considers the system as a whole. That could lead to outcomes that are driven by top-down goals and objectives. This is different from hatcheries operating more or less independently where the overall outcomes become the sum of local objectives rather than an overarching global objective. Additionally, focusing concern with hatchery fish on straying and effects at spawning grounds tends to preclude consideration of their effects at sea in competition for limited food—especially when the ocean is a major limiting factor.

IMST appreciates the dilemma ODFW has in trying to rehabilitate wild salmonid populations versus providing consistent harvest opportunities through use of hatchery fish. This is a tough balancing act. Nonetheless, there is a clear contradiction between increasing hatchery production to sustain increased harvest versus decreasing hatchery production and harvest to decrease the risk to wild salmonids. Therefore, much stronger arguments are needed than are provided given the fiscal and ecological costs of hatchery production relative to other fiscal needs of ODFW, the genetic costs of hatchery fish straying to spawning grounds, and increased feeding competition in freshwater (e.g., Nickelson et al. 1986; Nickelson 2003; Pearsons 2008; Naman & Sharpe 2012; Tatara & Berejikian 2012), in estuaries, and at sea (e.g., Daly et al. 2012; Kaeriyama et al. 2012; Naish et al. 2008; Ruggerone et al. 2012). If ODFW does not regard feeding competition at sea to be a serious, potentially limiting, factor in wild salmonid production, what research is needed to support or negate that hypothesis? What does the existing science suggest regarding wild fish conservation? What lessons have been learned from lower Columbia River, California, Washington, British Columbia, Alaska, and Asian hatchery releases?

It would be scientifically and socioeconomically prudent for ODFW to conduct a rigorous economic analysis of the long-term ecological and socioeconomic costs and benefits of its state and federal hatchery and habitat rehabilitation programs, especially in regards to wild fish conservation.

Learning about and watching salmon develop from fertilized eggs to fry is a useful and interesting classroom exercise. However, it is more scientifically appropriate for the classroom instruction to include both fish rearing and fish ecology so that students develop an understanding of ecosystem rehabilitation and conservation versus technological arrogance that hatcheries and hatchery fish are a long-term replacement for wild fish and relatively intact ecosystems and ecosystem processes (Meffee 1992). In other words, it is important that the classroom hatchery fry program be incorporated into holistic ecosystemic instruction.

Predation

Because of a paucity of literature on the subject, the section concerning predators is supported by little science. There is a paucity of information on predation rates in general, particularly for the juvenile stage. In addition, we do not know whether population-level effects ascribed to predation are due to additive versus compensatory mortality. The question that needs to be answered is whether or not salmonids eaten by a predator were on a trajectory towards death due to some other factor (e.g., disease, hooking injuries, lack of proper smoltification, or contaminant load) and hence became “easy prey”. We are also unaware of studies that demonstrate that predator control effectively increases adult returns. Given that predator control (e.g., hazing) is an action supported by the state, to make this practice scientifically defensible requires that its effectiveness be studied. The CMP recognizes this but if or how it will be accomplished is not presented.