

Middle Rogue Pesticide Stewardship Partnership, 2019 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 (ODEQ). The results are used to inform outreach and education efforts as they relate to water quality and pesticide use; assess the use of chemicals of greater concern; and to develop communication tools and strategies to reach MRPSP's constituents. MRPSP's stakeholders include agricultural applicators; state and county agencies; irrigation districts; landscape contractors; public and private forestry managers; urban residents; and municipalities. The overarching goal of the MRPSP is to reduce the frequency of pesticides detected at concentrations greater than 50% of the aquatic life benchmark within the monitored watersheds.

In 2019 the MRPSP collected water samples from four tributary watersheds of Bear Creek: Jackson Creek, Larson Creek, Payne Creek, and Wagner Creek (Figure 1). Water samples were taken on regular intervals March through October. Based on the 2019 monitoring data, the MRPSP has identified three priority pesticides that warrant further attention due to observed concentrations, detection frequency, and their toxicity to aquatic life: diuron, imidacloprid, and oxyfluorfen.

This summary is intended to provide readers with a broad overview of the data collected and analyzed for the 2019 MRPSP sampling season, for more details and contact information for the MRPSP Coordinating Council, please visit: <https://bit.ly/MRPSP>. It is important to note that the MRPSP's charge is to evaluate pesticide detections in surface waters within the Middle Rogue Watershed. Therefore, our data should not be interpreted as a comprehensive analysis determining the presence or absence of pesticides in our environment.

Terms to Know

Aquatic Life Benchmark: a research-derived concentration of a given chemical which is found to be lethal to aquatic organisms. The aquatic life benchmarks used by MRPSP were developed by the US Environmental Protection Agency.

Detection Frequency: the proportion of samples in which a given chemical was detected across all grab samples collected within a given year

Pesticide: any substance, or mixture of substances, intended to prevent, destroy, repel, or mitigate any pest

Pesticide of Interest: a pesticide identified to occur at concentrations approaching or exceeding Federal, State, or Tribal human health standards or aquatic life benchmarks. These pesticides are determined locally by the MRPSP using data from ODEQ.

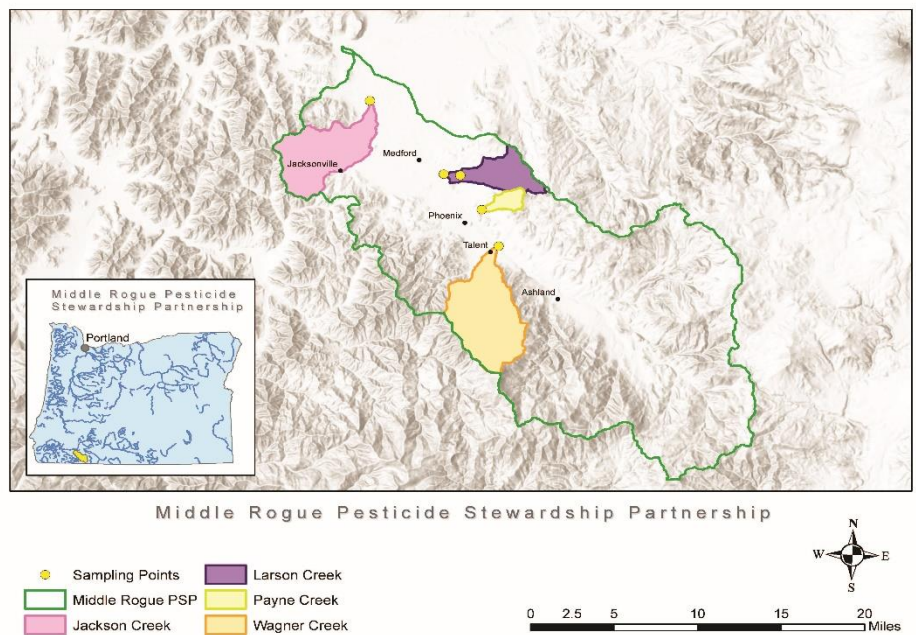


Figure 1 Watersheds sampled by MRPSP in 2019.

Data Analysis & Interpretation

During the 2019 sampling season, the MRPSP detected thirteen chemicals in four watersheds. Of the thirteen chemicals detected, eight were detected at less than 10% of their aquatic life benchmark. Only one chemical, imidacloprid, exceeded the aquatic life benchmark (Table 1). The MRPSP focuses attention on chemicals that are detected at high frequency or at concerning concentrations relative to EPA established aquatic life benchmarks, visit <https://bit.ly/EPAaqualife> for more information on how aquatic life benchmarks are established and applied. In 2019 MRPSP's pesticides of concern were imidacloprid, diuron and oxyfluorfen (Table 1).

Oxyfluorfen and diuron are herbicides. Imidacloprid is an insecticide. All three of these pesticides can be used on wine grapes and pears, common crops in the Rogue Valley, but are also labeled for a range of other applications. Oxyfluorfen and imidacloprid were detected in Jackson and Payne Creeks. Many meetings with agricultural applicators of these compounds have been led by the MRPSP and application strategies that will result in reduced pesticide runoff were discussed. Diuron is used to control road-side vegetation and was found in Jackson, Larson, and Wagner creeks. The MRPSP is working with public works crews throughout the county to improve best management practices to minimize runoff from diuron applications.

Table 1 MRPSP pesticides of interest based on 2019 data. Note that only imidacloprid was detected in concentrations greater than its aquatic benchmark.

Compound	Selected Trade Name	# of Samples	# of Detections	Detection Frequency (%)	Aquatic Life Benchmark (µg/L)	Number of Benchmark Exceedances
Imidacloprid	<i>Admire, Gaucho</i>	56	5	8.9	0.01	5
Diuron	<i>Karmex, Direx, Kovar</i>	56	23	41.1	2.4	0
Oxyfluorfen	<i>Goal, Goaltender, Galigan</i>	56	6	10.7	0.29	0

Conclusion

As our dataset continues to grow, MRPSP partners have been able to identify the pesticides most common and of greatest concern in the Bear Creek Watershed, and in doing so are working to develop communication materials and strategies for the most likely users of those chemicals. The intention of pesticide monitoring is that applicators, the general public, and research scientists will better understand how and why certain pesticides accumulate and move through our local watersheds. Over time, the MRPSP will continue to offer education, technical assistance, and incentives for the adoption of scientifically-based, best management practices to ensure appropriate pest control while reducing or eliminating pesticide contamination of surface waters.