

STATE OF WILLAPA BAY

Update #3, August 2015

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Life in the Dead Zone- The 2015 Eelgrass Die Off

As previous readers may be aware, the insecticide imidacloprid and its permit have been removed from Gray's Harbor and Willapa Bay. Many folks saw the headlines and had the impression that "spraying has stopped". It has not. In Willapa Bay we are undergoing the aftermath of a new wide open spraying program to eradicate eelgrass. The result is a "Dead Zone" is developing in the south near the mouth of the Nemah River.

You may remember the Four deadly N's, "No baseline, No monitoring, No limits, No problem". Over 3,000



The "Nemah Flats" as it appeared in the first part of May 2015 is typically covered with eelgrass that provides shelter and feed for fish, birds, and other wildlife.

can retard growth at strengths 10,000 times less.

This ALS inhibitor is believed to be accumulating in the south end of the bay where circulation is known to be poor. As a result, the dilution assumed by Ecology when issuing the spraying permit is apparently not incurring. Imazamox is carried into the Dead Zone from the north part of the bay as well.

This die-off was predicted in an appeal filed of Ecology's spraying permit based on oceanographic principles known since the 1950's and reaffirmed recently in a UW detailed study and explanation of Willapa's vertical boundary flow pattern. When Ecology ignores certain physical principals and allows chemical injections of this type into a low flow marine area, the picture to the right shows what we get is accurately labeled as a "Dead Zone" (see page 4 for explanation).

acres of duckgrass (*Zostera japonica*) have been approved for spraying by the Dept of Ecology (Ecology) for this year. In the name of eliminating duckgrass (*Zostera japonica*), all other eelgrass species are allowed to be killed where a permittee says duckgrass is present. A review of old baseline maps shows this can take up to 1,000 acres of protected *Zostera marina* eelgrass with it this year alone.

Still, these on-site mixed beds are just half the problem. The other problem half relates to the powerful nature of the chemical of choice, imazamox. It is an ALS inhibitor. Minute amounts of ALS inhibitor, sometimes less than detectable, can seriously retard plant growth. It goes on at 600 parts per million and



The newly created "Dead Zone" (Nemah Flats) as it looked on July 25th is approximately 3,500 yards from the nearest area Ecology approved for spraying in 2015



Test plots were established in the Nemah Flats and the number of eelgrass plants (per square foot) were carefully counted and recorded from May through July.



The same test plot as seen on July 25, 2015 showed a dramatic reduction in the number of plants.

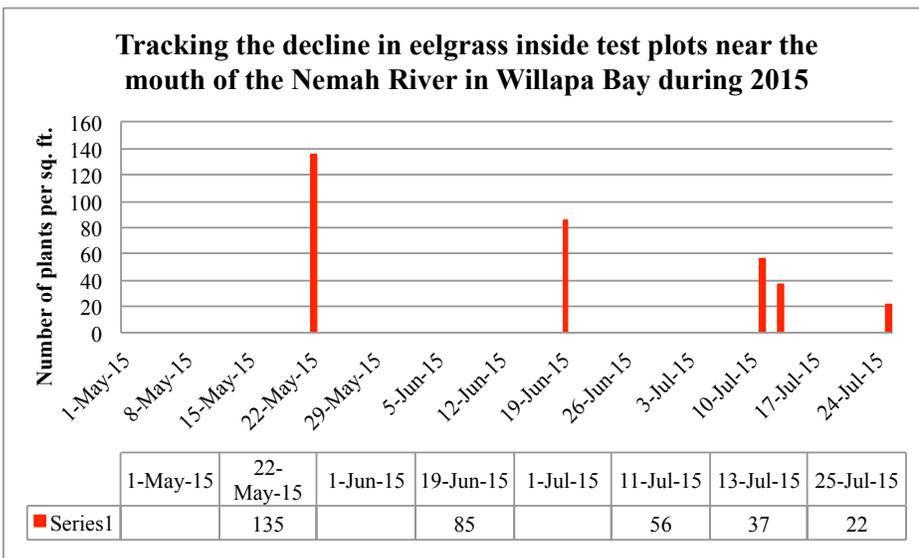
The author has placed a few benchmarks on the Nemah Flats and taken pictures. Sampling with careful counting was done periodically five times between May 22 through July 25. Ecology’s spraying permit notes a buffer around a sprayed area of 30 feet would protect other properties from chemical migration. The bottom line, 3,500 yards from the nearest legal spraying, at a time when significant growth should have been occurring, the sampling and counting showed:

1. An 82% decrease in numbers of duckgrass branches
2. A 50% decrease in the robustness of the branches
3. An estimated 90% reduction in volume of vegetative material available for waterfowl forage
4. The ability to harbor invertebrates is 90% reduced, or more

5. Rhizomes are now almost nonexistent where previously numerous.

6. *Z. marina* seems to have held steady in a period when it should have been growing.

In summary, the Fish & Wildlife Commission has passed a new salmon management policy for Willapa Bay. It only addresses the hatchery production and harvest part of the equation. The policy remains nearly silent regarding another huge ingredient, the quality of estuarine habitat.



The fisheries harvest sacrifices that will be made as a result of the policy’s attempt to protect natural spawning salmon populations will be for naught unless the state of Washington recognizes the degradation of key marine estuary habitat that is occurring from spraying in Willapa by the shellfish growers. Then, one needs to consider the bay’s fading ability to host shorebirds and waterfowl resulting from the spraying.

At this point, a “Dead in the Water” agency, ironically called the Department of Ecology has taken a flawed Environmental Impact Statement (EIS) drafted by the shellfish industry and used it to issue the same industry a

permit plagued by the deadly Four N's referenced earlier. This permit allows unlimited acreage, now far greater than the flawed EIS assumed, to have all eelgrass removed, with no restoration, by injection of a chemical pollutant throughout the waters of Willapa Bay. The permit ignores proven lower flow water circulation patterns and the ALS inhibitor effect. Then, in the event sprouts of duckgrass are spotted by the shellfish growers, all vegetation on the bed can be sprayed year after year until all vegetation of any kind disappears permanently.

Ecology says it is just a "clearinghouse" and that it got no major concerns or comments from other agencies when writing this permit. This is somewhat short of reality. It got plenty concerns from citizens and some agencies as well and ignored all but those representing the shellfish growers. There is an appeal of this disastrous permit filed before the Pollution Control Hearings Board of our state and the outcome is unknown at this point.

Now that all can see with their own eyes what is happening (Dead Zone creation), it is time for state agencies to speak up. WDFW and DNR must rise up further than they did during the old comment period for the permit issued by Ecology. Ecology should recognize the errors of its way and stop enabling the spraying of these chemicals in the Willapa Bay estuary. Until corrective action is taken, the only effective means to object that citizens have available is to cease buying clams and oysters produced in Willapa by those determined to defoliate our major coastal estuary.

Natural spawning salmon in Willapa are in constant decline, but at least the Commission recognized the fact and took action to protect the fish from over harvesting. Without a functioning estuary, the fish will continue to suffer right along with the shorebirds, waterfowl, and raptors that rely upon the habitat found in the estuary. Goals for all wildlife carrying capacity in the bay are needed and should be generated under an open public process like the Commission used for its new salmon policy.

If action is not taken, Willapa Bay will shortly lose its claim as the state's most pristine bay. The name will present an image in people's mind of barren mud flats that are loaded up with chemicals sprayed by shellfish growers. Pointing out that the fact that not all the chemicals stayed behind in the mud might be one defense. After all, an adjustment could be considered for the amount of chemicals absorbed by the clams, oysters, and crabs that were shipped out for consumption by unsuspecting consumers.



Low tide shows the area that was approved for spraying by Ecology that is approximately 3,500 yards from the test plots in the Nemah Flats is nearly barren of vegetation in July of 2015

While fully aware of the problem, Ecology has failed to recognize the water exchange in Willapa Bay when granting spray permits

A key factor in the creation of the “Dead Zone” is the low rate of exchange of water flow coming in from the Pacific to the southern portion of the bay. The graphic below is taken from a study published in by N. S. Banas and B. M. Hickey, School of Oceanography, University of Washington in 2005. The study showed the water in the south stays in the estuary for up to 54 days (red areas) while to the north, the water flushes from exchange with the Pacific in less than 12 days. The “Dead Zone” documented in this report is located just east of the tip of Long Island where the average time spent in the estuary for the water is 45 days. The low rate of exchange is not adequately addressed in the permit issued by Ecology and as a result, the spraying is believed to be the cause that is creating the “Dead Zone” in the south.

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BANAS AND HICKEY: MAPPING EXCHANGE IN WILLAPA BAY

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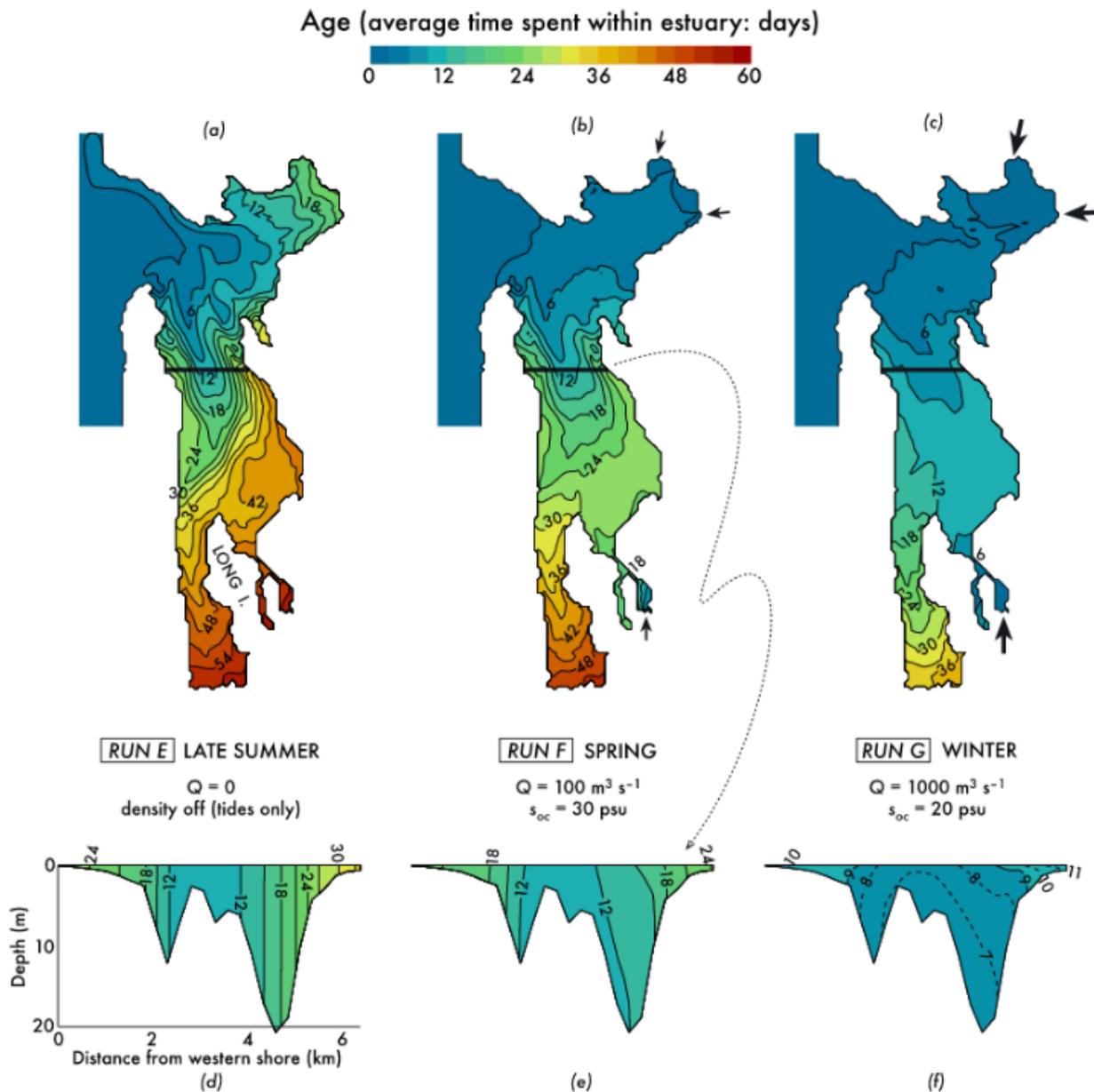


Figure 9. Maps of water age (average time that the water in each grid cell has spent within the estuary) under three constant forcing scenarios (runs E–G, Table 2). River flow Q and ocean salinity s_{oc} are given for each case where they are applied. (a–c) Depth-averaged age; arrows mark river inputs. (d–f) Vertical sections of age at midestuary.