Willapa Basin Ecosystem Review Team

Via Email

June 7, 2021

To: The Honorable Members of the Washington Fish & Wildlife Commission

Re: **Further Devolution of Willapa Bay Ecosystems**

We would like to bring your attention to the further devolution of Willapa Basin ecosystems since our earlier report. Our now defoliated mud flats South of the Dispersion Gap are silting in more than observed (Nemah Flats) in the last 45 years.

Eelgrass has been described as the " ecosystem engineer" that stabilized sediment and mitigates silt transport. This transport silts in Shellfish, provides new habitat for lugworms and burrowing shrimp, and relocates imazamox formulations and other chemicals with long sediment half lives, far from original site application. Further, the growth rate of shellfish is the lowest we have seen in 45 years, lower than Banas and Hickey described in 2006 South of the Dispersion Gap that we provided earlier.

The loss of birds and fish delineated in our first WBERT report continues. The one exception just the last two years has been the November presence of massive numbers of Dungeness crab larvae Megalops. Five years after the last legal spraying of insecticides carbaryl or imidacloprid, there seem to be many more fertile females present.

We would call three studies not previously referenced to your attention:

• The chemical fact sheet on imazamox (sprayed historically in WB) by Wisconsin DNR[1] that documents the long two year half life of imazamox in oxygen starved bottom sediment.

• "An imazamox based herbicide causes apoptotic changes in rat liver and pancreas tissue." by Sevim, Comakli' and Tsatsakis.[2] This shows harm previously denied by Ecology and the applicants when spraying of imazaox was approved in Willapa Bay and we would note that ducks have both these organs also.

• A recent study by STANTEC for Grays Harbor Conservation District on Grays Harbor and Willapa Bay, showing accelerating and problematic mass transport of sediment.[3]

[1] https://dnr.wi.gov/lakes/plants/factsheets/ImazamoxFactsheet.pdf
[2] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6289906/
[3] https://www.stantec.com/en/news/2021/stantec-completes-phase-ii-study-revitalization-western-washington-shellfish-industry

These studies along with above observations can carry the interested biologist or ecologist steps farther than our first WBERT report. First, sediment contains imazamox under long half life condition. Previous testimony by AG Forensics before the Pollution Control Hearings Board showed imazamox, an ALS inhibitor, goes deep to the roots of plants. Secondly, contrary to previous claims, low amounts of imazamox spray formulation do cause degeneration of liver and pancreas tissue in mammals. Turns out ducks have liver and pancreas also. Other birds? Our birds are hovering at lowest levels seen in 45 years. Thirdly, sediments that are considered a major limiter to shellfish viability are being transported at an accelerated rate resulting in increased propagation of lugworms and shrimp in new locations.

The frequently displayed WDFW " boilerplate press release" states "*WDFW is the primary state agency tasked with preserving, protecting, and perpetuating fish, wildlife and ecosystems…..*" We would hope the Commission and Department will assume it's responsibility and become active in taking NEAR TERM action to reverse the unfortunate loss of Willapa Basin Ecosystems that is ongoing today.

Sincerely-

Ross Barkhurst Marlisa Dugan Steve Boerner Tim Hamilton

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