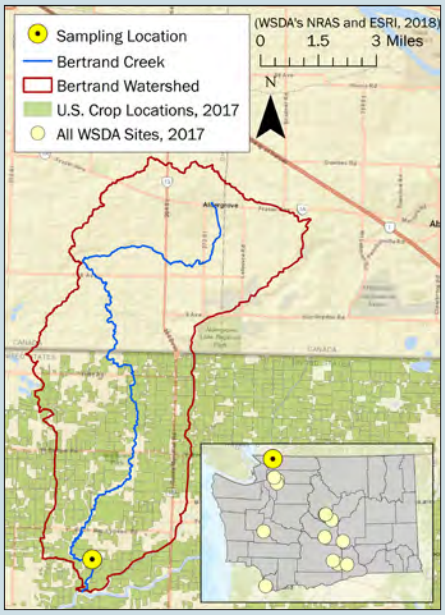
Lower Bertrand Creek

Summary of 2017 Surface Water Monitoring Program Results | **November 2018**



The Washington State Department of Agriculture (WSDA) has monitored pesticide concentrations in surface water throughout the state since 2003. WSDA staff take surface water samples during the typical pesticide use season (March - September). In 2017, WSDA monitored 16 sites in Washington, 2 of which were in Whatcom County. State and federal agencies use this data to evaluate water quality and make exposure assessments for pesticides registered for use in Washington State.

Washington State Department of Agriculture

Natural Resources Assessment Section

Watershed and site information

Sampling history: 2013 - present

Watershed area: 26,900 acres (~42 square miles)

Area in U.S. agricultural use: 8,000 acres (~30% of total watershed acreage)

Main crops: Grass hay, caneberries, field corn, blueberries, pasture, and potatoes

Fish habitat: Chinook, coho, chum, and sockeye salmon; and steelhead (Washington State Department of Fish and Wildlife SalmonScape: apps.wdfw.wa.gov/salmonscape/)

Sampling dates: 26 sampling events, March 28th - September 26th

Water testing:

- 144 chemicals (current and legacy insecticides, herbicides, fungicides, rodenticides, pesticide degradates, and other pesticide products)
- Streamflow and total suspended solids
- Air and water temperature measured every 30 minutes
- Sample analysis at Manchester Environmental Lab, Port Orchard, Washington

Notes:

- WSDA monitors Bertrand Creek at 2 locations: Upper Bertrand located near the Canadian border and Lower Bertrand located 7.82 miles downstream. Using both sampling locations provides an opportunity to compare potential pesticide inputs from Canada to pesticide detections downstream in the United States.

Results and Conclusions

- There were 284 pesticide detections in Lower Bertrand Creek. Of these, 8 were above WSDA's assessment criteria.
- Out of all the chemicals tested for, there were 7 types of insecticides, 14 herbicides, 9 fungicides, 5 degradates, and 2 other pesticide-related chemicals detected.
- WSDA identifies a pesticide as a Pesticide of Concern (POC) when it has been found somewhere in the state above WSDA's assessment criteria in recent years. Carbendazim, diazinon, diuron, imidacloprid, metolachlor, simazine, and malathion are POCs that were detected in Lower Bertrand Creek.
- All detections of imidacloprid and malathion at this site were higher than WSDA's assessment criteria.
- Malathion was detected once at the beginning of July. This is the first year it has been detected in both the upper and lower reaches of Bertrand Creek since the establishment of the Bertrand Creek sampling locations.
- Imidacloprid and malathion have also been detected in Lower Bertrand Creek in previous years at concentrations known to negatively affect aquatic ecosystems.

Recommendations

- **Make use of natural protections**
  - Use buffers, filter strips, sediment basins, ground cover, and setbacks.
- **Be informed**
  - Read and follow pesticide label directions, and be familiar with active ingredients.
  - Plan applications using the weather forecast to reduce the chances of drift or runoff.
  - Review WSDA's POCs and choose less-toxic pesticides when possible.
- **Care for your equipment and products**
  - Calibrate, maintain, and inspect application equipment regularly.
  - Properly dispose of all unneeded pesticides. Visit agr.wa.gov/wastepesticide to learn about waste pesticide collection events.

The calendar below shows the concentration in µg/L and date sampled of each WSDA Pesticide of Concern detected. This calendar does not include all the pesticides WSDA found during the growing season. The colors correspond to the risk each pesticide's detected concentration represents to an aquatic ecosystem. Detected concentrations that exceed WSDA's assessment criteria have a higher potential to cause harm to aquatic ecosystems. These assessment criteria are specific to each individual pesticide and are determined by applying a safety factor to state and federal water quality standards and criteria.

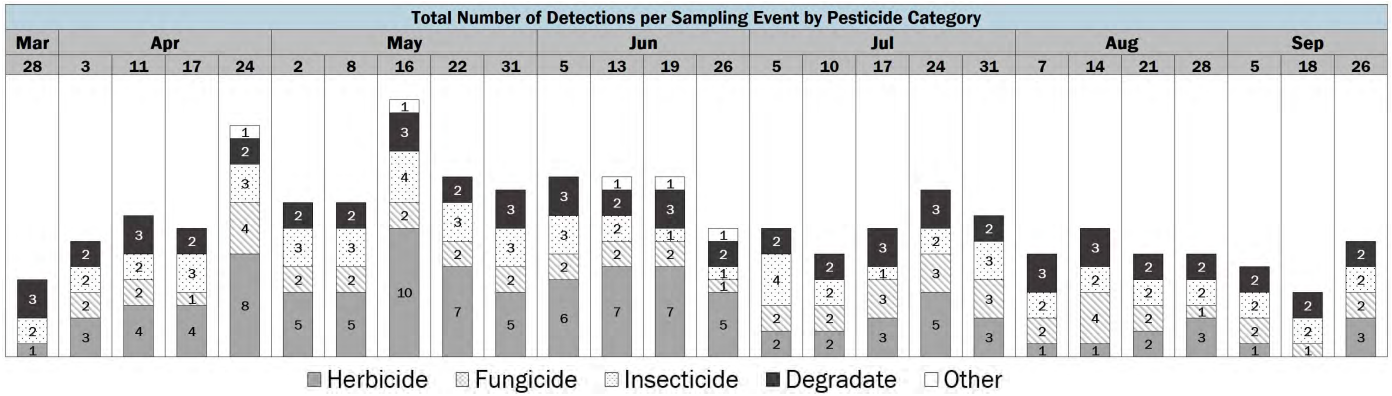
Washington State's Pesticides of Concern Detected and their Corresponding Sampling Dates and Concentrations

Month		Mar	Apr				May					Jun				Jul					Aug				Sep		
Day of the Month	Use*	28	3	11	17	24	2	8	16	22	31	5	13	19	26	5	10	17	24	31	7	14	21	28	5	18	26
Carbendazim	F												0.016				0.004	0.003	0.003			0.004					
Diazinon	I-OP									0.026	0.015	0.014															
Diuron	H			0.018	0.018				0.030	0.013								0.084	0.014	0.044	0.019	0.017	0.012	0.013			
Imidacloprid	I-N	0.269		0.017	0.029	0.026	0.186	0.040	0.051																		
Malathion	I-OP															0.021											
Metolachlor	H		0.030	0.060	0.038	0.043	0.033	0.023	0.026	0.014	0.009	0.009	0.009	0.021	0.008		0.010										
Simazine	H		0.080		0.255	0.293	0.082	0.083	0.114	0.031		0.080			0.041												0.087
Total Suspended Solids (mg/L)		41.0	10.0	27.0	12.0	26.0	3.0	4.0	106.0	5.0	4.0	2.0	3.0	2.0	2.0	1.0	<1.0	2.0	1.0	1.0	2.0	<1.0	1.0	1.0	<1.0	<1.0	<1.0
Streamflow (cubic ft./sec.)		329.0	175.0	320.0	160.0	247.0	71.9	71.5	373.0	68.6	71.1	30.5	26.8	33.3	19.5	13.2	10.7	8.8	10.1	7.2	9.0	7.4	6.6	6.4	6.1	10.1	8.1
Precipitation (total in./week)		1.14	2.47	1.21	1.87	0.53	0.41	0.86	1.24	0.82	0.22	0.33	0.36	0.41	0	0	0	0	0.08	0	0	0.03	0	0	0	0.04	0.32

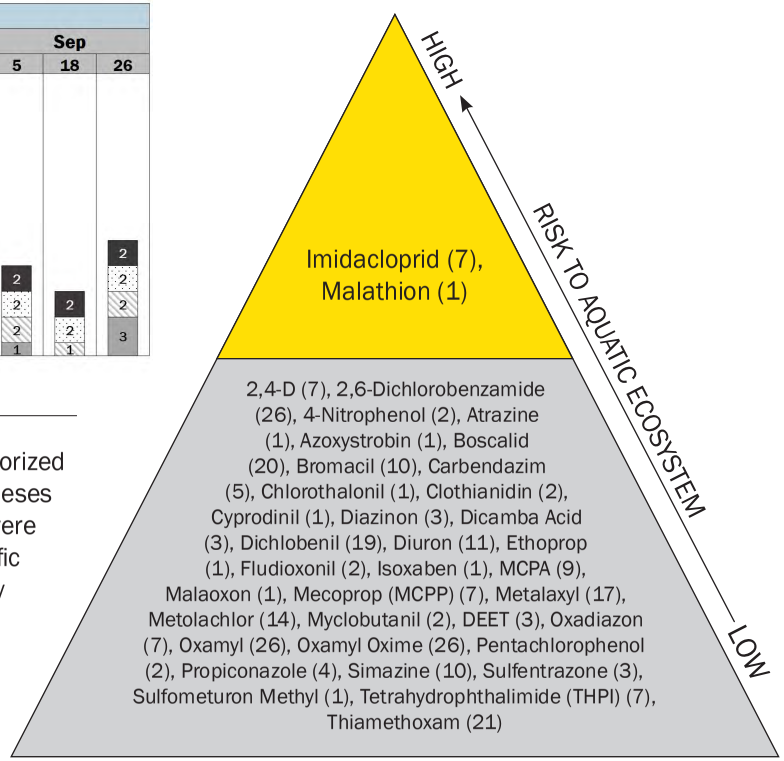
Exceeds Assessment Criteria Below Assessment Criteria

(F: Fungicide, I: Insecticide, H: Herbicide, OP: Organophosphate, N: Neonicotinoid)*

The graph below shows the total number of detections per sampling event in each pesticide category.
The category 'other' includes wood preservatives, an insect repellent, synergists, and antimicrobials.



The triangle to the right shows what pesticides were detected in Lower Bertrand Creek in 2017. Pesticides were categorized based on the highest detected concentration. The total number of detections for each pesticide is in parentheses next to the pesticide name. Detections have been color sorted according to WSDA risk assessment criteria that were surpassed. The risk each pesticide represents to an aquatic ecosystem is based on assessment criteria specific to each individual pesticide, not only on the concentration detected. WSDA's assessment criteria are derived by applying a safety factor to state and federal water quality standards and criteria in order to be proactively protective of aquatic life. Please see agr.wa.gov/PestFert/natresources/SWM for more information.



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