HABITAT REPORT ON EPA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT FOR OFFSHORE SEAFOOD PROCESSORS IN FEDERAL WATERS OFF THE COASTS OF WASHINGTON AND OREGON

As requested by the Council in April, the Habitat Committee (HC) prepared an update on the status of the Environmental Protection Act (EPA)'s proposed new NPDES General Permit to regulate seafood processing waste from processor vessels (Agenda Item E.1.a, Supplemental HC Report).

The revised draft permit was expected to be released for public comment in May, but is now expected later this month. In April, the HC described the potential impacts to essential fish habitat (EFH) for groundfish, salmon, and coastal pelagic species, and the Council asked the HC to prepare a comment letter. In lieu of a draft letter, the HC has prepared the comments below which could be included in a letter, once the draft revised permit is released. The draft revised permit may contain additional provisions which we cannot comment on at this time.

EPA's public comment period will likely occur outside the Council's regular meeting schedule. The HC recommends the Council use the "fast track" process for commenting on this permit and is available to assist Council staff in developing the letter.

EPA's anticipated draft permit proposes a seasonal (April - September) depth-based exclusion area will extend from each state's outer territorial sea boundary (3 nm) to a 100 m depth contour along the north-south extent of both states, with a seaward bulge to encompass Stonewall Banks and Heceta Banks off central Oregon (further referred to as the Stonewall-Heceta Banks complex). The exclusion area stems from input from the scientific community, state and Federal agencies, and the scientific literature. The general consensus is that significant inputs of organic matter into the system in the form of fish processing waste can trigger or exacerbate hypoxic conditions in hypoxia-prone waters. Numerous hypoxic and anoxic events have occurred off Oregon and Washington in the last 15 years with severe hypoxic events in 2002 and 2006**.**

POTENTIAL COMMENTS

The primary comments are as follows:

1) Depth-based exclusion area: **The Council recommends avoiding hypoxic-prone waters by extending the proposed Exclusion Area to include the continental shelf off Washington and Oregon (approximating the 200 m contour).** The EPA's proposed exclusion areas seaward depth boundary of 100 m will encompass approximately 40 percent of the Washington-Oregon shelf in Federal waters. Given the uncertainty and unpredictability of the spatial and temporal distribution of hypoxic events on shelf, the Council recommends that the discharge exclusion area encompass the entire shelf out to the shelf break, which approximates the 200 m depth contour, until further data informs otherwise. This requirement will also provide protection for rocky reef essential fish habitat/habitat area of particular concern (EFH/HAPC) from potential adverse effects of accumulating detritus and excess nutrient input. Rocky reefs outside the Exclusion Area would also need protection.

2) Seasonal closure: The exclusion area is currently proposed as a seasonal closure from April to September to coincide with peak hypoxia. **The Council recommends a year-round closure**, for

three reasons: 1) the timing of fishing practices and regulations could change, 2) low oxygen levels occur on the Washington shelf and Heceta Bank year-round, and could expand to other areas year-round; and 3) to protect rocky reefs year-round.

If EPA implements a seasonal closure, the Council recommends including the post-upwelling transition period until the end of October to allow time for hypoxic waters to recover. According to National Marine Fisheries Service (NMFS)/Pacific States Marine Fisheries Commission (PSMFC) Observer data, 22 percent of the at-sea sector's catch and processing waste occurs in October and could extend the hypoxic period. Regulations currently prohibit the at-sea sector from operating prior to May 15.

3) Rocky Reefs: **Protect water quality and habitats of rocky reefs by establishing year-round closures around large rocky reefs** that are not included in the Exclusion Area.

4) Vessel speed: **Vessels should maintain a minimum speed of 5 knots while discharging**, unless it is unsafe to do so.

5) Monitoring and reporting: The monitoring and reporting requirements of the General Permit should **include vessel tracking requirements to ensure that processor vessels are not discharging fish waste inside the exclusion area**, to ensure sufficient vessel speed of at least 5 kts while discharging. Reporting requirements for vessel tracking should include vessel monitoring system (VMS) vessel location at the required VMS interval (3 pings per hour), duration of each discharge event, and vessel speed of each discharge event.

6) EPA should require that processor vessels report the quantities of solids and wastewater discharged.

BACKGROUND FOR COUNCIL COMMENTS

EPA Jurisdiction

According to the 2015 draft NPDES General Permit EPA may issue an NPDES permit if (a) the proposed discharge will not cause unreasonable degradation to the marine environment; (b) will not issue an NPDES permit if the proposed discharge will cause unreasonable degradation; or (c) may issue an NPDES permit where there is insufficient information to make an unreasonable degradation determination, if EPA also determines that the discharge will not cause irreparable harm to the marine environment while further evaluation is undertaken, that there are no reasonable alternatives to on-site discharge, and that the discharge will comply with certain mandatory permit conditions, including a bioassay-based discharge limitation and monitoring requirements. When reaching a determination that a proposed discharge will not cause unreasonable degradation, EPA may rely on seasonal restrictions on discharges, process modifications, a monitoring program to assess discharge impacts, and any other conditions deemed necessary because of local environmental conditions. In addition, EPA is authorized to modify or revoke a permit at any time if, on the basis of new data, the EPA determines that continued discharges may cause unreasonable degradation of the marine environment. 40 CFR § 125.121 states "unreasonable degradation of the marine environment" means "significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding biological communities."

In the Council's opinion, the discharge of fish waste will result in an unreasonable degradation of water quality of the marine environment. Therefore, the permit conditions requested by the Council are reasonable and necessary to minimize this degradation.

Seafood processing waste and the fishery

Waste from processor vessels contributes substantial amounts of organic matter into the marine system that may contribute to hypoxia by increasing respiration and increasing oxygen demand and supports regulations to minimize the potential effects of this activity. The Council's Groundfish Fishery Management Plan and Pacific Coast Salmon Fishery Management Plan identify organic matter and fish processing wastewater as sources for potential adverse effects on essential fish habitat (EFH) for those species. The EFH Appendices includes conservation measures that are directly applicable to seafood processing waste: 1) effluent limitations should be based on water-quality concerns for EFH, 2) limit the discharge of untreated solid and liquid waste, 3) establish controls for stickwater, 4) find alternative uses for fish processing waste, 5) avoid waste discharges into fish rearing and nursery habitat, 6) monitor the affected environment and water quality discharges under NPDES requirements.

Sixteen vessel-processors operate off the west coast of Washington and Oregon and northern California. Metrics of seafood processing waste for at-sea processor vessels are not available, however Oregon Department of Environmental Quality (Oregon DEQ) estimates vessel processing waste at 40 percent of unprocessed product, based on the lowest percentage of shore-based processing waste (40-60 percent). Using the estimate of 40 percent processing waste (including wastewater), and official catch data for the at-sea sector (Table 1, attached), the estimate of total annual seafood processing waste ranges from 48,000 to 120,000 metric tons, depending on the year's total catch.

Oregon Department of Environmental Quality determined that wastewater and solids from processor vessels are a significant source of biological oxygen demand and considers state-waters to be impaired for dissolved oxygen with no assimilative capacity for oxygen lowering pollutants. Oregon DEQ advised against permitting discharges into Federal waters, as these waters transport into state waters. (Yelton-Bram, 2016).

EPA's Proposed Depth-Based Exclusion Area

EPA's anticipated draft permit proposes a seasonal (April - September) depth-based exclusion area will extend from each state's outer territorial sea boundary (3 nm) to a 100 m depth contour along the north-south extent of both states, with a seaward bulge to encompass Stonewall Banks and Heceta Banks off central Oregon (further referred to as the Stonewall-Heceta Banks complex). The decision to create an exclusion area stems from input from the scientific community, state and federal agencies, and the scientific literature. The general consensus is that significant inputs of organic matter into the system in the form of fish processing waste can trigger or exacerbate hypoxic conditions in hypoxia-prone waters. Numerous hypoxic and anoxic events have occurred off Oregon and Washington in the last 15 years with severe hypoxic events in 2002 and 2006.

Depth of EPA's Proposed Exclusion Area

The depth of the outer boundary of the proposed exclusion area warrants further consideration to ensure adequate protection of EFH and in support of ecosystem resilience. A high-resolution regional oxygen model that examined the transport processes of hypoxic water across the Washington-Oregon continental shelf (north of 43° N. Latitude) and the primary drivers

responsible for reducing dissolved oxygen suggests a broad temporal and spatial pattern of oxygen decline across most of the shelf (Siedlecki, et. al 2015) (Figure 1, attached).

A comparison of modeled and observed data on the Washington shelf suggest that seasonal upwelling transports low oxygen water from the deeper waters (>200m) beyond the shelf break up onto the shelf where hypoxia develops and expands across the entire shelf, up into the water column (Figure 2, attached). Conversely, survey results off central Oregon indicate hypoxia typically occupies waters on the mid to inner shelf (<100m depth), however hypoxic waters were identified at the shelf break (200 m) in 2002 and 2006 (Chan, et al. 2008). During the 2006 severe hypoxic event, hypoxia occupied 80 percent of the water column of the mid and inner shelf (Chan, et al. 2008), resulting in significant mortality of fish and invertebrates. Once upwelling occurs, respiration of organic matter is the primary driver of hypoxia through the upwelling season (Figure 1).

Impact of Exclusion Area on At-Sea Whiting Processors

A depth-based exclusion area with an outer boundary of either 100 or 200 m may have a negligible impact on vessels operating in the at-sea sector of the whiting fishery under current regulations and fishing practices. Catcher-processor vessels and motherships are required to carry Federal observers 100 percent of the time to collect fishery data, and catcher boats must also carry a vessel monitoring system (VMS) that reports their position to federal fisheries law enforcement via satellite. Data from these two sources provide reliable and accurate accounting of catch, vessel position and depth for all fishing and processing activity. The proportion of vessel activity by two depth strata is summarized over an eight year period (Table 2, attached). Observer and VMS data indicate that catcher-processor vessels operated almost entirely at depths greater than 200 m since 2008. This is also the case for mothership catcher-vessels between 2012 and 2015. Restrictions on overfished species have motivated these vessels to operate further offshore to avoid catching species declared as overfished. However, the fleet could change their fishing patterns in the future if there are significant changes in factors driving current locations of fishing, including regulations, that would allow the at-sea sector to fish in shallower waters.

Contribution of Organic Pollutants to Ocean Acidification and Hypoxia

A major finding of the West Coast Ocean Acidification and Hypoxia Science Panel (Panel) is that organic pollutants contribute to algal and bacterial blooms that trigger hypoxia and exacerbate ocean acidification. Ocean acidification and hypoxia (OAH) are expected to increase with climate change (West Coast Panel, 2016). A subsequent OAH Panel publication on ecosystem management calls for the consideration of OAH in spatial management decisions, and the full enforcement of water quality laws and regulations to strengthen resilience in the ecosystem (Klinger T, et al. 2017).

Hypoxia is known to persist spatially and temporally in regions with the highest total respiration and relaxed or counter-current circulation. On the Washington shelf, respiration is intensified by high sediment oxygen demand across the wide, shallow continental shelf. On the Oregon shelf, retention and recirculation patterns of the Stonewall-Heceta Banks complex induce the highest levels of water column respiration and low oxygen levels persist. These regions of persistent hypoxia are identified as hypoxia “hotspots” for the Washington-Oregon shelf.

The Council is concerned for the implications of OAH on West Coast fisheries. The Council was among the first regional Councils to develop a Fishery Ecosystem Plan that incorporates

information on OAH. The Council understands the gravity of a changing ocean environment and the need for sensible, precautionary actions that minimize risks for inducing or exacerbating hypoxic conditions.

Vulnerability of Rocky Reefs

Rocky reefs and reef-dependent species may be particularly vulnerable to the chemical and physical effects of seafood-processing waste discharges, as the complex topography of rocky reefs serve to slow the movement of water across the reef landscape, suspending particulate matter in the water column. Sinking fish waste has a greater chance of accumulating on the reef bottom, especially in the many crevices, channels, holes and depressions, causing increased respiration and reduced oxygen. Sessile organisms, habitat-forming invertebrates, and fish eggs would be susceptible to degraded water quality as well as physical smothering from accumulated detritus. As noted in EPA's Ocean Discharge Criteria Evaluation, these organisms are particularly vulnerable to disturbance and burial under a minimal amount of material. Rocky reefs are a finite resource of great ecological significance, providing habitat for egg-rearing, nursery beds, feeding and shelter. All rocky reefs are designated as HAPC under MSA EFH, and several are further protected as EFH Conservation Areas. The Council is currently undergoing its periodic EFH review process which will identify additional reefs for EFH Conservation Area designation. Given the strong potential for water quality degradation on these reefs, their ecological importance and limited availability, the Council strongly recommends that EPA reconsider including rocky reefs for Exclusion in the NPDES General Permit. The Council can provide EPA with the necessary information to delineate these major important reefs.

Summary of NMFS consultations

In conjunction with the 2015 draft NPDES permit, NMFS conducted ESA Section 7 and EFH consultation for groundfish concluding that the proposed action would not likely adversely affect ESA-listed species or their critical habitat, but that it would adversely affect essential fish habitat (EFH). Adverse effects on EFH include temporary degradation of water quality that could result in shifts in phytoplankton abundance affecting food web production and smothering of benthic organisms and the eggs of Council-managed groundfish. In short, NMFS' EFH Conservation Recommendations are to prohibit discharges within 250 feet of any visible algal blooms, rocky reefs or hypoxic zones, and to require a constant vessel speed of 5 knots during discharge to aid dispersal. EPA has yet to respond officially to NMFS, but has indicated that they do not intend to condition the permit to avoid algal blooms stating insufficient scientific support, nor rocky reefs as this is not a water quality issue, nor minimal vessel speed, as the whiting fleet believes this is unrealistic.

Table 1. Metric tons of processed catch by month and year for all vessels operating in the at-sea sector of the whiting fishery. (*Source: NMFS/PSMFC Observer Program data.)*

Year	May	June	July	August	Sept	Oct	Nov	Dec	Total
2008	47,980	26,008	7,520	14,691	5,772	32,074	31,401	15,194	180,640
2009	24,014	2,142	125	6,877	14,465	10,814	8,406	5,506	72,349
2010	28,939	10,590	4,413	10,209	20,985	20,202	7,948	3,028	106,314
2011	31,090	13,785	1,394	1,160	10,944	17,455	38,303	13,942	128,073
2012	24,610	2,749	618	5,851	22,039	36,616	1,293		93,775
2013	29,552	11,567	2,242	4,359	23,966	41,006	17,707		130,399
2014	47,066	11,282		4,706	36,653	50,582	15,012		165,302
2015	47,457	19,544			9,464	12,908	6,771		96,144
Total	**280,708**	**97,667**	**16,312**	**47,853**	**144,289**	**221,656**	**126,841**	**37,670**	**972,997**

Table 2. Depth distribution of hauls for the at-sea fisher-processor sector of the whiting fishery. (*Source: NMFS/PSMFC Observer Program data and VMS data.)*

		> 55 fathoms (100 meters)		> 109 fathoms (200 meters)	
	Year	% Deeper	% Shallower	% Deeper	% Shallower
Catcher-Processor	2008	100%	0%	100%	0%
	2009	98%	2%	98%	2%
	2010	100%	0%	100%	0%
	2011	99%	1%	99%	1%
	2012	100%	0%	100%	0%
	2013	100%	0%	100%	0%
	2014	100%	0%	100%	0%
	2015	99%	1%	99%	1%
Mothership	2008	91%	9%	90%	10%
	2009	94%	6%	94%	6%
	2010	100%	0%	100%	0%
	2011	90%	10%	88%	12%
	2012	100%	0%	100%	0%
	2013	97%	3%	97%	3%
	2014	100%	0%	100%	0%
	2015	100%	0%	100%	0%

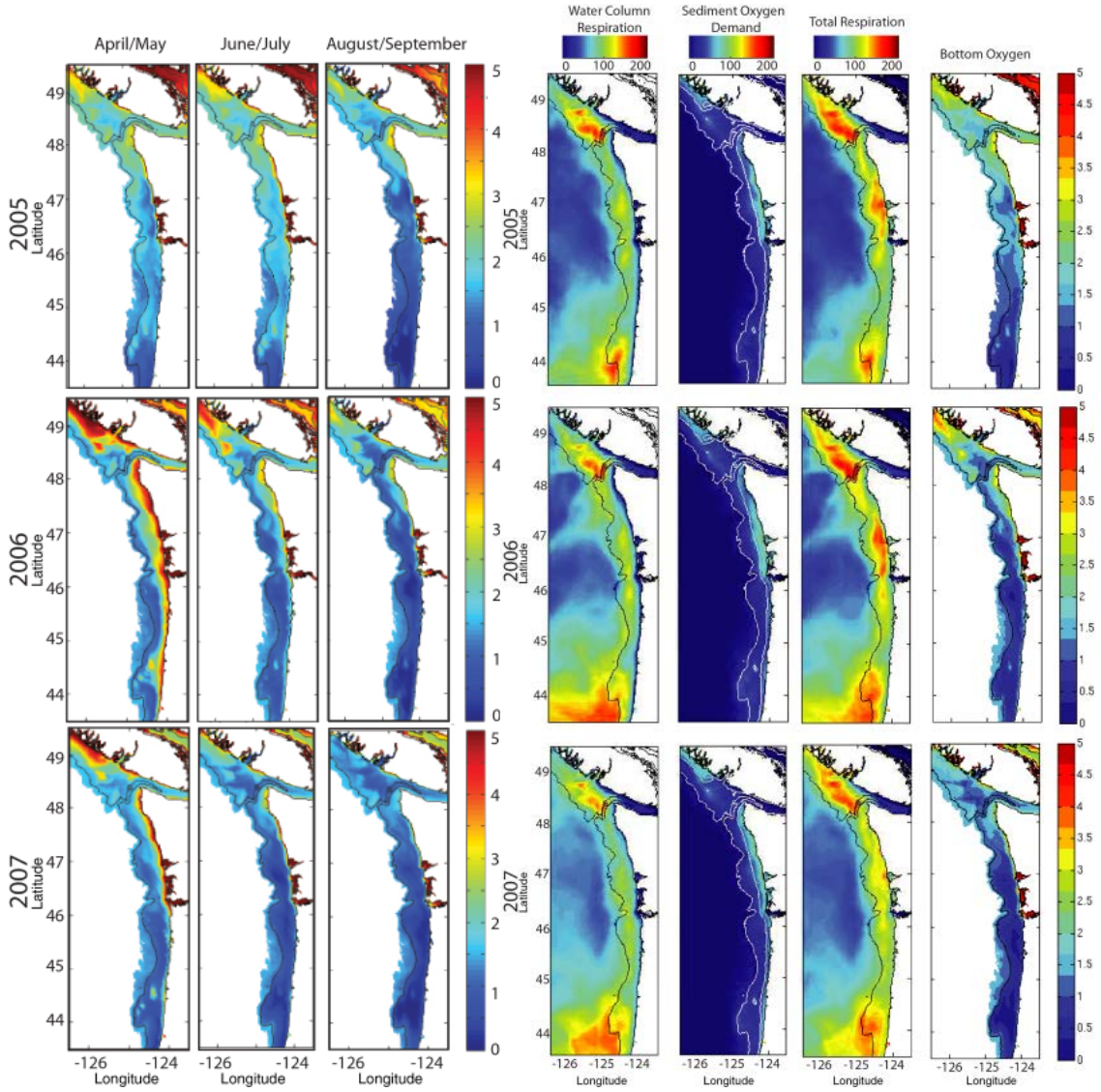

Figure 1. Seasonal and inter-annual oxygen variability on the Washington and Oregon continental shelves. (Left) Modeled bottom oxygen of the seasonal progression over the upwelling season. Hypoxic at <1.4 mL/L. (Right) Modeled water column respiration, sediment oxygen demand, total respiration (water column respiration plus sediment oxygen demand), and average bottom oxygen distribution (mL/L). All panels include the 200 m isobath at the shelf break. Sediment oxygen demand panels also include the 60 m isobath. (*Source: Siedlecki, et al. (2015)*)

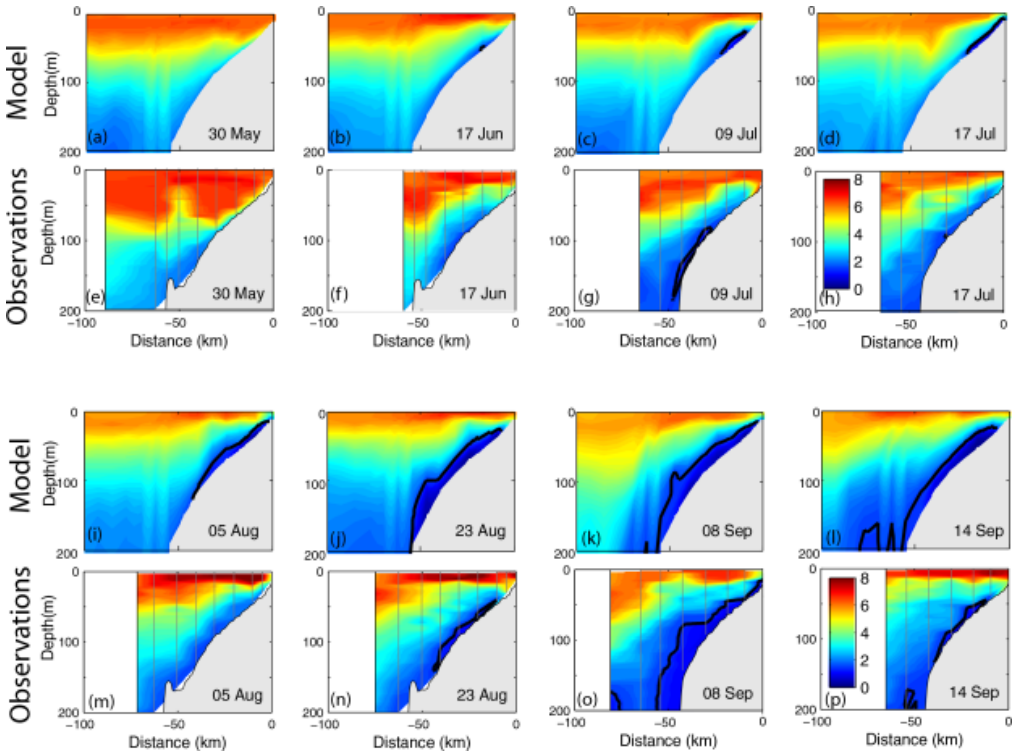

Figure 2. Cross sections of oxygen in the water column on the Washington shelf from (top) the model and (bottom) the observations for the same time periods in 2005. Units are mL/L and hypoxia (<1.4 mL/L) is outlined by the black contours. *(Source: Siedlecki et al. (2015))*

References

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