Enhancing the Wild:
A Film about Repopulating Ocean Fisheries

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"Enhancing the Wild" in itself is a contradiction. Our ocean is filled with ecosystems delicately balanced by a global interconnection that any outside intervention is bound to alter.

Enhancement programs aim to target the impacts of natural and anthropogenic influences on wild fish stocks in hopes of increasing recreationally and commercially important species. However, many are lacking in adequate research and have the potential of throwing these ecosystems off-balance. Management by collaborating stakeholders taking a precautionary approach to minimize adverse effects on the environment and economy while also working with the best available science is how these programs will be most effective. Such broad statements are simple enough to digest when discussing replenishment programs worldwide until you take a closer look...

The Hubbs-Seaworld Research Institute (HSWRI) Ocean Resources Enhancement Hatchery Program (OREHP) is regarded to be at the cutting edge of marine coastal finfish restocking programs given its extensive history and community-driven successes in the spawning, rearing, and releasing of white seabass. Written into California legislature in 1983 as an experimental program to test the feasibility of enhancing white seabass populations, there are conflicting ideas as to whether or not the program has accomplished their mandated goals. As with other enhancement programs, funding, research, and education are driving forces behind the OREHP, though at what point success or failure is realized has yet to be determined.

Receiving funding from the Sportfish Restoration Act as well as the contentious OREHP Enhancement Stamp Account, the program has received around 40 million dollars since its inception. Arguably the best funded enhancement program in the world, the OREHP has created a pathway for others to follow suit in their technological and biological advances. 30 year's worth of experience offers invaluable insight into the potential to increase wild fish stocks, however their findings can only go so far when you're targeting different species.

Illusive, myth, ghost, these are the words used by seasoned fishermen when describing white seabass. A beautiful, elongated member of the croaker family, these fish offer allure, thrill, and a delicious meal to anyone patient and skilled enough to catch them. White seabass are pelagic and spend most of their time offshore in the open ocean and are therefore not only difficult to track, but enigmatic to survey and research making the effective replenishment and conservation of the species questionable.

Pathology, sampling, maintaining genetic biodiversity in the wild, these are the primary challenges the OREHP faces and as pioneers in this particular endeavor, successful methodologies aren't always distinctive. OREHP captures wild broodfish and maintains this program with vigilance, however; being raised in captivity makes viable, healthy offspring a tall order and many of the fish found at the hatchery are diseased or malformed. Geneticists and pathologists are regularly tasked with assessing the wellbeing of broodfish and offspring yet diseases not found in wild white sea bass continue to impact fish at HSWRI. With deformities not always visible from the outside, there is speculation that the program is releasing fish unfit for the wild into the ocean causing concern for not only the cultured fish, but the wild stock and marine environment as well.

In order to assess how the OREHP is impacting the ocean, gillnet sampling takes place. An efficient, arguably indiscriminate fishing practice, HSWRI is the only authorized gillnetting operation within three miles of the shore and is one of three ways for them to collect their tagged hatchery fish. Evaluations have estimated hundreds of thousands of fish killed as bycatch associated with gillnet surveys and are understandably controversial in an arena founded on the conservation of the species. Gillnet sampling, despite its downfalls, offers faster insight into whether OREHP fish are assimilating, surviving, and reproducing in the wild. Without such knowledge, the effort, research, and resources of scientists, fishermen, volunteers, and so many more will continue without the necessary tools to make change.

Without more research and less invasive ways of sampling, accurately understanding what it takes to spawn, rear, and release captive white sea bass will likely continue to fall short of restocking goals and collaborating stakeholders must be the ones to decide how to move forward. The future of OREHP as well as other replenishment programs must be founded on their joint efforts, the best available science, and a strict precautionary approach if we are to ever effectively enhance the wild.

It is for this reason that I decided to create a film about the OREHP. With multiple stakeholders, 30 years of experience, and 40 million dollars on the table, it isn't a stretch to imagine the issue easily turns from scientific to political. Fishermen who love white sea bass want to see their populations rebound and are forced to support this program whether they

think it works or not. Pathologists are torn between professional morals and scrutiny, and HSWRI aims to establish an effective program while appeasing the many involved. It is my goal that by laying the story out in a palpable, condensed way, a conversation may begin on a level playing field. Enhancement programs such as OREHP have potentially positive and negative impacts on wild fish stocks as well as the marine environment and we must therefore discuss at what point opportunism overshadows altruism.

Video Link: https://www.youtube.com/watch?v=lDXZmYJI6N4

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Abstract

"Enhancing the Wild" in itself is a contradiction. Our ocean is filled with ecosystems delicately balanced by a global interconnection that any outside intervention is bound to alter. Enhancement programs aim to target the impacts of natural and anthropogenic influences on wild fish stocks in hopes of increasing recreationally and commercially important species. However, many are lacking in adequate research and have the potential of throwing these ecosystems off-balance. Management by collaborating stakeholders taking a precautionary approach to minimize adverse effects on the environment and economy while also working with the best available science is how these programs will be most effective.

The Hubbs-Seaworld Research Institute (HSWRI) Ocean Resources Enhancement and Hatchery Program (OREHP) located in Carlsbad, California is on the cutting edge of such initiatives. Though despite 30 years of valuable research and experience as well as 40 million dollars worth of funding to date, less than one percent of OREHP white sea bass has contributed to the wild population. Now, with stakeholders finally able to express their opinions across the same platform, a conversation about not only *how* we can effectively spawn, rear, and release white seabass into the wild, but *if* we can may take place.

Keywords: Hubbs-SeaWorld Research Institute, Ocean Resources Enhancement and Hatchery Program, California Department of Fish and Wildlife, White Seabass, fishermen, pathologists, scientists, biologists, geneticists, disease, malformation, commercial, sport, recreational, sustainable, fishing, Ocean Resources Enhancement Stamp Account, documentary, film, political, research, education, outreach, aquaculture, finfish, fish farm, replenishment, enhancement, restocking, fisheries

Video Link: https://www.youtube.com/watch?v=lDXZmYJI6N4