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Fisheries and Oceans Canada
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SUSPEND THE STRAIT OF GEORGIA HERRING FISHERIES

Pacific Wild Alliance respectfully submits the following comments regarding the *Draft 2026/2027 Integrated Fisheries Management Plan (IFMP)* for Pacific herring.

Pacific herring (*Clupea pallasii*) represent a foundational species within British Columbia's (B.C.'s) coastal food web and are in urgent need of conservation and recovery measures. In light of their critical ecological, cultural, and economic importance, this submission advocates for the immediate suspension of commercial herring fisheries in the Strait of Georgia (SoG) and the continued closure of the commercial fishery on the West Coast of Vancouver Island (WCVI). We further call for the rapid implementation of an ecosystem-based approach to fisheries management, informed by Indigenous Knowledge Systems (IKS), independent scientific research, and the lived experience of coastal communities. A more comprehensive understanding of herring population dynamics, distribution, and environmental pressures is essential to ensure management decisions reflect the complexity of the ecosystems that depend on this foundational species.

Please note, recommendations in this submission are not intended to apply to Food, Social and Ceremonial Fisheries or the commercial Spawn on Kelp fishery.

Pacific herring play an irreplaceable ecological, cultural, and economic role in the SoG and along the WCVI. Their seasonal spawning events sustain a diverse array of species, including Chinook and coho salmon, lingcod, Pacific halibut, marine mammals, and seabirds, many of which are of vital importance to First Nations, and commercial and recreational fisheries.[1] The recovery of herring populations in the SoG would directly support at-risk Chinook salmon,[2,3] the primary prey of the endangered Southern Resident killer whales (SRKW). While

[1] Surma et al., 2018
[2] Chamberlin et al., 2021
[3] Davis et al., 2020

Fisheries and Oceans Canada (DFO) has invested substantial resources in SRKW recovery initiatives, the protection and rebuilding of Pacific herring, an essential component of the marine food web and an important prey resource for numerous salmon populations, remain conspicuously absent from this strategy.[4]

Over the past five decades, spawning activity of Pacific herring in the SoG has exhibited a south-to-north contraction, now threatening the few remaining spawning grounds north of Nanaimo.[5] The spawning window has likewise narrowed drastically, from approximately five months to only a few weeks in recent years, suggesting a loss of genetic diversity and population resilience.[6,7,8] DFO has yet to establish a comprehensive understanding of the primary drivers behind these changes. While environmental variability, fishing pressure, habitat degradation, and climate change are all potential contributing factors, herring continue to be managed without a sufficiently integrated understanding of how these pressures interact. Managing herring populations without adequately accounting for these ecological relationships is both scientifically and ecologically irresponsible. It threatens the long-term sustainability of the species, Indigenous access and rights, and the numerous species and coastal livelihoods dependent upon herring for survival.

Furthermore, management decisions continue to rely on historical baselines that do not necessarily represent the abundance of herring prior to industrial exploitation. Assertions that herring populations are at or near historic highs are based on data beginning in 1951, long after industrial fishing had already substantially altered these populations. Indigenous knowledge systems, archaeological evidence, and historical records indicate that herring were once vastly more abundant along the Pacific coast. [9] Research on forage fish species reveals declines of up to 99% in some regions, underscoring that current biomass estimates are neither sustainable nor representative of pre-industrial abundance.[10,11]

Climate change further compounds these concerns and must be central to future herring management decisions. Rising ocean temperatures, shifting oceanographic conditions, changing plankton communities, and increasingly frequent marine heatwaves are already affecting marine ecosystems and the species that depend on them. Pacific herring are particularly sensitive to environmental conditions during their early life stages, when temperature, food availability, and the timing of plankton blooms can influence survival and recruitment. Changes in environmental conditions can alter spawning timing and distribution, potentially creating mismatches between herring reproduction and the availability of suitable food for developing larvae.[12,13,14]

The 2014–2016 northeast Pacific marine heatwave offers a stark example of how a warming ocean can disrupt the entire marine food web, resulting in major shifts in plankton communities, declines in forage fish quality

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4 DFO, 2018
5 Pacific Marine Conservation Caucus, 2025
6 Okamoto et al., 2020
7 Petrou et al., 2021
8 Stier et al., 2020
9 McKechnie et al., 2014
10 Morin, Evans & Efford, 2023
11 Efford et al., 2025
12 Villalobos, Love & Brady, 2020
13 Hunter & Wade, 2015
14 Harley et al., 2024

and availability, and widespread food shortages. The impacts extended all the way up the food chain: approximately 62,000 dead or dying common murres were found along the Pacific coast from California to Alaska, with total mortality estimated at nearly one million birds.[15] The North Pacific humpback population declined by approximately 6,800 whales (20%) between 2012 and 2021, showing lasting effects of the marine heatwave.[16] This is a sobering reminder that when warming disrupts the foundation of the food web, the consequences can ripple through the entire marine ecosystem.

These concerns are especially relevant as B.C. enters the winter of 2026/2027 during an exceptionally strong El Niño event that could become one of the strongest on record.[17] Seasonal forecasts indicate an increased likelihood of above-average temperatures across much of western Canada through the winter and spring of 2027. Although El Niño does not guarantee specific local ocean conditions or biological outcomes, it is a significant climate driver that can influence Pacific oceanographic conditions, sea surface temperatures, and marine productivity. Research has specifically identified the influence of the Oceanic Niño Index, sea surface temperature, and other large-scale climate patterns on Pacific herring spawning phenology.[18] Entering a potentially historic El Niño year with additional environmental uncertainty makes precautionary fisheries management particularly important.

The effects of warming and changing ocean conditions on herring populations are not hypothetical. In California, San Francisco Bay's Pacific herring population has experienced increased variability and declines that have contributed to fishery closures. Temperature and other hydroclimatic conditions are important influences on juvenile herring abundance, distribution, and recruitment.[19,20] On Canada's east coast, Atlantic herring populations have experienced significant environmental pressures associated with warming ocean conditions. In the southern Gulf of St. Lawrence, a shift from colder to warmer ocean conditions has been associated with persistent low recruitment in spring-spawning herring, while research on the Scotian Shelf has identified temperature, thermal phenology, and exploitation as important contributors to herring population declines.[21,22,23,24]

These examples demonstrate that herring populations are vulnerable to interacting environmental and fishing pressures, and that historical productivity cannot be assumed to continue under changing climate conditions. DFO must account for these realities when determining whether commercial fisheries should be permitted to open. Management decisions should not rely solely on whether projected biomass exceeds a reference point, but must also consider the resilience, distribution, reproductive success, and ecological function of herring populations under increasingly uncertain environmental conditions.

Recommendations

[15] Piatt et al., 2020
[16] Cheeseman et al., 2024
[17] NOAA, 2026
[18] Harley et al., 2024
[19] Sydeman et al., 2018
[20] Pak et al.,, 2023
[21] DFO, 2025
[22] Turcotte, 2022
[23] Beaudry-Sylvestre et al., 2022
[24] Melvin et al., 2009

1. **Suspend all commercial fishing for Pacific herring in the Strait of Georgia.**
   Pacific Wild does not support the proposed 2026/2027 harvest options for the SoG, which include total allowable catches (TACs) of up to 16,674 short tons, with the exception of allowing harvest to support FSC. We urge that an immediate suspension of the commercial Food and Bait, Special Use, and Roe herring fisheries is necessary to allow for population recovery and to safeguard the ecosystem services on which coastal communities and wildlife depend.

2. **Develop a formal Recovery Plan for Herring in the Strait of Georgia.**
   DFO should develop a comprehensive recovery plan modeled on the *Haida Gwaii 'iináang | iinang Pacific Herring: An Ecosystem Overview and Ecosystem-based Rebuilding Plan*. This plan must be co-developed with First Nations, independent scientists, government representatives, and conservation organizations to ensure that it is transparent, science-based, and inclusive. Importantly, the fishery should be paused while the plan is being developed to allow herring populations the best chance to recover.

3. **Maintain the closure of the commercial herring fishery on the West Coast of Vancouver Island.**
   Pacific Wild does not support reopening the WCVI commercial herring fishery for the 2026/2027 season with harvest options of up to 4,883 short tons, representing a 10% harvest. While DFO forecasts a 2027 spawning biomass of 48,854 short tons and identifies the stock as being above both the LRP and USR, a modelled healthy stock designation should not, on its own, justify reopening a commercial fishery. Stock assessment models cannot fully capture the local ecological, cultural, and social significance of herring, nor do they necessarily reflect the lived experience and observations of Indigenous communities.

4. **Accelerate the integration of an Ecosystem Approach to Fisheries Management (EAFM).**
   Herring management must move beyond single-species biomass assessments and fully incorporate the ecological relationships and cumulative pressures affecting Pacific herring populations. Management frameworks must fully incorporate Indigenous Knowledge Systems, climate adaptation strategies, and recognition of herring's ecological role within the broader marine food web.

5. **Differentiate between migratory and resident herring populations.**
   Substantial evidence suggests that both migratory and resident herring populations exist within the SoG, with some local populations likely extirpated. These distinct population structures cannot be managed as a single stock unit without risking further loss of genetic and ecological diversity.[25,26,27,28,29,30]

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[25] Benson, Cox,. &, Cleary, 2015
[26] Okamoto et al., 2020
[27] Stier et al., 2020
[28] Rogers et al., 2018
[29] Pitcher et al., 2017
[30] Petrou et al., 2021

Fisheries and Oceans Canada holds both a legal and ethical obligation to sustain Pacific herring for First Nations, the integrity of coastal ecosystems, and all British Columbians whose lives and livelihoods are intertwined with this foundational species. The 2026/2027 draft IFMP continues to prioritize commercial harvest opportunities in the SoG and proposes reopening commercial fisheries on the WCVI, despite substantial ecological uncertainty, changing environmental conditions, and ongoing concerns regarding local herring populations.

As climate change accelerates and ocean conditions become increasingly unpredictable, the need for precautionary, ecosystem-based fisheries management has never been greater. The potentially historic El Niño event forecast for the coming year further underscores the importance of allowing herring populations to maintain their reproductive capacity and ecological function without the added pressure of commercial exploitation. We therefore call on DFO to suspend all commercial herring fisheries in the SoG, maintain the commercial closure on the WCVI, and prioritize Indigenous-led, ecosystem-based recovery measures throughout B.C.

Herring are too important to coastal ecosystems, cultures, and communities to be managed through narrow, single-species stock assessments that prioritize biomass projections over the broader ecological role of herring and the needs of the ecosystems that depend on them. We must begin managing them according to what the ecosystem needs to thrive.

Sincerely,
Sydney Dixon



Marine Specialist

References

Beaudry-Sylvestre, M., Benoît, H. P., & Hutchings, J. A. (2022). Combined effects of exploitation and environmental change on life history: A comparative analysis on Atlantic herring. *ICES Journal of Marine Science, 79*(10), 2728–2740. https://doi.org/10.1093/icesjms/fsac209

Benson, A.J., Cox, S.P. & Cleary, J.S. (2015). Evaluating the conservation risks of aggregate harvest management in a spatially-structured herring fishery. *Fisheries Research*, *167*: 101-113. https://doi.org/10.1016/j.fishres.2015.02.003

Chamberlin, J., Petrou, E., Duguid, W., Barsh, R., Juanes, F., Qualley, J., & Hauser, L. (2021). Phenological diversity of a prey species supports life-stage specific foraging opportunity for a mobile consumer. *ICES Journal of Marine Science, 78*(9), 3089–3100. https://doi.org/10.1093/icesjms/fsab176

Cheeseman, T., Barlow, J., Acebes, J. M., Audley, K., Bejder, L., Birdsall, C., Bracamontes, O. S., Bradford, A. L., Byington, J., Calambokidis, J., Cartwright, R., Cedarleaf, J., García Chavez, A. J., Currie, J., De Castro, R. C., De Weerdt, J., Doe, N., Doniol-Valcroze, T., Dracott, K., … Clapham, P. (2024). Bellwethers of change: Population modelling of North Pacific humpback whales from 2002 through 2021 reveals shift from recovery to climate response. *Royal Society Open Science, 11*, Article 231462. https://doi.org/10.1098/rsos.231462

Davis, M. J., Chamberlin, J. W., Gardner, J. R., Connelly, K. A., Gamble, M. M., Beckman, B. R., & Beauchamp, D. A. (2020). Variable prey consumption leads to distinct regional differences in Chinook salmon growth during the early marine critical period. *Marine Ecology Progress Series, 640*, 147–169. https://doi.org/10.3354/meps13279

DFO. (2018). *Amended recovery strategy for the Northern and Southern Resident Killer Whales (Orcinus orca) in Canada*. Species at Risk Act Recovery Strategy Series. Government of Canada.

DFO. (2025). *Rebuilding plan: Atlantic herring (Clupea harengus), spring spawner component – NAFO Division 4T*. Government of Canada.

Efford, M., Taft, S., Morin, J., George, M., Speller, C., & Christensen, V. (2025). Unsettling the record: Modelling the devastating cumulative effects of selected environmental stressors and loss of human life caused by colonization in Burrard Inlet, Canada. *Philosophical Transactions of the Royal Society B, 380*(20240040). https://doi.org/10.1098/rstb.2024.0040

Harley, J. R., Grinnell, M. H., Hebert, K., Cleary, J., Thompson, M., & Rooper, C. N. (2024). Forecasted changes to the timing of Pacific herring *Clupea pallasii* spawn in a warming ocean. *Marine Ecology Progress Series, 740*, 95–108. https://doi.org/10.3354/meps14630

Hunter, K.L., and Wade, J. (Eds). 2015. Pacific Large Aquatic Basin climate change impacts, vulnerabilities and opportunities assessment – marine species and aquaculture. Can. Manuscr. Rep. Fish. Aquat. Sci. 3049: viii + 242 p. https://publications.gc.ca/collections/collection_2016/mpo-dfo/Fs97-4-3049-eng.pdf

Government of British Columbia. (2022). *Coastal marine strategy: Policy intentions paper*. https://engage.gov.bc.ca/coastalmarinestrategy

McKechnie, D. Lepofsky, M.L. Moss, V.L. Butler, T.J. Orchard, G. Coupland, F. Foster, M. Caldwell, K. Lertzman, K. (2014). Archaeological data provide alternative hypotheses on Pacific herring (Clupea pallasii) distribution, abundance, and variability. *PNAS, 111*(9): E807-E816. https://doi.org/10.1073/pnas.1316072111

Melvin, G. D., Stephenson, R. L., & Power, M. J. (2009). Oscillating reproductive strategies of herring in the western Atlantic in response to changing environmental conditions. *ICES Journal of Marine Science, 66*(8), 1784–1792. https://doi.org/10.1093/icesjms/fsp167

Morin, J., Evans, A.B., & Efford, M. (2023). The Rise of Vancouver and the Collapse of Forage Fish: A Story of Urbanization and the Destruction of an Aquatic Ecosystem on the Salish Sea (1885–1920 CE). *Human Ecology, 51*(2): 303–322. DOI:10.1007/s10745-023-00398-w

NOAA Climate Prediction Center. (2026, October 8). *ENSO Diagnostic Discussion*. https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.shtml

Okamoto D.K., Hessing-Lewis M., Samhouri J.F., Shelton A.O., Stier A., Levin P.S., Salomon A.K., (2020). Spatial variation in exploited metapopulations obscures risk of collapse. *Ecological Applications, 30*: 1–16. https://doi.org/10.1002/eap.2051

Pacific Marine Conservation Caucus. (2025, November 26). *MCC response to draft 2024/2025 Pacific herring Food & Bait and Special Use Commercial Fishing Plans, and the full Integrated Fisheries Management Plan*. Pacific Marine Conservation Caucus.

Pak, N., Colombano, D. D., Greiner, T., Hobbs, J. A., Carlson, S. M., & Ruhi, A. (2023). Disentangling abiotic and biotic controls of age-0 Pacific herring population stability across the San Francisco Estuary. *Ecosphere, 14*(5), Article e4440. https://doi.org/10.1002/ecs2.4440

Petrou E.L., Fuentes-Pardo A.P., Rogers L.A., Orobko M., Tarpey C., Jiménez-Hidalgo I., Moss M.L., Yang D., Pitcher T.J., Sandell T., Lowry D., Ruzzante D.E., Hauser L. (2021). Functional genetic diversity in an exploited marine species and its relevance to fisheries management. *Proc Biol Sci, 24*: 288(1945):20202398. doi: 10.1098/rspb.2020.2398

Piatt, J. F., Parrish, J. K., Renner, H. M., Schoen, S. K., Jones, T. T., Arimitsu, M. L., Kuletz, K. J., Bodenstein, B., García-Reyes, M., Duerr, R. S., Corcoran, R. M., Kaler, R. S. A., McChesney, G. J., Golightly, R. T., Coletti, H. A., Suryan, R. M., Burgess, H. K., Lindsey, J., Lindquist, K., … Sydeman, W. J. (2020). Extreme mortality and reproductive failure of common murres resulting from the northeast Pacific marine heatwave of 2014–2016. *PLOS ONE, 15*(1), Article e0226087. https://doi.org/10.1371/journal.pone.0226087

Pitcher, T., Lam, M., & Kaiser, M., & White, A.S.J. (2017). "Hard of Herring". Pages 112-119 in Tortell, P., Young, M. & Nemetz, P. (eds) *Reflections Of Canada: Illuminating Our Opportunities and Challenges at 150+ years*. 309pp. Peter Wall Institute of Advanced Studies, Vancouver, Canada.

Rogers, L.A., Salomon, A.K., Connors, B., & Krkošek, M. (2018). Collapse, Tipping Points, and Spatial Demographic Structure Arising from the Adopted Migrant Life History. *The American Naturalist, 192*(1). https://doi.org/10.1086/697488

Stier, A. C., A. Olaf Shelton, J. F. Samhouri, B. E. Feist, and P. S. Levin. (2020). Fishing, environment, and the erosion of a population portfolio. *Ecosphere, 11*(11):e03283. https://doi.org/10.1002/ecs2.3283

Surma, S., Pitcher, T. J., Kumar, R., Varkey, D., Pakhomov, E. A., & Lam, M. E. (2018). Herring supports Northeast Pacific predators and fisheries: Insights from ecosystem modelling and management strategy evaluation. *PLoS ONE, 13*(7), e0196307. https://doi.org/10.1371/journal.pone.0196307

Sydeman, W. J., Thompson, S. A., García-Reyes, M., Kahru, M., Peterson, W. T., & Largier, J. L. (2018). Climate-ecosystem change off southern California: Time-dependent seabird predator-prey numerical responses. *Deep Sea Research Part II: Topical Studies in Oceanography, 151*, 122–133. https://doi.org/10.1016/j.dsr2.2014.03.008.

Turcotte, F. (2022). *Environmental effects on recruitment dynamics and population projections of NAFO Division 4TVn spring spawning Atlantic herring* (DFO Canadian Science Advisory Secretariat Research Document 2022/047). Fisheries and Oceans Canada. https://publications.gc.ca/collections/collection_2022/mpo-dfo/Fs70-5-2022-047-eng.pdf

Villalobos, C., , Love, B.A., & Brady,O.M. (2020). Ocean Acidification and Ocean Warming Effects on Pacific Herring (*Clupea pallasi*) Early Life Stages. *Frontiers in Marine Science, 7*: 597899. DOI=10.3389/fmars.2020.597899