Salmon Thoughts

I was reading an article in the Peninsula Daily News recently about Coho Salmon fishing in the Strait. In it a fisherman was complaining about the mark-selective Coho fishery rules which promote the preservation of wild salmon over hatchery salmon. This is a big deal to local recreational fishermen. It generates lots of discussion and misleading information on social media. What does a mark-selective fishery mean?

To understand the issue, some knowledge of the life cycle of Pacific salmon is required. Pacific salmon start life in fresh water (streams, rivers, lakes), migrate to the ocean to mature, and then return to their natal freshwater location to spawn and die. Hatchery salmon come from eggs that are milked from female salmon and fertilized in human-controlled hatcheries. The juvenile salmon are released into public waters, but they return to the hatchery to spawn, while wild salmon are born and raised entirely in natural rivers and streams.

Beginning in the 1980s, juvenile hatchery fish had their adipose fin (a small fin on the top back of the fish) clipped off at the hatchery to differentiate them from wild salmon. In Puget Sound, during salmon season, wild Chinook (or King) salmon must be released, and for at least part of the season, wild Coho salmon must also be released. For anglers, this means that only hatchery fish can be kept and the wild fish released. This is what is meant by a mark-selective fishery.

The immediate complaint is that the survival rate for released Pacific salmon ranges from 55% to 90%, depending on the fishing gear used, the severity of the fish's injuries, and how the fish are handled. If an angler catches 10 wild salmon in the process of catching the one or two hatchery fish that he or she can keep, mark-selective regulations mean that between one and six wild salmon are wasted because they will not survive after being released. This situation is very frustrating to anglers and has led to the saying, "Two and done" meaning that an angler should be able to keep the first two fish he catches, whether they are wild or hatchery.

A more fundamental issue has to do with the definition of wild and hatchery salmon. Hatchery fish are not "farmed" fish; once released from the hatchery, depending on the species of salmon, they spend between one and four years in the Pacific Ocean before returning to their spawning grounds in fresh water. Farmed salmon are kept in net pens and fed pellet food until they are large enough to harvest. Hatchery salmon caught in the ocean or returning to spawn are sold as wild salmon in the grocery store.

More importantly, for all practical purposes, there are no "pure" wild salmon. Hatcheries have been in Puget Sound since at least 1900. For over 100 years, before hatchery fish were clipped, those hatcheries produced billions (not millions!) of unmarked salmon and millions of those juvenile fish were trucked out of the hatcheries and released across multiple river basins. When

this happens, the adult salmon will return to the river basin where they were released to spawn and interbreed with wild salmon. Additionally, a significant percentage of hatchery fish stray to natural rivers and interbreed with wild salmon. Thus, two wild salmon caught in a natural river and bred in a hatchery will produce hatchery fish, and two hatchery fish that have their young released in a natural river will produce wild fish. No wonder anglers say, "A salmon is a salmon."

How did the current mark-selective fishery come about? In 1973 the Endangered Species Act went into effect to protect the existence of threatened species. By then wild salmon runs in Puget Sound had plummeted to roughly 10 percent of their historic, pre-development abundance. Despite serious opposition, plummeting rates of survival of juvenile wild Chinook led to Puget Sound wild Chinook being officially listed as threatened in 1999. Mass marking programs (clipping the adipose fin on hatchery fish) expanded across the Pacific Northwest to protect the weak wild runs. In collaboration with the Northwest Treaty Tribes, the Washington Department of Fish and Wildlife launched the first marine mark-selective Chinook salmon pilot fishery in Marine Areas 5 and 6 (Strait of Juan de Fuca) in 2003. Mark-selective regulations soon included Coho salmon and spread across Puget Sound.

One of the key impacts of the Endangered Species Act (ESA) on hatcheries was a policy of extensive cuts in hatchery production to protect ESA wild fish from competition. Early studies of wild versus tagged hatchery salmon showed that wild salmon have higher overall survival rates in the open ocean and higher reproductive success. Hatchery fish grow faster initially but have lower overall survival in the open ocean and reduced reproductive success. Some hatcheries are now segregated, meaning that only hatchery fish can be used to produce hatchery fish, as opposed to integrated hatcheries which use mixed hatchery and wild broodstock. Later studies showed that much of the difference between wild and hatchery fish had more to do with hatchery management and anti-hatchery bias in the studies than strictly genetic differences. Studies used first generation hatchery fish with tendencies brought about by a protected environment and overfeeding, but no follow-up was done on the succeeding generations to see if there were long-term genetic effects. Hatchery fish brought in from hatcheries in other rivers were compared unfavorably with native wild fish. More recent studies have shown that clipping the adipose fin makes hatchery fish less desirable to female salmon. Strictly segregating hatchery fish leads to inbreeding as opposed to the genetic diversity that occurs as various native and hatchery fish interbreed.

Despite curtailing hatchery production and strictly segregating wild and hatchery fish, wild salmon runs have not increased. The problem is that hatcheries are not the problem. Current federal and state programs now emphasize long term habitat restoration projects as the most meaningful solution to the decline of wild fish stocks. The Puget Sound Partnership is a Washington state agency created in 2007 to coordinate regional ecosystem recovery, protect water quality, and restore salmon habitats. The agency provides funding, policy and coordination of tribes, federal agencies, state agencies, local governments and watershed partners.

An example of a successful restoration project is the Elwha River restoration. The Elwha River Dam was built in 1910-1913 and the Glines Canyon Dam was built upstream in 1927. Annual salmon runs crashed from over 400,000 fish to fewer than 4,000. Congress passed the Elwha River Ecosystem and Fisheries Restoration Act in 1992 to acquire and remove the dams. The project began in 2011, and both dams were removed by 2014. Salmon and steelhead are naturally recolonizing the upper watershed, although not all genetic types of Chinook have yet returned.

Besides habitat degradation, newly revised data shows that for more than two decades ocean fisheries have killed thousands more Endangered Species Act-listed Puget Sound Chinook salmon each year than previously understood. “Over-success” of the Marine Mammal Protection Act, designed to protect Pinnipeds (seals and sea lions) has led to unprecedented predation of Pacific Salmon. Climate change is having serious effects on all marine life.

Hatchery Chinook and Coho provide food for endangered Orcas and support for tribal, commercial and recreational anglers. As habitat restoration proceeds, hatcheries can supply wild brood fish salmon to seed lost wild runs. To go back to our frustrated Coho angler, “two and done” and robust, integrated (wild and hatchery broodstock) hatcheries would better serve and make more sense than a mark-selective fishery that only applies to recreational anglers.

May all recreational anglers be given vinyl landing nets for Christmas! (Vinyl nets cause less damage to fish than mesh nets.)

Puget Sound Anglers North Olympic Peninsula is a 200-plus member organization centered in Sequim whose purpose is to organize and fund educational events and learning that promotes stewardship, conservation, camaraderie, safety and enjoyment of local fisheries. Monthly meetings, open to the public, are held at the Elks Lodge in Sequim on the third Wednesday of each month. Our website is psanopc.org.