New metrics for seafood security assessments in coastal fisheries

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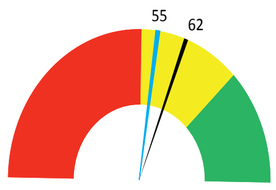
Problem and Approach: The State of Hawaii's fisheries are in decline. It is through the understanding of people's dependence on healthy fisheries for seafood security via carefully designed assessments that we can successfully manage fisheries for healthy ecosystems and sustained benefits to people. **Approach:** We develop novel metrics that researchers and conservation practitioners can use to evaluate progress toward seafood security goals.

Key Findings: The State of Hawai'i is highly dependent on the food provision benefits from local ocean resources. The current state of local fisheries and the future changes in seafood demand threaten the sustainability of food provision benefits from the ocean. Innovations in sustainable fisheries management and transformations of the seafood supply chains are critical if Hawai'i is to improve its seafood security.

Hawaiian capture fisheries contribute lc levels of seafood self-sufficiency

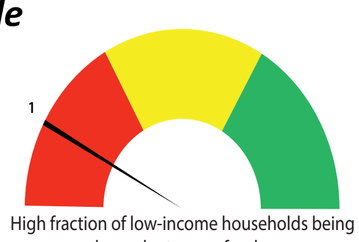
- Local wild capture fisheries landings represent only 62% of fisheries production and trade flows



When domestic US imports and transshipments through the US are considered, the self-sufficiency drops to 55%

Low-income Hawaiian residents are particularly vulnerable to seafood insecurity

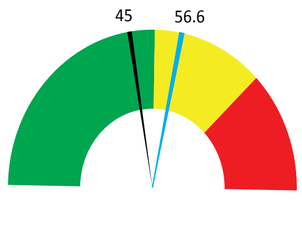
- More than 50% of low-income (< \$35,000 yr^{-1}) households have high dependence on seafood for their protein consumption



High fraction of low-income households being dependent on seafood = low seafood security rank

Seafood supply in Hawaii is relatively highly dependent on imports.

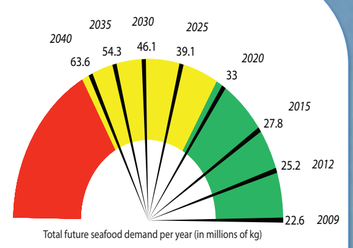
- Foreign imports represent 45% of fisheries production and trade flows



When domestic US imports and transshipments through the US are considered, the import dependency rises to ~57%.

Total seafood demand in Hawaii will continue to increase

- Total seafood demand is projected to increase by nearly 300% by 2040, compared to 2009 levels

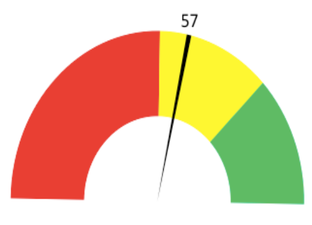


By 2040, total seafood demand is likely to exceed 60 million kg (or 130 million lbs)

Outcomes: The metrics we provide can be used in two valuable ways: 1) for a present-day assessment of seafood security state for the Main Hawaiian Islands, and 2) for on-going monitoring and evaluation of the success of different actions and strategies designed to improve seafood security. Our overarching goal is to inform conservation practitioners, policy and decision makers with practical ways to evaluate seafood security policies, interventions, and investment strategies. The metrics we develop are also meant to add resilience to ecosystems and governance structures the successful functioning of which will improve and maintain food security and human well-being in the region. We also provide several future models of seafood demand and seafood expenditures based on our metrics, and demonstrate a future production gap, which needs to be addressed with sustainable fisheries management approaches. Our assessment approach can be exported to other island nations in the Pacific and beyond, and can help fisheries management agencies pinpoint areas that need improvement in order to secure food provisioning ecosystem services from the ocean.

Local wild capture fisheries landings mee a low amount of total seafood demand in Hawai'i

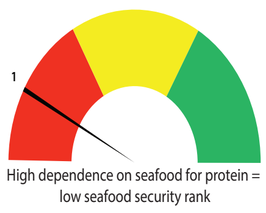
- Commercial landings alone satisfy only 57% of estimated seafood demand in 2012



On the scale of one calendar year, that would cover total seafood demand only through July

Hawaiians have high dependence on seafood for their total protein intake

- More than 50% of Hawaiian residents consume more than 20% of their protein from seafood



High dependence on seafood for protein = low seafood security rank

Such high dependence on seafood translates into a low seafood security because the local residents' major protein source is vulnerable

The gap between seafood demand and local wild fisheries production in Hawaii will continue to increase in the future

- By 2040, with the assumption that wild capture fisheries harvests are sustained in Hawaii, local seafood production is likely to satisfy less than 20% of the total local seafood demand
- On the scale of a calendar year, by 2040, local seafood production would be able to satisfy the needs only through mid-March