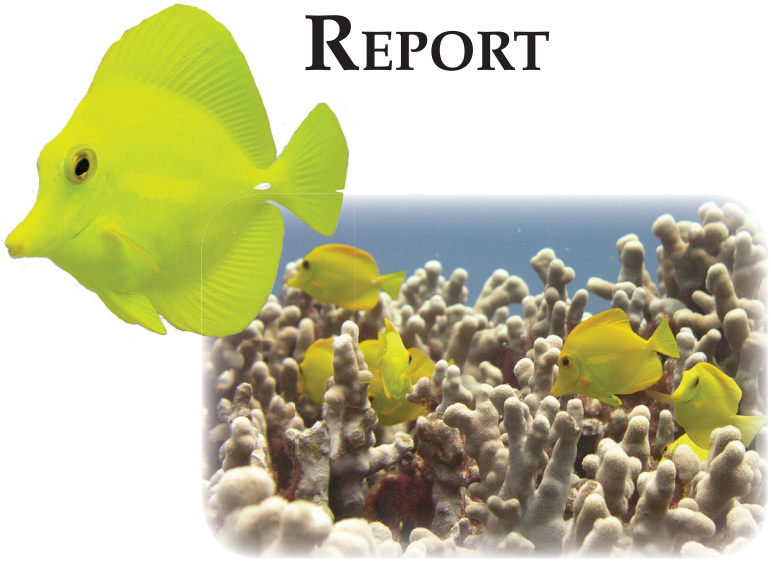
The West Hawai'i Fisheries Council Case Study Report



University of Hawai'i Sea Grant College Program

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Executive Summary

The West Hawai'i Fisheries Council (WHFC) is a community group on the island of Hawai'i that involves citizens in the management of local marine resources. The WHFC was formed in 1998 partly due to community concerns over the collecting of tropical reef fish for aquarium use. In tandem with the formation of the group was the passing of Act 306. The Act was an important piece of legislation that required substantive community involvement to achieve four main tasks: setting aside a minimum of 30 percent of the West Hawai'i coastal area where no aquarium fish collecting could take place, creating a day-use mooring system, establishing portions of existing Fisheries Replenishment Areas (FRAs) as no-take FRAs, and setting portions of FRAs where use of lay gill nets would be prohibited. The Act also gave the Department of Land and Natural Resources "expanded rule-making authority to separate incompatible uses," empowering the agency to address and solve conflicts relating to use of marine resources.

The WHFC brought together many of the local marine stakeholders, including tropical fish collectors, divers, recreational and commercial fishermen, boat operators, hoteliers and environmental groups. The WHFC now stands as an example of citizens actively engaged in a wide range of issues relating to the management of the local marine resources well beyond aquarium fish collecting.

The WHFC has fulfilled several tasks assigned by Act 306, including establishing nine Fish Replenishment Areas (covering 35.2 percent of the West Hawai'i coastline where no aquarium fish collecting can take place), and has set aside over 18 percent of the coast-line as no-lay gill net areas. In addition, the WHFC has taken up issues beyond the four original tasks assigned by Act 306, such as accommodating local user and cultural practices by providing for a limited sea urchin harvest within a protected area and created an active Youth Fisheries Council. WHFC has also recommended changes in the Fish Replenishment Area boundaries to address new user conflicts and banning spearfishing with SCUBA (currently under consideration by the governing agency).

The University of Hawai'i Sea Grant College Program (UH Sea Grant) has long been an engaged and active partner that has facilitated many of the success of the WHFC. UH Sea Grant has organized workshops, mediated agreements, and helped in the resolution of marine conflicts in the area for several decades.

UH Sea Grant also developed educational programs to engage the local community. Since 1993, ReefTalk, the monthly public education lectures series given by researchers, scientists and experts in various fields, has presented important marine issues to the community. ReefWatchers, a reef and shoreline monitoring program active since 1998, has provided monitoring protocol training and updates to volunteers.

There have been several enabling factors that have played a role in the WHFC's success, including a clear legislative mandate with specific goals, long-term community involvement and outreach efforts by UH Sea Grant, a full-time marine biologist assigned to the area and aware of both biological and social factors affecting resource use, and an active and knowledgeable community.

Table of Contents

University of Hawai'i Sea Grant College Program

The University of Hawai'i Sea Grant College Program (UH Sea Grant) supports an innovative program of research, education and extension services dedicated to achieving resilient coastal communities characterized by vibrant economies, social and cultural sustainability, and environmental soundness. UH Sea Grant is part of a national network of 32 university-based programs located in every coastal and Great Lakes state, Puerto Rico and Guam. As part of the prestigious School of Ocean and Earth Science and Technology, UH Sea Grant is in a unique position to link academia, federal, state and local government, industry, and private citizens. It has been involved in a wide range of ocean issues throughout the state of Hawai'i and the Pacific since its inception in 1968, while also partnering with Sea Grant programs throughout the nation on issues that are mirrored on a national and international scale.

UH Sea Grant addresses diverse topics vital to human and environmental health through five Centers of Excellence:

- **Center for Smart Building and Community Design**
- **Center of Excellence in Island Resiliency and Climate Policy**
- **Center of Excellence in Sustainable Aquaculture**
- **Center of Excellence in Sustainable Tourism**
- **Center of Excellence in Marine Education**

1.1 *Research, Outreach and Education*

UH Sea Grant funds research addressing the needs of Hawai'i's coastal communities via a competitive peer-refereed process. As scientists make new discoveries, the network of UH Sea Grant outreach professionals transfer this information to coastal communities to assist in decision-making.

UH Sea Grant has a long tradition of increasing environmental literacy through education. The award-winning Hanauma Bay Education Program was developed and is administered and conducted by UH Sea Grant. Over one million annual visitors to Hanauma Bay are educated on the value of marine resources and appropriate behavior, which reduces their environmental impact both within the marine protected area as well as other coastal areas that they may visit. In addition, to ensure the nation's next generation of environmental professionals, UH Sea Grant develops a wide variety of education programs for K-12, undergraduate and graduate students as well as spearheading a highly successful Graduate Trainee Program.

UH Sea Grant has also assisted in establishing and maintaining a dialog among local marine stakeholders since its inception 40 years ago. This report highlights the role UH Sea Grant has played in engaging individuals and organizations involved in all aspects related to aquarium fish collecting in the area of West Hawai'i, and the work of the West Hawai'i Fisheries Council (WHFC), a community group dedicated to the management of its local marine resources.

2 Sea Grant in West Hawai'i

The University of Hawai'i Sea Grant College Program efforts in West Hawai'i on the Big Island consist of a Coastal Resource Extension Agent and a part time assistant who have been working in the local community mainly in three areas:

- **Education & Outreach:** ReefTalk Lecture Series, ReefTeacher Project and Local Resource Councils
- **Environmental Monitoring:** ReefWatchers program
- **Co-Management of Marine Resources:** Supporting WHFC in the local marine ecosystem management

The sustained efforts of UH Sea Grant based in West Hawai'i have been instrumental in assisting and enabling local communities take an active role in managing their marine resources. The ReefTalk lecture series, centered on ocean issues, has been a monthly feature in the area for the past 15 years, and working towards increasing scientific

literacy of the local citizenry. The ReefWatchers program, implemented in 1999, has trained over 200 volunteers throughout the island, preparing them to be involved in environmental monitoring if they chose to monitor a site. UH Sea Grant has provided essential support for the work of the WHFC from its very beginning. UH Sea Grant has also helped establish the Local Resource Councils, assisting in the implementation and maintenance of a successful community-based management of the marine resources. In addition, UH Sea Grant has taken part, via facilitation of small group meetings, in Hawai'i County's initiative to have community members envision and plan smart growth in their neighborhoods, towns and cities. The next portions of the report present a detailed account of these three main efforts.

2.1 Education & Outreach: The ReefTalk Lecture Series

UH Sea Grant has conducted monthly talks related to marine issues in the West Hawai'i area since 1993. The venue for the talks alternates between Kona and Waimea, covering a large geographical section of West Hawai'i. Experts are invited to talk about a wide range of topics, including marine biology and ocean technology, policy and human impacts, fisheries and local cultural aspects of ocean use, among other issues. It is noteworthy that global warming and climate change were part of a ReefTalk lecture as early as 1996, and El Nino was a ReefTalk topic two years later. Via the ReefTalk venue, local audiences have been exposed to the work of the WHFC.

2.1.1 Topics

For the 10-plus year period from 1996 until mid-2007, there have been over 130 ReefTalk lectures. The majority of the topics (73 of them) have focused on the rich Hawaiian marine life and ecosystems: whales (particularly the humpback whale), dolphins, the Hawaiian monk seal, sea turtles and manta rays are perennial "charismatic mega-fauna" favorites in the ReefTalk lecture series. Marine life topics have also included coral reefs, alien species, and invertebrates. Human impacts and human ocean use have also been prominently featured, with 27 lectures dedicated to fisheries, overfishing, global warming and coastal development. Policy issues pertaining to ocean management have been covered regularly, with 16 ReefTalk presentations to date, including regular updates on local legislative initiatives relating to marine sanctuaries and protected areas, and the International Year of the Reef. Lectures on ocean technology, local organizations (other than WHFC) and other topics account for remaining lectures. A summary of ReefTalks by alignment with National Sea Grant Focus Areas as of 2007:

- Safe and Sustainable Seafood Supply: 8
- Sustainable Coastal Development: 11
- Healthy Coastal Ecosystems: 83
- Hazard Resiliency in Coastal Communities: 9

For a list of month-by-month ReefTalk topics and recorded attendance from 1996 through 2007, please refer to Appendix A.

2.1.2 Attendance

The ongoing ReefTalk lecture series attract an average attendance of almost 40 people per talk, with some lectures drawing over 100 people. During the 10-plus year period, the total recorded number of attendees is in excess of 4,800. The number of attendees is not available for a small number of lectures , but using the average recorded attendance for the rest of the lectures, the total attendance since 1996 is estimated to be over 5,000 (refer to Appendix A for the number breakdown per lecture). To further extend the reach of the ReefTalk lecture series, since the year 2000 most ReefTalks have been video recorded, edited and aired on the public television channel *Na Leo Hawai'i* 6-8 times per month. These airings extend the reach of the lecture series to approximately 4,000 more people per ReefTalk airing (approximately 288,000 - 384,000 viewers per year).

The ReefTalk lecture series has exposed a large number of residents of the West Hawai'i area to up-to-date, and often cutting-edge, research and information, aiming to increase the scientific literacy of the constituents that members of the WHFC represent. The aggregate effect of nearly 14 years of activity, beginning in 1993, has produced

a public that is knowledgeable about marine issues: guest speakers often commend the West Hawai'i audience for their engagement, remarking that the "hard" questions formulated by audience members tend to reflect awareness and understanding level not often matched at other venues in the state.

2.2 Local Resource Councils

A logistical problem arose as the WHFC worked its way through the aquarium fish collecting issue via a community involvement approach mandated by Act 306 during the first two years of existence. Locating and alternating meeting venues to accommodate members from communities up to fifty miles to the northern and southern extremes of the West Hawai'i Regional Fishery Management Area (WHRFMA) became confusing to the membership and public wishing to attend. In order to hold true to the notion of broad geographical stakeholder representation on the Council, Sara Peck, UH Sea Grant Coastal Resource Extension Agent, requested and received permission from the Council to establish outreach meetings to communicate the WHFC work and gather input from the more isolated communities. This outreach effort has produced unintended but very useful outcomes.

The work of exciting interest among residents of a community to attend marine resource management meetings turned out to be a challenge. Island residents' attitudes reflected their skepticism towards outside ocean resource management initiatives, as many felt that their input had not been heeded in the past. Peck, the UH Sea Grant agent and liaison, adopted a community approach strategy to present information emanating a sense of "now or never" urgency.

The result has been the formation of two Local Resource Councils (LRCs), Miloli'i and Kawaihae, whose input made the work of the WHFC more locally relevant and representative of the larger West Hawai'i community. For additional information about the creation of these two councils, please see Appendix C.

2.3 Monitoring Efforts: ReefWatcher West Hawai'i

The ReefWatcher program is part of a larger project (closely related to Makai Watch), aimed at involving communities in the systematic monitoring of their local marine resources. Volunteers (either SCUBA divers or snorkelers) are trained to identify and conduct regular surveys of marine species in particular areas. Volunteers record abundance per species, as well as location, time and ocean conditions of each survey.

UH Sea Grant started the ReefWatchers West Hawai'i in 1998 with a collecting protocol (developed with the Hawai'i Division of Aquatic Resources [DAR]) that was quickly deemed too stringent for volunteers. With volunteer input, UH Sea Grant and DAR Kona modified this protocol to make it easier to use, and tailored it to gather more locally relevant data. The protocol currently in use includes species deemed to be key indicators of reef health, alongside with species often targeted by aquarium fish collectors (tangs and butterfly fishes), introduced species (bluestripe snapper, peacock grouper), endemic species (such as cleaner wrasse), as well as representatives of main feeding guilds. ReefWatcher West Hawai'i adopted its current survey protocol in 1999.

Once volunteers have been found for a specific geographic area, the agent conducts one or more half-day training sessions in the use of the protocol. After volunteers become acquainted with each observation area and achieve a confidence level in the identification of species (checked for accuracy by UH Sea Grant staff), they collect data on a regular basis and submit it to the UH Sea Grant office. The office staff enters the raw data into the database and archives the original data reports. The office staff and volunteers have selected 33 sites around the island, with training having taken place at many of these locations. Eight sites have conducted ReefWatchers surveys for one to seven years.

The state's DAR scientists conduct fish census in other areas in the island of Hawai'i with no overlap with the ReefWatchers sites – so

ReefWatchers offer valuable regular monitoring of additional sites not covered by the state, including intertidal sites. Until the DAR settled upon a state-wide database program, ReefWatcher data was simply entered onto a spreadsheet. In February 2005, DAR adopted the DAR Kona office data entry format state-wide, and UH Sea Grant adopted the same format in March of 2006. The ReefWatcher survey data is regularly shared with the DAR Kona office.

The value of having the community involved in citizen science extends well beyond the collection of data: by engaging in collective monitoring of the local environment, participants become aware of the status and variation of marine resources. Volunteers become proprietary about their study areas and have often taken on the role of caretakers of their ecosystems. After participating in the ReefWatcher program, several volunteers have subsequently become involved in the WHFC as members.

2.4 UH Sea Grant Support of the West Hawai'i Fisheries Council

The UH Sea Grant office based in West Hawai'i has been closely involved with community-based management of the marine resources in West Hawai'i since the mid-90's. UH Sea Grant has helped the WHFC in five main areas: with meeting facilitation during the early stages of the WHFC, note-taking of the meeting minutes, grant-writing to fund the operations of the WHFC, outreach and member recruitment to ensure a balanced council composition and wide community participation, and finally by providing continued informational support to help during decision-making.

UH Sea Grant actively works to provide regular informational materials for the WHFC. Sea Grant staff helps put together background information and bring speakers who are expert on issues topical for the WHFC, ensuring equal exposure to marine issues and that all members have the same basic information on a particular subject, a starting point for constructive dialog.

The agent supported the group by facilitating the early (and often contentious) meetings, and providing models for the exchange of ideas and conflict resolution. From 1998 until 2002, the agent also produced meeting notes and minutes, and distributed meeting agendas set by the WHFC's Executive Committee. More recently, UH Sea Grant has helped mediate new disputes among stakeholders regarding marine resources - the Friends of Pebble Beach group credits the work of the agent for mobilizing available resources towards the resolution of the user conflict in their local community.

Although WHFC members serve on a voluntary basis, the council as an organization requires financial support to function optimally, and UH Sea Grant has assisted in the writing and submission of grants. With the help of UH Sea Grant, the WHFC obtained small grants totaling approximately $20,000 over nine years from the National Fish and Wildlife Foundation, the Coastal Zone Management Program, the Harold K. L. Castle Foundation, the Hawai'i Community Foundation, the Malama Kai Foundation and UH Sea Grant. The current administrative office assistant serving the WHFC is a part-time position funded by one of these grants. Additionally, in 2001 UH Sea Grant drafted and submitted a grant proposal to the Castle Foundation to fund a half-time office assistant position to help with the volume of work generated by the WHFC, ReefWatcher, ReefTalk, ReefTeacher and other programs. Since 2005, The Harold K.L. Castle Foundation, UH Sea Grant and other funds have supported a contracted WHFC coordinator/ administrator position.

The Council's strength comes from its ability to be representative and have the support of the larger West Hawai'i community. UH Sea Grant has helped to make the work and role of the WHFC known, striving to ensure that all sectors of the community, and native Hawaiian communities located far from the Kona area in particular, are well-represented and their concerns not overlooked. In collaboration with the Community

Conservation Network, the Nature Conservancy and Queen Lili'uokalani Children's Trust, UH Sea Grant encourages open communication between the WHFC and the community with ongoing marine resource education, outreach and recruitment efforts.

While Act 306 set up the goal of a minimum of 30 percent of the coastline to be set aside, it left it up to the WHFC, working alongside stakeholders, to designate the specific portions to be protected. DAR and UH Sea Grant worked together to assist the WHFC in fulfilling this task. Before the start of the area selection process for the Fish Replenishment Areas (FRAs), council members were given information on marine protected areas, community-based resource management, and scientific studies on local marine ecosystems, species and aquarium fish collecting in general. The WHFC then took into account minimum effective reserve sizes, locations, ease of monitoring and enforcement, and how each FRA would affect the user conflict it was trying to address. This process is detailed later in the report in chapter 6.

The next report section presents a historical overview of the role of UH Sea Grant in starting and sustaining dialog among stakeholders in the West Hawai'i area.

2.5 UH Sea Grant & Stakeholder Dialog

Stakeholder conflicts regarding aquarium fish collecting and concerns over sustainability and the effects of the fishery in the rest of the marine ecosystem have been present from early days. UH Sea Grant, working in tandem with DAR in West Hawai'i, has been involved in creating a dialog among agencies, business and individuals as far back as the late 1970's. Four major stakeholder-centered events relating to aquarium fish collecting are presented in this report: a **Kona Conference** (1978), the **1987 Gentlemen's Agreement,** the **Reef Fish Working Group** in 1996, and the creation of the **WHFC** (1998).

In 1978, UH Sea Grant was among the organizers of a conference in Kona, Hawai'i, on tropical fish (UH Sea Grant also produced and distributed several printed editions of the conference proceedings). This Kona conference, the first of its kind in the state, brought together many users related to aquarium fish collecting: boat captains, tropical fish shop owners, researchers and fish collectors. Several organizations and institutes were also represented: the Bishop Museum, Oceanic Institute, DAR, and Zoology professors from the University of Hawai'i. The conference explored all angles relating to fish collecting: tropical reef fish management, the role of marine reserves, fish collecting itself and its effect on the rest of the ecosystem, aquaculture of tropical reef fish, and the regulatory structure of fish collecting in the state (UH Sea Grant, 1978).

Some of the people involved in this conference were active players in other related efforts: Dr. Ernst Reese (who presented on the social behavior of butterfly fishes), was a key figure in helping set up Hanauma Bay as an Marine Life Conservation District. Dr. John Randall has played an advisory role to the WHFC, and Dr. William Walsh, then representing the Reef Fish Research Foundation, is now directly involved with the work of the Council as DAR's marine biologist for the West Hawai'i area.

The issues and problems, however, continued despite these early conversations. In the late 1980's, the aquarium fish collecting catch was undergoing substantial growth in the island of Hawai'i (see Figure 1). With the user conflicts still unsolved a decade after the Kona conference, there were "boiling controversies" in West Hawai'i, with a strong advocacy for protection and concerns about resource depletion clashing with the growing aquarium trade (Tarnas, 2007). DAR and the general public interpreted the discord as a conflict between the dive/snorkel commercial operators and the aquarium fish collectors. UH Sea Grant and DAR helped draft an informal, and short-lived, Gentleman's Agreement in 1987 between collectors and dive operators (Walsh, 1999).

The agreement did not produce lasting changes in the dynamics of fish collecting, which continued growing unabated. In the mid-1990's, the aquarium fish collecting fisheries were undergoing a second stage of significant growth in West Hawai'i (Figure 1), and without any meaningful changes in the regulation of the industry or protection of the resources.

With the failure of the agreement, UH Sea Grant, again working together with DAR and under the mandate of legislative resolution, brought together many individuals to form the West Hawai'i Reef Fish Working Group in 1996, providing a forum for dialog and extending the stakeholders involved beyond collectors and commercial dive/snorkel operators. The working group formulated a number of resolutions and represented the first structured exchange among stakeholders, but did not succeed in achieving lasting agreements and ultimately dissolved a year later.

Controversy over marine resource use continued to spread throughout the West Hawai'i community, surfacing as a conflict between collectors and an expanded set of stakeholders including the native Hawaiian community, businesses, recreational ocean users and fishers.

With the state's recognition of both the problem present and multiplicity of stakeholders involved, the 1998 legislature introduced a bill on behalf of the West Hawaii community to limit the areas where aquarium fish could be collected. The bill was passed and adopted as Act 306, which gave a legislative mandate to designate no-collecting areas with significant input from an array of stakeholders. UH Sea Grant and DAR assisted these local stakeholders in creating and sustaining the WHFC as a successor of the defunct Working Group, in 1998, as a lasting forum for stakeholder dialog. It is noteworthy that the four major stakeholder events relating to aquarium fish collecting (1978, 1987, 1996, and 1998) occurred during or after increased catch in fisheries, the first one the increase taking place in the island of O'ahu, and the last three, in the island of Hawai'i (Figure 1).

To this day, UH Sea Grant continues early efforts to establish and maintain a dialog among marine stakeholders in the West Hawai'i area, primarily via the WHFC, assisting them in the management of their ocean resources.

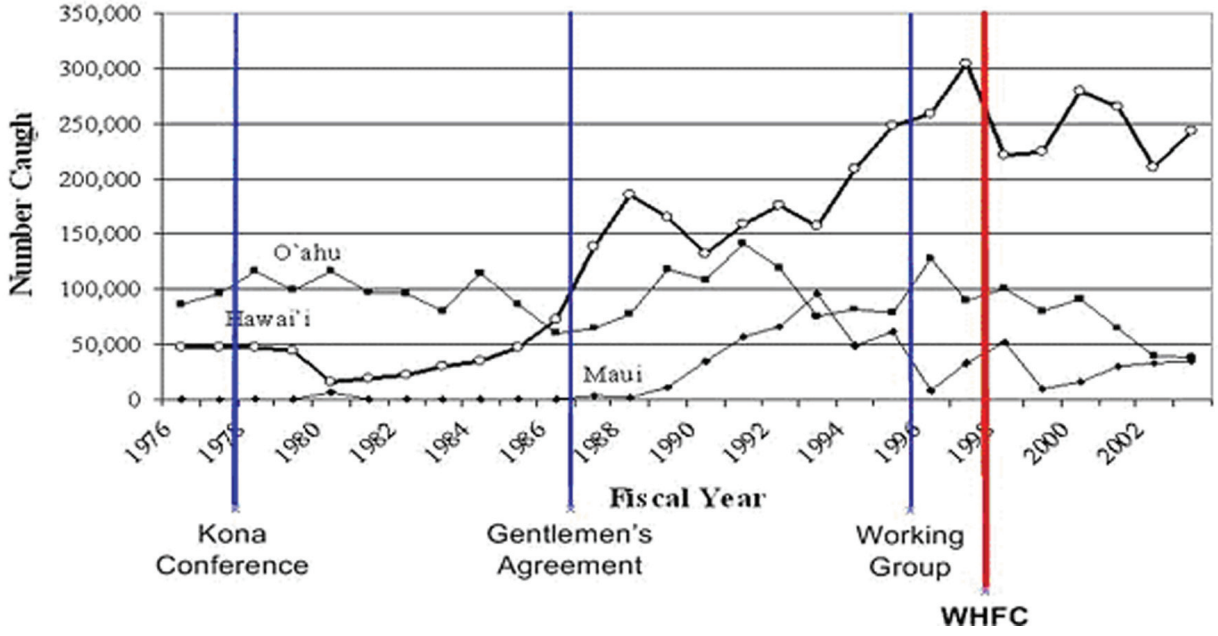


Figure 1 – Aquarium Fish Caught & Stakeholder Group Events (Adapted from Walsh et. al., 2003)

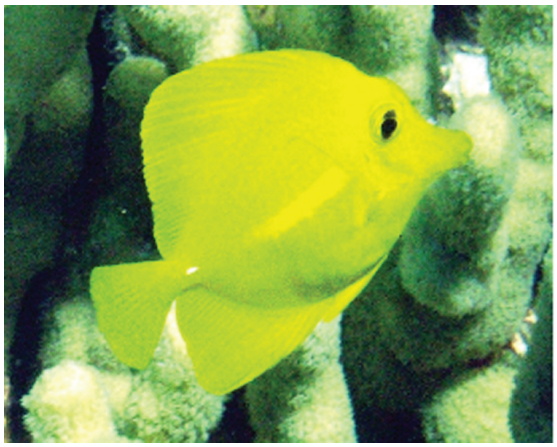
3 Aquarium Fish Collecting & Stakeholders

Aquarium fish collecting is a large and mostly tropical fishery, supplying a growing number of private aquarium owners worldwide (Wood, 2001). Most of the tropical reef fish collected in the U.S. for aquaria originates from Hawai'i, as part of a commercial activity that started increasing significantly in the early 1970's. Compared to other commercial fisheries, aquarium fish collecting in Hawai'i has been one of the last ones to be regulated in the state, being free of any regulation during its early years.

Licenses to use fine mesh nets and collect aquarium fish were established in 1953 (later than commercial licenses were required for other fisheries). As part of the licensing agreement, collectors must file monthly catch reports with the state. These catch reports are often the only available information regarding the fishery, and the basis of the related management decisions, but they are believed to significantly under-represent the number of fish actually collected (Walsh et. al., 2003).

Reef fish suitable for aquaria have not escaped the general downward trend observed in many marine species targeted for commercial purposes. During the early years of aquarium fish collecting, and up until the mid-1980's, the largest portion of all the collecting activities was taking place in O'ahu, also home to the largest number of collecting permits. During the mid-1970's until the mid-1980's, the yearly average for O'ahu hovered around 100,000 fish reportedly caught (with significant year-to-year variance), more than twice that of the island of Hawai'i (known locally as the Big Island). But fish catch in O'ahu started declining in the early 1990's, and, at under 50,000 fish per year, now accounts for less than a quarter of the reported catch for Big Island (Walsh et. al., 2003).

In 1986, the annual catch off the coast of Hawai'i exceeded for the first time that of O'ahu. While there is a large number of species collected in the state of Hawai'i, the top 10 of collected species represented close to three quarters of all catch. The Yellow Tang (*Zebrasoma flavescens*), has been the most collected of these aquarium reef fish. It remains West Hawai'i's most abundantly exported live fish, with a reported annual catch close to a quarter of a million specimens (Walsh et. al., 2003).



Yellow Tang *(Zebrasoma flavescens)*

For the past three decades, West Hawai'i has been the center of aquarium fish collecting in the state, and where the most significant efforts to regulate the industry have taken place. The next report section highlights the efforts of the first group organized to address the issue of aquarium fish collecting by involving the local community in a systematic way.

3.1 West Hawai'i Reef Fish Working Group

With aquarium fish collecting catching a record number of specimens in the mid-1990's, community interest and concern about the sustainability of the fishery were high. In October of 1995, as a result of growing alarm among West Hawai'i businesses and residents about marine resource depletion, community groups organized a facilitated town meeting in Kona, Hawai'i, inviting resource managers, scientists, and collectors, and attended by over 230 people (a large attendance by local agency standards). The strong community participation and tenor of this meeting drew the attention of media, state marine resource managers and legislators. In May 1996,

Hawai'i House Resolution H.C.R.184 passed, stipulating the formation of a working group to assist the resolution of user conflicts.

The West Hawai'i Reef Fish Working Group (Working Group) represented the first attempt at sustained stakeholder engagement relating to the aquarium fish collecting in the state of Hawai'i. Unlike the 1987 Gentlemen's Agreement, in which stakeholder interaction was limited to a few group meetings, the working group held nine meetings over a 15-month period beginning May 1996 and ending September 1997. The group consisted of fish collectors, members of the native Hawaiian community, recreational SCUBA divers, fishers, resort operators, and other users, with over 70 people participating in the professionally-facilitated process. State agencies and other organizations assisted the decision-making process by providing representatives from Australia's Great Barrier Reef Authority, the universities of Montana and Washington, local fisheries experts, DAR and UH Sea Grant (Walsh, 1999).

The Working Group developed a list of recommendations, including some that required new legislation, and others that required amendments to existing rules. Different bills suggested by the Working Group were introduced in the legislation, seeking to establish a new commercial aquarium permit, a moratorium on new permits, increased fines for non-compliance and a limited entry permit system. But there was little political and agency support for most of these recommendations, and all of the introduced bills died during subsequent legislative sessions. Of the rule amendment recommendations, establishing dealer licenses and increasing of commercial license fees were among the few recommendations adopted, but the status quo was more or less maintained.

Faced with a lack of political will, half-hearted governmental support for a new legislation, and combined opposition by fishers and collectors, the Working Group disbanded in September of 1997. The ongoing conflicts continued to brew and grow. Some lessons, however, were learned from the Working Group's failure. DAR and UH Sea Grant staff learned in more detail the dynamics of the aquarium fish industry and the steps needed to have diametrically opposed ocean users meet in a productive forum. The crucial role played by education became evident: a functioning group must have, at the very least, a common information base covering all sides of the issues it tackles. Also, the information given to involved stakeholders needs to be consistent and should be provided to all stakeholders at the same time and early in the decision-making process to diminish the chances of misinformation taking hold. But even these measures, of course, cannot be considered failsafe because how information is interpreted varies across individuals and groups.

3.2 Act 306

Political will to affect how marine resources are used began to take form in the 1997-98 legislative sessions as a result of strong pressure on individual legislators from large numbers of constituents in West Hawai'i. The lack of meaningful legislation had led to the formation of a community group called the LOST FISH Coalition (*Leave Our Shallow Tropical Fish In their Sea Habitat*). The coalition gained broad-based support from many sectors of the community including teachers, professionals, business owners, homeowners, and local families. Partly as a result of the active lobbying and mobilization of the community led by the LOST FISH Coalition, the Hawai'i State Legislature passed Act 306 on July 13, 1998, with the broad goals of managing fisheries effectively, ensuring sustainability,
minimizing user conflict, and also enhancing near shore marine resources.

The drafting and passing of Act 306 did not occur in a legislative vacuum: it represented a balancing act between clashing sides previously mired in a stalemate. Each key provision in the Act was the product of intensive interactions and intensive lobbying of stakeholders and lawmakers from various sides, each giving concessions from their earlier, and more absolute, stances. One fish

collector described the negotiation process by noting: *"I was with the working group and working with [legislator] Dave Tarnas to get Act 306 … to come up with a good bill that wouldn't destroy us completely. A compromise bill, if you will"* (interview notes).

The Act recognized that regional ocean management is a valuable tool, and acknowledged that West Hawai'i lacked an integrated regional management plan. Citing "localized resource depletions," the Act established the West Hawai'i Regional Fishery Management Area (WHRFMA) that encompassed all of the Western shoreline of the island of Hawai'i (with the exception of the commercial harbor at Kawaihae).

By establishing the entire Western coast of the island as a management area, the Act empowered the Hawai'i Department of Land and Natural Resources (DLNR) with "expanded rule making authority to separate incompatible uses," enabling the agency to designate specific areas with any particular set of protections without needing a case-by-case approval from the legislation. In lieu of a list of places where activities would be restricted, the Act outlined seven general purposes of the WHRFMA:

1. To ensure sustainability of the state's nearshore ocean resources
2. To identify areas with resource and use conflicts
3. To provide management plans as well as implementing regulations for minimizing user conflicts and resource depletion
4. To establish a day-use mooring buoy system
5. To identify areas and resources of statewide significance for protection
6. To carry out scientific research and monitoring, and
7. To provide for substantive involvement of the community in resource management decisions for this area through facilitated dialogues with community residents and resource users.

To accomplish the seven purposes for the fisheries management area, Act 306 outlined specific tasks that the management plan needed to address. The act tasked the DLNR to:

1. Establish a minimum of 30 percent of the West Hawai'i coastal area as FRAs where no aquarium fish collecting could take place
2. Establish a day-use mooring system, and designate areas where no anchoring would be allowed
3. Establish a portion of the FRAs as no-take of reef-dwelling fish
4. Set areas within the FRAs where gill net use would be prohibited
5. Review the effectiveness of the WHRFMA at five year intervals

The Act's requirement for "substantive" community input before management decisions can be taken to achieve the goals has been described as "revolutionary." It required, explicitly and for the first time, that the state agency regulating ocean use go beyond the standard public hearings which often occur late in the rule-writing process, and engage in active and ongoing consultation with its constituents.

Whereas the earlier Working Group had failed in part due to ambiguous legislation that reflected a weak political will to affect the status quo of deeply entrenched interests, Act 306 gave the managing agency a clear set of goals. It also vested the agency with expanded authority to carry out these goals and with the mandate to include the community, creating the necessary conditions for the emergence of the WHFC. These elements of the Act are seen as being key factors to the success of the WHFC. A council member explained that the Act delineated *"some very specific things that we're required to do"* (interview notes).

4 West Hawai'i Fisheries Council (WHFC)

After the West Hawai'i Reef Fish Working Group dissipated, most of the user conflicts were still unresolved. The WHFC (originally called the West Hawai'i Fishery Management Council, underline added), first convened on June 16, 1998, to solve many of the same issues. The WHFC was the second attempt by the local community to address, in the form of a group, the growing number of ocean user conflicts in the area. WHFC, however, started with the added impetus of a clearly delineated list of goals, a concrete and ambitious timeline, and the maturity that came from earlier failures.

The Act tasked DAR to carry out its mandates with substantial community involvement. The WHFC was created as the forum that would provide this necessary input to the state on marine issues. The mission statement of the WHFC reflects this role, as well as the larger sustainability goals embedded within Act 306. The mission statement of the WHFC:

"To effectively manage fishery activities to ensure sustainability; enhance nearshore resources; develop and implement management plans for minimizing resource depletion and conflicts of use; per legislative mandate to the Department of Land and Natural Resources to provide for substantive involvement of the community in resource management decisions; and encourage scientific research and monitoring of the nearshore resources and environment from Upolu Point to Ka Lae."

Concerns about the sustainability of aquarium fish collecting were the catalyst for community action that resulted in the eventual creation of the WHFC. The WHFC quickly grew beyond its initial role to become a venue for indirect but structured community-based management beyond this particular fishery, and now covers sustainable and fair use of ocean resources in general.

4.1 Council Operation

The WHFC has adopted the following values to guide its actions and describe its operating philosophy:

- Proactive and precautionary as stewards of the resources
- Representative of all key constituencies
- Collaborative and conflict resolving inviting of all points of view
- Work hard to look at all sides
- Just, Firm, Pono (true, righteous, just, beauty, harmony)
- Accountable, self-scrutinizing
- Efficient, committed to definitive results and follow-through
- Humble, tolerant, forgiving, thankful, grateful

The above values are to assist the WHFC remain as neutral as possible on the many issues it addressed. The next report section describes the process of selecting council members.

4.1.1 Council Members

From its inception, the WHFC was conceived as representative of the larger West Hawai'i community, in order to allow its voice to stand as the input of the area to the government. It consists of 25 voting members who represent the broad spectrum of community interests, chosen by geographical area, user group and interests. Although members are interviewed and chosen by the WHFC, the expectations are that chosen members represent their constituency, serving as a link to their respective groups, and act as agents in the exchange of information between their stakeholders and lawmakers. Council members serve on a voluntary basis, receiving no monetary compensation for the often considerable amount of work that they perform. The WHFC itself is not supported by state or county funding, thus ensuring complete autonomy, financial or otherwise, from the government.

While knowledge of the Hawaiian marine environment and ability to serve as community liaison are important factors taken into account

for the selection of council members, they are not the only one. Early voting members represented aquarium fish collectors and an aquarium shop owner, commercial dive tour operators, commercial and recreational fishermen, recreational divers, hoteliers and a representative of the local grass roots environmental organization LOST FISH Coalition. This early selection of members was done by UH Sea Grant and DAR Kona by doing a stakeholder analysis to map out and include major stakeholder groups and to assist in charting the long-term strategic goals of the WHFC, and this diverse composition of the council has been more or less maintained.

These set of criteria helped ensure that not one single group or segment could overpower the WHFC (a majority vote requires at least three different stakeholder groups), and helped to create a more objective member selection process that can withstand scrutiny and challenges, as has happened in the past. (See Appendix C for the full member selection process and criteria.) In addition to voting members, the WHFC also has several non-voting members representing supporting agencies and groups.

Non-voting members responsible for guiding the WHFC have continued to work to ensure involvement of the native Hawaiian community (representing 40 percent of the council at its inception) and other community members who at times have felt alienated from the mainstream political process. To invite Hawaiian and other local participation, council meeting procedures quickly evolved from the Robert's Rules of Order model. The parliamentary procedures established by Robert's Rules of Order were modified, and not adhered to strictly, to accommodate a consensus model more attuned to traditional forms of mediation in Hawai'i. Also as part of an effort for cultural inclusion, all council meetings start with a Hawaiian chant asking permission to start the work and invoking blessings.

4.1.2 Committees of the Council

The Council is a committee-driven body, and members are expected to participate in one or more committees. The majority of the council's work is done at this committee (or sub-committee) level, chaired by an appointed council member, and which meet regularly and report their work and progress to the general group. All committees have engaged in fact-finding research related to specific issues before issuing recommendations to the WHFC. The council committees are:

Government Affairs Committee: Originally called the Legislative Affairs Committee, the committee surveys the legislative environment and reports back to the WHFC on current and upcoming bills, rules changes and acts that relate to the council work. It provides a monthly summary of policy activity relating to marine issues in general to the rest of the WHFC.

User Conflict Committee: Addresses conflicts among marine stakeholders in the area. This committee often acts as mediator and enabler of dialog between users.

Aquaculture Committee: Looks at the impact of existing and proposed aquaculture activity in the coastal area.

Traditional and Cultural Committee: Deals with issues involving local Hawaiian culture and traditions, ensuring these are respected and observed by the council's activities.

Membership Committee: Works to find members and alternates to the WHFC, trying to achieve representation of the larger community and diversity within the WHFC itself.

Youth Local Resource Committee: Works to engage school-age children in marine issues. It has formed the West Hawai'i Fisheries Youth Council, where children and teenagers have worked with the local legislature on environmental bills.

Emerging Issues Committee: Works to address issues that come up to the WHFC but fall outside the other committees' realm. It is made up of the following subcommittees:

Limited Entry Subcommittee: Works closely with aquarium collectors and government representatives to draft rules for the state to initiate a limited entry aquarium fishery for West Hawai'i.

Species of Special Concern Subcommittee: Looks at the species that might need additional

protection due to any threats (not only aquarium collecting).

Marlin Subcommittee: The Council's first foray beyond near-shore issues, this subcommittee looks at the impact that sports fishing has on the off-shore marlin species.

Spearfishing Subcommittee: Works to issue recommendations regarding spearfishing in the area, including possible area and equipment restriction.

The WHFC also has an Executive Committee that creates the meeting agenda, sets the meeting, and reviews and strengthens the work of the other council committees.

4.1.3 Council Meetings

The Council meets monthly, with meetings lasting about two hours. Each voting member is required to attend, or to have an alternate (proxy) present. In addition to the regular members, meetings are also regularly attended by the DAR Kona and UH Sea Grant staff. Also present are members of the local media, Non-government Organizations (NGOs), university students and the local community, often outnumbering the council members themselves at the meetings.

Each council meeting normally features a guest speaker presenting on ocean issues related to ongoing council work. The aim with these presentations is to have each meeting also serve an informative role, building up a common knowledge base among council members that facilitates their work and interactions. In an attitude assessment conducted within the WHFC in 2005, it was found that members support the structure by which the body deliberates, and find the information provided by the speakers to be valuable and useful in their work (McLees, 2005).

4.1.4 WHFC Conflict Resolution Model

Per design, the WHFC is made up of diverse interests and communities, some of which are at odds with each other. The WHFC has adopted the ACBD conflict resolution model to address and solve differences in conflicting ocean user needs, and is used during the general meetings as well as during the committee work.

Council ACBD Conflict Resolution Model:

A. **Air** all viewpoints
B. **Clarify** the problem/issue; reframe the problem.
C. **Brainstorm** solutions; involve everyone.
D. **Determine** the best/wisest solution; blend solutions; determine what will and will not work.

Variations of this resolution model have been used at different meetings, including the use of visual expression of ideas onto artifacts (such as area maps to delineate proposed protected areas per stakeholder group) and dividing the airing of issues to one side per meeting session, avoiding a point-counterpoint argumentation that might interfere with dialog.

4.2 The WHFC and the Legislature

The WHFC is not a rule-making body, but rather serves to inform the state's DAR about the community's position on issues and rules. It should be noted that Act 306 did not establish the WHFC itself nor gave it recognition as an official entity. But the Act did set forth far-reaching goals for the management of the marine resources in West Hawai'i, and required the DLNR, through DAR, to have significant community involvement in achieving them. The WHFC, with its representative nature, is seen by lawmakers as the conduit of community input that satisfies the prerequisite for community input established by the Act before rules and regulations can be enacted.

Legislators and division directors have regularly come to the council general meetings for two-way informational exchanges. State legislators have appeared in different occasions before the WHFC to report on marine-related bills, requesting council input and/or support on upcoming legislation. Representative Cindy Evans noted that legislators are "change agents" that champion citizen's ideas, and the WHFC can serve as a think tank to help create effective legislation.

In 2004, the DAR compiled a report to the Hawai'i legislature on the effectiveness of the FRAs established by Act 206. Before presenting its summary of findings, the report highlighted the contributions of the WHFC to the work of the agency by noting that, although not established by statute, *"the West Hawai'i community's formation of the WHFC has been, and continues to be, invaluable and instrumental in achieving the objectives of Act 306, SLH 1998. The WHFC appears to be a model system for the resolution of issues surrounding reef fisheries resources"* (DAR, 2004, p. 2).

The presence and close involvement of DAR Kona staff, The Division of Conservation and Resource Enforcement (DOCARE) and the Division of Boating and Recreation (DOBOR) with the WHFC has also provided a constant communication channel between the agency and grass roots organization. Taken together with Act's requirements, the WHFC exerts considerable "soft power" to influence the rule-making process.

4.3 *Timeline of WHFC Work*

The visual timeline on this page presents some of the major events relating to the work of the WHFC.

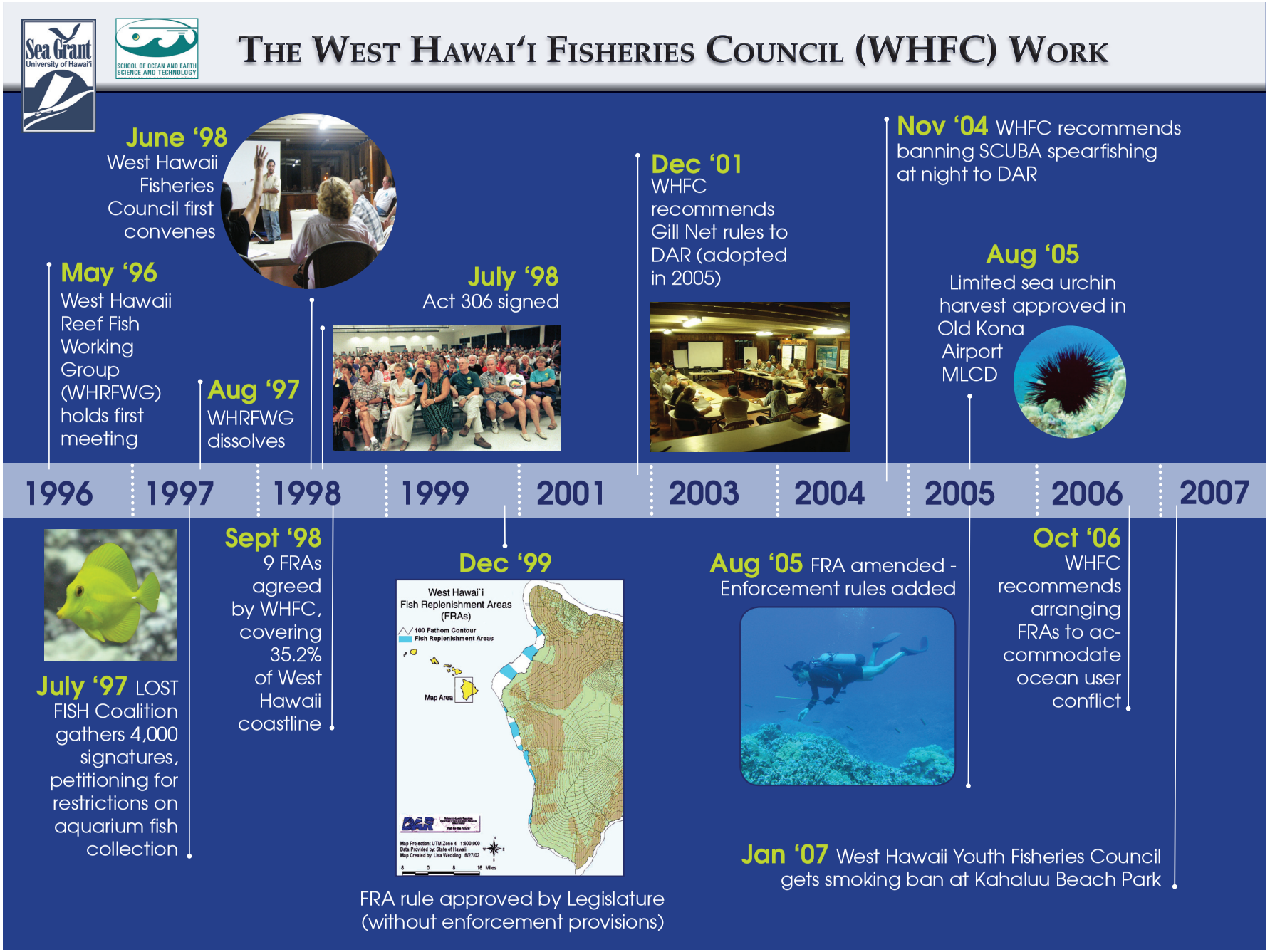


Figure 2 - Visual Timeline of the WHFC work

5 WHFC Accomplishments

Volunteer council members have accomplished most of the tasks outlined by Act 306, together with deliberation on five additional conflict issues. Some issues, such as the FRA establishment, gill net use and limited sea urchin harvest, have already been codified by the legislature; others are in the recommendation stage while state agencies work in the drafting of rules, including FRA boundary changes and SCUBA spearfishing.

UH Sea Grant and DAR have worked together to support the WHFC achieve all of the goals and accomplishments. Summary of main accomplishments of the WHFC to date:

1. **Establishment of FRAs:** Set up nine FRAs covering over one third of the West Hawai'i coast.
2. **Sea Urchin Limited Harvest:** the WHFC developed a management plan that allows for the sustainable harvest of wana (long-spine/black sea urchin).
3. **The West Hawai'i Youth Fisheries Council:** An outreach component of the WHFC, the youth council led a successful effort to ban smoking in a local beach area.
4. **Gill Net Rules**: Crafted a set of recommendations limiting the use of gill nets, which were submitted and approved by the DAR.
5. **SCUBA Spear Fishing Recommendations:** The WHFC set forth a set of recommendations, currently under review by DNLR, to ban SCUBA spear fishing in West Hawai'i.
6. **Day-Use Mooring Buoys:** In collaboration with Malama Kai, the WHFC is working to educate and create community support for setting up buoys.
7. **Pebble Beach User Conflict:** The WHFC drafted recommendations addressing the conflict between collectors and a local community, creating a new FRA by the Pebble Beach area and opening up a portion of another FRA (by a non-residential area) to collecting. Currently submitted to DAR and currently under review.
8. **Informal Council Involvement:** the WHFC has helped mediate between a community group and a live aboard dive operator, to ensure minimal disruption to the endangered Hawksbill sea turtle nesting and hatching.

These council accomplishments can be divided into three categories: **1) Regulation Accomplishments** (council recommendations which have been made into rules) **2) Recommendations to DAR** (in the process of rule-making), **3) Ongoing Issues** (issues which have been addressed by the WHFC, some of which have produced temporary arrangements, but are still in the developing stage). Each type of accomplishment is documented in more detail in the next sections.

5.1 Regulation Accomplishments

Establishing Fish Replenishment Areas: The first significant piece of WHFC work was the creation of a network of nine FRAs which prohibited aquarium fishing and fish feeding. After nine months of deliberation, 35.2 percent of the West Hawai'i coastline was designated as FRAs (refer to report section *"FRA Establishment Process"* for more detailed information). This precedent-setting action has caught the attention of other Hawaiian island communities. Maui in particular has begun the process to create a similar FRA network. Since 1999 the FRAs and control sites have been monitored regularly by DAR with a rigorous protocol, and there has been a marked increased within the FRAs in the number of the top fish species targeted by collectors. Once the FRAs were established, the WHFC recommended enforcement provisions to properly protect these areas. These recommendations were subsequently incorporated in the Hawai'i State Revised Statutes.

Sea Urchin Limited Harvest: Makae'o, the Old Kona Airport Marine Life Conservation District (MLCD), is a protected area that predates the WHFC in which all extractive activities were originally excluded from taking place within the reserve. Its physical characteristics (a large and shallow reef area) normally allows for easy hand collection of sea urchins, species

traditionally harvested and valued by the Hawaiian community. At the request of kupuna (Hawaiian elders), the WHFC developed a management strategy to provide limited harvest of wana (a type of sea urchin) within this MLCD. To monitor the wana population, UH Sea Grant collaborates with high school students from the West Hawai'i Explorations Academy to conduct regular monitoring. The WHFC established a Kupuna Advisory Group to assist in the monitoring and empowered the group to stop the harvest if deemed necessary to replenish the sea urchin population.

Smoking Ban at Kahalu'u Beach Park: The WHFC established a Youth Council as an outreach initiative, inviting middle and high school students to deliberate council issues or define their own issues. Peck assisted the Youth Council in defining an issue: the toxic effect of nicotine on invertebrates as related to public beaches. The science fair project by a local student (and a Youth Council member) on this topic won state awards. Using this research and scientific literature searches to support their plan, students distributed a petition to ban smoking at Kahalu'u Beach Park in West Hawai'i. With the help of Councilwoman Virginia Isbell, they wrote a resolution, testified six times in support of the resolution and subsequent ordinance, which was passed by the Hawai'i County Council in early 2007. Kahalu'u Beach Park is now only the second no-smoking beach in the state. Thirteen 7th and 8th grade students testified at every level and were present at the signing by the Hawai'i County Mayor. As recognition for all their work, the youth group received the Hui Laulima award for outstanding community service in June 2007, and a member of the Youth Council was selected as "Youth Advocate of the Year" by the state's Coalition for a Tobacco-Free Hawai'i in October 2007.

Gill Net Rules: To satisfy the third task of Act 306, the WHFC developed a set of gill net rule recommendations (which were subsequently adopted as rules by DAR) focusing on limiting impacts of lay gill netting while providing for subsistence netting. Council members and constituents supported this rule through the public hearings process and the Small Business Regulation Review. Several gill net refuges have been established within existing protected areas (adding 18.2 percent of the West Hawai'i coastline as no gill net areas, on top of the existing 6.5 percent). The WHFC also recommended a Hawaiian cultural netting area, where only hand constructed, natural fiber nets can be used (refer to report section "Gillnets: WHFC and State Rule Process" for a more detailed account.)

5.2 Recommendations to the Hawai'i Department of Aquatic Resources

SCUBA Spear Fishing Recommendations: In another precedent-setting action, the WHFC has recommended to DAR that spearfishing with SCUBA be banned (DAR is writing the regulations). After a review of a summary of the science presented and regulations existing in other countries and territories, the WHFC determined, in November 2004, "that the take method of spearing with SCUBA was detrimental to the population of reef fish and should be banned within the WHFC's geography, i.e. Ka lae to Upolu Point" (WHFC minutes). This recommendation was moved thoroughly through potentially affected ocean recreationists including sport diving clubs, Hawaiian communities and general public constituents over two years. Very few individuals disagreed with this recommendation and this lack of resistance has paved the way for state DAR rule-making.

Pebble Beach Protection: Partly as a result of the success in establishing no aquarium fish collecting zones, a community whose coastal area fell outside the FRAs wanted the small bay immediately seaward of their subdivision protected from collectors. A particularly prolonged conflict ensued between the Pebble Beach neighborhood and aquarium fish collectors in the area. After these tensions surfaced between extractive and non-extractive ocean use of the bay fronting the Kona Paradise subdivision, the neighborhood formed an organization called

"Friends of Pebble Beach" and sought to protect their bay from aquarium fish collecting by lobbying the Council to recommend a designation of a FRA. Collectors demanded a fair swap in exchange. Two years after the concerns were first brought up to the WHFC, DAR is in the final process of having Pebble Beach as an FRA and opening up an equal amount (2,000 feet) within an existing FRA located away from housing areas and conveniently near a boat launch.

5.3 Informal Council Intervention

Hawksbill Sea Turtle Hatching: Pohue Bay, an area located in island of Hawai'i's southern district, has been a nesting area for the endangered Hawskbill sea turtle. Its underwater environment also attracts divers, and one live-aboard dive boat has been using the bay, anchoring at night and sometimes having passengers camping. The increased noise and lights can potentially distract animals (and light can even attract predators). At times, concerned community members would swim to the boat to talk with passengers, informing them of the environmental impact of their activity, but the group was unable to achieve a sustained change in the practices of the diving operation.

The issue was brought up to the WHFC and assigned to a sub committee, which wrote a letter in 2006 to the live-aboard dive boat asking to limit access to the area and night activities. The WHFC acted as a vehicle to convey the concern of the group that had taken upon the task of protecting the nesting site. Since the WHFC contacted the dive boat, the night dive commercial activities have ceased from taking place at the bay. This is a welcomed development, as the bay is now an important and thriving nesting ground for the Hawksbill turtle.

5.4 Ongoing Issues

Day-Use Mooring Buoys: The WHFC has worked at the subcommittee level to develop an agreement with shoreline communities adjacent to proposed mooring sites. WHFC collaborated with the Malama Kai Foundation to augment the existing mooring buoy system with additional installation and inform communities of the value of day-use moorings to preserve coral reefs and thus obtain support from coastal communities.

5.5 Issues Not Taken by Council

Act 306 set up four specific tasks for the WHRFMA. Two of them have already been accomplished (FRAs and gill nets rules). The third task, finding locations for a buoy system, is actively being addressed by the WHFC at the moment. The fourth task set by Act 306, the establishment of no-take FRAs, however, has not been achieved nor is it being worked on.

During its early stages, the WHFC tried to address the no-take issue, but it was quickly abandoned due to vast disagreements among stakeholders. While there was strong overall community support for the establishment of FRAs where no collecting of fish for aquaria could take place, prohibiting fishing altogether from even significantly smaller portions of the coastline did not have the same universal backing of the community. Fishing is deeply engrained in the Hawaiian culture and the ethos of large segments of the community, which traditionally had managed its fisheries successfully by a large array of methods that did not include general and permanent closures of fishing areas (Lowe, 2003).

Creating additional MLCDs in the West Hawai'i area remains a challenge, and it will be a difficult task to address in the immediate future. The WHFC, as a consensus-building entity, is not able at the present to reach agreement given that large segments of the community they represent are skeptical about the need for full closure of ocean areas to all forms of fishing. Fishers have suggested that they will agree to full closure for all users, extractive and non-extractive; recreational users resist that suggestion.

6 Fish Replenishment Area Establishment

The landmark accomplishment of the WHFC to date has been the creation of network of nine fish replenishment areas, covering 35.2 percent of the West Hawai'i coastline, where no aquarium fish collecting can take place.

While Act 306 set up the goal of a minimum of 30 percent of the coastline to be set aside, it left it up to the DLNR, working alongside stakeholders, to designate the specific portions. DAR and

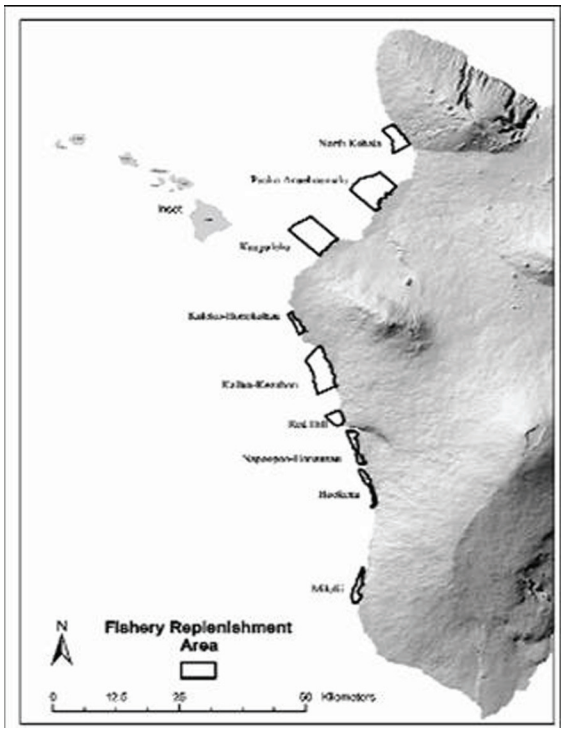


Figure 3 - Fish Replenishment Areas, West Hawai'i (Source: Walsh et. al., 2003)

UH Sea Grant assisted the WHFC in fulfilling this task. Before the start of the area selection process for the FRAs, council members were given information on marine protected areas, community-based resource management, and scientific studies on local marine ecosystems, species and aquarium fish collecting in general. The outcome of this process is shown in Figure 3.

Council members were given a specific set of criteria for FRA selection, and each was given a copy of the map of the West Hawai'i coastal area. Each member was then asked to explain the selection criteria to the communities they represented and collaboratively select tentative sites that would account to at least 30 percent of the area required by the act, or slightly more. (While the Act did not set a cap in the percentage of the area to be closed, fish collectors had the general understanding that the FRAs would be approximately one third of the coastline – a significantly higher area closure would result in many collectors not being willing to cooperate.)

Fish collectors were asked to mark areas that they felt where crucial for them to have access to and not be part of the FRAs. When the maps were returned, the selected areas were compiled into a master map, which quickly showed consensus on certain areas, a remarkable fact given the diverse composition of the stakeholders involved (Walsh, 1999). It should be noted that some communities wanted a much larger coastal section closed to all collecting (if not banning the fishery altogether), while others wanted the closure to be only what was minimally required. In addition, many fish collectors' excluded themselves from this process, but several did provide some form of input.

The final combined areas account for 35.2 percent of the 120-mile West Hawai'i coastline. Once the majority of the WHFC agreed on the FRAs, they were forwarded as recommendations to DAR, which then held public meetings before enacting the rules. This public meeting was held in April of 1999, and it drew the largest attendance of any DAR meeting, estimated to be in excess of 860 community members, with over 93 percent of the testimony in favor of adopting the proposed FRAs (Capitini et. al., 2004). But events that soon followed indicated that this

7 Collecting with and without Community Input

Aquarium fish collecting is but one of the many active and long standing fisheries in the state of Hawai'i. The impact of all types of extractive activities on the marine ecosystem of the main Hawaiian islands have resulted in a current marine stock that is estimated to be about 25 percent

of the stock of 100 years ago (Shomura, 1987; Friedlander & DeMartini, 2002). In an island-by-island comparison, Oʻahu, the most populous of the Hawaiian islands, has the lowest fish biomass level per area (Birkeland & Friedlander, 2002).

The reported collected tropical fish catch for Oʻahu reached the 100,000 fish per year mark ten years before the island of West Hawaiʻi (1977 and 1987, respectively), placing it ahead of other islands in the large-scale collection of marine resources. In tandem with the decline of collected fish in Oʻahu, the collection of invertebrates experienced exponential growth beginning in the early 2000, with the Featherduster worm (*Sabellastarte sanctijosephi*) and hermit crabs being the most popular invertebrate collected (Walsh et. al., 2003).

The adjusted catch value for Oʻahu (Figure 3) shows a larger decline (today's value representing a quarter of its highest historical value) than the decline observed in the amount of fish caught (close to half of the high historical mark– refer to Figure 3): not only are fewer fish presently caught on Oʻahu, but the value per collected animal has eroded even further, suggesting the collection of lesser profitable species substituting higher valued, but unavailable, species.

Natural events, in the form of two hurricanes, set some of the conditions that led to the depletion of the collected species. Hurricanes Iwa (in 1982) and Iniki (in 1992) caused significant damage to coral reefs associated with the island of Oʻahu (Walsh et. al., 2003). The coral damage reduced the habitat for many of the collected reef-dwelling species, concentrating the species into smaller physical spaces and making the populations more susceptible to over collecting.

Different island geography also played an indirect role by affecting the social interactions between collectors and members of the community. Oʻahu, being an older island (formed between 3 and 5 million years ago), has reef extending relatively far offshore, resulting in collecting areas that are not visible from shore and not often frequented by other ocean users. The much younger island of Hawaiʻi (ranging from present-day up to a million years of age), has reef areas limited to a short distance to shore, with deep drop-offs occurring close off shore. Any reef ocean activity, and its effect on the ecosystem, is readily visible to ocean users and observers.

The old adage "out of sight, out of mind" might partly explain why there was minimal community involvement regarding fish collecting in Oʻahu, while the island of Hawaiʻi was the center of several attempts by the community to curb an activity whose effects were experienced at a personal level. As a result, without significant community involvement, the rules regulating aquarium fish collecting did not change for Oʻahu, allowing for the over-exploitation of the resource. As a result, Oʻahu collectors have moved "down the food chain" and are forced to collect lesser-valued invertebrates due to the increased rarity of fish targeted for aquaria.

Another factor that helped mobilize the West Hawaiʻi community was that many residents were well acquainted with the development of fish collecting in neighboring places. The adjusted value of tropical fish collected in Oʻahu started declining in the late 1970's after reaching a peak in 1978, and today stand at a fraction of this historical high watermark. Big Island's numbers reached the same peak 20 years later (see Figure 4). This "Oʻahu experience" provided an often cited example in the West Hawaiʻi community, who would mention *"we don't want to be another Oʻahu"* time and time again as a way to gather support and to justify marine conservation measures (interview notes).

Four years after establishing the FRA network, the abundance of the fish targeted for aquarium collecting had increased when compared to open areas (Tissot, 2005), even when enforcement provisions had not been in place. When compared to the 1999 baseline, aquarium target fishes have been found to be 50 percent more abundant in 2003 – with the most collected species overall, the yellow tang, also showing a

significant increase (Walsh et. al., 2003). Also, the overall catch and catch per unit effort (general parameters of stock level for targeted species) have not seen any significant decline (Walsh et. al., 2003).

It is an encouraging fact that West Hawai'i still sustains an active aquarium fishery years after closing off one third of its coastline. The work of an involved citizenry, actively supported by UH Sea Grant and the DAR in the area, played a significant role in averting the sharp decline of the local aquarium fishery that was observed in O'ahu nearly 10 years earlier. Collectors moved "down the food chain" and are forced to collect lesser-valued invertebrates due to the increased rarity of fish targeted for aquaria.

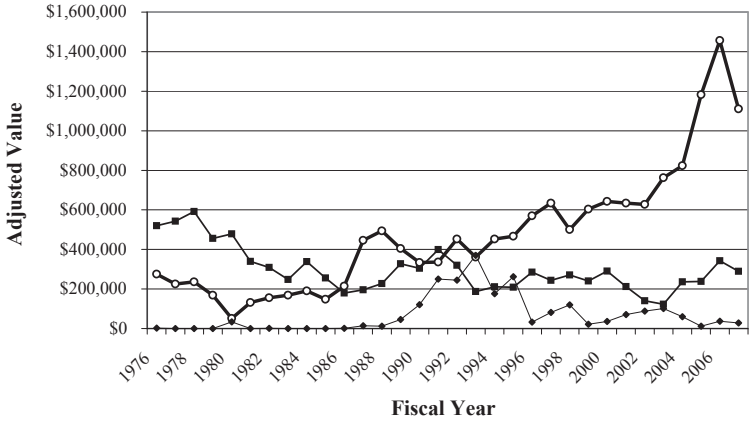


Figure 4. Dollar value (adjusted for inflation) of aquarium fish catch on each island per fiscal year (Source: Walsh et. al., 2003)

8 Evolving Council Role

The WHFC stands as one of Hawai'i's most successful cases of sustained community input in the management of the local marine resources. The WHFC represents a structure for the co-management of fisheries, an approach that is being increasingly implemented in many other parts of the world. The key "enabling factors" for the success of the WHFC can be summarized as follow:

1. **A clear and action-oriented legislative mandate**, requiring community cooperation (more than simply input) towards accomplishing specific goals;
2. **An active and involved local community**, assisted by continuous outreach/education efforts by UH Sea Grant and mobilized by grass roots organizations such as the LOST FISH Coalition;
3. **A marine literate local citizenry**, helped by UH Sea Grant's public outreach efforts (in the form of ReefTalk, ReefWatchers, ReefTeachers) along with monthly informational presentations at the WHFC;
4. **A full-time marine biologist under the state DAR agency**, dedicated to the community;
5. **A partnership between UH Sea Grant and DAR**. Both agencies closely coordinate their work at the local level, facilitating and assisting the successes achieved by the WHFC.

These five major factors have assisted the local community in managing its marine resources. Act 306 contained two key factors that set the ground for the successful involvement of the community: it had a clearly defined list of goals and a timeline which assisted the group in structuring itself in order to achieve them. At the same time, and balancing this helpful rigidity, Act 306 also gave the managing agency a welcomed flexibility by establishing the West Hawai'i Regional Fishery Management Area, which encompassed the entire West Hawai'i coastline. By doing this, the managing agency had the ability to make or modify rules affecting the marine resources within the area without needing new legislative mandates, expediting regulatory action.

In a sense, the WHFC's influence has grown beyond the geographic boundaries it was set to serve. The state has now repeatedly come to the WHFC to present issues and management initiatives before these are presented at public hearings statewide. A council member observed that many state government officials *"are supporting us being a clearinghouse for issues at an early stage, so we can make recommendations seasoned with all the dialog we've had, so we are doing a service to DAR"* (interview notes).

The requirement for public hearing outside the WHFC still applies to any changes or additions to rules, but by bringing issues up to the WHFC beforehand, the government can obtain significant community input, allowing it to fine-tune the proposed rule change and diminishing the chances of encountering stiff public opposition at a later stage in the rule-making process.

"Whose fish are they? This is the question nobody's asked before." The comment, coming from a council member, illustrates the growing community consensus to the right to affect how marine resources are used. The WHFC created to answer that question now serves to address a wide range of marine issues that extend beyond fish collecting. The work of the WHFC is well known and generally supported by community members involved in ocean issues. During a public hearing for a rule amendment in November 2004, the testimonies offered by the public showed overwhelming support for the work of the WHFC.

The WHFC is a forum that is directly linked to the community and which meets regularly – and as such, marine use issues often come up in the WHFC before they are addressed in any other public sphere in the state. The evolving WHFC/government relationship was characterized by a council member as follows: *"the paradigm was, government, the central power, would say every once in a while you will do this, and you will do this, and really not much concern, and maybe they would see a problem and would try to address it, but often times they'd see things that would be totally disconnected from the communities"* (interview notes). The lay gill-net rules illustrate how the WHFC and the state's agencies have built upon the work of each other: the WHFC took the recommendations of the state's earlier Gill Net Task Force as the basis to start its own discussion, which eventually succeeded changing the rules for the area in 2005. The state then took several aspects of the West Hawai'i rules, informing its own proposed rules, which were adopted in 2007.

The devolution of power from the state government to a local organization requires that local groups be representative and be able to negotiate issues and differences more effectively than the central authority. The WHFC works to this end by building consensus among diverse stakeholder groups. But sometimes the disagreement among members can result in individual members communicating personal stances to their constituency, instead of the official stance of the WHFC itself – a peril often present in a body made up of volunteers that have the choice of how to represent themselves. But while the group discussions do not normally lead to universal agreement, they do tend to produce a consensus of the whole that parts can live with, as remarked by a council member: *"consensus to me is, not everyone necessarily agrees, but no one is going to lay down in front of the bulldozer and be a martyr"* (interview notes).

UH Sea Grant's long and sustained involvement in the area helped create a fertile ground for the local community to take an active role in the managing of its marine resources. For over a decade, UH Sea Grant has been maintaining ongoing efforts to educate, engage, and support the community in a variety of ways, creating the necessary conditions for involving diverse marine stakeholders in a productive and effective dialog. As a result, the WHFC has been able to achieve concrete results towards the larger goal of sustainable use of the oceans.

Appendix A – ReefTalk Lecture Series, 1996 to 2007

Date	Title of ReefTalk	# Attended
1996		
Jan 1996	Cetaceans Behavior and Lifestyles	18
Feb 1996	Incredible Anchaline pools	n/a
Mar 1996	Coral Reefs of Hawai'i	12
Apr 1996	DLNR'S West Hawai'i Fisheries Assessment	20
May 1996	Hawai'i's Endemic Fresh Water Stream Fauna	n/a
Jun 1996	Global Warming and Climate Change	n/a
Jul 1996	*(no topic recorded)*	31
Aug 1996	Ocean Expo	24
Sep 1996	Tracking Sharks and Tunas in Hawai'i	n/a
Oct 1996	Views of Nodules and Mini Monsters from Undersea	17
Nov 1996	Underwater Natives	34
1997		
Jan 1997	Whales-Pacific Whale Foundation	108
Feb 1997	Dolphin Bisonar	54
Mar 1997	Loihi	72
Apr 1997	Legislative Update	n/a
May 1997	*(no topic recorded)*	19
Jun 1997	*(no topic recorded)*	8
Jul 1997	International year of the Reef	32
Aug 1997	The Billfish Industry-Exploration, Development, and Management	17
Sep 1997	Living in the light, corals, and UV	13
Oct 1997	Aliens on the Reef	20
Nov 1997	Kona's Manta Rays	47
1998		
Jan 1998	Whale Sanctuary	38
Mar 1998	Monk Seals and Turtles	45
Mar 1998	Manta Rays	38
Apr 1998	Sharks and Dolphins	41
May 1998	Status of Corals	23
Jun 1998	El Nino	46
Jul 1998	Read the Reef	n/a
Aug 1998	West Hawai'i Regional Fishery Management Area	27
Sep 1998	Legislative Initiatives for Sustaining our Coastal and Marine Environment	24
Oct 1998	Sanctuary Update	37
Nov 1998	Coastal Erosion and Shoreline Management	36
1999		
Jan 1999	Whale Sonar	58
Feb 1999	Report on Impact of Fish Collecting and Diving in W Hawai'i *(in Waimea)*	48
Feb 1999	Report on Impact of Fish Collecting and Diving in W Hawai'i *(in Kona)*	76
Mar 1999	Whale Communication	38
Apr 1999	What Do Whales Hear When Boats Are Near?	30
May 1999	Spinner Dolphins of Kealakekua bay	63
Jun 1999	The Natural Energy Laboratory of Hawai'i	n/a
Jul 1999	*(no topic recorded)*	41
Sep 1999	*(no topic recorded)*	13
Nov 1999	National Marine Fisheries Service	12

2000		
Jan 2000	Fishes of Micronesia	18
Feb 2000	Tracking Marine Mammal Diving Behavior	56
Mar 2000	Open Ocean Aquaculture	9
Apr 2000	Do Whales Tend To Their Fellows In Distress?	33
May 2000	West Hawai'i Fisheries Council Informational Meeting	24
Jun 2000	Parrotfish Pajamas and Twilight Romance	50
Jul 2000	Kahalu'u Corals- Kuulei Rogers Research	25
Aug 2000	*(no lecture)*	n/a
Sep 2000	*(no lecture)*	n/a
Oct 2000	Red Turtle Raising Video	18
Nov 2000	*(no lecture)*	n/a
2001		
Jan 2001	NWHI/NOWRAMP	48
Feb 2001	Aquaculture in Hawai'i	25
Mar 2001	Hawaiian Sea Turtles	88
Apr 2001	U.S. Coral Reefs	41
May 2001	Hawksbill Turtles	30
Jun 2001	Ciguatera	23
Jul 2001	Silent Sentinels/Fish Feeding	23
Aug 2001	Hawaiian Sea Turtles	19
Sep 2001	Coral Revival	23
Oct 2001	New Ocean Technology for Hawai'i	8
Nov 2001	NELHA's 55 Inch Seawater Supply System	21
Dec 2001	Hawai'i's Humpbacks: At Home and in Alaska	39
2002		
Jan 2002	Marine Mammals in Hawai'i: Results of 1993-2000 Aerial Surveys	86
Feb 2002	Whale Rescues- Entanglement Threats to the Populations	33
Mar 2002	What is W.H.A.P. & Have Fish Replenishment Areas Worked?	58
Apr 2002	Diving behavior: Hawai'i's Humpback Whales & Spotted Dolphins	66
May 2002	Science & Planning Converge Along Hawai'i's Coastal Zone	20
Jun 2002	Mauka Makai Connections- Vital Watershed Issues	29
Jul 2002	Whose Home Is In A Floodway?	26
Aug 2002	Boaters and Shoreline Residents: How to Weather a Hurricane?	35
Sep 2002	Tiger Shark Research and the Hawai'i F.A.D.'s	36
Oct 2002	Ocean Ranching	50
Nov 2002	The Keiki Kohala Project: Caring for Calves in Hawaiian Waters	52
2003		
Jan 2003	"Choosiness" In Humpback Whales: Habitats and Escorting Strategies	65
Feb 2003	Spinner Dolphin Research: Kula Naia Foundation	89
Mar 2003	Are Taape and Roi To Blame? *(in Waimea)*	19
Apr 2003	Are Taape and Roi To Blame? *(in Kona)*	30
May 2003	Manta Rays: Habitat Use, Population Structure, and Conservation *(in Waimea)*	18
Jun 2003	Manta Rays: Habitat Use, Population Structure, and Conservation *(in Kona)*	96
Jul 2003	Hawaiian Spinner Dolphins of Midway Atoll	32
Aug 2003	Sea Turtles of Hawai'i and The World	67
Sep 2003	Manu Kai: Hawaiian Birds of the Sea	40
Oct 2003	Tsunamis in Hawai'i	26
Nov 2003	The Northwestern Hawaiian Island Coral Reef Ecosystem Reserve	48

2004		
Jan 2004	The Not So Silent Underwater World of The Humpback Whale in S.E. Alaska	96
Feb 2004	Findings from Hawaiian Islands Cetacean and Ecosystem Assessment Survey	62
Mar 2004	What Do Whales and Dolphins Hear?	47
Apr 2004	Learn To Sea PSA Announcement	10
May 2004	Kona Underwater and Monk Seal Muggings	21
Jun 2004	Have the FRA's Worked?	52
Aug 2004	Hawaiian Monk Seals "Endangered" There Is Still Time	16
Sep 2004	New Whale Sanctuary Office in Kona	27
Oct 2004	Hawai'i's "Other" Whales and Dolphins	67
Nov 2004	What Are Those Buildings at the Natural Energy Lab?	20
2005		
Jan 2005	Hawai'i Sea Animals *(in Waimea)*	35
Feb 2005	Hawai'i Sea Animals *(in Kona)*	71
Mar 2005	Are Land-Derived Sediments Affecting Reef Ecosystem?	35
Apr 2005	Nutrient Levels *(in Waimea)*	37
May 2005	Nutrient Levels	9
Jun 2005	Prey Preference of the He'e Octopus on Two Species of Crabs	24
Jul 2005	Hawaiian Monk Seals	15
Jul 2005	Coral Reef Cities Under The Sea	145
Aug 2005	Where Did All the Opihi Go?	30
Sep 2005	National Marine Debris Program	8
Oct 2005	What's Happening with Kona's Drinking Water?	90
Nov 2005	Reef Research at Kaloko-Honokohau Harbor	45
Nov 2005	Designation of the Northwestern Hawaiian Islands	52
2006		
Jan 2006	Designation of Northwestern Hawaiian Islands	57
Feb 2006	Water Quality Issues	6
Mar 2006	Hawai'i's Humpback Whales-Their Past, Present, and Future	45
Apr 2006	Waimea Watershed	4
May 2006	Ahupua'a and Land Use Concept	35
Jun 2006	Water Quality Watershed	10
Aug 2006	Yellow Tang Populations and FRAs	61
Aug 2006	Kona Blue	41
Sep 2006	Hawai'i's Algae	14
Sep 2006	ReefWatcher Thank You Night	28
Oct 2006	Marine Weather Hazards	21
Nov 2006	Hawaiian Monk Seals	23
2007		
Jan 2007	Hawaiian Humpback Whales	40
Feb 2007	Hawaiian Blue-The Encounters *(in Waimea)*	39
Mar 2007	Hawaiian Blue-The Encounters *(in Kona)*	57
Apr 2007	Recent Billfish Discoveries off Kona Coast	52
May 2007	Coastal Processes	20
Jun 2007	Sea Level Rise	34
Aug 2007	Oasis in a desert sea: Studies of resident whales and dolphins of Hawai'i	65
Sept 2007	Warm and Cold Seawater Applications at the Natural Energy Lab of Hawai'i	28
Oct 2007	Deep Water Animals of Hawai'i	89
Nov 2007	13th: How to Identify Hawai'i's Marine Mammals	24
	19th: What's So Special About Hawai'i?	102

Appendix B – Council Member Selection Criteria

Selection criteria:

- Knowledge of the ocean in Hawai'i
- Ability to serve as community liaison
- Equitable representation of regions in West Hawai'i
- Equitable representation of user groups
- Commitment to attend the meetings and be an effective liaison.
- Fishermen actively involved commercial fishing, spearfishing, subsistence fishing, gatherer, and recreational fishing are adequately represented.

Process: To use the above selection criteria effectively, the group decided that it needed to know the current representation of the WHFC in terms of regions and users/activities. The process involves sending applicants a set of questions prior to the interviews, which remain the same from one interviewee to another, ensuring standardization of the process. As membership turns over, the criteria fulfilled by the outgoing member is used to search for the replacement.

Original User/activity representation of WHFC:

Commercial	7
Aquarium fish collector	5
Charter Boat Fishing	1
Dive/Snorkel Tour Operator	4
Recreational diver	8
Recreational fisher	5
Subsistence fisher	4
Shoreline Gatherer	5
Scientist	1

There was initially a good representation from many types of fishing, except charter fishing and, when the tropical fish collectors left, tropical fish collecting and commercial fishers were temporarily under-represented. The group agrees that new members should include more scientists, and those who participate in charter fishing, tropical fish collecting, commercial fishing, and recreational fishers who shore-cast and spear-fish.

Appendix C – Two Local Resource Councils

Miloli‘i

Peck acquired grant funding to initiate the Miloli‘i LRC project in 2001 and a native Hawaiian individual was contracted through a collaborating NGO to serve as the outreach liaison to this isolated Hawaiian fishing village on the southern end of the 150-mile long WHRFMA. Twelve meetings were held with Miloli‘i residents from August 2001 to October 2003. Quickly the agent learned that this community had issues overshadowing marine resource management. Substance abuse, poverty, community infighting and isolation made it impossible for the community to achieve consensus on almost any issue. The agent sought additional help from the public health services, the Community Conservation Network and The Nature Conservancy. With the community capacity building experience of NGOs and additional collaboration with the Queen Lili‘uokalani Children’s Trust, learning activities for the youth were initiated and an anti-drug program made available to parents. Over the next five years educational marine resource activities were provided by the agent and NGOs. Within the village support for the notion of managing their own marine resources from a traditional standpoint grew, and in 2006 this village secured legislative support to manage traditional near shore areas. Community leaders presented the Miloli‘i Village resource management outline to the WHFC.

Kawaihae

The northern end of the WHRFMA is sparsely populated with pockets of residential areas and no clearly defined village other than the Kawaihae Harbor and surrounding loosely adjoined residential areas. Kawaihae Harbor proved to encompass numerous ocean recreation and commercial activities, a Hawaiian housing subdivision, and residents from Puako and points north and east who share a keen interest in that area. Between February 2003 and July 2007, forty-three Kawaihae Local Resource Council (KLRC) meetings have been held. Attendance ranges between 10 and 40 people, depending upon the topic or speaker. Once again, Peck, acting as a liaison, found localized issues to be of more concern to area residents. Harbor facilities, highway congestion, incompatible multi-use areas within the harbor, lack of enough water supply for fire suppression, decline of fish habitat, sediment carried from higher elevations smothering not only the adjacent coral reef ecosystem but important Hawaiian archeological sites are all issues that require cooperation between federal, state and county agencies. With the assistance of Hawai‘i State Representative Cindy Evans, agency managers continued to attend these meetings to explain their plans and constraints. In the third year of these KLRC meetings, Hawai‘i County initiated an ambitious Community Development Planning program. Individual districts (geopolitical areas) were invited to create for their communities a “Smart Growth, Sustainable Island Living” vision to guide planning as land development proceeds. Kawaihae’s harbor and extended settlements are at the point of needing critical infrastructure, facility renovation and community planning to accommodate what promises to be a threefold increase in commercial traffic and a smaller increase in recreational use. These KLRC meetings continue on a monthly basis, serving as the communication conduit between community members, policy makers and resource managers.

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