**PACIFIC TUNA TAGGING PROJECT Phase 2 (Central Pacific)**

**Cruise CP-15, 15th July to 22nd August 2021**

**SUMMARY REPORT**

**Jeff Muir, Giulia Anderson, Chris Stoehr and Ben Stephens**

## INTRODUCTION

This report summarizes activities during the 39 days of a fifteenth Central Pacific research cruise (CP-15), on the San Diego-based FV Gutsy Lady 4. Due to the COVID 19 pandemic, the cruise was designed with a (mostly) Hawaii based science crew sampling in a geographic area suited to a Hawaii arrival and departure that maximized working days at sea (vs. steaming) and involved no intermediate port stops for provisioning or crew change. CP-15 was designed to augment data collection for studies on tuna movements, exploitation rates and fish aggregation device (FAD) association dynamics in the WCPO. It was the second major tagging event to incorporate significant numbers of drifting FADs (dFADs) in the geographical area as part of its sampling design. Additionally, it was also the first CP style trip to have not visited any TAO moorings, which traditionally these cruises were completely dependent on. The geographic area of CP-15 fishing activities was roughly delimited between 10°N-4°S and 170°W-150°W, in international waters and the Line Islands within the EEZ of Kiribati. (**Figure 1**).

Locations of dFADs were made possible by the cooperation between SPC, Cape Fisheries and the U.S. Tuna Group.

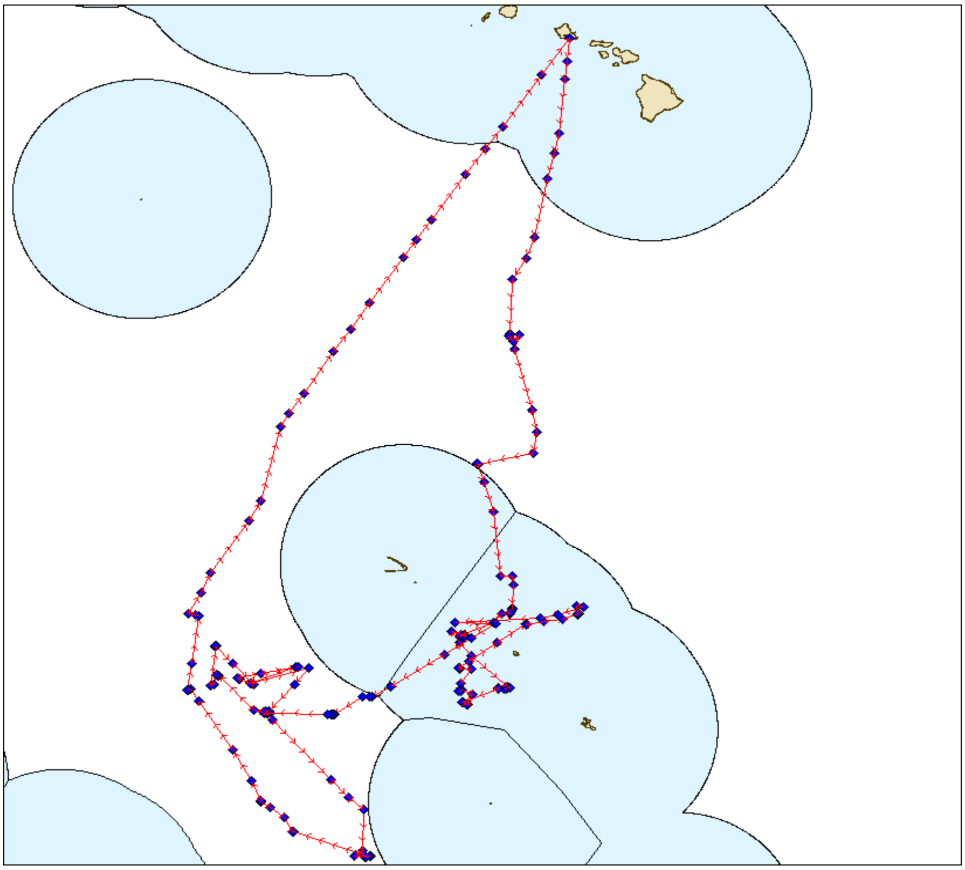


**Figure 1: Thirty-nine day cruise track (red arrows) of nearly 5400nm and daily positions (blue squares) of CP-15.**

Crew and scientific personnel onboard Gutsy Lady 4 during CP-15 are listed in **Table 1**.

**Table 1: Personnel onboard Gutsy Lady 4 during CP-15**

| Name | Title/affiliation | Nationality |
|---|---|---|
| Tim Jones | Captain | U.S. |
| Ben Stephens | Contractor | U.S. |
| Jeff Muir | Cruise Leader/contractor | U.S. |
| Chris Stoehr | Contractor | U.S. |
| Giulia Anderson | Scientist/ SPC | U.S. |
| Jazuli | Crew | Indonesia |
| Taswid | Crew | Indonesia |
| Warsito | Crew | Indonesia |
| Nurrofik | Crew | Indonesia |
| Jaenel Abidin | Bosun | Indonesia |

**GENERAL DESCRIPTION OF VESSEL**

The FV Gutsy Lady 4 (named hereafter GL4) is a 30 meter steel vessel (**Picture 1**) previously outfitted for shrimp trawling in the Gulf of Mexico. It is now equipped with longline gear and used for fishing pelagic fish (mainly tuna, with bigeye as the main target) in the Central and Eastern Pacific. The vessel is fitted with two 600hp Cummins engines, two 70 KVA Cummins generators, and one water-maker (80 l/h). The vessel is fully equipped with Furuno electronics including 3 VHF and 1 SSB radios, radar and dual frequency sounders (FCV 295 + 3KW transducer), autopilot, AIS, a vessel monitoring system (CLS), 2 water temperature gauges, a longline LP system, one desktop computer for navigation (HighPlot, custom-made by an ex-fisherman) and the OrbMap oceanography information package. GL4 is also equipped with an Iridium satphone linked with Skyfile software for email communication. The vessel is owned by Tim Jones and the Haworth family in San Diego, CA. It's current home port is San Diego, CA, with fishing time split between Hawaii and the west-coast of the USA.

The operational range of GL4 is over 10,000 nm and 60 days at 8 knots with a total fuel tank capacity of 110,000 litres. The boat also has a fresh water tank of 30 $m^3$ capacity and a 2 tons/day capacity ice-maker. The fish hold is divided into two parts, one dedicated to preserve fish in ice (about 22 ton capacity) and one freezer compartment, mainly used to store frozen bait (about 15 tons).

The vessel arrived in Honolulu with a new stabilizer arm (**Picture 1)** installed in San Diego prior to departure. This apparatus was designed to be deployed immediately after leaving port, and secured upon return, making it a fixed system. It was immediately noticeable how much the ride of the boat improved as a result of the stabilizer, minimizing rocking even in heavy seas.

Complete boat specifications are detailed in **Appendix 1**.


**Picture 1: FV Gutsy Lady 4 at Kewalo Basin, Honolulu, Hawaii (left) stabilizer arm (right).**

Prior to CP-15 departure, the GL4 was outfitted with a new Fleet Broadband FBB-250 satellite communication system coupled with an "Oceanbox" data compression server (Thalos). The system was used for buoy management via Satlink ELB software and for scientific and contracted staff email. The server was lost 4 times during the 39-day trip for unknown reasons.

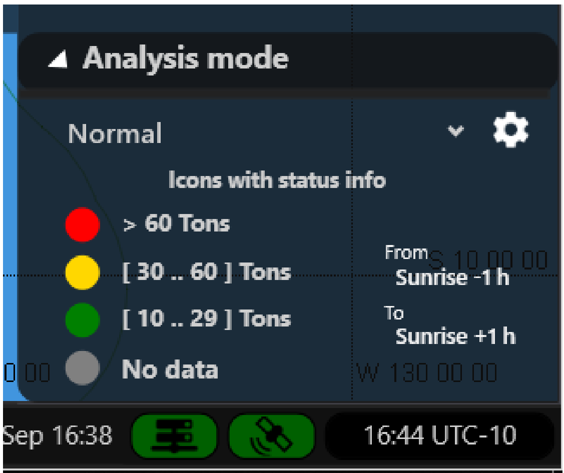
***Access to dFADs and satellite buoy data information used during the cruise***

Cape Fisheries (formerly Trimarine) and the US Pacific Tuna Group (USPTG) provided full access to dFADs owned by them, all of which are equipped with Satlink ISL, SLX, and ISD satellite buoys, in the areas that the tagging vessel operated during the cruise. Both companies agreed to share their buoys between 7 July and 23 August, with this agreement made directly between SPC and Cape Fisheries, and via Satlink with the vessel owners of the USPTG. Both companies had geographic fences upon which their dFADs would appear and disappear when crossed (dFADs crossing into the WCPO over the 150W meridian were turned on, for example). The maximum number of dFADs that were shared was 341, and most of the time was >300 (**Picture 2**). A total of 40 different dFADs were visited and fished (See **Figure 3** for an overview of dFAD locations during release events).

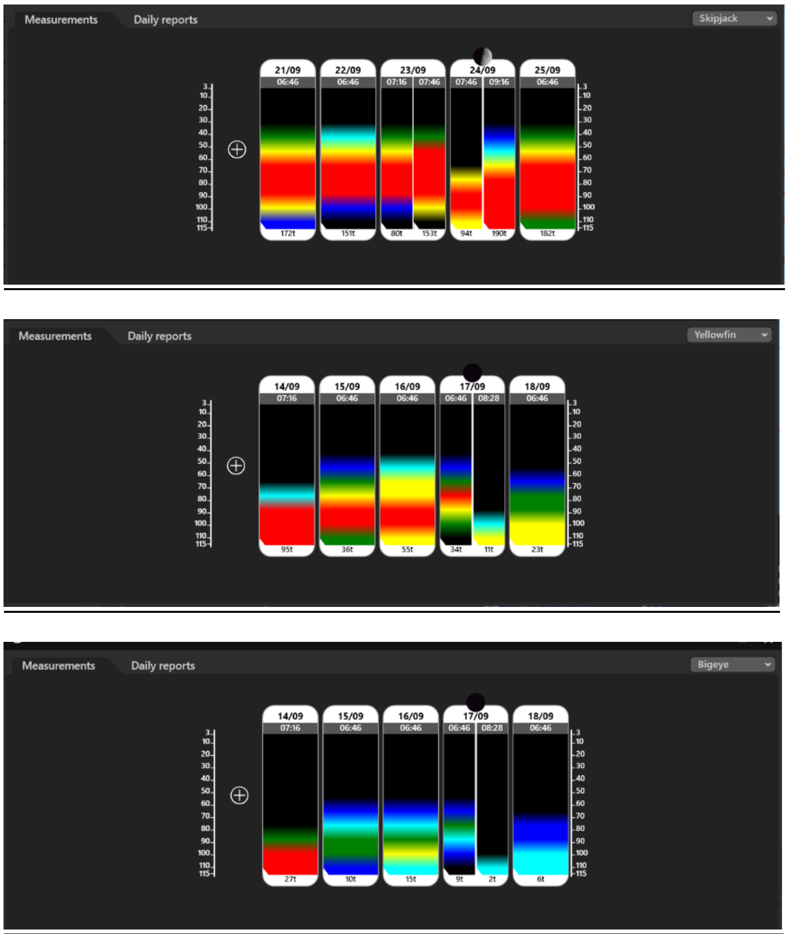
Satlink ELB3010 Manager software was used for buoy management and querying.


**Picture 2: Screen display of Satlink ELB3010 Manager dFADs in CP-15 study area.**

Each buoy utilized echosounder data collected at different times of the day (depending on the model of buoy) to estimate the tonnage of fish, and further categorized by species. A four color system (**Picture 3**) was used to differentiate tonnage estimates to make planning easier. Tonnage estimates (**Picture 4** as an example) seemed to be inaccurate, usually overestimating total tonnage probably because of the presence of bigeye (with larger swim bladders). However, there was no way to empirically confirm this with the resources available on the GL4. It was useful to use the tonnage estimates more as a total biomass indication, rather than rely on it to make planning decisions based on how many tons of bigeye or yellowfin were predicted. This seemed to work well for the purposes of a hook and line tagging trip.




**Picture 3: Color-coded tonnage estimates on ELB3010 software.**




**Picture 4: An example of the tonnage estimates for SKJ, YFT and BET from the buoy echosounder**

**FISHING GEAR**

For this tagging cruise, the vessel was fitted with 8 “danglers”. This gear consists of stainless steel or aluminum davits which extend at right angles from the hull for 2 meters and deploy two short trolling lines skipping at the surface. This technique has been successfully used during the fourteen previous CP cruises as well as in Hawaii for other tagging programs. Initially developed for commercial fishing at offshore seamount and FAD tuna aggregations in Hawaii, it is still used in Hawaii by a handful of commercial fishermen.

Five danglers were placed on the starboard side and 3 on the port side. The troll lines hanging from the danglers consisted of a 2m length of 6mm rope spliced with loops at both ends, to which an 80cm length of 2mm monofilament line was fitted with a variety of trolling lures and a 7/0 Mustad galvanized barbless hook.

Six troll lines were also deployed on the stern of the vessel- three on hydraulic reels and three handlines. The lines consisted of 400 lbs monofilament line, to which a 5m length of 2mm monofilament line was attached and rigged with a trolling lure and a 7/0 Mustad galvanized barbless hook.

Jigging landed a large proportion of the fish tagged during CP-15, and nearly 100% (3 BET were implanted with archival tags during dangling schools) of the fish that were implanted with archival tags. When conditions allowed, 4 rods and 3 handlines were jigging simultaneously, and this resulted in multiple hook ups for most of the duration of the jigging sessions. Timing of jigging sessions was also critical; 02:30 seemed to be a good start time as it allowed enough time before daylight to have a decent amount of effort, but at the same time not so early that it caused excessive fatigue of the crew. Jigging after daylight was also useful during CP-15, resulting in many short but productive sessions to top off the mornings dangling school.

**TAGGING OPERATIONS**

Three tagging stations were set up on the deck of the vessel. Two cradles were dedicated to conventional tagging (example of conventionally tagged fish in **Picture 5**) and were of the same design to those previously used for pole-and-line tagging. One cradle was placed at the stern of the vessel while the second one was positioned on the starboard side at midships. The third cradle was set up specifically for archival tagging and supplied with a saltwater hose for irrigating the fish during surgery (example of archival tag surgery in **Picture 6**). The archival cradle was placed in a central location on the deck. All cradles were marked with one cm graduations from 30cm to 120cm.

***Data recording***

Each tagger was equipped with a digital voice recorder enclosed in a waterproof sleeve. The first and last tag in each new block was read out before commencing tagging, and tag numbers were intermittently recorded and checked. After each fish was tagged, its length was recorded from the graduations on the cradles. Data were later transcribed onto hard copy release log sheets at the end of each tagging session. Data were subsequently entered into the Microsoft SQL Server data base "TagDager".

***Conventional tagging***

Conventional tagging (CT) uses the 13cm yellow dart tag manufactured by Hallprint Ltd (**Picture 5**). After checking if fish did not present any severe injuries[1], the tag was inserted between the pterygiophores of the second dorsal fin using a sharp stainless steel applicator tube. Used applicators were collected and immersed in a bucket containing a solution of fresh water and bleach, rinsed in fresh water and dried for re-use. Prior to each tagging operation, tags were placed inside the applicators and mounted in numbered tagging blocks each holding 100 loaded applicators. There were eleven 100-tag blocks in total.

[1] Typical injuries, incurred by large hooks and the shock/trauma of hookset, included mouth/lower jaw damage, eye damage (from inside the mouth cavity) and bleeding from various locations, and ranging from superficial to heavy. Bites from cookie cutter sharks and wounds from sharks and billfish were also noted.

**Picture 5: A nice specimen of bigeye tuna tagged with a conventional dart tag immediately before release.**

***Archival tagging***

Fifty-three Wildlife Computers MK9, and 113 Lotek ARCGEO-9TS archival tags were available for deployment. All tags were deployed; 140 in bigeye tuna, and 26 in yellowfin. All tags were configured to sample all likely depths, sea and internal fish temperatures and light intensity every 30 seconds. Archival tagged tuna were externally marked with an orange 13 cm conventional tag. Suitable sized tuna (generally > 55 cm for MK9 and > 50 cm for the ARCGEO-9TS, see the length frequencies (**Figure 4**) for further details) were placed belly up on the V-shaped central tagging cradle, the eye covered with a synthetic chamois and irrigated via the mouth by a seawater hose. All archival tags were and surgical instruments were placed in a bath of chlorhexidine (4.0% solution) prior to use.  Tags were then implanted into the peritoneal cavity and the incision was closed with one or two sutures (**Picture 6**).

**Picture 6: Bigeye tuna implanted with a Lotek ARCGEO-9TS archival tag and incision closed with 2 sutures.**

**FISH TAGGING RESULTS**

A total of 7866 tropical tunas were tagged and released during the cruise, comprised of 6424 bigeye (82%), 1344 yellowfin tuna (17%) and 98 skipjack (1%). Their size distributions are shown in **Figure 2.** The spatial distribution of all tuna tag releases is shown in **Figure 3**.

**Table 2** summarizes the number of fish tagged per tag type and per species. **Figure 2** details the length frequency distribution of all released tropical tunas during CP1-15, with spatial distribution described in **Figure 3**. **Figure 4** and **Figure 5** provide similar breakdowns specific to archivally tagged fish.

**Table 2: Numbers of tags deployed by tag type and species. Others include oceanic whitetip and silky sharks.**

| Tag type | BET | YFT | SKJ | others | Total |
|---|---|---|---|---|---|
| Lotek ArcGeo-9TS | 97 | 16 | - | - | **113** |
| Wildlife Comp. MK9 | 43 | 10 | - | - | **53** |
| Satellite (miniPAT) | - | - | - | 3 | **3** |
| Conventional Y13 | 6424 | 1344 | 98 | - | |
| Total fish tagged | **6564** | **1370** | **98** | **3** | **7869** |

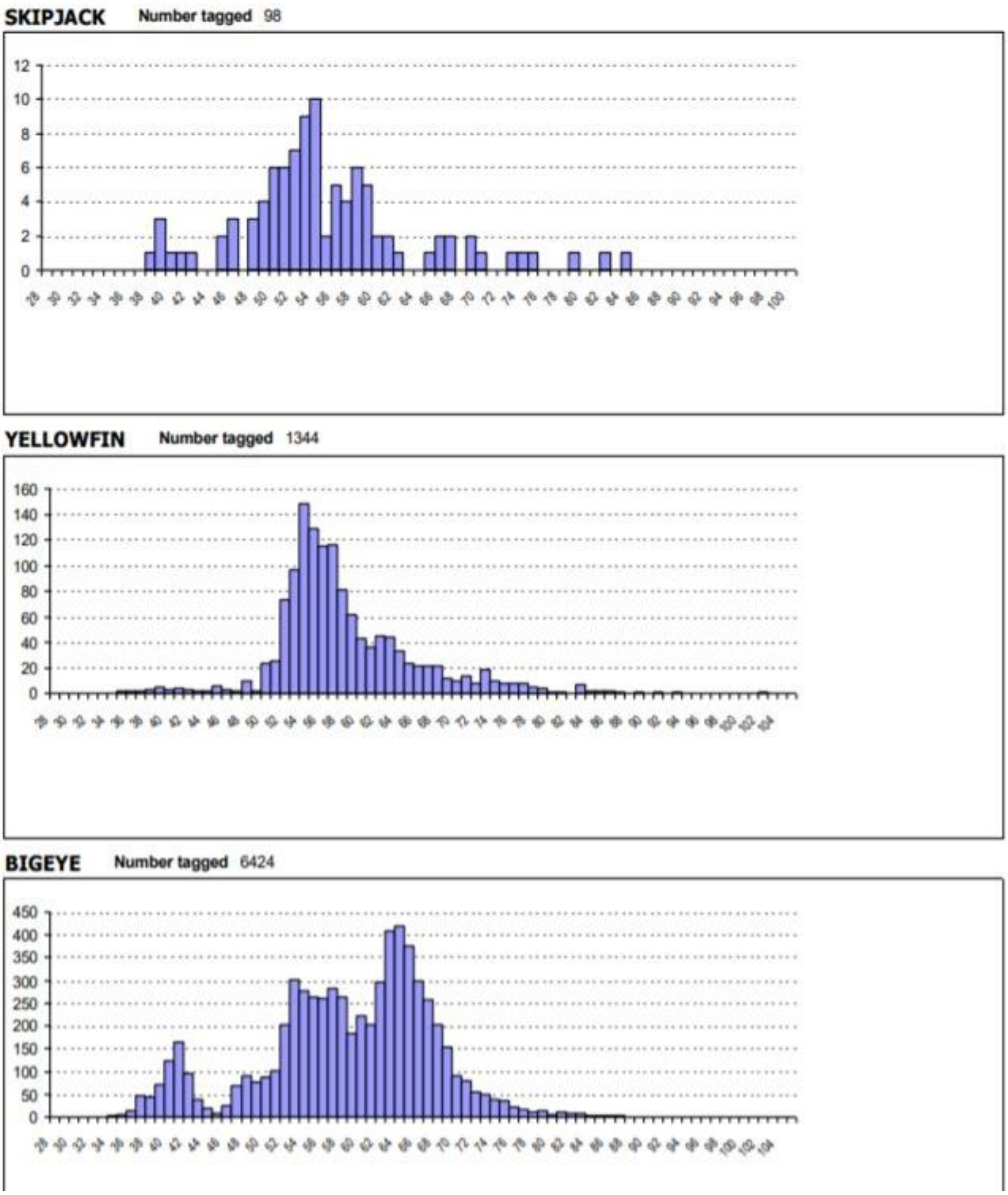



**Figure 2: Length frequencies of releases by species, all tag types.**

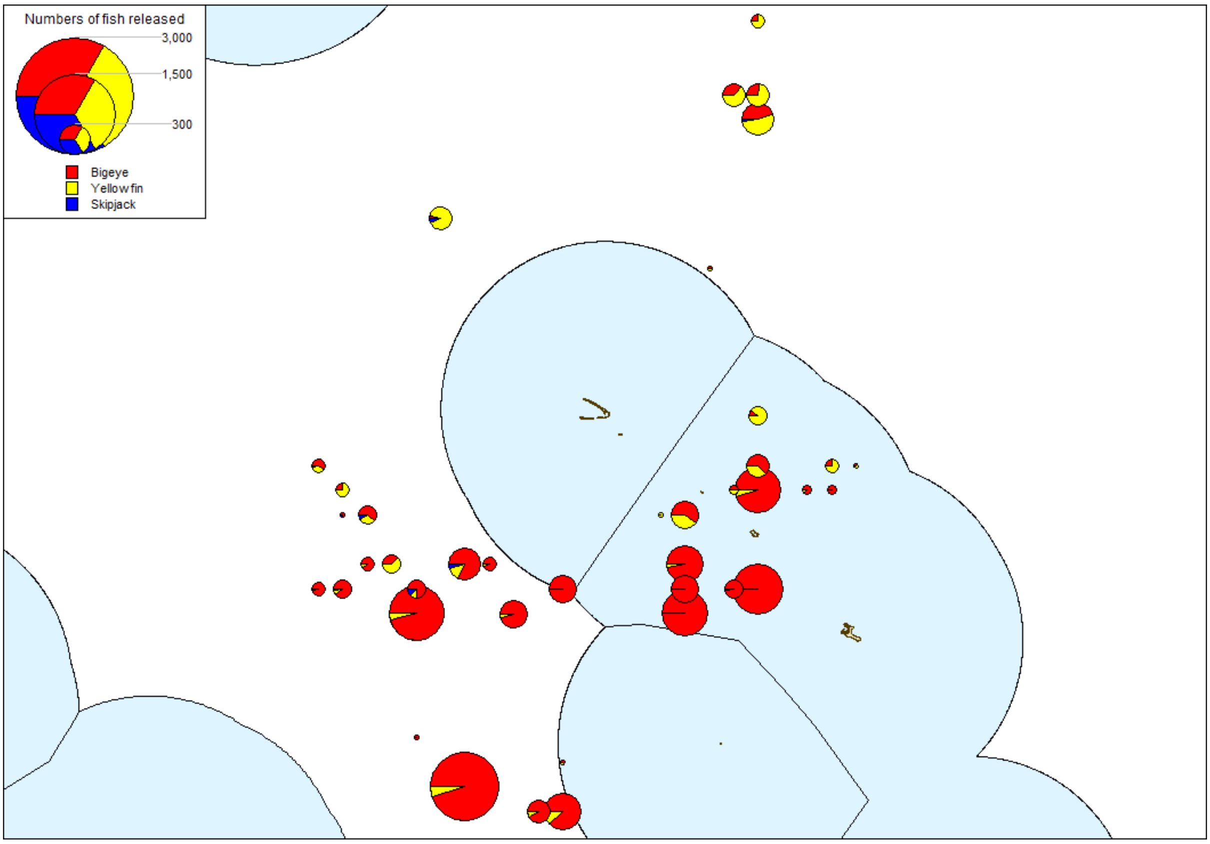
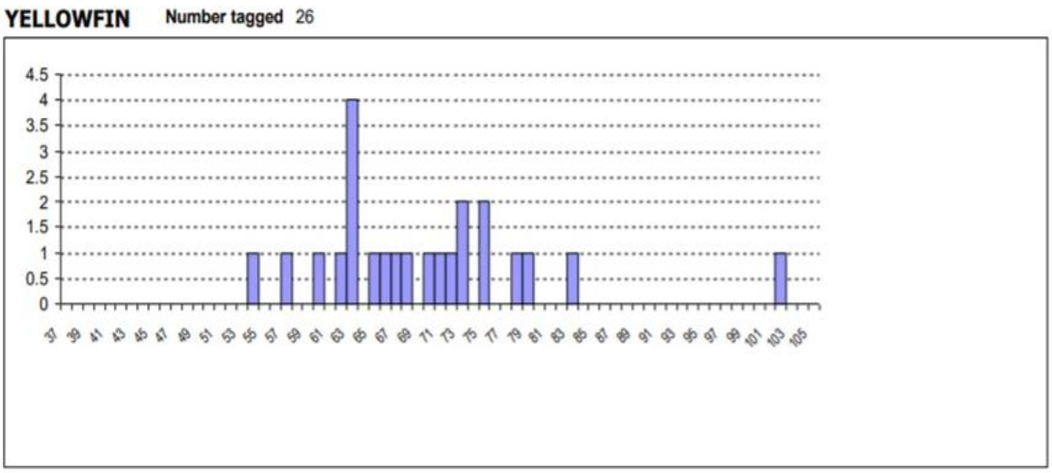



Figure 3: Spatial distribution of all releases during CP-15.



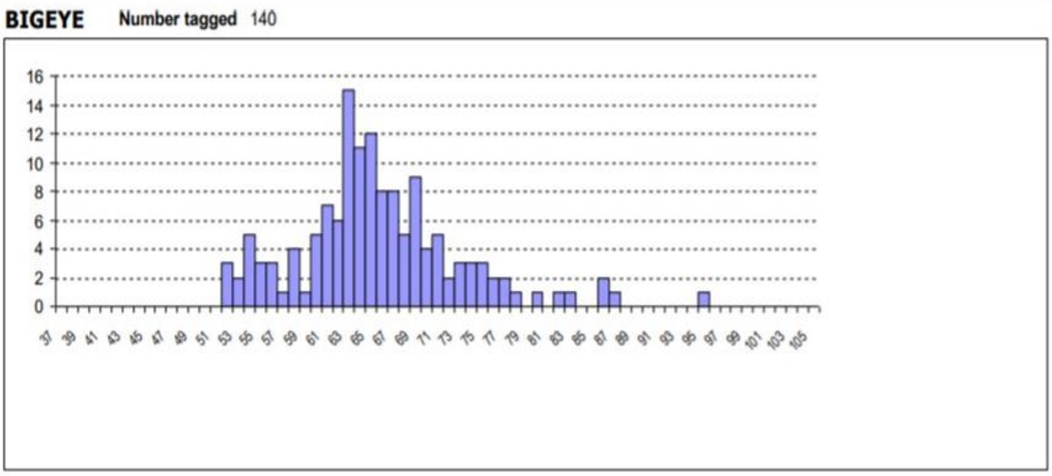



**Figure 4: Length frequencies of yellowfin and bigeye tuna implanted with archival tags.**

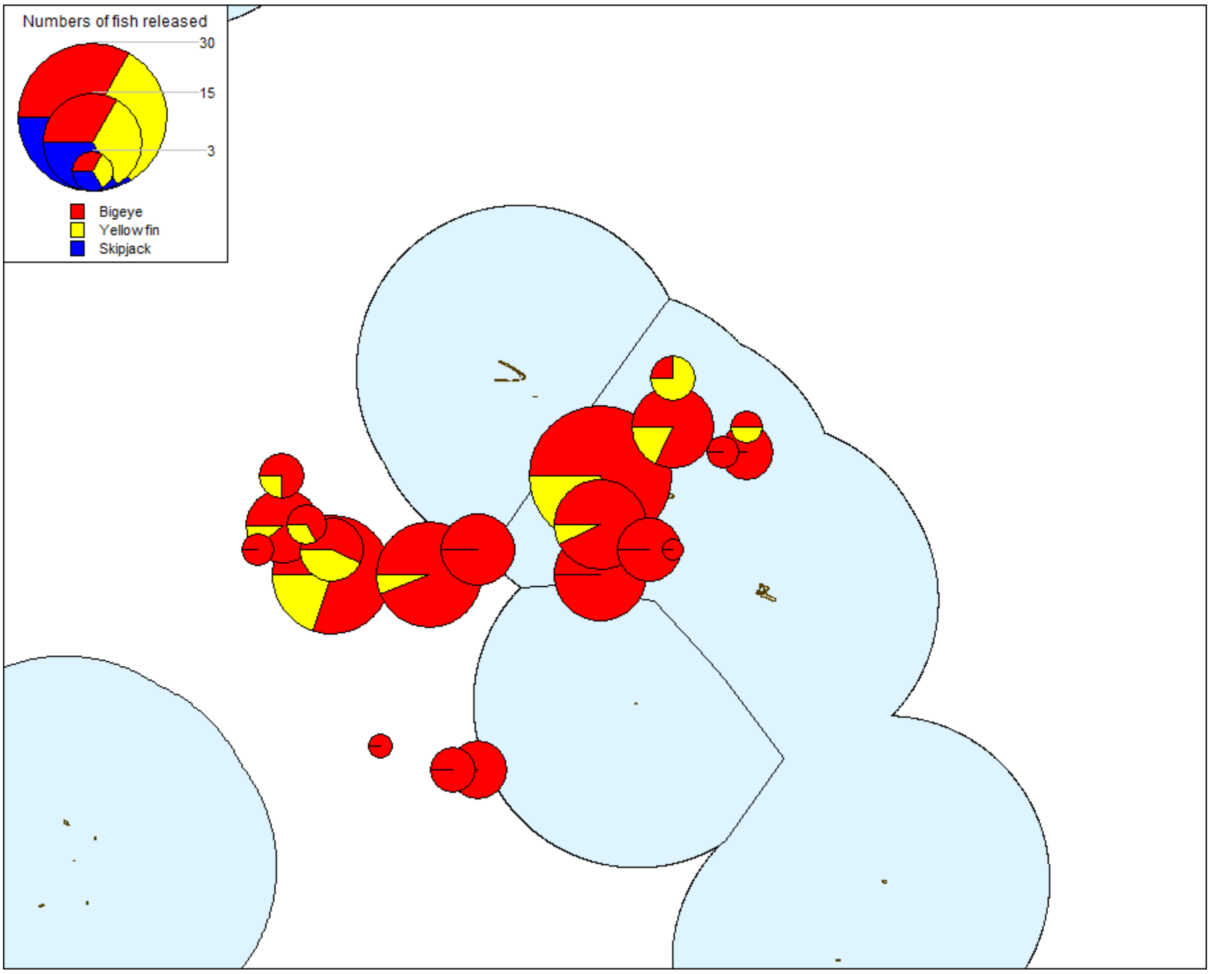



**Figure 5: Spatial distribution of archival tag releases during CP-15.**

## ELECTRONIC MONITORING

CP15 was outfitted with a portable electronic monitoring system (EMS) from Saltwater Inc., with the goals of 1) assessing the quality of EMS technology available on the market today, 2) comparing the efficiency of current, paper-based biosampling protocols and EMS-augmented options and 3) beginning to collect images to train artificial intelligence for future automated EMS data collection. Unfortunately, the EMS functioned for roughly 5 of the first 11 fishing events before failing to turn on regardless of troubleshooting attempts. Saltwater Inc provided further technical support suggestions over the next 2 weeks, but to no avail. The system was dismantled and put in dry storage on day 23 of the cruise.

Based on this trial it is probable that portable EMS technology is not yet robust enough for large scale integration into observer or other biosampling scenarios. Biosamplers also noted, at least during initial use, that the EMS slowed the sampling process.

**BIOSAMPLING**

Biosampling was undertaken on fish brought on board but rejected for tagging and release. Less than ten tunas were discarded without biosampling across the entire trip. Fewer non-target species were caught this year compared to CP14, with the possible exception of mahimahi. These were often not sampled due to the concurrent presence of numerous tunas.

As was introduced during CP14, an additional muscle sample was taken from each specimen with a single-use biopsy punch after drying the area with a clean Kimwipe, and stored in RNAlater for use in genetic analyses.

In total, 334 fish were sampled, of which 281 were tunas and 191 were BET. The total also includes 29 finclips from sharks (**Table 3**).

**Table 3**: distribution of biosamples by species and length

| Species | Length (cm) | | | | | Total |
|---|---|---|---|---|---|---|
| | <35 | 35-54 | 55-74 | 75-94 | 95+ | |
| **BET** | 8 | 69 | 103 | 7 | 4 | **191** |
| **BUM** | 0 | 0 | 0 | 0 | 4 | **4** |
| **DOL** | 0 | 0 | 1 | 8 | 2 | **11** |
| **FAL** | 0 | 0 | 1 | 2 | 17 | **20** |
| **OCS** | 0 | 0 | 0 | 0 | 9 | **9** |
| **RRU** | 0 | 1 | 4 | 1 | 0 | **6** |
| **SKJ** | 0 | 9 | 4 | 0 | 0 | **13** |
| **WAH** | 0 | 0 | 0 | 2 | 1 | **3** |
| **YFT** | 5 | 29 | 41 | 1 | 1 | **77** |
| **Total** | 13 | 108 | 154 | 21 | 38 | **334** |

As an interesting sidenote, one silky shark was brought onboard for sampling that was determined to have already been finclipped. Biosampling records indicate a similar sized shark had been finclipped a week before at the same buoy.

**GENETICS**

Three genetic experiments were conducted during CP15 in addition to the continued collection of genetics-quality tissue samples during biosampling. All three experiments recycled biosampled BETs and were often executed on the same fish.

*Experiment 1—"Degradation": Tissue degradation during storage on ice*

This experiment used 40 fish that were sampled fresh and then resampled every second day for 10 days while being stored on ice. Twenty of these fish were held at ambient seawater temperature for several hours to approximate the a fish that was dead when retrieved (i.e. to replicate some longline caught fish). The fish were stored on ice in the fish hold after first sampling. Biopsies were only taken on the subsequent days from parts of the fish that had remained in contact with ice.

*Experiment 2—"Epigenetics": Variability between muscle sample locations in epigenetic analyses*

Muscle samples were taken from the head, back, tail, lateral line and anus of forty BET of diverse sizes. The protocol mandates the use of 35 freshly caught live fish and 5 fish that had been dead for several hours (as per description in experiment 1). Sampled fish ranged from 32cm to 85cm, with the majority of fish in the 50-60cm range. Although this is far from covering the species range, it is reflective of the range of fish available on the cruise.

*Experiment 3—"Apple corer": Quality of samples collected with a modified apple coring tool*

A new tool was tested that might satisfy requirements for both genetic cleanliness and biosampling muscle size. A smooth-edged apple coring device (previously purchased by SPC for the TIPTOP project) was modified to be sharper using a basic flat metal file and tested on 94 BET. Per fish, a section of skin was sliced back using a soap-cleaned knife and two cores taken using a soap-cleaned apple corer. The same fish were also sampled using standard muscle sampling methods and a genetic biopsy punch. All four samples per fish will be genetically sequenced to compare rates of cross contamination.

As a matter of functionality, the modified apple corer worked just fine. Even on 35cm fish, it can still produce an acceptable volume of tissue. It is also simple to slice off a larger piece of skin and take multiple cores in those cases. The tool needed to be sharpened once after sampling roughly 70 fish, a maintenance rate similar to the demands for sampling knives, in general. There is one seam in the metal of the tool that was eventually noted to collect some residue tissues between fish. If the genetics results indicate elevated rates of cross contamination, that is a likely source. Scouring the inside of the coring tube with a bottle brush during the soapy water wash between fish would likely be adequate to address the issue. Pending genetic sequencing results, the option of apple coring as a dual purpose muscle sampling strategy remains viable.

**CONCLUSIONS**

CP-15 represents the second SPC-sponsored research trip during COVID times. Although not quite as problematic as planning during 2020, planning and preparation for CP-15 was again hampered by the issues of COVID, including supply chain issues and delays, travel restrictions, and the risk of contracting COVID while out and about. Despite this, it is noteworthy that CP-15 pushed forward and was carried out without incident. This would have been impossible had the trip needed to originate from any other port in the Pacific Islands due to travel restrictions.

Industry collaboration in the form of dFAD access played a critical role in the success of CP-15. Having these dFADs have allowed almost all of the cruise days to begin on a known aggregation which already tipped the chances of success in the trip's favor. Sometimes multiple stops on different dFADs were made in a day making it even more productive. Including more fleets in these buoy-sharing programs would further increase the chance of the success of future cruises.

The staffing of CP-15 was a unique blend of highly adept fishermen from Hawaii and skilled scientific staff. Furthermore, the crew on the vessel were already trained in Hawaiian-style tuna handline fishing, which made a notable difference in the catch rate and resulting numbers of tagged fish.

Another benefit of having a larger, skilled team is the ability to accomplish multiple non-tagging objectives effectively and in parallel to tagging operations. The number of fish biosampled during CP-15, 334, was a solid effort relative to other CP trips. The degradation, epigenetic, and apple coring projects, although ancillary to biosampling, were carried out and were nearly invisible to the tagging operation. In the past with a smaller staff this would not have been possible.

Some noteworthy observations were made during CP-15 concerning tagging success on dFADs:

1. A large aggregation doesn't necessarily correspond to better tagging success. Multiple times during CP-15, relatively small aggregations were checked and good numbers of tags were deployed.
2. Time of day is usually better at dawn, but again, several times buoys were checked at mid-morning or even the middle of the day and resulted in worthwhile numbers of tags deployed.
3. Similarly, arriving at daylight and not disturbing the aggregation with jigging or the vessel's lights, pre-dawn, in many cases proved to work well as the bigeye immediately came up and bit the dangler and trolling gear.
4. dFADs in high current areas (>1kt) seem to have fish that were more susceptible to being caught.

Probably the most remarkable outcome of CP-15 was the nearly pure bigeye schools encountered on dFADs on multiple occasions, and on 5 occasions these schools provided tagging events with >400 tags deployed (with a maximum of 1084). This was novel for CP style trips and perhaps marks a turning point away from planning these trips around TAO mooring lines. Whether this was a function of geography, the relative abundance of small bigeye on the dFADs visited during CP-15, and/or a number of other factors, is difficult to determine. However, as more CP trips using dFADs occur, fishing methods and trip strategy improve from experience and hard lessons learned.

F/V Gutsy Lady 4 proved again during this cruise to be the perfect platform for this type of experiment. The combination of its long range, stability, ample space on the working deck and comfortable accommodations are hard to compete in this class of commercial fishing vessel. The skills of the captain and his crews are of course one of the main components that made this tuna tagging project a success.

Lessons Learned and Recommendations

1. The satellite communication system was again troublesome during CP15. It would be advisable to review if the Oceanbox unit with a firewall/data compression unit is compatible with the Fleet Broadband FBB250 under all conditions. .
2. Permits for Palymra and Jarvis U.S. remote area EEZs would be extremely useful for future tagging experiments in this region.
3. A dedicated berth for a media/outreach person could produce high quality material for subsequent communications on tuna research and monitoring.

**Appendix 1. Gutsy Lady 4 characteristics**

| | |
|---|---|
| Name of Vessel | GUTSY LADY 4 |
| Owner of Vessel | Gutsy Lady 4 LLC |
| Port of Registration | Honolulu, Hawaii |
| Vessel Type | Fishing vessel |
| Flag | USA (US) |
| Hull Type/year built | Steel / 2001 |
| WCPFC registration | 1120347 |
| IMO | 8970469 |
| MMSI | 367571490 |
| Length (LOA) | 26.15m / |
| Beam | 7.92m |
| Draft | 4.5m |
| Tons Gross | 170 |
| Engines Make and Model | 2x Cummins KTA 19 (600hp) |
| Call Sign | WDG 7854 |
| Address of company owner | **Game Over LLC**<br>**350 Ward Avenue, Ste 106-315**<br>**Honolulu, HI 96814, USA**<br>**Tel: +1 808 217 4539** |

## Appendix 2. Specifics about daily activity, location and deployed tags.

| | | | Conventional Tags | | | | Percentage | | | Archival | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Area | Activity | BET | SKJ | YFT | TOTAL | BET | SKJ | YFT | BET | SKJ | YFT | TOTAL |
| 15-Jul-2021 | Kewalo Basin | In port/steaming | - | - | - | - | - | - | - | - | - | - | - |
| 16-Jul-2021 | U.S.-HI | Steaming | - | - | - | - | - | - | - | - | - | - | - |
| 17-Jul-2021 | Int'l Waters | Steaming/fishing | 21 | - | 53 | 74 | 28.4 | - | 71.6 | - | - | - | - |
| 18-Jul-2021 | Int'l Waters | Steaming/fishing | 243 | 13 | 382 | 638 | 38.1 | 2 | 59.9 | - | - | - | - |
| 19-Jul-2021 | Int'l Waters | Steaming/fishing | - | - | - | - | - | - | - | - | - | - | - |
| 20-Jul-2021 | Int'l Waters | Steaming/fishing | 9 | - | 7 | 16 | 56.3 | - | 43.8 | - | - | - | - |
| 21-Jul-2021 | Kiribati-LI | Steaming/fishing | 67 | 1 | 97 | 165 | 40.6 | 0.6 | 58.8 | 1 | - | 3 | 4 |
| 22-Jul-2021 | Kiribati-LI | Steaming/fishing | 62 | - | 65 | 127 | 48.8 | - | 51.2 | 9 | - | 2 | 11 |
| 23-Jul-2021 | Kiribati-LI | Steaming/fishing | 131 | 2 | 63 | 196 | 66.8 | 1 | 32.1 | 15 | - | 6 | 21 |
| 24-Jul-2021 | Kiribati-LI | Steaming/fishing | 14 | - | 35 | 49 | 28.6 | - | 71.4 | 4 | - | 2 | 6 |
| 25-Jul-2021 | Kiribati-LI | Steaming/fishing | 748 | - | 8 | 756 | 98.9 | - | 1.1 | 8 | - | - | 8 |
| 26-Jul-2021 | Kiribati-LI | Steaming/fishing | 539 | - | 5 | 544 | 99.1 | - | 0.9 | 13 | - | - | 13 |
| 27-Jul-2021 | Kiribati-LI | Steaming/fishing | 195 | - | 3 | 198 | 98.5 | - | 1.5 | - | - | - | - |
| 28-Jul-2021 | Kiribati-LI | Steaming/fishing | 381 | 2 | 12 | 395 | 96.5 | 0.5 | 3 | 12 | - | 1 | 13 |
| 29-Jul-2021 | Kiribati-LI | Steaming/fishing | 502 | - | 31 | 533 | 94.2 | - | 5.8 | - | - | - | - |
| 30-Jul-2021 | Kiribati-LI | Steaming/fishing | 64 | 3 | 4 | 71 | 90.1 | 4.2 | 5.6 | 7 | - | - | 7 |
| 31-Jul-2021 | Kiribati-LI | Steaming/fishing | 21 | 3 | 49 | 73 | 28.8 | 4.1 | 67.1 | 1 | - | 1 | 2 |
| 01-Aug-2021 | Kiribati-LI | Steaming/fishing | - | - | 1 | 1 | - | - | 100 | - | - | - | - |
| 02-Aug-2021 | Int'l Waters | Steaming/fishing | 249 | - | 2 | 251 | 99.2 | - | 0.8 | 9 | - | - | 9 |
| 03-Aug-2021 | Int'l Waters | Steaming/fishing | 191 | 2 | 9 | 202 | 94.6 | 1 | 4.5 | 15 | - | 1 | 16 |
| 04-Aug-2021 | Int'l Waters | Steaming/fishing | 325 | 2 | 12 | 339 | 95.9 | 0.6 | 3.5 | 16 | - | 4 | 20 |
| 05-Aug-2021 | Int'l Waters | Steaming/fishing | 138 | 3 | 16 | 157 | 87.9 | 1.9 | 10.2 | 10 | - | 1 | 11 |
| 06-Aug-2021 | Int'l Waters | Steaming/fishing | 63 | 11 | 27 | 101 | 62.4 | 10.9 | 26.7 | 3 | - | 1 | 4 |
| 07-Aug-2021 | Int'l Waters | Steaming/fishing | 141 | 20 | 90 | 251 | 56.2 | 8 | 35.9 | 6 | - | 4 | 10 |
| 08-Aug-2021 | Int'l Waters | Steaming/fishing | 292 | 15 | 45 | 352 | 83 | 4.3 | 12.8 | - | - | - | - |
| 09-Aug-2021 | Int'l Waters | Steaming/fishing | 437 | - | 20 | 457 | 95.6 | - | 4.4 | - | - | - | - |
| 10-Aug-2021 | Int'l Waters | Steaming/fishing | 2 | - | 1 | 3 | 66.7 | - | 33.3 | - | - | - | - |
| 11-Aug-2021 | Int'l Waters | Steaming/fishing | 418 | 1 | 34 | 453 | 92.3 | 0.2 | 7.5 | 6 | - | - | 6 |
| 12-Aug-2021 | Int'l Waters | Steaming/fishing | 26 | 2 | 19 | 47 | 55.3 | 4.3 | 40.4 | 4 | - | - | 4 |
| 13-Aug-2021 | Int'l Waters | Steaming/fishing | 1025 | 2 | 57 | 1084 | 94.6 | 0.2 | 5.3 | 1 | - | - | 1 |
| 14-Aug-2021 | Int'l Waters | Steaming/fishing | 6 | - | - | 6 | 100 | - | - | - | - | - | - |
| 15-Aug-2021 | Int'l Waters | Steaming/fishing | 54 | - | 2 | 56 | 96.4 | - | 3.6 | - | - | - | - |
| 16-Aug-2021 | Int'l Waters | Steaming/fishing | 56 | 4 | 63 | 123 | 45.5 | 3.3 | 51.2 | - | - | - | - |
| 17-Aug-2021 | Int'l Waters | Steaming/fishing | - | - | - | - | - | - | - | - | - | - | - |
| 18-Aug-2021 | Int'l Waters | Steaming/fishing | 4 | 12 | 132 | 148 | 2.7 | 8.1 | 89.2 | - | - | - | - |
| 19-Aug-2021 | Int'l Waters | Steaming/fishing | - | - | - | - | - | - | - | - | - | - | - |
| 20-Aug-2021 | Int'l Waters | Steaming | - | - | - | - | - | - | - | - | - | - | - |
| 21-Aug-2021 | Int'l Waters | Steaming | - | - | - | - | - | - | - | - | - | - | - |
| 22-Aug-2021 | U.S.-HI-Kewalo | Steaming/in Port | - | - | - | - | - | - | - | - | - | - | - |
| **39 days** | | | | | | | | **Overall %** | | | | | |
| **Total** | | | **6424** | **98** | **1344** | **7866** | **82** | **1** | **17** | **140** | **-** | **26** | **166** |