Middle Rogue Pesticide Stewardship Partnership, 2022 Summary

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Introduction

The Middle Rogue Pesticide Stewardship Partnership (MRPSP) was established in 2014 as part of the Oregon Department of Agriculture's statewide effort to monitor water quality, particularly in connection to agricultural practices. Each year the MRPSP team collects water samples, which are analyzed by the Oregon Department of Environmental Quality. MRPSP uses the results to: identify pesticides of interest and concern; assess their use; and inform outreach and education efforts about water quality and pesticide use with MRPSP's stakeholders. Stakeholders include agricultural applicators; state and county agencies; irrigation districts; landscape contractors; public and private forestry managers; urban residents; industrial and commercial operations; and municipalities. The goal of the MRPSP is to reduce the frequency of detection and concentrations of pesticides within the monitored watersheds.

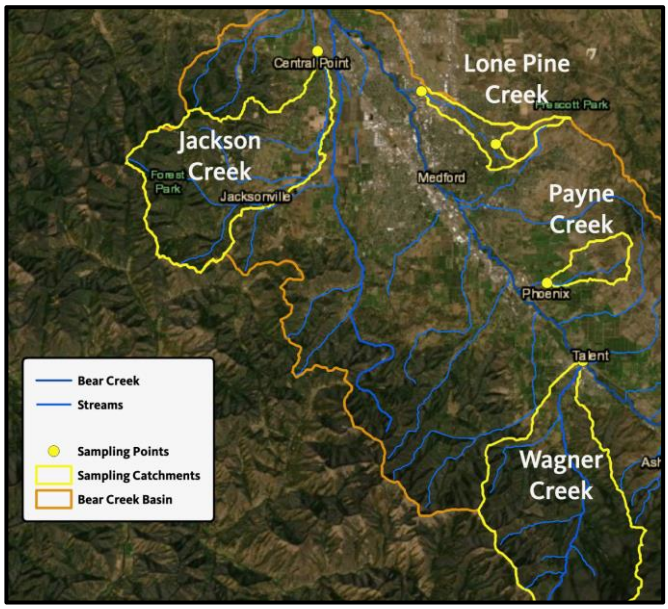

Figure 1: 2022 MRPSP sampling locations. Regular sampling occurred on 14 dates February to October.

Monitoring

In 2022 the MRPSP collected water samples from four tributaries of Bear Creek: Jackson Creek, Lone Pine Creek, Payne Creek, and Wagner Creek (Figure 1). Water samples were collected February to October.

Terms to Know

Aquatic Life Benchmark: a research-derived concentration of a given chemical which is found to be harmful to aquatic organisms. The aquatic life benchmarks used are developed by the Environmental Protection Agency (https://bit.ly/EPAaqualife).

Detection Frequency: the proportion of samples in which a given chemical was detected within a given year.

Pesticide of Concern: a pesticide identified to occur at concentrations approaching or exceeding Federal, State, or Tribal human health standards or aquatic life benchmarks.

Results & Interpretation

During the 2022 sampling season, the MRPSP detected 22 chemicals in four watersheds, for a total of 16 detections. Of those 22 chemicals, most were detected infrequently and at less than 10% of their aquatic life benchmarks.

However, the insecticide, imidacloprid, remains the primary pesticide of high concern in the Middle Rogue because of the concentration of detections in Lone Pine Creek. Herbicides sulfometuron methyl, tebuthiuron, 2,4-D, and diuron are pesticides of moderate concern because of the concentration and frequency of detections in Lone Pine Creek. Summary statistics regarding these pesticides of concern can be found in Table 1.

There were two low concentration detections of oxyfluorfen during the 2022 sampling season. This is a continued significant reduction in detection frequency following the 2014-2019 seasons and may be the result of MRPSP reconnaissance sampling and targeted outreach to landowners near Jackson Creek in 2019. Oxyfluorfen is no

Table 1: MRPSP pesticides of concern.

Compound	Selected Trade Names	# of Detections	Detection Frequency (%)	Number of Aquatic Life Benchmark Exceedances
Imidacloprid (Insecticide)	*Admire, Gaucho*	**6**	**9**	**6**
Sulfometuron-Methyl (Herbicide)	*Oust, Landmark*	**22**	**32**	**0**
Tebuthiuron (Herbicide)	*Spike, Sprakil*	**19**	**28**	**0**
2,4-D (Herbicide)	Various	**6**	**24**	**0**
Diuron (Herbicide)	*Karmex, Direx*	**7**	**10**	**0**

longer a pesticide of concern for the Middle Rogue, and that delisting is a success for MRPSP.

Of the four sampling watersheds, our newest, Lone Pine Creek, which we began sampling in 2020, accounted for 100% of benchmark exceedances and 91% of all chemical detections in 2022. These rates highlight Lone Pine Creek as an important watershed to better understand land uses and pesticide applications. Reconnaissance sampling was conducted in Lone Pine Creek in early 2022 and we are using those results to reach out to landowners in the area and plan further sampling in 2023.

Conclusion

As our dataset continues to grow, MRPSP partners have been able to identify the most common and concerning pesticides in the Bear Creek Watershed. The MRPSP has led meetings with applicators of these compounds to discuss application strategies that will result in reduced pesticide drift and runoff, and is working to develop further communication materials and strategies for the users of these chemicals. The intention of pesticide monitoring is that applicators, the public, and research scientists will better understand how and why certain pesticides accumulate, how they move through our local watersheds, and how to reduce their presence in surface waters. The MRPSP will continue to offer education, technical assistance, and incentives for the adoption of best management practices to address users' needs while reducing or eliminating pesticide contamination of surface waters.

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