



Hana Community FAD Project Report

*Prepared April 2008
Updated December 2009*

I. Introduction

Hana is a small, isolated community located in east Maui, Hawaii. In 2000, Hana's population was determined to be 709 people; however, this number is believed to be larger as there has been an influx of people in recent years. Hana has a long tradition of fishing within its community, and due to its remoteness, fishing remains an important socio-economic activity for many community members.

Fish aggregating devices (FADs) have been used in Hawaii for decades as an effective method to attract pelagic species targeted by commercial, subsistence, and recreational fishermen. The State of Hawaii maintains a network of FADs to promote fisheries production and maintain fishing opportunities. In recent years, fishermen have been deploying private FADs (PFADs) within State (0-3 nm) and Federal (3-200 nm) waters around Hawaii. The majority of these PFADs are illegal in that the owners have not acquired appropriate authorization from the U.S. Coast Guard if placed in federal waters. The proliferation of PFADs in Hawaii has raised questions such as what effects, if any, are the PFADs having on the movements or migration patterns of species such as yellowfin and bigeye tuna; what types of fish are attracted to FADs (including their life stage); the rate or duration of retention; and the effects on seasonal fish movements.

The Western Pacific Regional Fishery Management Council (Council) recognizes the potential community benefits of a properly placed and maintained FAD. The Council supports community development programs that are aimed at using marine resources in a sustainable manner as well as cooperative research with fishermen. The Council also recognizes that the FADs are increasingly becoming a management issue and that scientific information regarding the effect of FADs on targeted pelagic species is missing.

II. Hana Community FAD Project

In early 2006, the Council participated in meetings in Hana regarding bottomfish management and other fisheries management issues. During this time, Council staff had several discussions with Hana community members on potential fisheries related projects that could benefit the Hana community. One such project was the deployment of a legally authorized FAD that would provide benefits to the Hana community while also helping to investigate some resource management questions associated with FADs. It was also indicated during this period that there was renewed interest amongst Hana community members to reestablish a Hana fisherman's cooperative or association.

In July 2006, the Council entered into a contract with Sustainable Fisheries Hawaii, LLC, a commercial fishing operation located in Hana, to design and deploy a community FAD offshore of the Hana, Maui area. The project objectives were to: 1) establish a partnership with Hana fishermen and facilitate community development and benefits from the fish harvested from the community FAD and 2) provide an opportunity for researchers and fishermen to cooperatively collect data from FADs, which is an increasingly significant resource management issue in the Western Pacific Region. Also in July 2006, Sustainable Fisheries Hawaii, LLC received notice from the U.S. Coast Guard that its private aids to navigation application associated with placing and properly marking the FAD was approved.

A project steering committee was formed that included: Council staff (Eric Kingma- project monitor, Paul Dalzell- chief scientist), Keith Bigelow- NMFS Pacific Islands Fisheries Science Center pelagics scientist, and Dave Itano, research scientist Hawaii Institute of Marine Biology, and Warren Cortez, State of Hawaii Division of Aquatic Resources FAD program. The committee reviewed the design of the FAD as well as developed the voluntary catch reporting form that fishermen fishing off the FAD would provide to the Council.

In January 2007, Sustainable Fisheries Hawaii, LLC deployed the Hana community FAD (HC1) in area 10 miles offshore of Hana, in waters of approximately 600 fathoms. In February 2007, the Hana Offshore Fisheries Association (HOFA) was formed with 19 members. Council staff provided HOFA with catch reporting forms as well as to several non-Hana fishermen that expressed interest in fishing off of HC1. Unfortunately on June 9, 2007, HC1 became detached from its mooring and drifted to a location near Hana Bay where it was recovered by HOFA members. Inspection of the remaining line indicated that the line connecting the mooring and FAD chain separated at the 100 ft mark. Due to wave and current action, FADs often become detached from mooring due to high amounts of drag and resistance.

III. Hana Community FAD Catch Data

In the six months that HC1 was deployed, the Council received approximately 40 catch logs from 10 separate fishermen. The logs include catch data from the months of February to May 2007 and reported by species and number landed with an estimate of weight in 0-10 lb incremental categories. Anything greater than 100 lbs was given an estimated weight. Effort data collected includes Number of Lines and Hours Fished. Locations given on the sheet were either by buoy number or "off" buoy. The catch data presented here represents only that catch from HC1 where complete data was available/discernible.

During the period of February to May 2007, the majority of the species landed was tuna with nearly 85% of the total catch (Figure 1). The biggest contributor to this group was skipjack tuna (aku) with nearly 47% of the total landings followed by Yellowfin tuna, with 33%, and Bigeye 5% of the total catch. Mahimahi made up the largest non-tuna catch with 14% followed by Ono (wahoo) with 1%. Other species caught during this period include A'u (unidentified marlin), Kamanu (rainbow runner) and unidentified "Ahi" which made up less than 1% of the total landings.

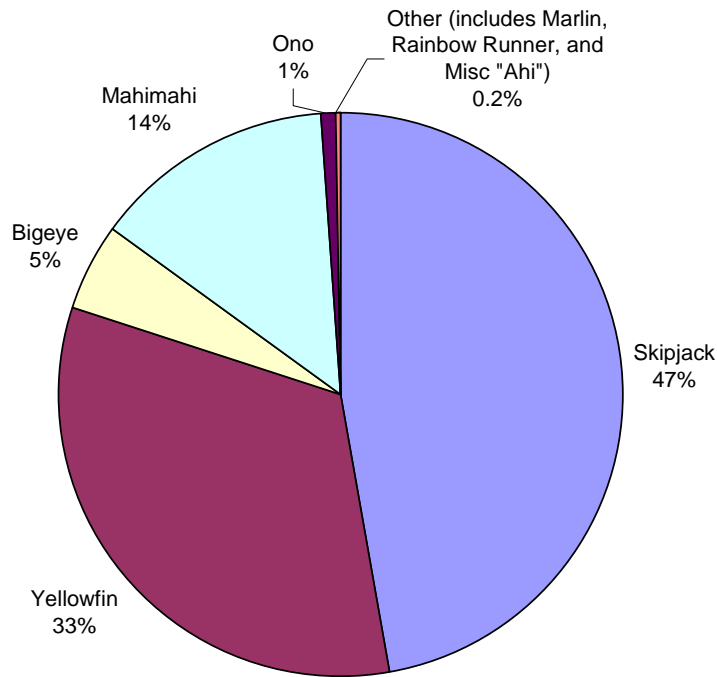


Figure 1: Species Composition of Total Landings from HC1 in Feb-May 2007

Community FAD HC1 accounted for a total of 2854 fish landed during the four month period in which a total of 855 lines were set and 1165 hours were fished. Figure 2 shows that after a slow start in February (116 fish landed), there was a large increase in landings in March (1236 fish landed) with a four month high in April (1323) before a large decrease in May (179 fish landed). The number of lines and hours fished also increased from February to March, but also decreased in both April and May (Figure 3).

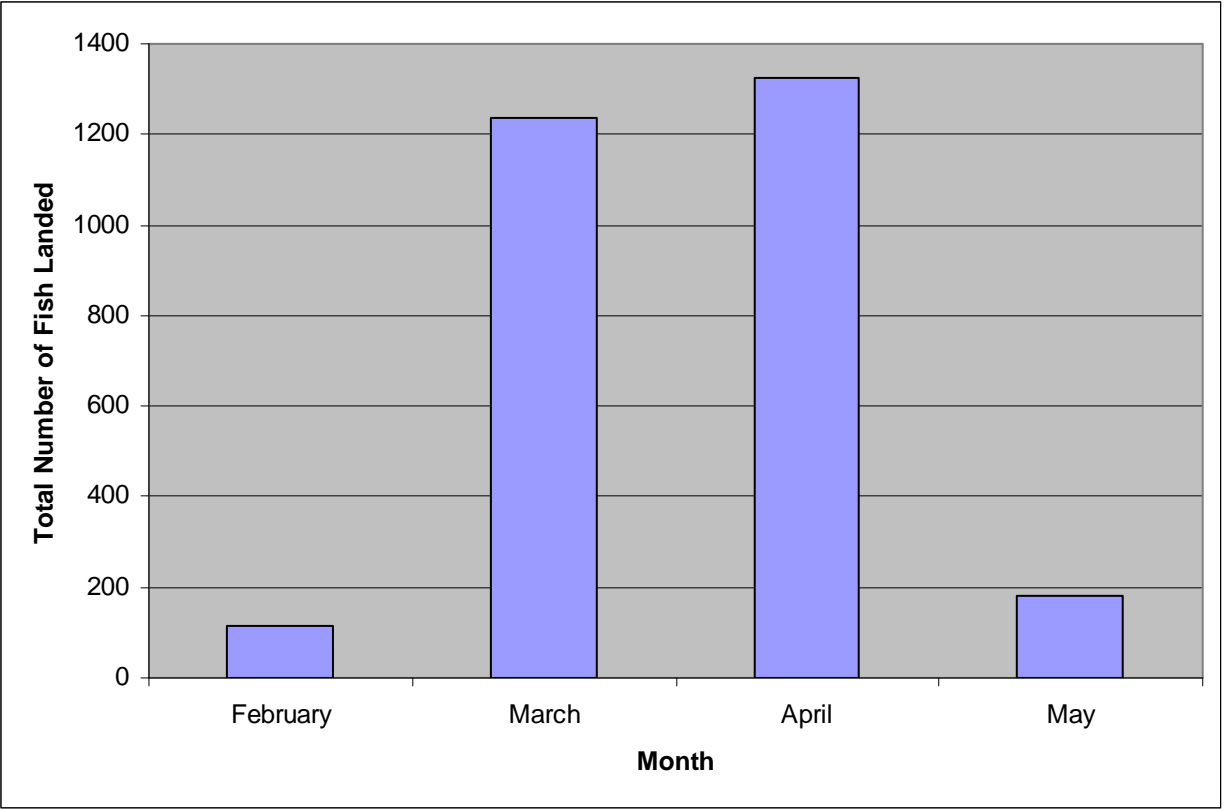


Figure 2: Total Number of Fish Landed by Month from HC1 in Feb-May 2007

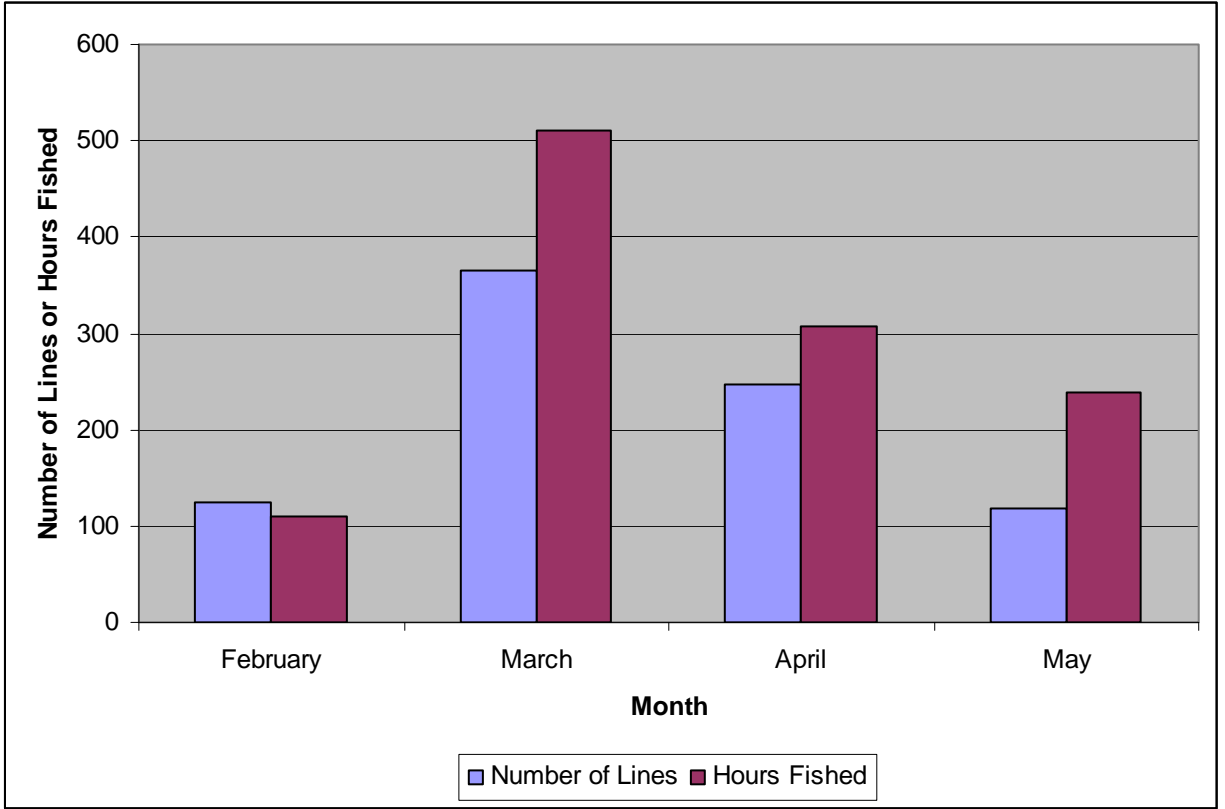


Figure 3: Total Number of Lines and Hours Fished at HC1 in Feb-May 2007

In February, Mahimahi was the most landed species, followed by Yellowfin and Bigeye Tuna, then Ono. There were no landings of Skipjack in February (Figure 4). Most species saw a large increase in landings from February to March with the exception of Bigeye that saw a slight decrease and Ono that had landings in February then no landings in March. Mahi also saw its highest total landings in March. The most total landings of all four months was in April due to the landings from the three tuna species. Ono had its largest numbers landed in May with Mahimahi also have a large amount of landings while all tuna species landings decreased.

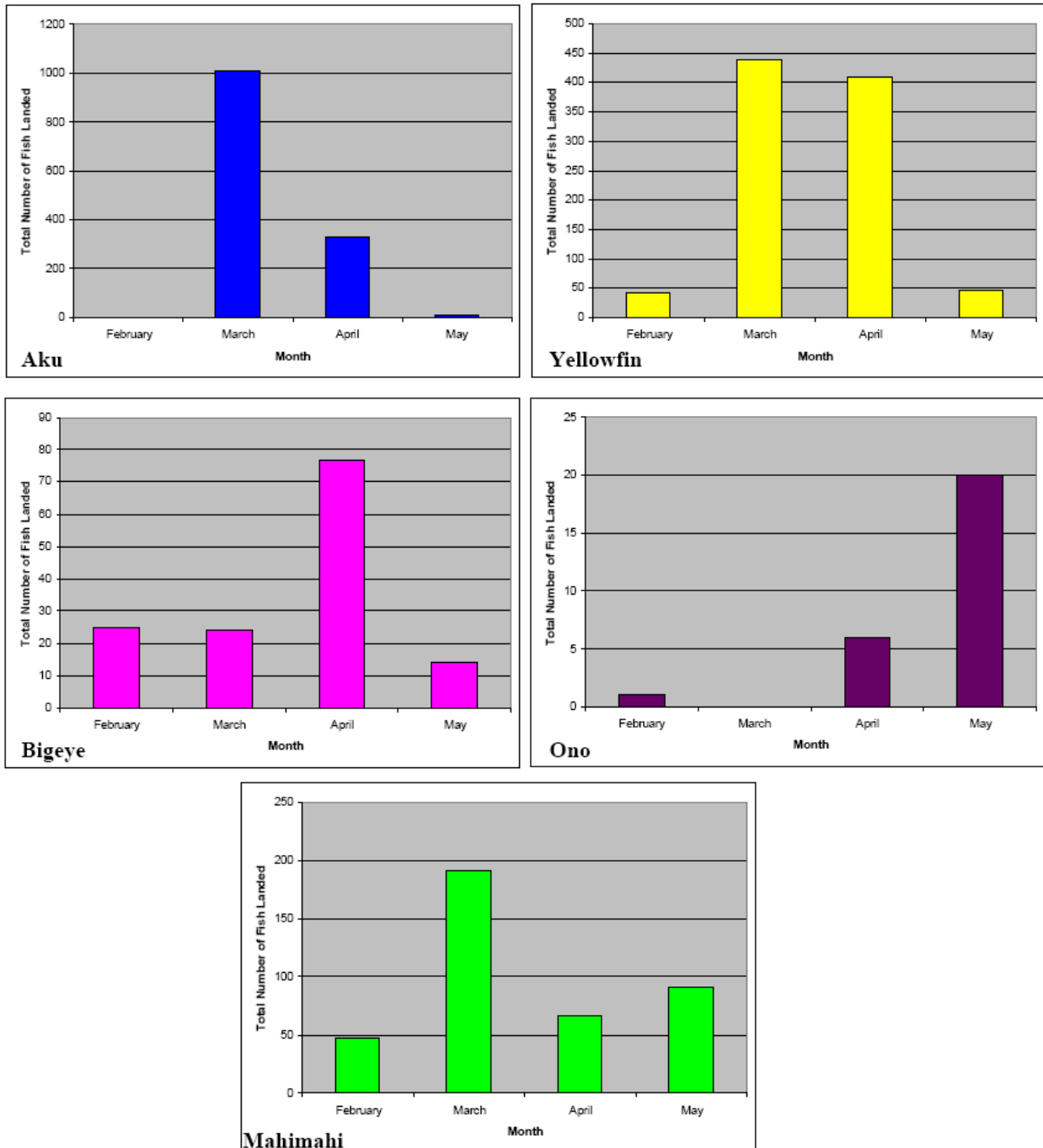


Figure 4: Total Number of Fish Landed from HC1 in Feb-May 2007

Effort data reported on the log sheets included number of lines and hours fished. The data was used to compile Catch Per Unit Effort (CPUE) using total number landed per line-hour (Figure 5). CPUE decreased from February to March, as landings increased nearly 3-times in April before decreasing again in May.

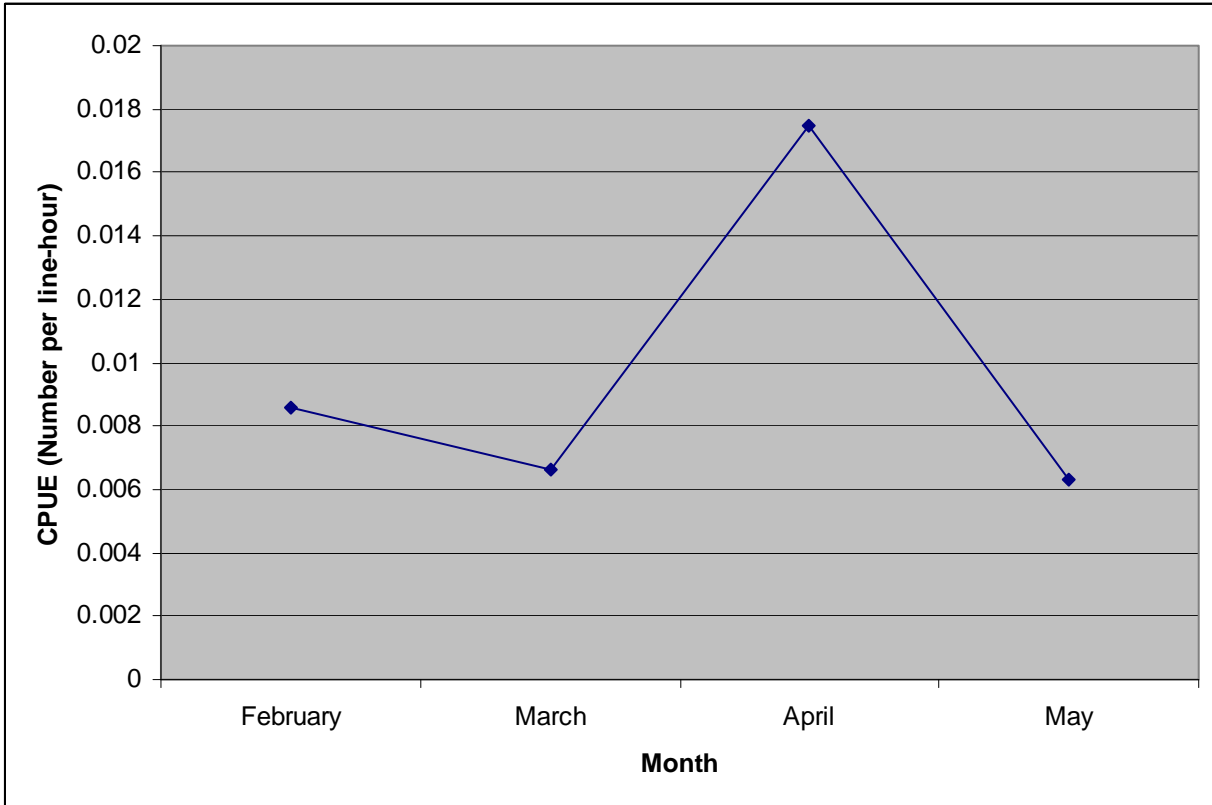


Figure 5: CPUE of HOFA fishermen at HC1 from Feb-May 2007 (Number Landed per Line-Hour)

Fishermen also reported an estimated size class or weight category for each fish landed and provided this information on the catch logs. Figure 6 shows the size frequency of the total landings by species reported from HC1 during the four month period. Aku had a large amount of landings from the 0-10 lbs weight category (1311 fish landed), while Yellowfin also had a large amount of landings from this category (454 fish landed), it had a nearly equal amount of landings from the 10-20 lbs weight category (419 fish landed). Mahimahi had a large number of its landings from the 10-20 lbs and 20-30 lbs weight categories (226 and 141 fish landed, respectively). Bigeye also had a number of fish landed in these same categories (53 fish landed in the 10-20 lbs and 17 in the 20-30 lbs weight categories). The largest fish caught was an unidentified marlin estimated to be 205 lbs.

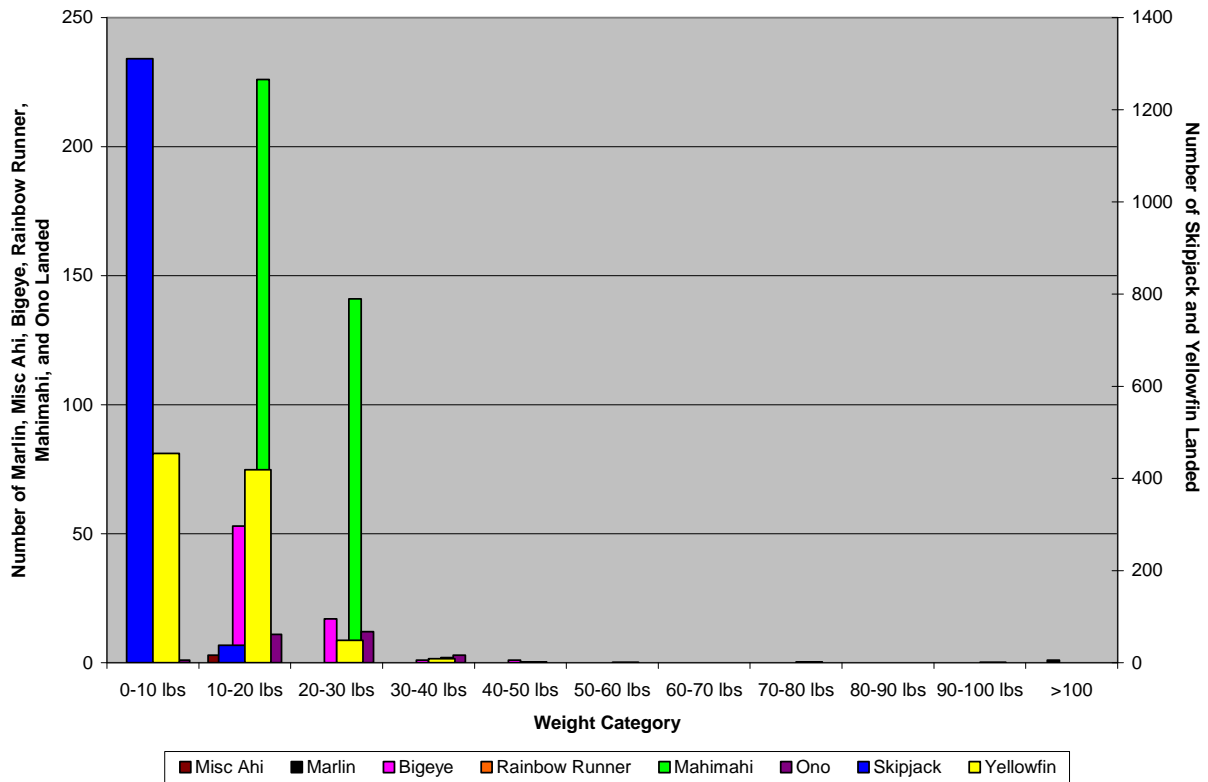


Figure 6: Size Frequency of Total Landings by species from HC1 in Feb-May 2007

Figure 7 shows that the catch stayed constant from Sunday to Thursday. However, Friday and Saturday showed over a 100% increase in landings from the previous 4 days.

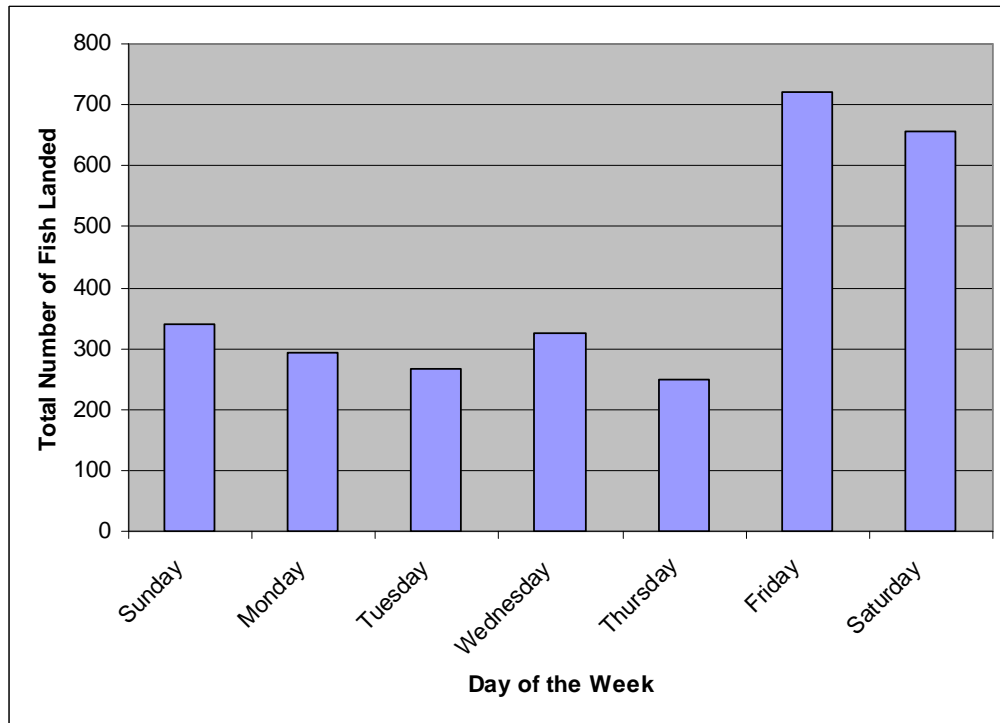


Figure 7: Total Number of Fish Landed by Day of the Week from HC1 in Feb-May 2007

Discussion

As a result of the FAD HC1 becoming detached from its mooring (and later recovered) in June 2007, the catch logs could only document the catch at HC1 from the start of the program in February until the end of May. While the short period of time does not allow us to look at long-term trends of FAD fishing off of Hana, it does provide some insight to the types of species that aggregate around FADs in this area, their sizes and their availability during certain months. For instance, Aku, Yellowfin, and Mahimahi have the biggest landings throughout this period while Ono seems to be picking up towards April and May.

While there were a total of 10 different fishermen reporting during this period, much of the catch comes from just a handful of fishermen. The monthly catch data may be a product of the majority of reports coming from the months of March and April with only one fisherman reporting in February (and consequently all four months). Some fishermen did not participate in some months because their boats were being repaired, while the majority of the fishermen seemed to have started reporting in March and continued on through May. There are also some fishermen that only fished in one month. A continuation of the catch logs over a longer period of time would provide a better idea of the monthly catch.

As the more lines set out and more time spent fishing, the number of fish landed increased. As more effort was put into fishing at HC1, the fishermen caught more fish (Figures 2 and 3), which is what you would expect. Figure 6 shows that although fishermen caught more fish in March than February, the CPUE decreased, mainly because the aforementioned difference in the number of reports of catch in February versus March.

Most of the fish caught during this time period were between 0-30 lbs. The skipjack catch was mainly comprised of 0-10 lb fish while Yellowfin ranged from 0-30 lbs and Bigeye from 10-20 lbs. There may still be concern that Bigeye are not properly identified at the 0-20 lb weight categories because of they closely resemble Yellowfin at that size. Mahimahi were predominantly caught at the 10-30 lbs size with a very little amount of fish caught over 30 lbs. This may attest to the idea that fish that aggregate around FADs are mainly juveniles.

Fridays and Saturdays provide the largest amount of landings, mostly due to the “weekend warriors” or those fishermen that work during the week and are only able to fish on Friday, Saturday or Sunday. It is interesting to note that there is a relatively constant landing of fish throughout the week, which is probably attributed to those commercial fishermen that provide fresh fish to the local restaurants like the Hotel Hana Maui and Mama’s Fish House, or subsistence fishermen.

IV. Hana Community Benefits

Based on verbal reports from the project contractor, the Hana community enjoyed significant benefits during the period when HC1 was in operation. Fish sharing amongst community members was often reported and commercial sales of fish caught off HC1 were also observed. For example, the fish harvested off of HC1 supported the consumption needs of Hotel Hana Maui and its Hana Ranch Restaurant. Correspondence from the Hotel Hana Maui Executive Chef, David Patterson, states that during the HC1 period, no fish harvested outside of Hana and

HC1 was brought in to serve guests. Furthermore, correspondence from Mike Pascher of Mama's Fish House in Paia, Maui indicated that the majority of mahimahi they served during the HC1 operational period were caught off of HC1.

After HC1 became detached and was no longer operational, Hana fishermen and community members were impacted. Support for this is found in the approximately 170 signatures of Hana community members that was provided to the Council June 2007 requesting that the Council continue to support the Hana Community FAD project and agreeing that HC1 has increased revenue to fishermen and their families, more affordable fish for community consumption, and more opportunities for community members to fish commercially or for subsistence.

V. Future Considerations

Recognizing that a singular FAD does have the potential to become detached from its mooring, HOFA requested additional funding from the Council while HC1 was deployed (March 2007) to deploy another FAD in the vicinity of HC1. The Council did not have available funds at that time. In March 2008, HC1 was redeployed by HOFA members and anecdotal reports indicate the FAD is producing fish for sale and consumption.

The project steering committee concurs that continuing collection of data from HC1 is important and HOFA has agreed to continue to provide the Council with voluntary catch information. The committee is supportive of tagging studies that could be conducted in association with HC1, especially if another FAD was placed near HC1, producing information on the movement of tagged fish between adjacent FADs.

VI. Update Since April 2008

HOFA members redeployed the FAD (March 2008) without funding assistance from the Council. They deployed a second FAD a few months later and for some time had two FADs in close proximity and producing fish. Voluntary catch logs were not received by the Council when the two buoys were both deployed. Unfortunately, both Hana Community FADs have since been lost and are no longer deployed. HOFA members are working to redeploy the buoys as well as construct cold storage facility and ice house. The Council is interested in continuing to work with the Hana Community on fisheries development.