Upper Big Ditch

APRIL 2021

Summary of 2019 Surface Water Monitoring Program Results

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.

Watershed and site information:

In 2019, Washington State Department of Agriculture (WSDA) monitored 16 sites in Washington. Upper Big Ditch was one of three monitoring sites located in Skagit County.

Years sampled: 2007 – present

Fish habitat:
Chinook, coho, chum, and pink salmon; and steelhead (SalmonScape: apps.wdfw.wa.gov/salmonscape)

Sampling dates:
25 weeks, March 25 – September 10

Water testing:

- Samples were analyzed at the Manchester Environmental Lab, Port Orchard, Wash.
- 159 current and legacy chemicals (56 insecticides, 58 herbicides, 21 fungicides, 19 pesticide degradates, 2 synergists, 1 antimicrobial, 1 insect repellent, and 1 wood preservative)
- WSDA compares detected pesticide concentrations to WSDA assessment criteria, which are half of state and federal water quality criteria. Each pesticide has its own assessment criteria, based on its toxicity to aquatic animals, insects, and plants.

Results:

- There were 688 detections in Upper Big Ditch. Of these, 24 were above WSDA assessment criteria.
- When multiple pesticides are detected simultaneously, the environmental effects can combine; multiple pesticides were detected every week Upper Big Ditch was tested. Between 17 to 54 pesticides were detected at each sampling visit.
- WSDA compares detected pesticide concentrations to WSDA assessment criteria, which are half of state and federal water quality criteria. Each pesticide has its own assessment criteria, based on its toxicity to aquatic animals, insects, and plants.

Watershed-specific POCs detected in Upper Big Ditch:

ICONS FOR ENVIRONMENTAL HAZARDS LISTED ON PESTICIDE LABELS

potential for spray drift | potential for runoff | potential to leach into groundwater | highly toxic to bees | toxic to aquatic invertebrates | toxic to fish | toxic to birds | toxic to mammals

Bifenthrin

- *Common trade names:* Sniper
- *Example uses within watershed:* market crops, grass
- Bifenthrin has extremely low solubility in water, yet it was found in samples from five monitoring sites in Western Washington. Contamination is likely from bifenthrin bound to the soils in runoff.
- Detected at three sites in 2019. A watershed POC at two of them.

Imidacloprid

- *Common trade names:* Admire Pro, Gaucho, Merit
- *Example uses within watershed:* nursery/ornamental, residential
- Detected at 11 sites in 2019. A watershed POC at nine of them.

Fluvalinate *(most toxic before product dries)*

- *Common trade names:* Mavrik
- *Example uses within watershed:* nursery/ornamental, building perimeters, beehives, residential
- Detected at eight sites in 2019. A watershed POC at one of them.

Sulfometuron-methyl

- *Common trade names:* Oust, Spyder
- *Example uses within watershed:* asphalt/cement, right-of-way, turf, sewer
- Detected at seven sites in 2019. A watershed POC at one of them.

Thiamethoxam

- *Common trade names:* Actara, Cruiser, Platinum
- *Example uses within watershed:* market crops
- Thiamethoxam has been found in groundwater and surface water samples in Washington.
- Detected at 13 sites in 2019. A watershed POC at two of them.

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The calendar at right shows the concentration in µg/L and date sampled of each watershed POC. This calendar does not include all the pesticides WSDA found during the growing season. Detected concentrations that exceed WSDA's assessment criteria have a higher potential to cause harm to aquatic ecosystems.

[* I: Insecticide; H: Herbicide]

exceeds assessment criteria

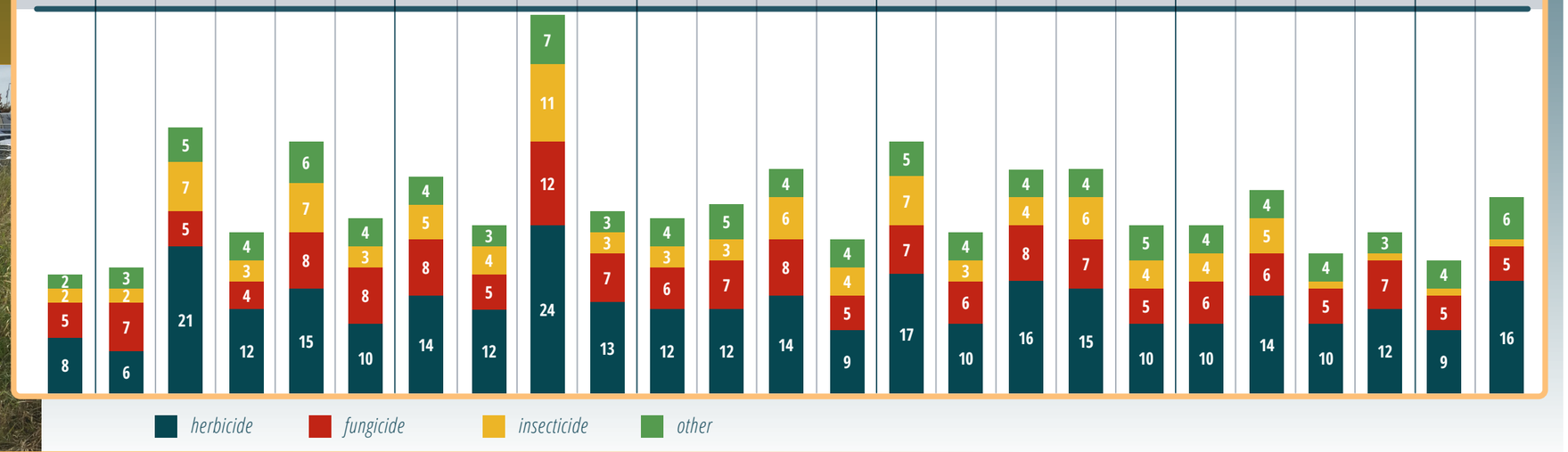
below assessment criteria

Watershed Pesticides of Concern Detected and their Corresponding Sampling Dates and Concentrations

Month ▶		Mar	Apr					May				Jun				Jul					Aug				Sep	
Day of the Month ▶	Use*	25	2	9	15	22	29	6	13	20	29	3	10	18	24	2	8	17	22	30	5	14	20	27	3	10
Bifenthrin	I			0.006		0.010				0.013	0.005					0.005			0.006							
Imidacloprid	I			0.005	0.002	0.012		0.011		0.032		0.016	0.008	0.029		0.033	0.010	0.024	0.020	0.010	0.015	0.015				
Sulfometuron-methyl	H				0.011	0.038	0.028	0.023	0.015	0.039	0.015	0.003	0.013			0.005			0.003							0.004
Thiamethoxam	I	0.007	0.015	0.003	0.009	0.031	0.015	0.029	0.014	0.049	0.008	0.032	0.010	0.019	0.002	0.013	0.003	0.011	0.007	0.003	0.008	0.010				
Total Fluvalinate	I			0.006					0.013	0.164				0.004	0.011	0.002			0.007							
Total suspended solids *(mg/L)*		4	6	76	6	15	6	7	10	12	7	5	4	6	3	20	3	7	4	3	6	2	2	2		5
Streamflow *(cubic ft/sec)*		1.9	1.4	5.5	3.3	2.2	1.5	0.9	1.0	1.4	0.8	0.8	0.9	0.7	0.6	0.8	0.8	0.5	0.4	0.3	0.2	0.4	0.3	0.2	0.3	3.5
Precipitation *(total in/week)*		0	0.17	0.47	1.47	0.60	0.04	0	0	0.39	0.33	0	0.93	0	0.04	0.45	0.14	0.24	0.41	0	0.17	0.15	0	0.35	0.19	1.94

The graph at right shows the total number of detections per sampling visit in each pesticide category. The category 'other' includes degradates and additional pesticide-related chemicals. Note that the number of detections between categories cannot be directly compared due to the different number of chemicals in each category and variability in analysis methods used.

Total Number of Detections per Sampling Event by Pesticide Category



Recommendations:

Please see agr.wa.gov/AgScience for more information.

Make use of natural protections

- Use buffers, filter strips, sediment basins, ground cover, and setbacks.
- Maintain vegetation along creeks and take care during spring time applications before vegetation along streams leafs out.

Be informed

- Read and follow pesticide label directions.
- Check the weather forecast to reduce the chances of drift or runoff.
- Review WSDA's Pesticides of Concern and choose less-toxic pesticides when possible.

Care for your equipment and products

- Calibrate, maintain, and inspect application equipment.
- Properly dispose of all unneeded pesticides. Visit agr.wa.gov/wastepesticide to learn about waste pesticide collection events.

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Upper Big Ditch crop groupings	acres
Other	< 1
Nursery	20
Pasture	11
Turfgrass	6
Vegetable	11

Total Agriculture	48	acres
Watershed Total	**2,040**	acres

To view mapped crop groups at the field scale, download the WSDA Agricultural Land Use data or view the interactive web map here: https://agr.wa.gov/departments/land-and-water/natural-resources/agricultural-land-use