

# Washington State Department of Natural Resources

## Adaptive Management Program



### Quarterly Updates to the Forest Practices Board

#### Summary

Cooperative Monitoring, Evaluation and Research Committee (CMER) held regular monthly meetings this quarter. The Committee approved or advanced to TFW Policy the following Adaptive Management Program (AMP) project deliverables:

- Riparian Characteristics and Shade (RCS) Prospective 6 Questions,
- Schedule L-1 Review and Revision Process Recommendation,
- Protocols and Standards Manual (PSM) Sections 1-3 revisions,
- Deep-Seated Landslide Strategy - Landslide Mapping and Classification Project (4.5 and 4.6) Study Design for Independent Scientific Peer Review (ISPR), and
- Independent Scientific Peer-Review (ISPR)-Approved Unstable Slopes Criteria: Susceptibility and Runout Study Design.

The Timber, Fish, and Wildlife (TFW) Policy Committee held regular monthly, in-person meetings this quarter. The committee approved the following Adaptive Management Program (AMP) project deliverables:

- Anadromous Fish Floor (AFF) Proposal Initiation,
- Potential Habitat Breaks (PHB) Charter,
- Default Physical Criteria Assessment (DPC) Charter, and
- Schedule L-1 Review and Revision Process Recommendation.

Both TFW Policy and CMER had in-person meetings in Spokane in September followed by a joint field trip to see sites that are part of the Eastside Type N Riparian Effectiveness Project (ENREP) (see page 9 for details). Both committees continue to make progress on advancing State Auditor's Office (SAO) Recommendations to improve the Adaptive Management Program. Key advancements this quarter include: CMER PSM revisions to improve process, transparency, and accountability, Schedule L-1 revision process to inform Structured Decision Making, CMER prioritization, public facing dashboard, and development of a TFW Policy Manual.

**November 2023**

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## PROJECT UPDATES

### ROADS PRESCRIPTION SCALE EFFECTIVENESS MONITORING PROJECT

The [Roads Prescription Scale Effectiveness Monitoring Project](#) examines high-traffic, near-stream forest logging roads as sources of sediment and seeks to better understand and evaluate mitigating best management practices (BMP). The project team has completed the fourth year of main experiment data collection, with two subsequent additional years of data collection planned. In this last quarter, the project team, in coordination with the DNR Pacific Cascade Region Road Crew, completed the first phase of annual summer road maintenance activities including replacing all traffic counters across our study area, placing new rock on study segments, and implementing new ditch-line BMPs. The project team is now coordinating with the Pacific Cascade Region to complete second phase of annual grading work to the project sites and preparing for flume calibration fieldwork taking place in October following a retrofitting of flow splitters in the flumes in September.

### EXTENSIVE RIPARIAN STATUS AND TRENDS MONITORING – RIPARIAN VEGETATION AND STREAM TEMPERATURE, TYPE F/N WESTSIDE AND EASTSIDE PROJECT

The [Extensive Riparian Status and Trends Monitoring Program – Riparian Vegetation and Stream Temperature Project's](#) purpose is to provide data needed to evaluate landscape-scale effects and changes over time of implementing forest practices riparian prescriptions. The objective is to build and maintain a status and trends monitoring program that will evaluate how aquatic conditions, riparian forest structure and functions, and the desired habitat conditions they support change on a landscape scale. This project is in an early stage of development in which the project team is considering how to scope and design the long-term study as well as how to tackle the development of specific critical questions and objectives. This quarter, the project team developed a draft charter that was thoroughly reviewed by Riparian Scientific Advisory Group (RSAG). The project team incorporated RSAG's feedback and developed a revised charter that will go back to RSAG for final review and approval. The project team has also been meeting with researchers and scientists specializing in extensive monitoring, such as Dan Isaak of USFS' NorWest Model, to learn about best practices and possible collaboration opportunities.

## WESTSIDE TYPE F RIPARIAN PRESCRIPTION EFFECTIVENESS- EXPLORATORY FIELD STUDY

The [Westside Type F Riparian Prescription Effectiveness- Exploratory Field Study](#) evaluates the effectiveness of westside riparian prescriptions for F and S streams in achieving resource objectives and performance targets. This exploratory study is intended to reduce uncertainties associated with the relative sensitivity of post-harvest riparian stand conditions and riparian functions to harvest prescriptions and to potential harvest-associated disturbances as well as to be used to focus and refine the development of a future Study Design for a more rigorous test of the effectiveness of the Type F rule buffers. The Westside Type F Exploratory Report was approved in December 2022, to submit to Independent Scientific Peer Review (ISPR). The ISPR response document package was received in January 2023. Since then, the author has been responding to the ISPR comments and making the requested revisions in an effort to develop a response document package (comprised of a comment matrix, revised report, and memo) to be sent back to ISPR for consideration. This effort has required the author to undertake significant and extensive revisions to not only the report itself, but also the underlying data analytics, upon which many sections of the report are based on. A complete response to ISPR is pending.

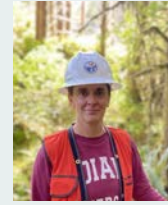
## EASTSIDE TIMBER HABITAT EVALUATION PROJECT (ETHEP)

The [Eastside Timber Habitat Evaluation Project \(ETHEP\)](#) is designed to develop framework(s) for applying riparian harvest rules along Type S and Type F streams in eastern Washington based on the Forest Practices Habitat Conservation Plan (FPHCP) functional objectives and performance targets. The Study Design is in Independent Scientific Peer Review (ISPR) review. The authors have responded to ISPR comments and returned the Study Design to ISPR in October 2023 for consideration. An ISPR-approved Study Design is expected to be approved by CMER in October 2023.

## RIPARIAN FUNCTION LITERATURE SYNTHESIS

The [Riparian Function Literature Synthesis](#) is a stand-alone literature synthesis that will address questions regarding the effects of timber harvest on riparian functions. The literature synthesis is in Riparian Scientific Advisory Group (RSAG) review. The authors are reviewing RSAG comments and expect to return the final document to RSAG in November 2023.

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## EASTSIDE TYPE N RIPARIAN EFFECTIVENESS PROJECT (ENREP)

The **Eastside Type N Riparian Effectiveness Project (ENREP)** will help inform if, and to what extent, the prescriptions found in the Type N Riparian Prescriptions Rule Group are effective in protecting water quality and some riparian functions, particularly as they apply to sediment and stream temperature in Eastern Washington. The project is currently in full implementation. Springdale and Tripps basins were harvested in 2021. Two years of pre-harvest data, harvest year, and one year of post-harvest data have been collected at these basins. Blue Grouse basin harvest was completed in 2022. Three years of pre-harvest data and harvest year data have been collected here. Coxit basin harvest was completed in fall 2023. Fish Creek basin harvest is scheduled to span two seasons, with harvest completion in 2024. Two years of pre-harvest data have been collected in Coxit and Fish Creek basins. Data collection includes: biophysical variables, including streamflow, wetted channel extent, suspended sediment concentrations, stream shade, riparian forest mensuration, large wood, temperature, and stream cross sections, aquatic life (benthic macroinvertebrates), and habitat. The project team led a joint TFW Policy/CMER field trip to the Blue Grouse and Tripps basins on September 27, 2023.

### RIPARIAN CHARACTERISTICS AND SHADE (RCS)

The **Riparian Characteristics and Shade (RCS)** project is a field research project intended to evaluate the combined effect of stream-adjacent no-harvest zone width and adjacent-stand harvest intensity (i.e., thinning density) on stream shade. The project team has been working on site selection and has identified two potential sites for implementation in summer 2024. The answers to the Prospective 6 Questions document was approved by CMER in August 2023 and delivered to TFW Policy in September 2023.

### WETLAND MANAGEMENT ZONE EFFECTIVENESS MONITORING PROJECT (WMZ)

The **Wetland Management Zone Effectiveness Monitoring Project (WMZ)** will evaluate wetland functions to determine if the target of no-net-loss of hydrologic function, Clean Water Act (CWA) assurance targets, and hydrologic connectivity are being achieved. Following the April 2022 CMER approval of the project charter, the project team has begun the scoping process. The development of the Scoping Document, the Best Available Science Document, and Prospective Six Questions Document are being developed, and an initial draft planned to CMER in early 2024. Funding for the WMZ begins in FY26, with implementation funding slated to begin in FY28.



## FORESTED WETLANDS EFFECTIVENESS PROJECT (FWEP)

The **Forested Wetlands Effectiveness Project (FWEP)** projects will look at the effectiveness of forest practices prescriptions to protect, maintain, and restore aquatic resources, namely water quality and wetland hydrologic and ecological functions. It will be evaluated to determine if they achieve the Forest Practices Habitat Conservation Plan (FPHCP) goal of no-net-loss of functions of those wetlands by half of a timber rotation cycle while meeting water quality standards (FPHCP). FWEP has an approved Study Design. Tanner Williamson, CMER Wetland Scientist, along with the Project Team completed the instrumentation of all 24 project sites over the 2023 field season. Water Quality data collection began in October and will continue through 2025. Data collection includes water quality analysis for: Suspended Sediment Concentration, soluble Reactive Phosphorus, Dissolved Organic Carbon and Nitrogen. The project team is also conducting hemispherical photography, forest and vegetation surveys at all sites.

## WATER TYPING STRATEGY

The purpose of the **Water Typing Strategy** is to inform a permanent water typing system that meets Forest and Fish Rules (FFR) objectives. One goal of the Department of Natural Resources (DNR) water typing system is to accurately identify the upstream extent of fish habitat. In November of 2019 the Washington Forest Practices Board (Board) passed a motion recommending "the Cooperative Monitoring, Evaluation and Research Committee (CMER) to [*sic*] develop study designs for the PHB validation, physical characteristics, and map-based Lidar model studies" ([WA FPB 2019a](#), [WA FPB 2019b](#)). The following April, CMER approved a strategy for the In-stream Science Advisory Group (ISAG) to complete Study Designs for the three projects identified by the Board: i) **Potential Habitat Breaks (PHB)**, ii) **Default Physical Criteria (DPC)**, iii) **LiDAR Model Map**. The Water Typing Strategy was approved by the Board in May, 2020 ([WA FPB 2020](#)). ISAG is currently developing and implementing the first two studies. The implementation of a LiDAR model study will use findings from the PHB and DPC studies to define metrics and criteria to model. The LiDAR mapping also requires a statewide LiDAR-based hydrography, which is currently scheduled for a 2029 completion (per Department of Ecology). The PHB and DPC Project Charters were approved by TFW Policy in September 2023. The PHB Project Team is working on the answers to the Prospective 6 Questions Document. The DPC Project Team has been working on the DPC Study Design, which is expected to be delivered to CMER to initiate a concurrent CMER/ISAG review in fall/winter 2023. A statistical consulting firm is assisting the Project Team in evaluating methods for the DPC Study Design.

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## **EASTSIDE FOREST HEALTH STRATEGY**

The **Eastside Forest Health Strategy** workgroup developed a report that was reviewed by CMER in April 2022. The Eastside Forest Health Strategy workgroup recommended the development of a research and monitoring strategy investigating active RMZ management approaches that build on current RMZ prescriptions and are designed to balance disturbance resiliency and resource protection objectives outlined in the Forest Practices Habitat Conservation Plan (FPHCP) (Schedule L-1 functional objectives and performance targets, Appendix N). Scientific Advisory Group- Eastside (SAGE) is discussing next steps to further develop the Eastside Forest Health Strategy based on the TFW Policy-approved 23-25 CMER Work Plan.

### **TYPE N EXPERIMENTAL BUFFER TREATMENT PROJECT IN HARD ROCK LITHOLOGIES AMPHIBIAN MONITORING PHASE III**

The **Type N Experimental Buffer Treatment Project in Hard Rock Lithologies – Amphibian Monitoring Phase III** project is in implementation. Data collection for stream-associated amphibian demographics and relevant covariates (e.g., stream temperature) for post-harvest years 14 and 15 was completed July-September 2022 and 2023 to allow for the evaluation of continued trends in amphibian densities at long-term study sites. The team is conducting QA/QC on data collected through 2023, which will be followed by data analysis and report development through the end of the current biennium (June 2025).

### **UNSTABLE SLOPES CRITERIA PROJECT**

The **Unstable Slopes Criteria project** will evaluate the degree to which the landforms described in the unstable slopes rules identify potentially unstable areas with a high probability of impacting public resources and public safety. This quarter, the project team made progress on Project 2, Object-Based Landform Mapping with High-Resolution Topography Study report. The project team worked on a necessary mapping exercise and began revising the final report. A draft of the final report is expected at the end of 2023.

The Study Design for the Empirical Evaluation of Shallow Landslide Susceptibility and Frequency by Landform (Project 3) and the Empirical Evaluation of Shallow Landslide Runout (Project 4) was finalized and approved by the Uplands Process Science Advisory Group (UPSAG) and the Project Team and then presented to CMER for approval on March 28th, 2023. The Study Design was then advanced to Independent Scientific Peer Review (ISPR). The Study Design author responded to ISPR and received final approval from CMER on September 26, 2023. The project team will now focus on developing the Prospective 6 Questions Document and planning for study implementation.

## DEEP-SEATED LANDSLIDE RESEARCH STRATEGY

The **Deep-Seated Landslide Research Strategy** utilizes the results of the literature reviews for forest harvest effects on glacial and bedrock deep-seated landslides to address key knowledge gaps identified during the literature reviews and to address questions from the Forest Practices Board and TFW Policy regarding the potential effects of forest practices on deep-seated landslides.

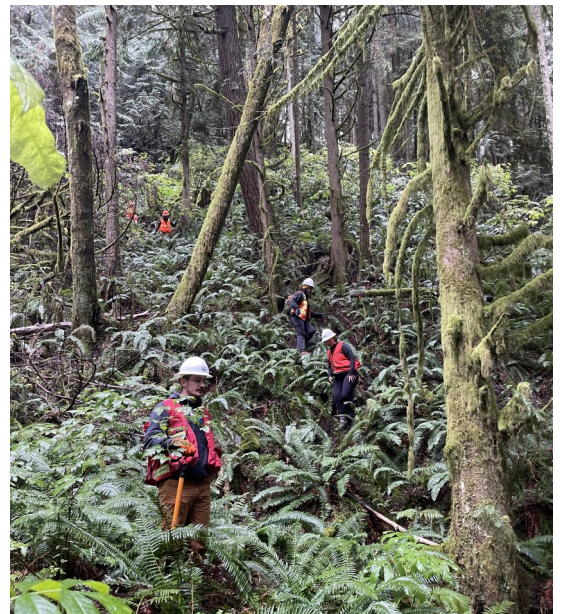
A consultant was hired to assist Uplands Process Science Advisory Group (UPSAG) in the development of the DSL Study Design based on the TFW Policy-approved Scoping Document for the Landslide Mapping and Classification Project (4.5 and 4.6) under the Deep-Seated Landslide Research Strategy. BGC Engineering delivered a draft Study Design which underwent CMER review in Spring, 2023. BGC Engineering and the project team responded to CMER comments and revised the Study Design. On September 26, 2023 the Study Design received CMER approval and was sent to ISPR.

## DEEP-SEATED LANDSLIDE MAPPING AND CLASSIFICATION PROJECT SITE VISIT

The Uplands Process Science Advisory Group (UPSAG) gathered in Whatcom County in October to visit a deep-seated landslide complex within the Mapping and Classification project area. UPSAG members from Weyerhaeuser, Rayonier, DNR Forest Resources, the Conservation Caucus, DNR Adaptive Management Program, the Northwest Indian Fisheries Commission, Washington Forest Protection Association, and the Nooksack Indian Tribe, attended the field trip.

The purpose of the Landslide Mapping & Classification Project is to define classes of deep-seated landslides based on variables that control the occurrence and type of failure. Moving forward, these classes will be used to identify and assess landslide types that may be prone to increased movement associated with forest practices, such as timber harvest or road construction. The regional scale project utilizes remote sensing data including InSAR and change detection between multiple lidar data sets. This field excursion was an opportunity to get together and discuss how fieldwork can be used to augment and verify the remote sensing data within the context of this project.

The field visit included a four-hour traverse across an active deep-seated landslide nested within a large landslide complex. Both InSAR and lidar change detection remote sensing tools highlight landslide movement. In the field, the group viewed bowed trees, sharp ridges and hummocks, variable hydrology, a steep head scarp, and geology outcrops. The observations stimulated good conversations and allowed the group to visit one of the landslides in the project area. The weather cooperated and it was a great day to get in the woods!





## EASTSIDE TYPE N RIPARIAN EFFECTIVENESS PROJECT FIELD TRIP

Adaptive Management Program (AMP) participants attended a site visit in Eastern Washington in September to tour sites that are part of the Eastside Type N Riparian Effectiveness Project (ENREP). The purpose of the ENREP study is to determine the extent to which the prescriptions found in the eastside Type N Riparian Prescriptions Rule Group are effectively achieving performance targets, particularly as they apply to sediment and stream temperature and their effects on aquatic life.

Dr. Tim Link, Director of the Water Resources Graduate Program and Professor of Hydrology at the University of Idaho, is one of two Principal Investigators for the ENREP study. Dr. Link led the field tour and provided an overview of two project sites. In the morning, the group visited Blue Grouse, a mesic, west-facing site north of Spokane, where the experimental harvest using the clear cut strategy was completed in August 2022. In the afternoon, the group visited Tripps Knob, a site northeast of Spokane, close to the Washington/Idaho border. This is a wet, north-facing site, where the harvest using the partial cut strategy was completed in October 2021.

Dr. Link, along with Clayton Christensen, ENREP Research Technician, introduced the study goals and design. Landowner representative, Paul Buckland from Inland Empire Paper, provided additional details about the forest management at each site.

The ENREP study uses a Before-After/Control-Impact (BACI) design. At each site, data are collected for at least two years pre-harvest and two years post-harvest, with a transitional year of data collected in between. Each study site has a treatment basin and an unharvested, reference basin.

The group visited the riparian area within the harvested basins at each site, including one segment at Blue Grouse which was approved by the Forest Practices Board under Pilot Rule to test the effect of complete clearcutting along a seasonally dry stream. Participants also saw examples of data collection equipment and discussed the parameters measured in this study.

Field trip participants included members of TFW Policy, CMER, Scientific Advisory Group Eastside (SAGE), a Forest Practices Board member, and AMP staff.





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October 20, 2023

**MEMORANDUM**

**To:** Forest Practices Board  
**From:** Darrin Masters, WDFW Senior Forest Habitat Biologist, Forest Habitat Section  
**Subject:** Upland Wildlife Update

The following provides a brief status update for ongoing or pending actions pertaining to priority wildlife species in forested habitats:

**Marbled Murrelet**

1992: Federally listed as Threatened  
1993: State listed as Threatened,  
1996: Federal critical habitat designated  
1997: FPB enacted State Forest Practices Rules  
2017: State up-listed to Endangered  
2023: Proposed expedited rule making for recommended changes to WAC 222  
2024: New murrelet rules take effect

The species' status has not improved since state listing in 1993. State-wide, Washington's Murrelet population has declined by 4.1% annually (2001-2020) overall. It has declined by 3.3% annually along the Washington coast (2001-2021) and 5.0% in the U.S. portion of the Salish Sea (2001-2020) (Pearson et al. 2022). To put these numbers in perspective, in the Salish Sea during the breeding season in 2001 for example, there were an estimated 5,740 birds. In 2020, there were approximately 3,140 birds in this same area. There has been nearly a 50% decline in the regional population over those 20 years. Following the 2017 state uplisting to state Endangered status, the Washington Department of Natural Resources (WDNR), in consultation with the Washington Department of Fish and Wildlife (WDFW), recommended that the Forest Practices Board (Board) support a forest practice rule assessment including relevant stakeholders. WDFW established a Murrelet Wildlife Working Group (WWG) to evaluate efficacy of the rules, identify potential rule modifications to improve clarity and implementation, and provide recommendations to the Board.

The WWG materials were finalized and submitted to WDNR on April 20. WDFW presented the recommendations and the supporting material at the May 2023 Board meeting. The Board accepted the proposed changes and approved the WWG's recommendation to utilize the expedited rule-making process. The comment period for proposed expedited rule-making closed on July 25. No objections were received, and the expedited process will be finalized at the November meeting with the new rules to take effect on January 1, 2024.

Proposed changes to Board Manual Sections 14 and 15 were presented in August and the Board accepted the draft revisions with the expectation that they would be finalized in November. The Murrelet Wildlife Working Group, and WDNR Forest Practices Foresters and Division Managers continued to refine the draft sections since August. The sections have been finalized and will be

presented at the November 2023 meeting. Training materials for foresters, landowners, and WDFW biologists are currently being developed. While a date has yet to be determined, joint training is currently being scheduled and will be completed by the end of 2023. The training will consist of an online presentation followed by field training.

WDFW continues to monitor Marbled Murrelet populations at-sea in the Puget Sound and Straits (most recently monitored in 2022) and the Washington coast (monitored in 2021) every other year during the nesting season. These are the only data available to assess Murrelet abundance and trends. The NW Forest Plan Effectiveness Monitoring team's 25-year report has been published (McIver et al. 2021) as well as a report on trends in habitat conditions (Lorenz et al 2021). The 2020 and 2021 at-sea survey reports are now available (Lance & Pearson, 2021; McIver et al. 2021) and a paper on winter trends over an eight-year period was recently published that found strong non-breeding season declines in Puget Sound (Pearson et al. 2022). Research in collaboration with Dr. Beth Gardner and PhD Student Sierra Gillman at the University of Washington is ongoing. They are developing predictive density surfaces for the murrelet and examining the factors driving changes in abundance and distribution.

Contact: Taylor Cotten (t.cotten@dfw.wa.gov)

### **Canada Lynx**

- 1993: State listed as Threatened
- 1994: FPB enacted voluntary management approach
- 2000: Federally listed as Threatened
- 2017: State up-listed to Endangered
- 2023: Draft Federal Recovery Plan to be released in December

With the 2017 up-listing to state Endangered status, it was recommended that no action be taken to include lynx in the forest practices rule designation for critical habitat (state) and to maintain existing voluntary protections. WDFW continues to explore lynx conservation opportunities in collaboration with landowners, Canadian federal and provincial entities, US Fish & Wildlife Service (USFWS), US Forest Service (USFS), conservation organizations, tribes, and academic partners. The goal is to refine recovery actions that can be implemented in the near- and long-term to benefit lynx conservation in Washington.

Evaluation of Forest Practices Applications (FPAs) on private lands continues in order to identify potential impacts to lynx habitat. Given wildfire impacts in northcentral Washington, WDFW has pursued ongoing coordination with partners to bring awareness of the importance of balancing habitat protection with the need to address fire risk, including on federal lands.

Under DNR's Lynx Habitat Management Plan (2006), DNR and Washington State University (WSU) have begun developing a proposal to investigate the effects of different pre-commercial thinning designs on snowshoe hare use of habitat, vulnerability to predation, and sources of mortality. The information gathered may then be used to better inform forest management treatments favorable for snowshoe hares while also providing increased foraging opportunities for lynx. DNR and partners are nearly complete with the pretreatment phase of the project and are beginning planning for the treatment phase. Additionally, Colville Confederated Tribes is leading a lynx conservation project and they have released 19 lynx from 2021 to 2022 into the Washington Kettle Range, and are actively trapping in October and November of 2023 for 10 more lynx to release in this reintroduction area.

To further lynx conservation, WDFW participates in ongoing multi-agency surveys for lynx in the North Cascades, WDFW maintains a current database of verifiable lynx detections, and WDFW is currently updating the periodic status review for the lynx (last done in 2017), and this updated version is expected to be available for public review in Spring 2024.

Contact: Jeff Lewis (Jeffrey.Lewis@dfw.wa.gov)

### **Northern Spotted Owl**

- 1988: State listed as Endangered
- 1990: Federally listed as Threatened
- 1996: FPB enacted State Forest Practices Rules
- 2012: USFWS designation of revised critical habitat
- 2016: State retention of Endangered status

The Northern Spotted Owl (NSO) population has continued to decline primarily due to ongoing competitive interactions with Barred Owls. The Barred Owl removal experiment, which included study areas in Washington, Oregon, and California, indicated, among other findings, a positive response in survival rates by Spotted Owls following Barred Owl removal (Wiens et al. 2021).

The USFWS has continued to address Barred Owl management and subsequent conservation of Spotted Owls in Washington, Oregon, and California. WDFW is an active partner in a process to develop management concepts and scenarios that will guide decision making by USFWS about the scope of Barred Owl management options that will be evaluated in an Environmental Impact Statement.

In February 2021 a bill was introduced to the legislature that, if passed, would give WDNR the authority to develop and manage a Programmatic Safe Harbor Agreement (SHA) for NSO with the US Fish and Wildlife Service. Before granting authority, the legislature desired to see a draft of the SHA and gave WDNR funding to complete that effort. WDNR, WDFW, and the Northern Spotted Owl Implementation Team (NSOIT) worked with WDNR's consultant to develop the SHA. In June 2022, the team completed drafts of the SHA, Environmental Assessment, and an explanation of an enrollment mechanism for landowners to voluntarily enroll. The SHA is designed to provide federal regulatory assurances to nonfederal landowners through a voluntary program regarding management of Spotted Owl habitat. On January 16, 2023, the bill was reintroduced to the legislature for consideration.

The Department is in the process of finalizing the 2023 NSO Periodic Status Review. The 90-day comment period is open from August 1<sup>st</sup> through Oct 29<sup>th</sup>. The last status review was published in 2016. Following a public comment opportunity, the final document will be presented to the Washington Fish and Wildlife Commission during the fall or winter of 2023.

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### **Fisher**

- 1998: State listed as Endangered
- 2016: Federal status: Final decision for west coast DPS - not warranted for listing (April 2016)
- 2018: Ruling on 2017 withdrawal of proposed ESA listing, USFWS ordered to revisit that decision
- 2019: Federal revised proposed rule to list fishers, excluded fisher in Washington

Fisher reintroductions into Washington have been completed by WDFW and cooperating partners, with a total of 260 fishers, including 90 in Olympic National Park (2008-2010), and 170 in other federal lands within the Cascade Range. Non-federal landowners can continue to voluntarily enroll in the Candidate Conservation Agreement with Assurances (CCAA) and receive federal regulatory assurances if the fisher were to become listed under the ESA in the future. By enrolling in the CCAA, landowners agree to follow basic conservation measures that protect fishers that may use their lands. To date, 62 entities who own or manage 3,442,491 acres of non-federal forest lands are enrolled in the CCAA.



WDFW and project partners are continuing the long term monitoring of reintroduced fisher populations in the state, following the 2013-2016 monitoring project on the Olympic Peninsula. WDFW and project partners conducted a distribution and occupancy survey (using camera stations) of much of the federal lands in the South Cascades Ecosystem from October 2022 – July 2023. Data analysis of this survey are ongoing, but our preliminary results included the detection of fishers at >=29 of 102 functioning survey stations. This survey effort is now being implemented in the North Cascades Ecosystem with deployment of ~160 camera stations from 15 September to 31 October 2023 and station revisits to be conducted in July of 2024.

Contact: Jeff Lewis (Jeffrey.Lewis@dfw.wa.gov)

### **Western Gray Squirrel**

1993: State listed as Threatened  
2002: Petitioned for Federal listing  
2003: Federal listing denied  
2013: FPB enacted voluntary management approach  
2016: State retention of Threatened status

A Draft Periodic Status Review incorporating results of the statewide western gray squirrel hair tube surveys and the statewide habitat change assessment was completed. The 90-day comment period closed in 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 23 June. Comments from the Commission and the public were considered, and changes made as appropriate. The document was finalized and posted in August 2023. Comments on the rulemaking will be accepted until Oct 27, 2023, and the Commission is expected to vote on the recommendation at its meeting in November 2023.

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### **Future Updates to the Board**

The forest practices rules require that when a species is listed by the Washington Fish and Wildlife Commission and/or the U.S. Secretary of the Interior or Commerce, WDNR will consult with WDFW and makes a recommendation to the Forest Practices Board as to whether protection is needed under the Critical Habitat (State) rule (WAC 222-16-080). WDFW and WDNR coordinate to anticipate federal actions and to respond to changes in the status of species addressed by the rules.

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**DEPARTMENT OF  
NATURAL RESOURCES**

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October 4, 2023

**TO:** Forest Practices Board

**FROM:** Tami Miketa, Manager, Small Forest Landowner Office *TM*

**SUBJECT:** Small Forest Landowner Office and Advisory Committee

**Small Forest Landowner Advisory Committee**

The Small Forest Landowner Advisory Committee did not meet during this reporting period.

**SFLO Program Updates**

*Forestry Riparian Easement Program (FREP)*

The Forestry Riparian Easement Program received \$20 million for the FY23-25 biennium. This budget will aid in buying down the current waiting list of 90 applications. To expedite the purchasing of easements, the SFLO is recruiting for a Forest Check Cruiser to cruise the qualifying timber within each easement in the FRE Program and the Rivers and Habitat Open Space Program.

Currently, these programs have used third party timber cruise contractors to conduct this work. This has proven to be a long process and on numerous occasions we received just one bid proposal or no bids at all. It has become a severe bottleneck to the easement acquisition process, and having a cruiser full time on staff will certainly expedite the process.

*Family Forest Fish Passage Program*

The Family Forest Fish Passage Program received \$7.78 million for the FY23-25 biennium and is planning on removing 28 fish barriers.

*Rivers and Habitat Open Space Program*

The Rivers and Habitat Open Space Program received \$5.014 million for the FY23-25 biennium. It is estimated this budget will fund all four projects on the RHOSP priority list.

*Regulation Assistance Program*

As you know, the SFLO recently expanded with the creation of a new Small Forest Landowner Regulation Assistance Program. A new regulation assistance program manager position was created along with six new positions that are located across the state. These positions continue to educate and provide expert technical assistance to assist small forest landowners with the Forest Practices Rules.

The Regulation Assistance Program also includes a statewide fish and wildlife biologist to assist with stream and wetland typing on small forest landowners' properties. The biologist is prepared with permits, expertise, and equipment to conduct electrofishing, as necessary, to determine water typing associated with landowner requests and FPA's.

### **Long-Term Applications (LTA)**

In this Forest Practices Board report, the SFLO regularly shows the status of Long-Term Applications. There are currently 315 approved long-term applications that have passed Phase 2 of the process. This is one more approved LTA since the end of the last reporting period (07/06/2023).

<b>LTA Applications</b>	<b>LTA Phase 1</b>	<b>LTA Phase 2</b>	<b>TOTAL</b>
Under Review	6	0	<b>5</b>
Approved	1	315	<b>316</b>
<b>TOTAL</b>	<b>7</b>	<b>315</b>	<b>318</b>

### **Upcoming Events**

[WSU Forestry Extension Forest Stewardship University Modules](#)

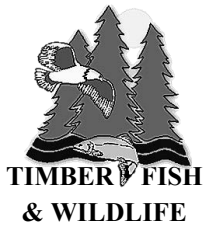
On-demand, self-paced, online learning on forest stewardship topics.

### **PODCAST SERIES**

[The Forest Overstory Podcast- WSU extension forestry](#)

Please contact me at (360) 902-1415 or [tamara.miketa@dnr.wa.gov](mailto:tamara.miketa@dnr.wa.gov) if you have questions.  
TM/





**Timber, Fish and Wildlife Policy Committee  
Forest Practices Board**

**PO BOX 47012, Olympia, WA 98504-4712**

**Policy Co-Chair:**

Cody Thomas, Upper Columbia United Tribes  
Brandon Austin, Department of Fish and Wildlife

October 23, 2023

TO: Forest Practices Board  
FROM: Cody Thomas and Brandon Austin  
SUBJECT: TFW Policy Committee Report

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The Timber, Fish, & Wildlife Policy Committee (Policy) workload is driven by internal process deadlines and priorities directed by the Forest Practices Board (Board). To accommodate the heavy workload, Policy relies on additional meetings, email communications between meetings, and policy workgroups to address specific issues and meet deadlines to accomplish their work.

**TFW POLICY COMMITTEE BUSINESS UPDATE for August 2023 - October 2023**

TFW Policy Operating Manual

Policy worked with the Adaptive Management Program Administrator (AMPA) to develop a manual to improve transparency and provide much needed clarity regarding Adaptive Management Program (AMP) processes. The manual has undergone extensive review and revision and is expected to be completed in November. The Board will receive a recommended revision to Board Manual Section 22, adding a reference to the manual at the February Board meeting. The manual is intended as a resource to assist onboarding of new TFW Policy members by providing a clear explanation of processes and common practices, as well as a resource to current members.

SAO Recommendation #5

Policy formed a State Auditor's Office (SAO) working group that meets monthly to refine and implement the Board-approved action plan. Several recommendations are being worked on including structured decision making, decision criteria, onboarding for new members, review of Schedule L-1, and how to handle non-CMER science.

Water Typing

Policy received and approved charters for both the Potential Habitat Breaks (PHB) and Default Physical Criteria (DPC) charters.

Budget Workgroup

The Policy budget workgroup continues to meet to discuss projects and funding in future.

Eastside Meeting and Field Trip

Policy held a joint meeting with CMER in Spokane. Both CMER and Policy members participated on a field trip of two of the Eastside type N Riparian Effectiveness Project (ENREP) study sites.

### Schedule L-1

A joint Policy and CMER work group met to develop a review and revision process for Schedule L-1. Schedule L-1 is part of the original Forests and Fish agreement, and the board approved version is Appendix N of the Forest Practice HCP. It contains the “Key Questions, Resource Objectives, and Performance Targets for Adaptive Management” and is a critical part of study development at CMER.

### **MAJOR TFW POLICY COMMITTEE TOPICS FOR CALENDAR YEAR 2023**

- **Adaptive Management Program (AMP) budget and the Master Project Schedule (MPS):** Policy will review and prepare recommendations to present to the Board at the May 2023 meeting.
- **CMER Work Plan:** CMER delivered to Policy for approval in January 2023
- **SAO:** Policy is developing the implementation criteria for SAO recommendation #5 (Net Gains Options) and 6 (adopt decision criteria) for inclusion in the rule or guidance in calendar year 2024. Policy is assisting to develop onboarding and training for new Policy members (SAO Recommendation 8).
- **Small Forest Landowner Experimental Harvest Prescriptions:** Policy has received the workgroup recommendations for two alternative harvest prescriptions. Policy has formed a workgroup and will bring forward recommendations for experimental harvest prescriptions to the Board in 2023.
- **Unstable Slope Criteria Project – Object Based Landform Mapping with High Resolution Topography Report:** CMER is expected to deliver it to Policy in fall 2023.
- **Extensive Riparian Monitoring:** Policy will receive approval from CMER a recommended extensive riparian monitoring charter for riparian vegetation and stream temperature in December 2023. The scoping document will follow in 2024.
- **Riparian Literature Synthesis Report:** CMER will deliver to Policy in August 2023
- **Eastside Forest Health Strategy:** CMER will deliver to Policy in November 2023
- **Wetland Management Zone Effectiveness Monitoring Program Scoping Document:** CMER will deliver to Policy in December 2023

### New Projects:

The Policy Committee workload is heavy yet must also remain sensitive to the changes in various timelines and to new issues as they come up. The capacity for Policy to accept any new work as assigned by the Forest Practices Board or taken on for other reasons could require delaying existing priorities and/or scheduling additional meetings.



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](mailto:john.mcentyre@dnr.wa.gov) or (360) 280-2712; [darrin.masters@dfw.wa.gov](mailto: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.

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