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Pacific herring spawns transfer energy to coastal ecosystems

Through their interspecific interactions, Pacific herring (*Clupea pallasii*) are foundational to coastal marine ecosystems in the North Pacific Ocean. During annual herring spawns, hundreds of thousands of individuals migrate to sheltered nearshore waters, where males release sperm and females deposit millions of adhesive eggs onto substrates such as seagrass, kelp, and rock. This aggregation of herring biomass results in a pulse of energy and nutrients that is transferred to coastal ecosystems via predation by species throughout the food web, including cetaceans, pinnipeds, fish, invertebrates, birds, and terrestrial mammals such as bears and wolves.

This photograph shows Pacific herring eggs deposited on seaweed during the March 2022 spawn in the territory of the Lekwungen peoples at the Fisgard Lighthouse National Historic Site (British Columbia, Canada). We observed many species feeding on Pacific herring and their progeny, including sea lions, seals, river otters, bald eagles, seabirds, and shorebirds.

Pacific herring populations in British Columbia are declining, in part due to commercial (over)fishing. The resulting loss of energy and nutrients from fewer herring spawns could alter the species interactions and structure of coastal marine, intertidal, and supratidal communities. However, sustainable harvest by coastal First Nations continues and includes harvesting herring roe on kelp and cedar boughs without catching the fish themselves. By not harvesting the fish themselves, this allows for the maintenance of older, more experienced, and more fecund individuals, which may help to recover Pacific herring populations and food-web interactions.

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