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Testimony in support of F2 BLNR 4-25-25
By Ron Tubbs B.S.N.D.

Please make stock assessments to manage marine fisheries. Please reconsider opening the aquarium fishery. We desperately need valuable sustainable fisheries!

Seven Years and hundreds of thousands into an environmental review what we learned:

Meta-Analysis Hawaii, & Pacific Fisheries, Environmental Review, and Global Warming 2025 Report

Sustainability is Key to Hawaii's future. As the most isolated island in the world, Hawaii is too dependent on tourism, the military, and other non-sustainable, [unreliable economic sources](#).

Marine fish are Hawaii's most renewable resource. Opah Moon Fish produces [300 million eggs a year per pair](#). Tuna produce 5 million to 15 million fry per female per spawn. Reef fish produce tens of thousands to millions of fry per spawn per female. Fish can be sustainably managed and renewed through current fishing practices. We must support a managed sustainable fishery to create a more sustainable society, especially in isolated Hawaii.

In 2022, **90 percent of all US fishery stocks** did not exceed their annual catch limits and **are considered sustainable**, according to a [NOAA report](#). US managed fisheries are the best managed fisheries in the world. Yet we import 80 percent of our seafoods into Hawaii! Why?

Since the introduction of the first men to Hawaii in 400 A.D., land-based species have resulted in over 100 endemic plant species, 30 bird species, 74 insect species, and 41 tree snails [becoming endangered or extinct](#). Insects, Birds, snails, and many others are listed as Hawaii IUCN red species of concern. In 2023 8 more birds were removed from the Federal Lists of Endangered and Threatened Wildlife and Plants due to their confirmed extinction.

Marine Fish are more immune to global warming impacts, and No Pacific marine fish

species have become extinct over the past historical period. No marine fish are on the IUCN red list of endangered species. Moreover, almost all of Hawaii's marine fishes are listed as species of IUCN "Least Concern." The lowest conservation level there is.

Looking at the marine species extinctions of the past five global extinction-level events, marine fish are more immune to global impacts and will out-survive land-based species. It should be noted, however, that some larger lower reproductive predators, especially marine mammals, and their low, long reproductive cycles make them more vulnerable than broadcast-spawning highly reproductive marine fish species.

Marine fish's vast geographical distribution, due to broadcast breeding and larval distribution over as much as five thousand miles and even other oceans like the Atlantic and Indian Ocean from and to Hawaii, makes them much less vulnerable to fishing and environmental impacts. Marine fish studied in aquariums show that they are more resistant to global warming temperature changes, pH changes, salinity changes, and other ecological changes than land-based species. For example, Tuna and many other species are found in all oceans of the world. Ocean Depth habitat range, the latitude of the Hawaiian Islands chain from 19 degrees to 28 degrees latitude, and 1500 miles of 132 atolls, reefs, and shoals create a vast, unique habitat range protecting Hawaii's ocean biodiversity. Seventy percent of the earth is ocean, making marine fish in Hawaii less vulnerable to point-source pollution and global warming.

The Hawaii Sustainable Seafood Industry and fisheries generate around \$867 million in annual sales impacts, making it a significant contributor to the state's economy, with the majority of this value coming from the high-value, a low-volume longline fishery that is considered the largest food-producing industry in Hawaii. Small Nearshore fisheries without the Aquarium Fishery 53 million benefits are worth 16 million annually, and the Tuna Fishery is worth 100 million annually.

Along with agriculture, Managed Marine Fishing and Mariculture could be very valuable and sustainable resources for Hawaii's increased sustainability.

Pisciculture is a type of aquaculture that consists of fish farming to obtain fish products as food, and this could greatly lessen our dependence on imported foods and the carbon footprint imports create.

Reports show **global aquaculture production** (including aquatic plants) in 2016 was 110.2 million tonnes, with the first sale value estimated at US\$244 billion. Three years later, in 2019, the reported output from global aquaculture operations was over 120 million tonnes, valued at US\$274 billion. Increased Aquafarming and managed fisheries should be Hawaii's "Blue Revolution" sustainable future.

Hawaii could greatly benefit from the 2.15 billion per year ornamental marine fish trade and the **207- billion-dollar** United States pet trade, which has grown from 100 billion in just a few years.

The value of Hawaii's nearshore oceans is worth 15.3 billion dollars in highly renewable resources in 2024, with a current 50% estimated increase every 20 years, which means one of The state of Hawaii's most valuable resources is our Ocean.

Tourism impacts are Hawaii's biggest ocean ecological offender and the largest source of Carbon Footprint and is not sustainable.

Reports show global aquaculture production (including aquatic plants) in 2016 was 110.2 million tonnes, with the first sale value estimated at US\$244 billion. Three years later, in 2019 the reported output from global aquaculture operations was over 120 million tonnes valued at US\$274 billion. Managing fisheries to their safest environmental output, improved ocean marine management science, and Aquafarming should be Hawaii's "[Blue Revolution](#)" to ensure a sustainable future. **The aquarium fishery**, with its higher biomass value, lower biomass removal and sustainable, highly renewable resources, should be utilized to its fullest to aid the state's plan for a sustainable future.

University of Hawai'i Economic Research Organization report in 2024 by UHERO.

"Hawai'i's economy depends heavily on tourism and is therefore vulnerable to sudden drops in visitor numbers and inconsistent and slow growth in tourism revenue for the past 30 years". The [University of Hawai'i Economic Research Organization](#) (UHERO) analyzes the variety of industries across counties in the U.S. and Hawai'i to identify potential opportunities to diversify the state's economy. What UHERO found based on industries already in Hawai'i, the study shows Hawai'i has great potential for ocean-based industries—such as *fishing, fish farming* and hatcheries, boat building, port and harbor operations, and seafood packaging. Diversifying into these industries can create long-term stability and support growth beyond tourism."

With science supporting the sustainability of the aquarium fishery an approval of fishery permits could aid the state in its greatly needed shift to sustainable renewable resource uses.

Out of the national 277-billion-dollar pet industry, Hawaii pet owners spent 355 million dollars on pets in 2021. Providing 21.8 million state tax revenues and 27.3 million local tax revenues. Hawaii residents have 1.7 pets per household on average. Nearly 57% of Hawaii households have one pet. That is 11% of U.S. household's fish. Taping into the sustainable renewable income aquarium fishing can provide sustainable economic benefits. **Marine fish used as pets are worth per fish as much as % 400 more than those similar fish used for food purposes.** Pet fish leave breeders' sizes to make it a "**Model Fishery**." Declines in food fish near shore near humane populated areas have not been seen in reef fish used for aquarium purposes.

DNA Genetic Biodiversity and Hawaii Fisheries.

The key to lowering the huge carbon footprint of the most isolated populated area in the world is using our renewable resources to their maximum potential while maintaining sustainability. While tourism is essential to our economy, **it is not sustainable**, it is vulnerable, and it is Hawaii's largest carbon footprint source.

Human survivability and a sustainable future depend heavily on transitioning to and

maximizing renewable resources while understanding and managing our dependence on non-renewable resources.

The idea that DNA genetic diversity in Hawaii's aquarium fishery is significantly affected does not hold water scientifically.

“We find no evidence of genetic (biodiversity) bottlenecks between islands of the Hawaiian Archipelago, as expected under a stepping-stone model of colonization, from the initial introduction site. Many species rapidly colonized across 2000km without loss of genetic diversity”.

Gaither, Michelle R., et al. "Genetic consequences of introducing allopatric lineages of Bluestriped Snapper (*Lutjanus kasmira*) to Hawaii." *Molecular Ecology* 19.6 (2010): 1107-1121.

Broadcast-breeding marine fish are the most biodiverse species on the planet due to their ability to disperse new DNA diversity over long distances and interconnect all the Hawaiian Islands.

The aquarium fishery was Hawaii's most valuable and sustainable ecologically friendly fishery. However, despite the passage of the Environmental Impact Statement Act 343, the fishery still has no permits!

Support sustainable, highly renewable, valuable fisheries (Ocean Value is well over 14 billion of sustainable, highly renewable resources). However, their significant economic contributions to Hawaii are not being used due to user conflict, bias, and propaganda. Science is being perverted, and facts are being distorted. DAR's and numerous scientists' recommendations, at every BLNR hearing to pass the EIS and at every legislature Bill regarding the fishery to give out aquarium fish permits, have been politically stalled by BLNR and the Hawaii State Legislature. **Facts, not Fiction, should be the basis of decision-making.**

I highly suggest you also utilize fishermen in a working group to aid this stock assessment. We must understand our stocks to maintain fisheries sustainably and maximize their economic benefits to the state, so **funding DAR on this is more essential than any other Earth Day topic you will address!**

If overall populations were declining, deeper reserves were affected, and statewide populations were affected, then DNA diversity could be impacted. But Hawaii's aquarium fishery shows population increases, not declines.

Marine species from deeper areas can repopulate. Many species, like yellow tangs, can be found at depths exceeding 200 feet, and many collected fish live in ecosystems as deep as 600 feet. Also, baby fry returns to Hawaii's reefs at very deep depths and slowly migrates to the shallows. Yellow tangs have been found as far away as the north Philippines Islands, and there is genetic connectivity.

All of Hawaii's collected marine fish species are broadcast breeders. Fish thousands of miles away can contribute new DNA to fish populations. Many of Hawaii's fish species came in on ocean currents from Japan 4000 miles away. Breeding biodiversity in areas where fishing occurs is not affected because of deeper "**Deep Refuge**" areas hold reserve marine fish in uncollected areas. Fish are not monogamous and breed in groups, creating more biodiversity than other species.

In areas where aquarium fish collection occurs both on Oahu and in West Hawaii closed to fishing reserves provide a source for new genetic biodiversity. Fish migrate along the coast, and many species have migrated hundreds of miles in search of food, even between Islands.

Larger breeder fish and smaller fish provide DNA sources that remain in collected areas; generally, only smaller fish are collected to ensure long-term DNA biodiversity and high populations of quick population-renewing breeders.

Conclusion: Multiple fish sources for renewed DNA biodiversity are available to ensure reef fish genetic biodiversity counter the harvest in Hawaii aquarium fish collection.

Renewable Resources:

These resources can be replenished naturally over time, often at a rate that matches or exceeds consumption. Examples include solar energy, wind power, water, and sustainably harvested timber.

Why is Transitioning to Renewable Resources Key?

- **Sustainability:**

Renewable resources are inherently sustainable because they can be replenished, unlike non-renewable resources which are finite and can be depleted.

Environmental Benefits:

Burning fossil fuels for energy releases harmful greenhouse gasses, contributing to climate change and air pollution. Renewable energy sources, on the other hand, produce significantly lower emissions, helping to combat climate change and improve air quality.

Energy Security:

Relying on a limited number of non-renewable resources can make a country vulnerable to

price fluctuations and geopolitical instability. Diversifying energy sources with renewables can improve energy security.

Economic Opportunities:

The renewable energy sector is growing rapidly, creating new jobs and economic opportunities.

Health Benefits:

Switching to clean energy sources like wind and solar can help reduce air pollution, which is a major cause of respiratory and cardiovascular diseases.

Resource Depletion:

Continued reliance on non-renewable resources leads to their depletion, which can have serious consequences for future generations

What About the Survivability of Aquarium Fishes

Why is it OK to Kill a fish but not OK to keep the same fish in an Aquarium?

“fish can and do live much longer lives in captivity than in the wild, not surprising given the absence of predators (in most cases), the unlimited amount of food available, and the lack of disease.” Link to full article: <https://reefs.com/magazine/aquarium-fish-longevity/>

The Emily Munday study followed 200 yellow tangs from West Hawaii for two years, and there was 100% survivability.

Watch these educational, **amazing videos** from Hawaii’s Marine biologist researchers.

Amazing Videos Must Watch: Educational

[**West Hawaii Commercial Aquarium Fishery Presentations Department Of Land and Natural Resources**](#) DAR State of Hawaii presentation confirming the low impact of the

fishery on April 12th, 2024, presentation. DAR Researchers recommend giving out aquarium fish permits. BLNR does not give out permits!

Non-embedded hyperlink: <https://www.youtube.com/watch?v=djtlsvg7qs&t=11s>

[**Aquarium Fishery; Scientists Hawaii Speak Out**](#) Researchers explain how Earth justice lies in closing the fishery and expose Rene Umber and Snorkel Bob’s misinformation campaign against it. The DAR head explained decades of research on fishery.

Non-embedded hyperlink: https://www.youtube.com/watch?v=AU_WZOyJzqk&t=9s

Fishery Sustainable Dr. Bill Walsh, Richard Pyle and NOAA Video

Non-embedded hyperlink: <https://www.youtube.com/watch?v=50L6JcMOVLO&t=219s>

Source [in-text links](#) and now below:

[https://www.fisheries.noaa.gov/national/sustainable-fisheries/status-stocks-](https://www.fisheries.noaa.gov/national/sustainable-fisheries/status-stocks-2022#:~:text=Under%20this%20law%20the%20United.ensure%20they%20do%20not%20continue.)

[2022#:~:text=Under%20this%20law%20the%20United.ensure%20they%20do%20not%20continue.](https://www.fisheries.noaa.gov/national/sustainable-fisheries/status-stocks-2022#:~:text=Under%20this%20law%20the%20United.ensure%20they%20do%20not%20continue.)

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<https://www.westhawaii.com/2020/06/25/opinion/my-turn-we-expect-better/hjawaii-tropical-aquarium-fish>

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Escaping paradise: larval export from Hawaii in an Indo-Pacific reef fish, the yellow tang

Zebrasoma flavescens. *Mar Ecol Prog Ser* 428:245-258. <https://doi.org/10.3354/meps09083>

(Lough et al., 1999) (Bagnato et al., 2004; Damassa et al., 2006; Cantin et al., 2010)

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Effectiveness of the West Hawai'i Regional Fishery Management Area (WHRFMA) that overall fish populations of targeted aquarium fish species increased significantly in West Hawaii over

20 years. "Overall Yellow Tang abundance in the 30'-60' depth range over the entire West Hawai'i coast is estimated to have increased by over 3.4 million fish from 1999/2000 to 2017/2018 (150% increase) to a current population of about 5.7 million fish within this depth range alone. Over time, management and habitat increases due to coral growth contribute to increased fish populations. Overall Kole abundance in the 30'-60' depth range over the entire West Hawai'i coast is estimated to have increased 118% (>5.1 million fish) during this time period with a current estimated population of almost 9.6 million fish. As with Yellow Tang, summer 2014 recruitment for Kole in many areas was very strong. Recruitment at the Manuka survey site for example was 254% higher than on any other previous survey at the site over the last 20 years." (WHRFMA) Shomura, Richard. "A historical perspective of Hawai'i's marine resources, fisheries, and management issues over the past 100 years." *Status of Hawaii's coastal fisheries in the new millennium, revised 2004 edition. Proceedings of the 2001 fisheries symposium sponsored by the American Fisheries Society, Hawai'i Chapter*. 2004.

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DAR BLNR Presentation 2024 <https://youtu.be/djItlsvg7qs?feature=shared>
Oahu there is a much greater refuge area than West Hawaii. Sources; 2013 By Friedlander, Alan M. (Alan Marc) ; Donovan, Mary K. ; Stamoulis, Kostantinos ; ...
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Regulated Fishing Areas on O'ahu

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