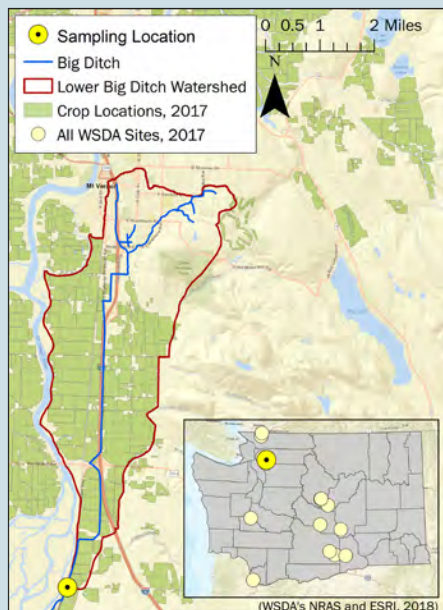


Lower Big Ditch

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, 3 of which were in Skagit 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: 2006 - present

Watershed area: 8,000 acres (~13 square miles)

Area in agricultural use: 4,100 acres (~51% of total watershed acreage)

Main crops: Potatoes, field corn, barley, grass hay, and ryegrass seed

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

Sampling dates: 25 sampling events, April 3rd - September 18th

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:

- Big Ditch drains directly into Puget Sound and is tidally influenced.
- The Skagit Valley (including the Big Ditch watershed) is a major pit stop for migratory waterfowl, including trumpeter swans, tundra swans, snow geese, and other birds.

Results and Conclusions

- There were 152 pesticide detections in Lower Big Ditch. Of these, 4 were above WSDA's assessment criteria.
- Out of all the chemicals tested for, there were 4 types of insecticides, 13 herbicides, 7 fungicides, 1 degradate, 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, difenoconazole, diuron, metolachlor, and imidacloprid are POCs that were detected in Lower Big Ditch.
- Every detection of imidacloprid at this site was higher than WSDA's assessment criteria.
- Imidacloprid has also been detected in Lower Big Ditch in previous years at concentrations known to negatively affect aquatic ecosystems.

Recommendations

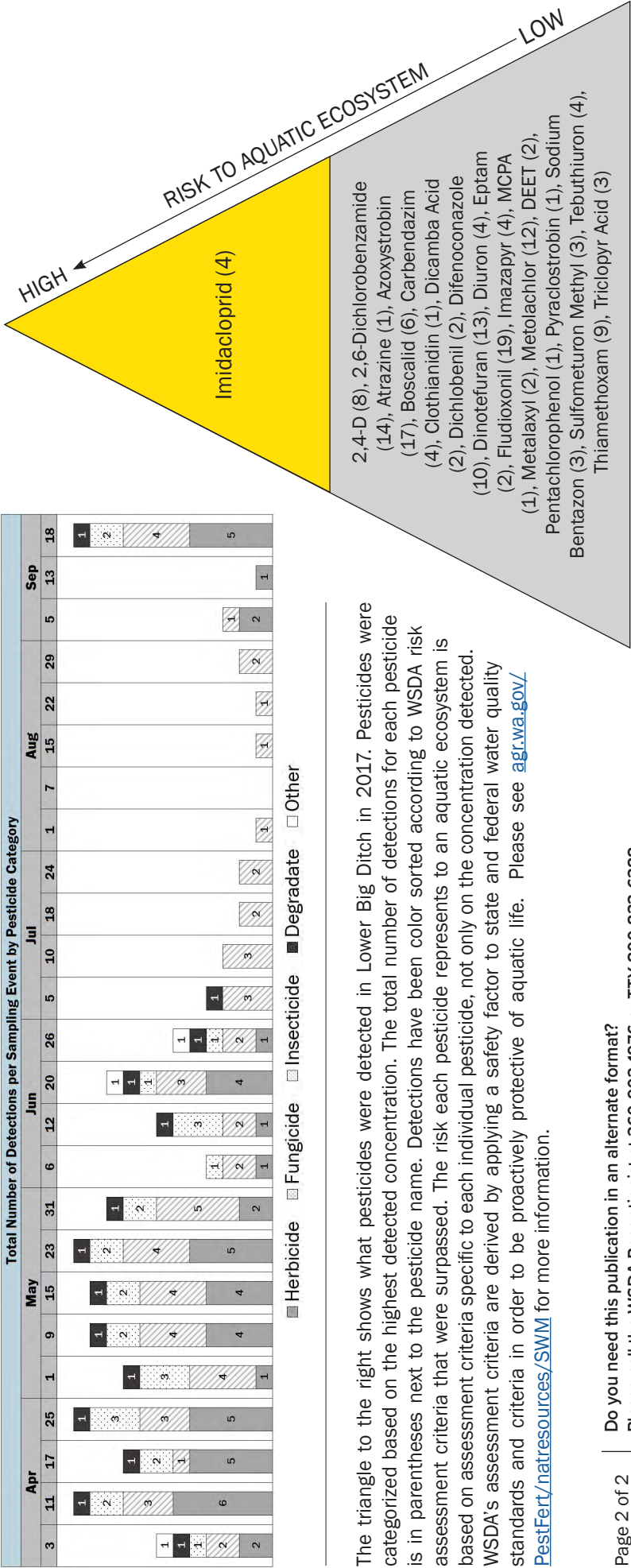
- **Make use of natural protections**
 - Use buffers, filter strips, sediment basins, ground cover, and setbacks.
- **Be informed**
 - Read and follow pesticide label directions, and be familiar with active ingredients.
 - Plan applications using the weather forecast to reduce the chances of drift or 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. The “-” signifies a sample or measurement that was not collected.

Washington State's Pesticides of Concern Detected and their Corresponding Sampling Dates and Concentrations																										
Month		Apr				May				Jun				Jul				Aug				Sep				
Day of the Month	Use*	3	11	17	25	1	9	15	23	31	6	12	20	26	5	10	18	24	1	7	15	22	29	5	13	18
Carbendazim	F						0.004		0.009	0.008																0.061
Difenoconazole	F		0.197		0.033	0.016	0.011	0.012							0.009	0.019					0.011	0.009	0.010			
Diuron	H	0.013	0.011	0.008	0.005																					
Imidacloprid	I-N		0.012		0.010	0.030																				0.010
Metolachlor	H	0.060	0.078	0.037	0.022	0.033		0.158	0.066	0.025	0.017	0.050	0.013	0.009												
Total Suspended Solids (mg/L)		36.0	23.0	39.0	20.0	26.0	38.0	25.0	10.0	11.0	33.5	20.0	8.0	7.0	12.0	8.0	14.0	6.0	13.0	10.0	13.0	6.0	25.0	6.0	42.0	3.0
Streamflow (cubic ft./sec.)		43.62	-	-	33.91	27.48	30.06	27.71	27.26	25.54	38.54	40.35	14.28	9.57	8.05	7.55	9.29	5.67	4.32	6.39	12.14	5.22	2.27	0.23	1.95	0.57
Precipitation (total in./week)		0.68	0.81	0.53	0.27	0.15	0.87	0.32	0.33	0	0.08	0.41	0.19	0	0	0	0	0	0	0	0.03	0	0	0	0.19	0.17

Exceeds Assessment Criteria Below Assessment Criteria
(* F: Fungicide, H: Herbicide, I: Insecticide, 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 Big Ditch 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.