the harvest vicinity and refers applicants to WDFW staff for assistance. Though this note is not a condition of the application, it is expected to inform the proponent of the potential occurrence of WGS and/or their habitat and to provide WDFW contact information. This note further improves communication and increases the likelihood of voluntary WGS protection during forest practices.

On November 12, 2013, the Board directed DNR and WDFW to report annually on the number of FPAs that might involve WGS conservation needs and the effectiveness of the voluntary protection approach. This report describing 2022 forest practice activities related to WGS marks the ninth annual report to the Board.

2022 FOREST PRACTICES APPLICATIONS/NOTIFICATIONS (FPA/Ns)

WDFW and DNR continued screening FPA/Ns for potential impacts to WGS using WDFW’s point and polygon GIS data cataloging presence, nest locations, and/or potentially suitable habitat. DNR notified WDFW for all FPA/Ns that are within ¼-mile of these locations. Once notified, WDFW regional biologists further evaluated the FPA/Ns to confirm conflict by working with the landowner/land manager to conduct WGS nest surveys (if suitable habitat is identified), discuss forest management goals, and develop voluntary measures to help protect WGS. Typically, forest management strategies incorporate conservation measures identified in WDFW’s *Priority Habitats and Species Management Recommendations for Western Gray Squirrel* (PHS – August 2010).

WDFW tracks WGS-associated FPA/N information using its WGS Survey Application tool (*Survey123*, supported by ArcGIS Online). Information collected includes FPA/N number, proponent name, forest practice location (county), whether the applicant is a large or small landowner, results of a WGS nest survey (presence/absence), WGS conservation measures agreed upon by the parties, and any additional pertinent information.

The following is a summary of FPA/Ns that triggered a WGS “hit” from January 1, 2022, through December 31, 2022:

- A total of 31 FPA/Ns were identified as potentially being associated with WGS.
- Of these 31 WGS-related FPA/Ns, 30 were in Klickitat County, and one in Pierce, County.
- Of the total FPA/Ns, 25 were associated with large/industrial landowners, and 6 were associated with a small forest landowner.

WESTERN GRAY SQUIRREL CONSERVATION

During the review process for the 31 FPA/Ns, WDFW continued to promote conservation efforts by supporting landowners when conducting WGS nest surveys and coordinating with them to implement voluntary WGS conservation measures. A large part of this effort involves education and cooperative development of harvest strategies that benefit the squirrel. A priority for WDFW is for industrial timber management companies to implement WGS conservation prescriptions on their lands by following guidance in the WDFW PHS recommendations for WGS. They typically incorporate nest surveys and habitat retention strategies into harvest planning and layout. Due to the large volume of FPA/Ns large landowners may file each year, WGS nest surveys are not conducted by WDFW staff for every industrial landowner FPA/N. Rather, WDFW relies on each company to voluntarily conduct surveys and incorporate management strategies into harvest plans.

WDFW staff frequently work with small forest landowners by conducting WGS nest surveys and developing conservation strategies with them when WGS presence is confirmed on their land. The goal is to educate and develop voluntary management strategies that meet landowner needs while also protecting WGS and their habitat, which can be challenging depending on the type of harvest (thinning versus a clearcut), the intended post-harvest forest conditions, and/or the economic interests of the landowner.

The following is a summary of WGS-related forest management activity for January 1 through December 31, 2022.

Of the total 31 WGS-related FPA/Ns:

- All 31 FPA/Ns involved the need for further review, including such tasks as:
 1. Additional GIS analysis.
 2. Confirmation of WGS presence or absence (e.g., conducting a WGS nest survey).
 3. Confirmation that appropriate WGS protection and/or habitat conservation strategies would be implemented during forest practice activities.
- Most FPA/Ns in need of WGS management considerations did incorporate recommendations for conservation measures. For each application, the landowner agreed to implement one or more of the following WGS management actions:
 1. Thinning with nest tree retention and buffers.
 2. Clearcut with nest tree retention and buffers.
 3. Thinning for oak release and habitat enhancement.
 4. Thinning while maintaining arboreal connectivity.
 5. Thinning with oak tree retention.

Due to ongoing limited staff resources, WDFW was not able to conduct post-harvest FPA/N compliance or effectiveness monitoring regarding implementation of the voluntary WGS management strategies that incorporate current PHS recommendations. Ultimately, knowing

more about how the PHS management recommendations may be influencing continued WGS occupancy of sites after harvests would allow WDFW to enhance its adaptive management approach to WGS conservation.

In November 2021, The Conservation Fund purchased 35,500 acres of land in Klickitat County through its affiliate, Lupine Forest LLC. Their primary goal for the land is to implement long-term conservation strategies that benefit wildlife and aquatic resources while maintaining sustainable forest management activities. Lupine proposes to use uneven-aged regeneration methods that promote and maintain structural and compositional forest diversity, providing habitat for a variety of terrestrial and aquatic species. The lands will be managed as a working forest, contributing to the local forest economy. Individual tree and group selection harvest as well as enhancing Oregon white oak habitat will create a historical forest condition providing for new conifer age classes and vigorous established conifers.

WDFW RESEARCH AND CONSERVATION EFFORTS

In 2021 and 2022, WDFW completed two scientific studies to support future management decisions. The first was a survey of site occupancy, which can be used to monitor the rate of change in squirrel distribution across the landscape over time. The second was a habitat change analysis. This study evaluated the percent change in WGS primary habitat between 1993 (when the WGS was listed as state Threatened) and 2017. The results of these studies were used to inform a Periodic Status Review (PSR) of the species drafted in early 2023. PSRs are required for all state-listed species and are often used as a basis for up-listing or down-listing imperiled species. The results of these documents are briefly described below. For details about each study, please refer to the literature cited at the end of this document. Pdf copies of the studies are available upon request.

Occupancy Survey. Early work on western gray squirrels in the state largely focused on habitat and species' ecology; describing preferred habitat characteristics, nesting behavior, activity patterns, diet, etc. While project specific efforts were made to estimate distribution and abundance, the methods employed were not repeatable, making them insufficient for long-term population monitoring. To remedy this, WDFW initiated a study in 2018 to assess the rate of occupancy of core habitat within the three population centers across the state (Vander Haegen and Keren 2021). There is a well-known relationship between occupancy and abundance (population count) in the ecological literature. When occupancy increases, abundance increases. Therefore, changes in the rate of occupancy over time can be used to infer positive or negative population trends.

The survey spanned three years. A total of 138 sites were surveyed across the state; 18 in the Puget Trough population (JBLM), 60 sites in the North Cascades population (Okanagan and Chelan Counties), and 60 sites in the South Cascades population (Klickitat County). Occupancy rates for the three-year timeframe ranged from 0.27 to 0.44 across the three core population areas. The results of this survey provide a baseline for future occupancy modelling efforts. More importantly, the research design provides a repeatable framework to assess the

trajectory of western gray squirrel populations over time, which in turn, will provide a solid foundation to inform management decisions. See Vander Haegen and Keren 2021 for a detailed account of this effort.

Habitat Change Assessment. WDFW published its final report (Vander Haegen and others 2022) of a project to assess the change in extent of WGS habitat from 1993 (the year of listing as state Threatened) to 2017 (the latest year suitable orthorimagery data were available). The assessment focused on lands comprising the North and South Cascades populations. The species was listed in 1993 because of habitat loss and fragmentation. Since that time, there has been no effort to monitor or evaluate the extent of habitat change. In 2017, WDFW began a four year effort to quantify WGS habitat change on a landscape level across the North and South Cascades population centers. The project first defined areas of potential range based on Washington's State Wildlife Action Plan (2015) and then refined the areas based on ecological systems and elevation to produce potential primary habitat maps. To analyze change on a fine scale, 1001 random one ha plots were placed (in GIS) within potential primary habitat in the North Cascades area and 1005 plots in the South Cascades area. All plots were systematically analyzed to determine the percent tree canopy cover, apparent tree size, and the spatial distribution of trees across each plot. The procedure was first completed with orthorimagery from 1993 and then repeated using imagery from 2017.

The results of the analysis estimated a net loss of 20.8% of primary habitat in the North Cascades and 21.2% net loss in the South Cascades. The primary driver of loss in the North Cascades was wildfire although timber harvest activities, largely in the form of thinning, were also a contributing factor. In the South Cascades, timber harvest was the primary driver with 55% of the issued Forest Practices permits focusing on thinning and 45% on clearcutting. Wildfire also played a small roll in habitat loss during the time period. Further, the authors concluded that assumed gains in habitat from successional processes over the time period did not compensate for assumed loss of habitat across both study areas. See Vander Haegen and Others (2022) for a detailed account of this study.

Periodic Status Review. A Draft Periodic Status Review incorporating results of the statewide western gray squirrel occupancy surveys and the statewide habitat change assessment was completed February 2023. The 90-day comment period closed the following May with 227 comments received from the public. The recommendation to up-list western gray squirrel to Endangered status was presented to the Fish and Wildlife Commission on June 23. Comments from the Commission and the public are being considered as the document is finalized. The Commission is expected to vote on the recommendation following submission of the final document in September 2023.

PROTECTION BY COUNTIES

Washington's *Growth Management Act* (chapter 36.70A RCW) requires that local jurisdictions protect critical areas, including fish and wildlife habitat conservation areas. Regulations (WAC 365-190-130(4)(a)) specify that counties should identify and classify habitat for federal and

state listed and sensitive species and should utilize the WDFW PHS database when doing so. The PHS database contains GIS location data for WGS and is routinely requested by counties to support land use planning. These are the same data that WDFW and DNR staff use to screen FPA/Ns, as well as other proposals going through the State Environmental Policy Act (SEPA) process, for potential project impacts to WGS.

SUMMARY

Throughout 2022, all proposed forest practice activities identified as potentially affecting WGS were screened by WDFW and DNR. WDFW, DNR, and landowners (or their consultants) conducted WGS nest surveys as needed and worked with proponents to conserve WGS when present within a harvest area. FPA/N-associated WGS nest surveys, combined with screening of FPA/Ns, allows WDFW and DNR to continue evaluating the effectiveness of the voluntary protection approach in achieving WGS conservation.

WGS remains a high priority species for conservation by WDFW. There continues to be a need for post-harvest effectiveness monitoring to evaluate the efficacy of the voluntary protection approach, but limited staff resources often restrict that effort. The recent publication of the habitat change report (Vander Haegen and others 2022) indicated that Washington is slowly losing primary habitat and that natural regeneration cannot keep up with the rate of decline. Because of this, WDFW made a recommendation to the Fish and Wildlife Commission to up-list the species from state Threatened to state Endangered. If up-listed, WDFW and DNR will need to work with landowners to craft a conservation strategy that not only reverses the habitat trajectory but also promotes a sustainable forest economy that so many people depend on. Indeed, conservation efforts are already in progress. For many years, landowners have been willing to survey for nests and adjust their harvest strategies to accommodate habitat. The Land Conservation Fund's recent purchase of 35,500 acres of land in Klickitat County with the intent to implement habitat conservation measures has the potential to benefit the western gray squirrel over the long-term. Lastly, WDFW completed the first study to document primary habitat occupancy rates across the squirrel's range in the state (Vander Haegen and Keren 2021). This will serve as a baseline for subsequent surveys in the years to come using the same methodology. Over time, the occupancy modelling results will tell us whether the conservation efforts are working by revealing an increase or decrease in occupancy rates.

In 2023, WDFW will continue to conduct surveys and evaluate habitat to improve our knowledge of squirrel distribution across the state and we will continue to work with landowners and DNR to develop conservation strategies that work for everyone.

LITERATURE CITED

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