Washington State Conservation Commission

# CREP Monitoring Report

## Implementation and Effectiveness Monitoring for the Washington Conservation Reserve Enhancement Program (CREP).

Federal fiscal year 2025

**April 6, 2026**

**Report prepared by Brian Cochrane, SCC Habitat and Monitoring Coordinator**
**bcochrane@scc.wa.gov | (360) 701-5749**

# Table of Contents

# Background

The Conservation Reserve Enhancement Program (CREP) in Washington state is a joint federal and state-funded program that restores streamside habitat for salmon and protects that habitat for 10-15 years. Through CREP, participants plant native trees and shrubs to improve stream conditions and enhance wetlands along salmon-bearing streams.

All the costs to landowners for these improvements are paid by the program. In addition, the program provides oversight and maintenance for five years after planting to ensure success. Landowners are paid rent for allowing their land to be used for fish and wildlife improvements and receive a monetary bonus for signing up. In Washington, landowners directly work with their local conservation district to implement CREP projects. The Washington State Conservation Commission (SCC) provides technical support and resources to the conservation districts.

Under an agreement with the USDA Farm Service Agency (FSA) that administers the program at the federal level, SCC must annually report to FSA on statewide implementation and efficacy of CREP.

## Report contents

The report contains information for the period of October 1, 2024, through September 30, 2025, or the federal fiscal year (FFY) 2025. The report is divided into five (5) sections as required by the FSA/SCC agreement:

1. **Implementation.** This section identifies number of projects, best management practice type and quantity for all projects, new projects, un-enrolled projects and re-enrolled projects that occurred during the FFY.
2. **Results.** Monitoring is conducted to assess the effectiveness of the program in two ways: transects collect data to determine growth rates of shrubs, deciduous and conifer species, evaluate bank erosion and weed pressure on randomly selected CREP sites; and using a modified Stream Visual Assessment Protocol (SVAP) to evaluate functional outcomes of the project.
3. **Expenditures summary.** This summary is of the non-federal CREP program expenditures.
4. **Recommendations.** What does SCC recommend doing to improve the program?
5. **Comparisons.** This section looks at the comparisons of salmon habitat characteristics and population trends in streams where there is significant enrollment in this program with similar streams where program participation is not significant.

Except for implementation, the patterns in the data for FFY25 are very similar to previous reports; some sections have been abbreviated as background information and discussion is consistent with earlier reports.

# 1. Implementation

Implementation numbers took a large plunge in FFY25. An audit conducted by FSA on contracts in Whatcom County in FFY23 was extended to the rest of the state in FFY24. The audit identified errors with previously approved enrollments of project acres incorrectly located, lacking justification for additional width needed to address the resource concern, not meeting density requirements and other errors. As a result of the audit, affected participants were given the choice of being terminated or opting out of the program with no penalty, or accepting a reduction in acres. Many chose to opt out.

The outcomes and the experience of the audit have had a negative effect on participant's willingness to continue in the program.

Table 1 summarizes both Whatcom changes for FFY23 and the rest of the state changes for FFY24, based on audit results provided by FSA. Withdrawn contracts were not in the program for FFY25.

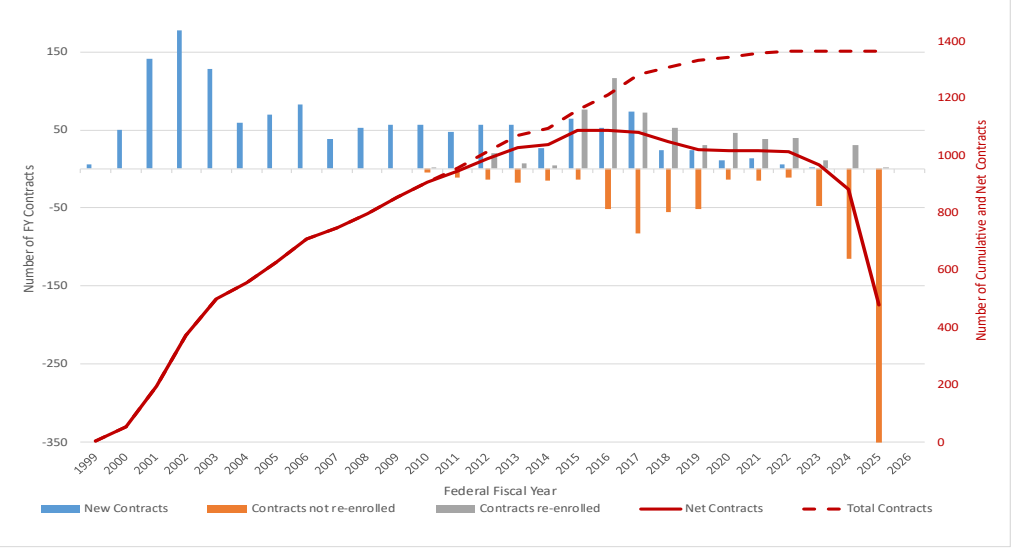
***Table 1.*** *Summary of FFY23 (Whatcom County) and FFY24 ("Rest of state") audit changes to contracts and acres in Washington CREP. "Rest of state" data assumes 11 pending County Committee determinations will result in proposed changes. Changes in enrollment due to the audit affect the subsequent year's enrollment, therefore FFY24 actions impact FFY25 participation*.

| Audit summary data | Whatcom | Rest of State | Total |
|---|---|---|---|
| **Original number of contracts enrolled** | 274 | 725 | 999 |
| **Number of contracts not changed** | 68 | 124 | 140 |
| **Number of contracts reduced acres** | 206 | 601 | 807 |
| **Number of contracts removed from program** | 115 | 404 | 519 |
| **Remaining number of contracts** | 159 | 321 | 480 |
| **Number of acres originally enrolled** | 1810.6 | 10580.3 | 12390.9 |
| **Number of acres remaining** | 760.3 | 3072.3 | 3832.6 |
| **Percent acres remaining** | 42% | 29% | 31% |
| **Percent acres reduced** | 58% | 71% | 69% |

Implementation information was derived from two sources: GIS data supplied by FSA following the end of federal fiscal year 2024 (Stephanie Fisher, personal communication, November 2025), and information supplied by FSA following completion of the Whatcom County audit which was combined with preliminary data supplied by FSA following completion of the rest-of-state audit.

Audit data was compared to the GIS data after matching contract numbers as best as possible. FSA data does not contain information about ancillary practices and metrics such as length of stream protected, average buffer width, length of fence associated with the project or whether off-stream water or a stream crossing was provided as a part of the project.

***Figure 1.*** *CREP enrollment by federal fiscal year (FFY) since program beginning in 1999.*



## New projects

No new projects were started during FFY25, continuing the trend from the previous fiscal year.

## Re-enrolled and expired projects

During FFY25, one (1) CREP contract was re-enrolled and retained in the program. (S. Martin, personal communication, March 2026)

## Net enrollment

Net enrollment now stands at approximately 480 contracts and 3,833 acres. Figure 1 shows the dramatic decrease in net enrollment over the past two (2) years. The net enrollment number matches information supplied by FSA (Patrick Lewis, personal communication, December 2025) and accounts for reenrollment, contracts removed during the audits, contracts either not audited or determined to need no change as a result of the audit. Net enrollment doesn't convey the entire story, however.

Most of the contracts that have been cancelled have retained their buffer functions. We know this because SCC obtained a legislative proviso to compensate holders of cancelled contracts for one year of lost FSA rent, provided there was still buffer function in place. In Whatcom County, a total of 211 out of 321 cancelled or reduced contracts received a payment. This response rate includes both sites that had reduced or no function and non-responsive participants. Assistance payments for the rest of the state are ongoing so that cannot be reported, but a similar response rate is expected.

# 2. Results

## Monitoring methodology

Effectiveness monitoring was performed in September of 2025. Effectiveness monitoring is intended to determine how well the program funded plants are performing. To date, the way that determination has been evaluated has been to measure plant height and ask the question: how are the plants at this project growing compared to all the others we've planted ecoregion? Most CREP locations fall into EPA Type III ecoregions 2 (Puget Lowlands) or 10 (Columbia Plateau) (EPA, 2025). A few western sites are in ecoregion 1 (Coast Range) and are combined with those in Puget Lowlands for analysis.
The question can be reduced to a hypothesis:

> $N_1$: the growth rates of the plant types (conifers, deciduous, shrubs) at this project site are drawn from the same population of growth rates for the plant types already in the database for this ecoregion of Washington state.

Conversely, the null hypothesis can be articulated as follows:

> $N_0$: the growth rates of the plant types at this project site are not drawn from the same population of growth rates for the plant types already in the database for this ecoregion.

A total of thirty (30) project sites were randomly selected from the SCC database for monitoring. Of these, one (1) was not available to monitor and two (2) had changed character so that monitoring techniques were rendered invalid (Figure 2). Of the remaining 27 sites, eleven (11) were appropriate for transect monitoring. Transect monitoring for FSA planted trees/shrubs assumes a) the observer can distinguish FSA supplied plants from naturalized plants, b) the observer can accurately establish the heights of the trees to determine growth rate, c) plants are distributed along a gradient so each transect will sample an

adequate number of species, and d) the observer can safely access the transect and its length. As sites mature, evidence of FSA-planted trees declines, as does the ability to clearly see the tops of the trees to get an accurate height measurement to determine growth rates.

Of the 17 sites that could not be measured, two (2) had sparse or clustered plantings that would require many transects to characterize; 13 had many tall plants that prevented measurement of the tops of the trees from within the buffer, and three (3) noted that many naturalized plants made it impossible to determine which were planted with FSA funds and which were either preexisting on site or volunteers.

Transect field methods for CREP effectiveness monitoring followed that of previous Washington CREP effectiveness monitoring studies (Cochrane, 2020), as follows:

1) Each transects' beginning location was randomly drawn from along the length of the project buffer.
2) At each location, a tape measure was placed perpendicular to the stream, from ordinary high water to the edge of the buffer or 180', whichever came first. A strip 10-feet-wide on each side of the tape (total of 20') was surveyed for plants installed by the project. Each plant was identified to species and its height recorded.
3) Individual species were grouped by plant type (conifer, deciduous, shrub) and, within each transect, plant type was compared by using a z-statistic (similar to the Student's T test) to the others in the population already in the database for the appropriate side of the state and to other transects collected on the project site for the monitoring event. Data was entered in the field into an Excel spreadsheet on an iPad. The spreadsheet had the z-statistic formulas pre-loaded and updated the z-test metrics automatically as data was collected. A minimum of two transects was sampled. If between-transect mean and variability was comparable (calculated z less than z-table value) for all three plant types, no further transects were sampled. Additional transects were sampled until between-transect variability stabilized or until the field technician could determine why the variability was not stabilizing (i.e. extensive re-plant, low light within buffer, absence of a component in a mature site). This ensured adequate sampling of each site without oversampling.

Field estimates were also collected at each transect for bank erosion, percent bank unvegetated, number of erosion slides, percent invasive species, and for stream canopy contributed by the CREP plantings, along wadeable streams using a spherical crown densiometer, again, following previous methods (Cochrane, 2022).

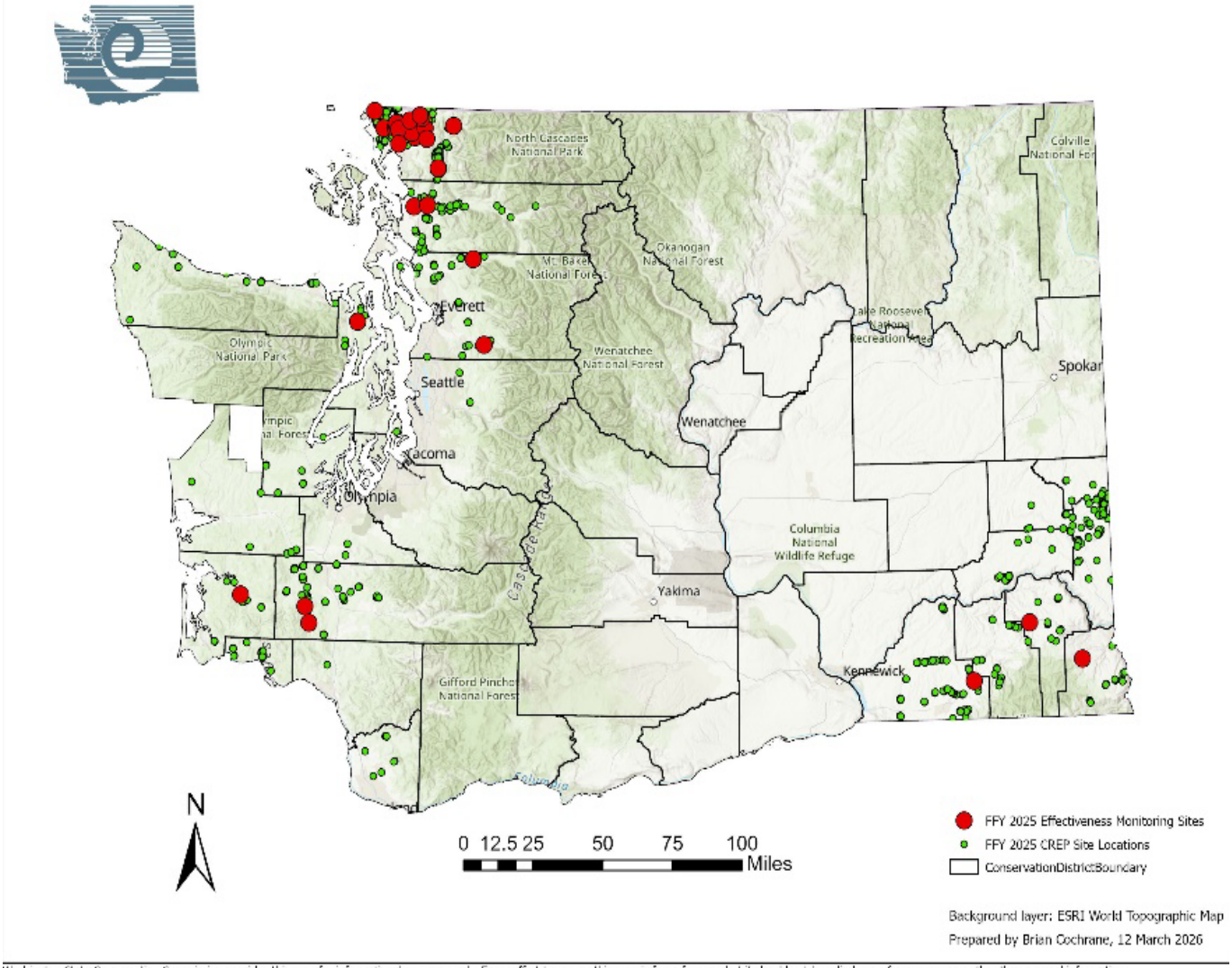
## Modified Stream Visual Assessment Protocol

Field monitoring also included a modified Stream Visual Assessment Protocol V2 (SVAP2) added in 2022 to test how well a functional assessment would compare to the performance metrics usually used for CREP monitoring. The SVAP2 was developed by the National Resources Conservation Service (NRCS) to provide a simple, comprehensive assessment of stream condition on small streams (NRCS, 2009). It is useful in holistic assessment of CREP projects to determine the level of stream functions the buffers are providing, regardless of the condition of the plants provided by FSA.

The complete methodology assesses sixteen (16) elements of stream condition; each rated on a 1-10 scale based on descriptions describing conditions associated with the score. An average of all elements is calculated to arrive at a site score from 1-10, with seven (7) considered "functioning."

Of the sixteen elements, thirteen (13) were chosen to capture functions that riparian buffers could impact over time.

*Figure 2. Location of effectiveness monitoring sites for federal fiscal year 2025.*






Those elements were: channel condition, hydrologic alteration, bank condition, riparian area quality, canopy cover, water appearance, nutrient enrichment, manure or human waste, pools, fish habitat complexity, and aquatic invertebrate habitat. Each element was assessed for the conditions on the site, regardless of contribution by FSA funded plantings.

Even though the method is designed for small streams, both large and small streams were assessed, and type of stream (small, large, or ditch) is noted for data comparison.

## Monitoring results and discussion

### *Plant growth*

Using transect data, plant types at each project site were compared for growth rate to the larger population of the same plant type on that side of the Cascade Mountains. Plants were either:

a) drawn from the same population (“Yes” in Table 2),
b) not drawn from the same population (“No” in Table 2), or

c) not present in sufficient quantity for the observed variation (“n too small” in Table 2).

For observations in FFY25, plant types were predominantly drawn from the same population, indicating that sites were consistent with previous observations.

***Table 2**: Number of 2025 CREP effectiveness monitoring sites meeting statistical criteria for similarity to the population of growth rates already in the CREP database for the equivalent side of the state*

| Is the site growth rate drawn from the same population of all growth rates sampled on CREP sites on the same side of the Cascades? | Conifer | Deciduous | Shrub |
|---|---|---|---|
| Yes, site drawn from the same population | 9 | 4 | 9 |
| No, site not drawn from the same population | 1 | 3 | 1 |
| n too small; not enough samples or too much variability to compare | 1 | 4 | 1 |

As noted in previous annual reports (Cochrane, 2022, 2023), sites with small sample sizes or growing significantly different from the rest of the monitoring observations still provide biologic function to offset agricultural impacts in the form of a future source of large woody debris, bank stabilization, stream shade, and a buffer between agricultural activities and the stream.

## *Bank Erosion, Invasive Species, and Plant Density*

Bank erosion estimates were made at all transect locations. Four (4) sites of the 11 sampled this field season showed evidence of bank erosion. Relatively stable bank erosion is consistent with previous reports. Median percent invasive species was 5%, down from 11.25% in 2024 and 57.5% in 2023. Like previous years, the dominant species were reed canary grass and blackberry.

Density of FSA-installed plants was calculated for all transects measured in 2025 and ranged from 100 plants per acre to 417 plants per acre, with a mean of 292 plants per acre. This is consistent with ranges previously reported. A look at density of 136 sites monitored since 2015 shows a median of 281, with 1st and 3rd quartiles of 193 and 415. Figure 3 compares the distribution of density at sites measured in 2025 with all sites measured since 2025. There is no significant difference between east and west of the Cascades density, as shown in Figure 4.

***Figure 3.** Histogram showing density of FSA-supplied plants on CREP sites monitored using transects from 2015-2025 (n=136) compared to distribution of sites monitored in 2025.*

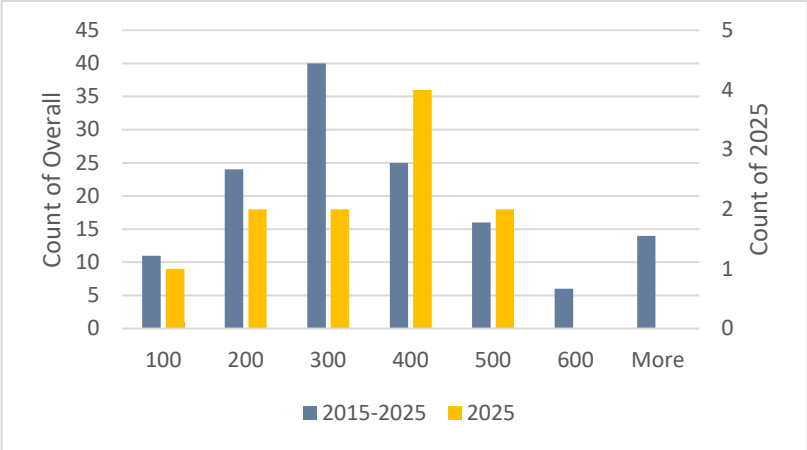
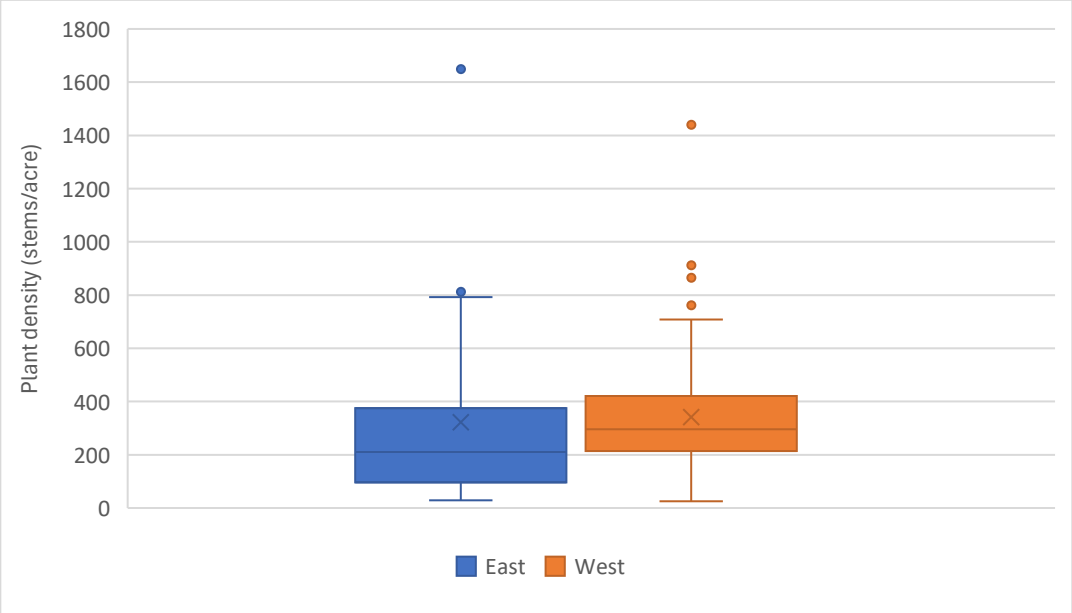


***Figure 4.*** *Box-whisker plot comparing site density for all sites monitored since 2015 comparing sites east of the Cascades (n=24) with sites west of the Cascades (n=112). Note that x's depict the mean, boxes represent the upper and lower quartiles (half the data lies within the box), bars in the boxes indicate the median, bars (or whiskers) represent the minimum and maximum excluding outliers (+/- 1.5 x interquartile range).*



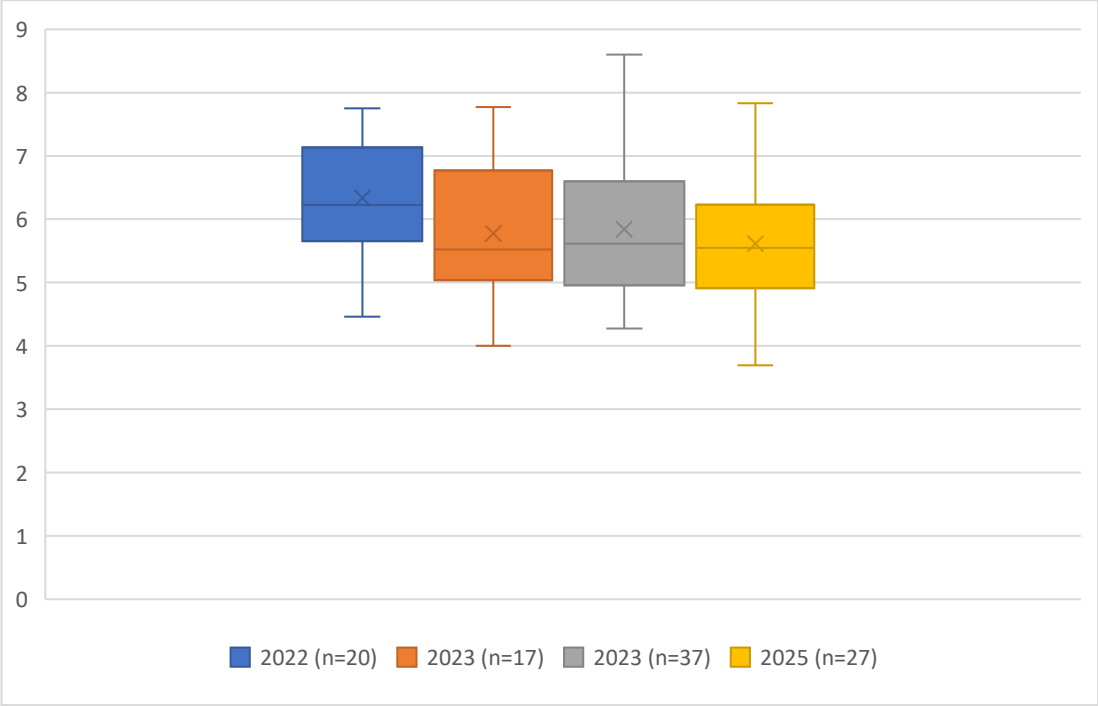

## Canopy Cover

Canopy cover measurements were physically collectable from mid-channel on wadable streams at three (3) of 11 sites monitored this year. Average measured canopy for all five (5) transects was 57%, all on small (<50 bank full width) streams. All other transects (non-wadable) used a visual estimate for canopy with none having any mid-stream canopy.

## Modified SVAP

Mean modified SVAP score for sites sampled this year was 5.61, down slightly again from 5.8 in FFY24 and 6.1 and 6.34 in FFYs 22-23 (Figure 5). Current data ranged from 3.27 to 8.6, comparable to previous monitoring. ANOVA analysis shows that each year's data is not different from any other, despite the suggested trend.

***Figure 5.*** *Box-whisker plot showing SVAP scores by year sampled.*




Certain functions continue to score relatively well (>6); others continue to not score as well. The following functions averaged six (6) or better (seven (7) is considered functional, 5.5 is considered degraded). Bank condition, water appearance, nutrient enrichment, manure/sewer and channel condition all consistently average above 6. FFY25 data is compared to previous data in Figures 6 and 7.

***Figure 6.*** *Box-whisker plot showing SVAP function scores averaging >6 for 2025 vs 2022-2024.*

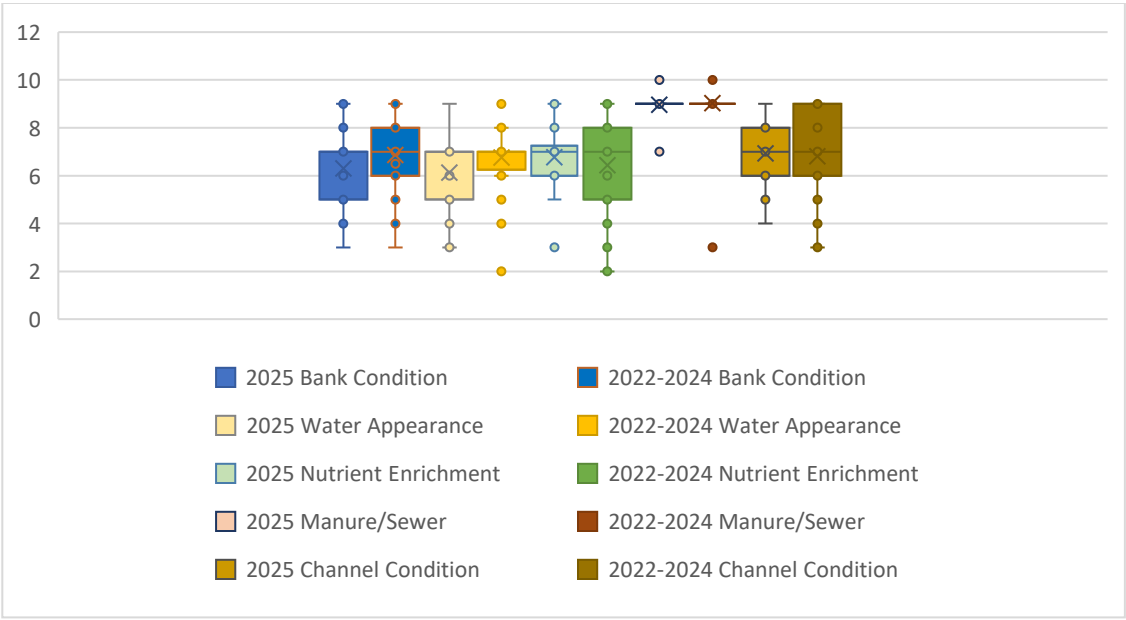
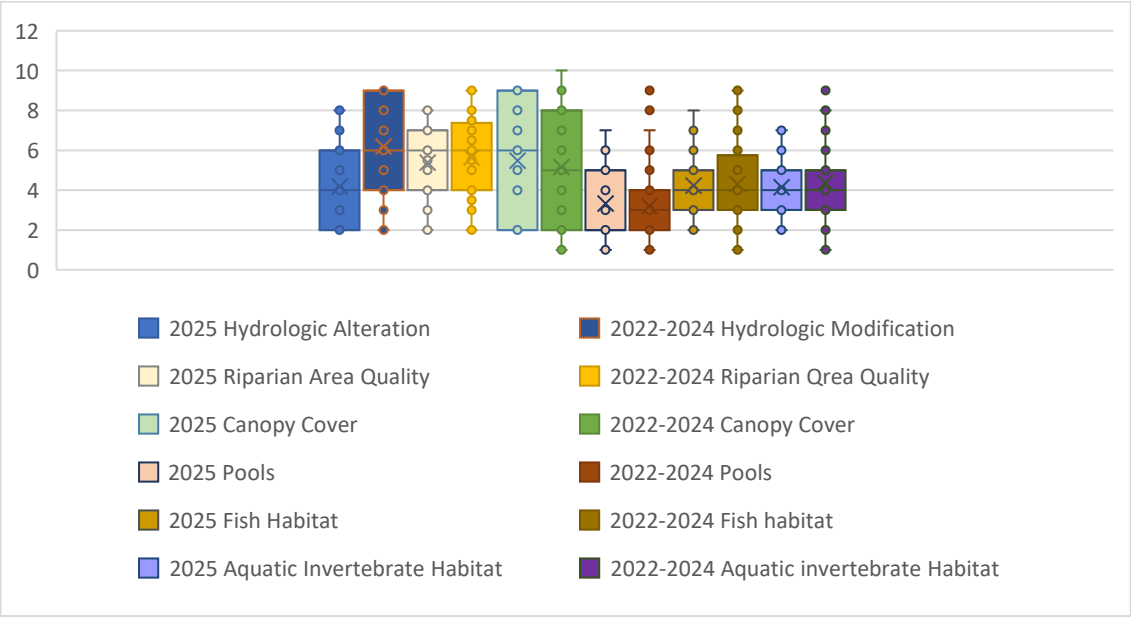


***Figure 7**. Box-whisker plot showing SVAP function scores averaging >6 for 2025 vs 2022-2024.*




Scoring lower were functions of hydrologic alteration, riparian area quality (both left and right), canopy cover, pools, fish habitat, and aquatic invertebrate habitat. Of those, at 2025 sites, riparian area quality and canopy cover are near the “degraded” limit of 5.5 at 5.44 and 5.48 respectively. Hydrologic modification averaged 4.2; pools averaged 3.2, fish habitat and aquatic invertebrate habitat averaged 4.2 and 4.15 respectively

The lower score for hydrologic alteration is likely why annual total scores appear to be decreasing. The national SVAP is very focused on the decreased effect of flood frequency from alteration. Most of the altered streams are incised, so while flood frequency does decrease with alteration, recent hydrologic cycles have produced increasing flows and more frequent large flood events. Over time, more attention in the scoring has been focused on whether the natural flow regime is prevalent, not affected, altered or severely altered, bringing scores for this function down over time.

The relatively good scores for bank stability indicates that most of these streams were modified a long time ago, but the low pool and fish habitat scores show a lack of recovery from channelization that resulted in monotypic habitats and shorter flow length (therefore greater slope, therefore greater shear stress on the substrate, therefore incision). In time, large woody debris from CREP riparian buffers could fall in the channel to re-create sinuosity and habitat, but that affect hasn’t been observed to date.

# 3. Expenditures summary

Washington state spent a total of $2,020,973 in support of the CREP program during federal fiscal year 2025. The amount is based on when reimbursements to CDs were paid by SCC as conservation district expenses for the time period are frequently billed after the actual date the expense was incurred. Program expenditures are broken into categories as follows:

| Category | Total | Percent |
|---|---|---|
| **Beaver Management** | $1,413 | 0.1% |
| **Contingency** | $4,221 | 0.2% |
| **Cost Share** | $5,444 | 0.3% |
| **Mid-contract Management** | $86,186 | 4.3% |
| **Reenrollment Cost Share** | $2,092 | 0.1% |
| **Maintenance** | $81,078 | 4.0% |
| **Audit Assistance** | $581,730 | 28.8% |
| **T**echnical Assistance | $1,130,133 | 55.9% |
| **Commission** | $128,675 | 6.4% |
| **Total** | **$2,020,973** | **100%** |

FSA expenditure for FFY25 was reported as (Patrick Lewis, personal communication, December 2025):

- Annual Rental Payments $2,659,748
- Cost Share Payments $31,214
- SIP and PIP Payments $0

Total FSA reported expenditure equals $2,690,962. FSA does not provide costs of staff time, so a comparison of whether the agreed to spending ratio between FSA and State of Washington cannot be provided.

# 4. Recommendations

The following recommendations are made using input from CREP field technicians and this and past effectiveness monitoring reports. Recommendations are unchanged from the FFY23 and FFY24 reports. Please refer to those for more detail on the bulleted items below:

- Improve rental rates.
- Focus on outcomes, not standards.
- Allow naturally altered hydrology (conversion to beaver habitat or wetland) after a project is installed without penalty to the participant.
- Raise cost share hold-downs.
- Increase maintenance beyond five years.
- Prioritize small streams and sites with agriculture operations to edge of ordinary high-water mark.

# 5. Comparisons

Linking salmon habitat and population trends is difficult since salmon face a variety of pressures across a large geographic area occupied during their life cycle. Habitat is but one of several pressures on threatened and endangered stocks including warming riverine and ocean waters, lack of stream flow, vanishing floodplains, polluted water, and a gauntlet of predators and migratory obstacles. Discussion comparing CREP habitat improvements to salmon recovery trends is unchanged from the FFY23 and FFY24 reports as no update to salmon status and trends have been produced during the reporting period (Cochrane, 2024).

# Literature Cited

Cochrane, B. 2024. Implementation and Effectiveness Monitoring for the Washington Conservation Reserve Enhancement Program (CREP) for Federal Fiscal Year 2024. Washington State Conservation Commission, Olympia, WA

Cochrane, B. 2023. Implementation and Effectiveness Monitoring for the Washington Conservation Reserve Enhancement Program (CREP) for Federal Fiscal Year 2023. Washington State Conservation Commission, Olympia, WA. 23 pp.

Cochrane, B. 2022. Implementation and Effectiveness Monitoring for the Washington Conservation Reserve Enhancement Program (CREP) for Federal Fiscal Years 2020 and 2021. Washington State Conservation Commission, Olympia, WA. 23 pp.

Cochrane, B. 2020. Implementation, Effectiveness Monitoring, and Financial Report for the Washington Conservation Reserve Enhancement Program (CREP) for Federal Fiscal Year 2019. Washington State Conservation Commission, Olympia, WA. 18 pp.

EPA. 2025. Level III and IV Ecoregions of the Continental United States. Accessed March, 2026. https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states

Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture (USDA). 2009. Stream Visual Assessment Protocol Version 2. National Biology Handbook, Subpart B – Conservation Planning, Part 614: 75 p.