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We should not delude our selves concerning the present state of world environments resulting from human population growth and the environmental consequences of this growth on all our environmental parameters. Demands from the resources of the world for feeding and sheltering this mass of people is reaching limits with the present directions of use and on the ability of the people to live together with the planets plants and animals. Evolution wise the past 100 years has seen changes that certainly threaten the human race and plants and animals of this planet. The extreme view is that if the human population ceases to exist the world will continue to evolve without the influence of man.

The point of this statement is that we have reached a stage where all the events produced by man are intertwined and each effects the other. Our fisheries resources are an excellent case where population growth has reduced the available fish and causes changes in the views of how this resource should be managed. World production is controlled by the input of the sun's energy, nutrients and space. Total sustained production has been calculated to be 70-90 million metric tons which has been reached for several years. How to use that resource in the face of changes in human population becomes a basic statement that is influenced by economics and reality of best management of the incoming sun energy and the nutrient base that is produced. Intensive management of a resource such as Pacific salmon and trout is a good example. Since this fishery began the availability of fish has been manipulated by management, hatcheries and habitat changes. We moved fish from stream to stream, state to state and country to country with characteristic biological analysis for size, weight, sex structure, and run timing to other streams that suffered run declines from logging, management, and any other change that caused disastrous changes in the fish populations. Coupled with natural straying the salmon gene pool has been so mixed that it is impossible to insure the integrity of any run. Concern with this lack of distinct runs has caused a panic that is threatening the economic value of the salmon resource to the west coast.

We have placed a cost on a salmon returning to the hatchery to bring forth a point about the hatchery as a management tool. This is not a good value for the hatchery goal was to put fish in the water for fishermen, both sport and commercial with cost benefit ratios. If the hatchery only provides brood stock for continuing the operation it is successful. The cost of a wild fish returning to a stream may be much higher than hatchery fish if the cost of a removed dam, lost irrigation, water availability, etc are placed on a wild fish.

The most likely scenario for wild fish, even with present intensive management scheme, is a continuing downward trend for Washington, Oregon, Idaho, and California. The assumed future level of the region's human population is such an intense factor that the continuing influence on the salmon is for a long term downward trend. One of the strategies for rebuilding the salmon populations is conservation hatcheries. Did I sleep through the last 75 years and hatcheries for dam mitigation, fishing, etc not exist? Without the present hatchery system the entire salmon population would be so depleted it would probably only exist in Canada and Alaska. Even in the pristine waters of Alaska the hatchery makes large contributions to the system.

Solutions to this dilemma are to continue to use the hatchery system to provide fish for recreation and commercial fishermen. Modification of hatchery methods, use of seapens to rear fish through all the life history stages, and management concepts that protect certain areas will provide

maximum fish in the face of regional developments. Throwing away the hatchery system only takes away the state and federal responsibilities for salmon maintenance. Tribal fisheries suffer the most from the present direction taken by the program. Policy change directions need to be implemented to reverse the long term trends that the present direction will insure will happen. Farm reared fish are blamed for declines in the wild fish market values and consumption. Competition is primarily in fish quality and availability which means that treatment of wild fish for the market needs attention. Present methods for processing fish for the consumer, such as vacuuming packing and rapid transportation of fish products to the consumer will increase the demand for high quality fish. The U.S. market for pen reared fish exceeds the U.S. production and fishermen should be encouraged to compete in this market. Norwegian fishermen have profited greatly by participation in the pen rearing markets. Why should we eat foreign salmon when the U.S has areas that can be used for development of farming ventures. Present technology avoids conflicts with wild fish by adequate containment of farmed fish.

Shellfish hatcheries are a good example of how the industry can be stabilized by use of a constant source of seed. Reliance on production of wild fish and shellfish for sale results in market fluctuations and inability of producers to compete. With increasing pressures on stocks the hatchery will insure continuation of production, maintenance of sensitive stocks and development of strains that can meet the demands of the industry. Reliance on wild stocks cannot provide the food necessary to meet the demands of tomorrows increasing populations.

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