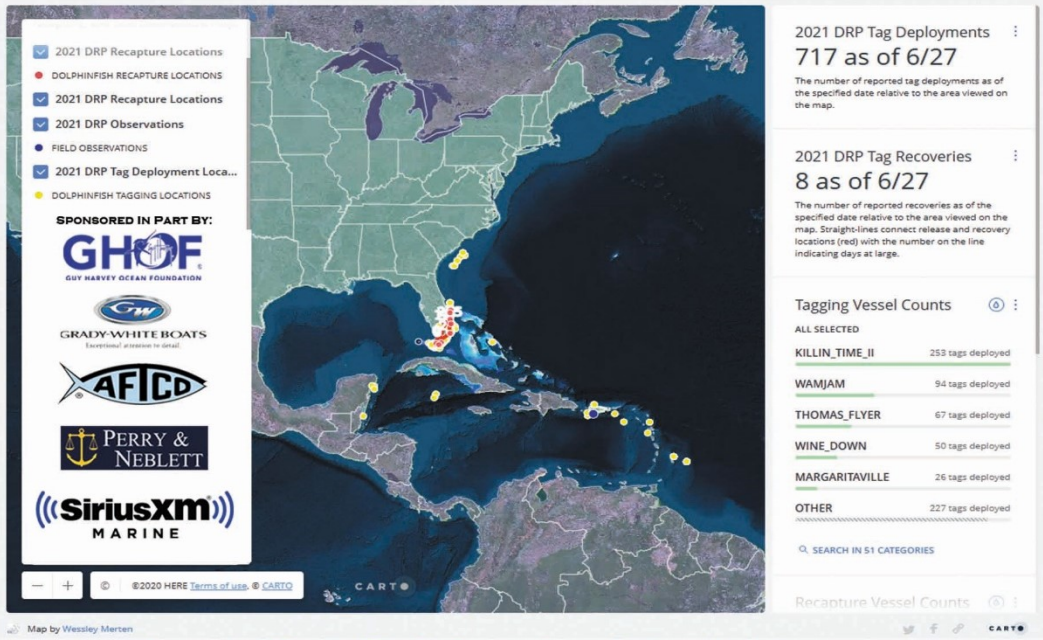
Dolphinfish Research Program™

Made possible by a grant from the Guy Harvey Ocean Foundation

June 2021



Reported and Received Tagging Progress from 5/27/2021-6/27/2021:

Don Gates (Killin' Time II) 166
Jimbo Thomas (Thomas Flyer) 63
Tim Heiser (Irish Wake) 14
Mike Prendergast (Reel Therapy) 12
Jon Reynolds (Dropback) 9
Steve Goff (Southern Comfort) 5
Mario Emilio (Catch and Release) 5
Jeff Jaques (Bluefin) 4
Bob Williams (Gut Wrench) 2
Robert Malloy (Reel Thunder) 1
Chase Cornell (Southern Eagle) 1
Gary Sweataran (Hoss Power) 1
Derek Biel (Obsession) 1

David Wamer(WamJam) 94
Jay Blakeley (Margaritaville) 19
Jim Ivey (Drs Orders) 14
David Neblett (Hit That!) 10
Don Williams (Knot Covered) 6
David Suarez (DSouth) 5
Gino Dellacava (Bandit) 4
Ed Fourest (First In) 2
Tony Ettari (The Bounty) 1
Pete Foster Smith (Bad Decisions) 1
Stuart Doley (Bocas Del Toro) 1

Earlier this month, the South Atlantic Fishery Management Council voted 8-6-3 (yes, no, abstain) to change their preferred vessel limit reduction of 48 dolphin per vessel to 54 fish per vessel along the U.S. East Coast. Our program saw this as a step in the wrong direction given the level of uncertainty surrounding the status of dolphin in the Western Central Atlantic Ocean but better than leaving the limit at 60. The vessel limit is 30 dolphin per boat in Puerto Rico state waters. Our program is working diligently on a host of topics related to this issue and we remain committed to our mission to improve data collection on this species to assist in future fishery management decisions as well as ensure the long-term conservation of the WCA stock. In other news, the largest dolphin caught in the recent Big Rock tournament was 48.3 lbs which was only slightly smaller than last year's 55.2 (and 2019's 53.7) largest dolphin. Recently, there was also a 60 pound fish caught somewhere in the SoFlo area (details TBD). However, these fish are a lot smaller than the 70 lb fish observed several times in the spring and summer of 2019 from FL to NJ. We also observed large 70+ lb fish in the eastern Caribbean Sea this past winter. Will we see those big fish this year along the U.S. East Coast? We shall see.

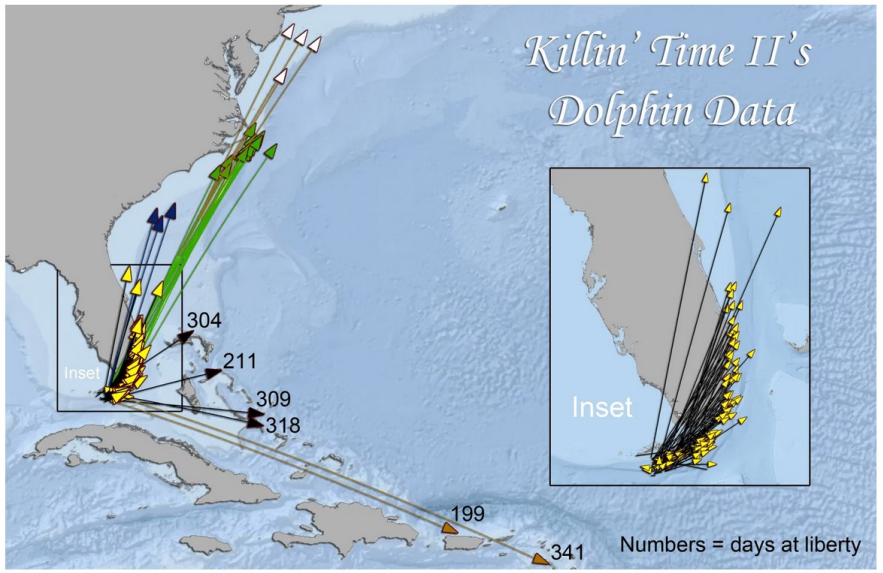
Year to 6/27/2021 for Reported Releases:
717 tagged & released for conservation and science by
51 different vessels

8 Recaptures to date in 2021 8 verified
0 PSAT movements
3 PSAT Deployments 0 Acoustic Tag
333 Kits Distributed

Reported Recaptures Since 5/27/2021

Mark Melhado reported a *Killin' Time II* tagged fish
Don Gates reported a *Killin' Time II* tagged fish
Samuel Greggs reported a *Irish Wake* tagged fish
Dennis Schreider reported a *Killin' Time II* tagged fish
Luke Dennis reported a *Killin' Time II* tagged fish
Eddy Gonzalez reported a *Killin' Time II* tagged fish

Killin' Time II Tagged 4000th Dolphin!



When you set out from Cudjoe Key, FL, aboard ***Killin' Time II*** with **Don Gates**, you are destined to tag and release a small dolphin. Two weeks ago today, angler **Chris Whitley** did just that and witnessed **Gates** tag and release his 4000th dolphin! He joined more than 70 other anglers who have helped him to surpass this incredible milestone since **Gates** started tagging for the DRP in 2002. Since then, **Gates**, along with three of his closest fishing aficionados, **Allen Lewis**, **Darryl Williams**, and **Rich Benton**, have been responsible for the majority of tag deployments and 180 tag recoveries have been generated from their effort. While documenting the movements and life history patterns of dolphin are their main goals, the

"Since I began fishing for dolphin in the Keys in the 90s, we would catch larger dolphin more often than today. This concerns me because if there were not any dolphin, then I would not be an offshore fisherman. So, we got involved in the Dolphinfish Research Program to help conserve and improve our understanding of the species for future generations."

Captain Don Gates

Killin' Time II fishing team prides itself on exposing new anglers to the proper methods to tag and release small dolphin, the fun involved in tagging, and the reasons to get involved in tagging. Hence, in 2018, we documented ***Killin' Time II*** surpass 3000 tagged dolphin (click here for that video) and produced a short how-to-tag dolphin video (click here to watch) with outings sponsored by the team. In addition, over the past several years, the team has assisted in educational DRP seminars with the Scouts of America at Florida Sea Base and sponsored outings to deploy CCA FL STAR tags, thus providing further evidence of their dedication to the craft of tagging and conservation and research of dolphin. As a result, ***Killin' Time II's*** dolphin data is a comprehensive offshore private recreational angler dataset that we examine it in detail below.

Killin' Time II's Dolphin Data

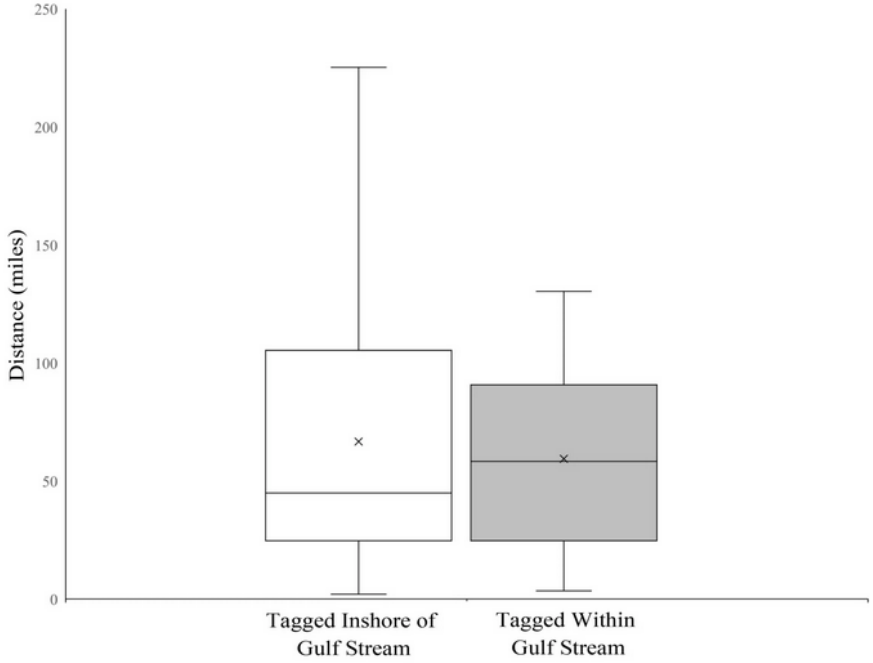
Killin' Time II's dolphin data collection revealed both local and regional short and long-distance movements throughout the WCA. We arranged their data collection into ten separate sections based on specific attributes that relate to the recoveries and data this vessel generates. Read more below.

Percent Recaptured

Currently, *Killin' Time II's* recapture rate is 2.3% for 2021 (253 tagged and 6 recovered). Overall, their recapture rate is 4.5% (4001 tagged and 180 recovered). If you examined this vessel's recapture rate by their most active month (June) and the number of fish recaptured from that month's effort for the last four years their rate ranged from 4.1% (2017) to 6.0% (2020). Their recapture rate is due in part to heavy fishing pressure in the Florida Keys but also due to the extreme care and skill used to effectively tag and release healthy dolphin. Watch the video on the left to learn how this tagging team increases their recapture rate.

Short-term Movements Relative to Gulf Stream

The Naval Oceanographic Office estimates the west wall of the Gulf Stream relative to 12 lighthouses and inlets from the Dry Tortugas to Jupiter Inlet on a daily basis. This data set can be compared to dolphin tagging sites and movement attributes such as total distance traveled between tag and recapture site based on position released inshore or within the Gulf Stream. For short-term movements (same day to 4 days at liberty) generated by Killin' Time II from 2002 to 2021, the majority of fish released both inshore or within the Gulf Stream moved to the east (ultimately to the north) within the Florida Straits but total distance traveled for fish tagged inshore of the Gulf Stream was greater than fish tagged within the Gulf Stream (image right). One possible explanation is fishing pressure east and north of tagging sites bypasses where fish tagged inshore of the Gulf Stream could be moving. For fish tagged and released within the Gulf Stream that were recovered, movement variability was higher with 24.3% recovered to the south and 19% to the west. The westward short-term movements could be attributed to fish moving against the overall easterly flow of the Gulf Stream for feeding, predator avoidance, spawning, or utilization of sargassum habitat.

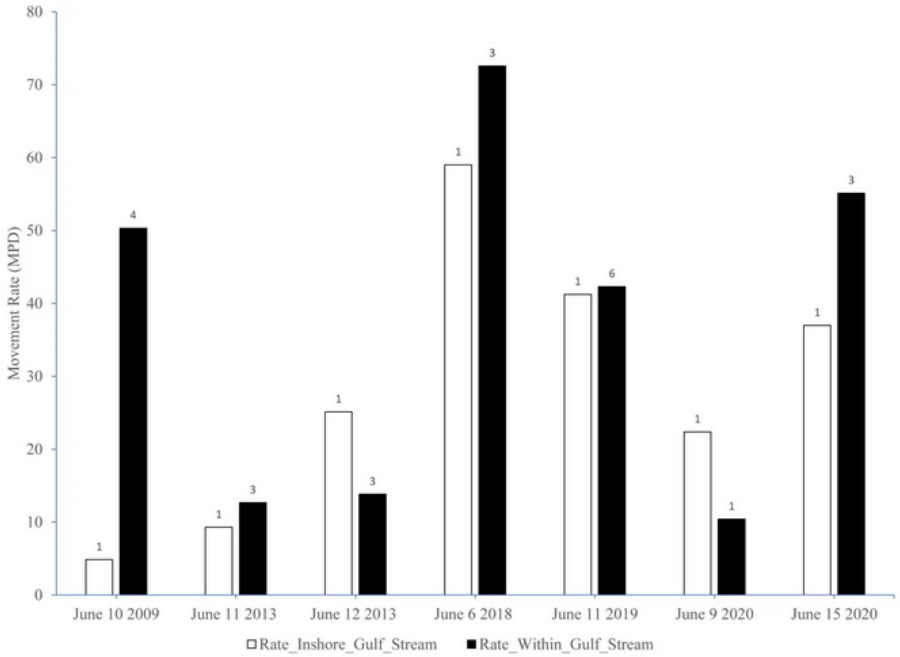


DISTANCE TRAVELED (IN MILES) FOR DOLPHINFISH RECAPTURED AFTER BEING TAGGED AND RELEASED INSHORE OR WITHIN THE GULF STREAM.

Table 1 Percent dolphinfish recaptures (0, 1, 2, 3, or 4 days at liberty (n=95) grouped by initial movement bearing based on straight-line movements between tag and recapture site generated by *Killin' Time II* off Cudjoe Key, Florida. Tagging locations were divided between sites inshore of the western wall of the Gulf Stream or within the Gulf Stream. The position of the Gulf Stream was based on daily archived reports provided by the Naval Oceanographic Office.

	EAST	*SOUTH*	*WEST*	*TOTAL*
COMBINED	67.4% (64)	21.1% (20)	11.5% (11)	95
INSHORE	74.1% (43)	19% (11)	6.9% (4)	58
WITHIN	56.7% (21)	24.3% (9)	19% (7)	37

Same Day Movements Relative to Gulf Stream

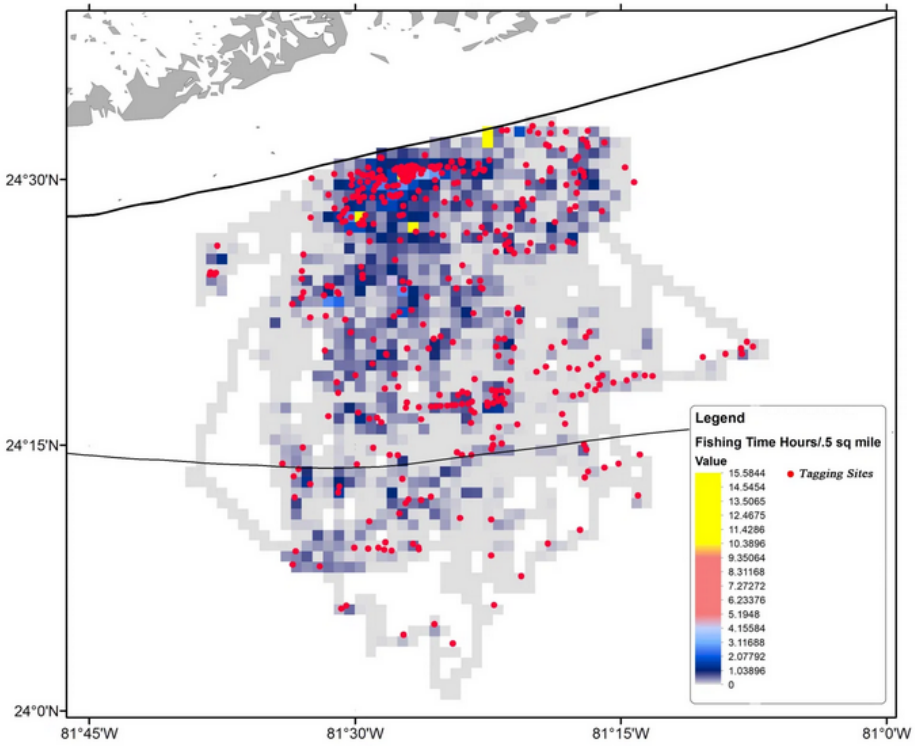


MOVEMENT RATE (MILES PER DAY) FOR DOLPHINFISH RECAPTURED AFTER BEING TAGGED AND RELEASED INSHORE OR WITHIN THE GULF STREAM FROM WITHIN A 24 HOUR PERIOD (SAME DAY). THE NUMBERS ABOVE THE COLUMNS REPRESENT THE NUMBER OF EXAMPLES USED TO CALCULATE AN AVERAGE MOVEMENT SPEED.

When a higher number of fish are tagged in a given area there is a greater likelihood that fish tagged on a particular day are recovered that share unique or similar attributes. Since 2009, there were 7 events where fish were tagged and released inshore and within the Gulf Stream on the same day that were also recovered. These events allow for comparisons of movement attributes for fish tagged inshore and within the Gulf Stream where fish may be exposed to differing oceanographic or biological influences. While a statistical test revealed no significant differences in movement rate between these events, the majority of the movement rates for fish tagged within the Gulf Stream were higher than fish tagged inshore of the Gulf Stream. For same day movements on June 10, 2009, June 6, 2018, and June 15, 2020, movement rates were considerably different. One caveat is more same-day recoveries occurred for fish tagged within the Gulf Stream than tagged inshore which could have an influence on these results. Nonetheless, on June 12, 2013, and June 9, 2020, movement rates were higher for fish tagged inshore of the Gulf Stream which suggests fish can move faster inshore of the Gulf Stream than within the actual current at times off Cudjoe Key, FL. The difficult part is gathering enough same day recoveries to compare to local oceanography to be able to predict how fish may move given the position of the west wall of the Gulf Stream and other environmental correlates (sea surface temperature, eddies, sargassum events, etc.). Our research continues.

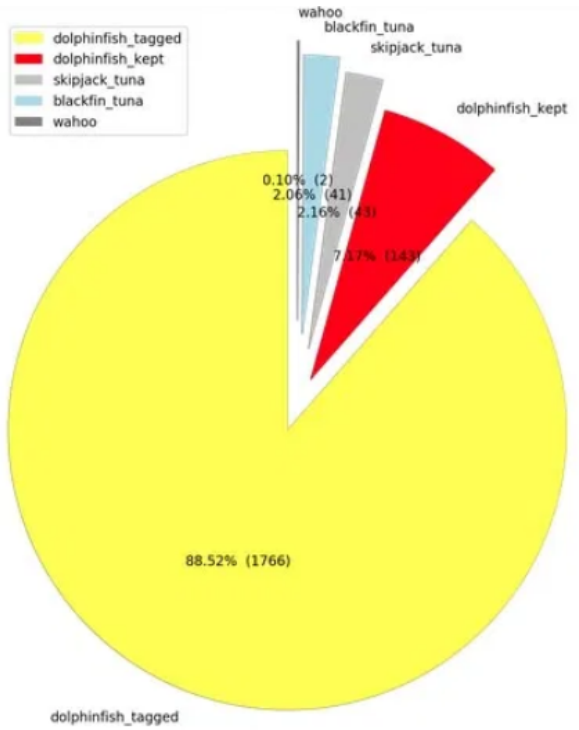
Catch Per Unit Effort

Killin' Time II's cumulative fishing effort from June 2017 until June 2021 was broadly distributed south of Looe Key, FL. A greater amount of time searching and fishing for dolphinfish as well as the actual number of dolphinfish tagged occurred in water from 100 to 500 feet deep. With the dolphin tagging sites overlaid (red ovals), effort and tagging data can be used to examine the orientation, biomass, and length of sargassum habitat that this vessel may have been fishing at given any distance from the 30 meter reef contour. Dolphin tagging sites are slightly offset due to the methods used to estimate fishing effort per .5 square mile. Since 2016, the Dolphinfish Research Program has worked with over 50 vessels to collect fishing effort and catch data. While there is value to examine cumulative patterns in these data, what is beyond the scope of this article is how this effort varies through space and time and how it relates to other factors such as sea surface temperature, chlorophyll a, or the position of the Gulf Stream, etc. For these trips we have also logged the number of fish kept per trip for all major pelagic species (skipjack, blackfin, yellowfin, sailfish, blue marlin, wahoo, etc.). In total, 143 dolphin



KILLIN' TIME II FISHING EFFORT (70 OUTINGS) FROM JUNE 2017 TO JUNE 2021 ALONG WITH DOLPHIN TAGGING SITES (N=1767). FISHING TIME IS PROVIDED IN HOURS PER .5 SQUARE MILE. THE BLACK LINES INDICATE THE 30 METER AND 400 METER CONTOUR.

were kept ranging in size from 20" to 34" fork-length. The only other pelagic species encountered were wahoo, blackfin tuna, and skipjack tuna. The greatest number of dolphin kept in one outing throughout the last 70 outings was 10 dolphin. During the last 70 outings, 1,766 dolphin were tagged and released with a maximum of 128 tagged in one day. Of the 3,794 tagged dolphin for which we have measured fork lengths from *Killin' Time II*, 19" was the most frequent size tagged and released (17.2%). The second most frequently tagged size was 18" (15.6%). The third was 20" (12.3%). Of all measured sizes, 39.5% were fish >=20".



KILLIN' TIME II CUMULATIVE CATCH FOR 70 OUTINGS FROM JUNE 2017 TO JUNE 2021.

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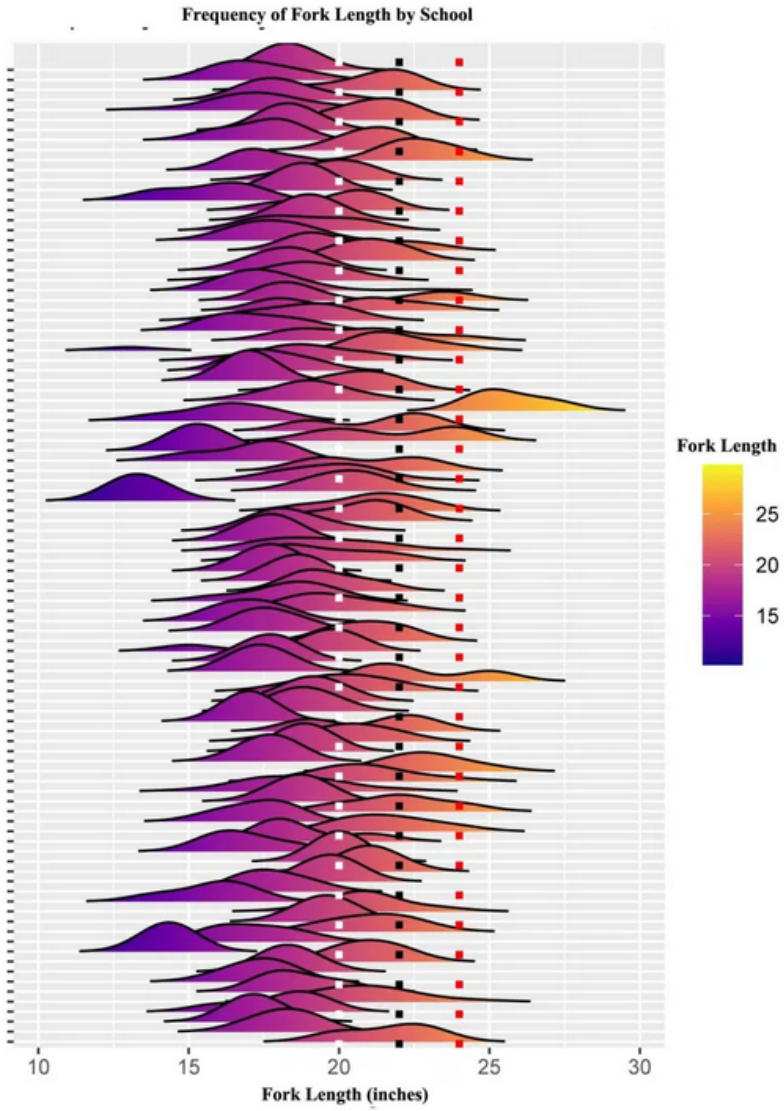
Size Frequency Tagged Per School



How many schools of dolphin do you interact with during your offshore fishing season while bailing (casting to dolphinfish with live or cut bait from a drifting or slowly moving boat)? Based off of this question, our decision as offshore anglers should be to minimize the incidence of negative interactions when encountering schools of dolphin while bailing by utilizing ethical angling methods such as the use of non-offset circle hooks and decreasing the use of drop-back methods that can result in fatal injuries to dolphin. In ongoing research to educate anglers about the opportunity we all have to minimize negative interactions with dolphin while bailing, we examined the last three years of tagging data associated with the *Killin' Time II* fishing team, a vessel in which we have also collected vessel tracking data for every offshore outing (n = 65) during that time period. Over that time period, this fishing team tagged 3 or more fish in 98 separate schools while bailing. To the left is the frequency of size in terms of fork length (FL: inches) for all of those schools. Visually, you can see from the plot that it appears that the size composition of most of the schools encountered were fish less than 20" FL (white dashed line). Numerically, 38.7% of the schools had a size composition per school less than 20" fork-length but 53.9% of all individuals encountered across schools were less than 20" FL. On average, 4 size classes were present per school with a range from 1 to 8 size classes per school. What this means, if you assume your fishing style is similar to the *Killin' Time II* fishing team i.e., you start to fish when you see birds, something floating, or travel along a weedline, the likelihood is higher that you will encounter small dolphin so you should be prepared with an arsenal of tools e.g., non-offset circle hooks or non-offset circle hook jigs, a dipnet or sling, a towel and gloves, and an ethical angling mentality to ensure the smallest individuals you encounter are caught and released with the least amount of injuries. In doing so, you can also safely and effectively land the size classes that you prefer to bring home for table fare and release the size classes that you would like to continue to grow and spawn and contribute to a healthier dolphin fishery.

Fishing Mortality

While aboard *Killin' Time II*, the general rule is to keep dolphin larger than 24" and tag and release fish smaller in size. Although, the team has tagged and released 135 dolphin greater than or equal to 24" fork-length over the years. In 2017, we incorporated fishing method into the data collection process and since then their data show that only 22% of the dolphin they caught were caught trolling with j-hooks leaving the vast majority of fish hooked up on circle hooks. The terminal tackle of choice are 5/0 circle hooks for live or cut bait or non-offset circle hook jigs (click here for an example) to ensure dolphin are hooked in the jaw or lip. In fact, of the last 805 dolphin tagged, when terminal tackle was incorporated into the tag and release data collection, 93% of the dolphin hooked were hooked in the jaw allowing the team to execute a clean tag and release. Working with Gates and the *Killin' Time II* fishing team has allowed our program to push the envelope on data collection on fishing method, hooking location, and post-release swimming behavior which are necessary data to estimate discard mortality in recreational hook and line fisheries (see article to the right). Since this article was published in 2019, all boats that tag in the DRP are requested to submit these data. One of the goals would be to gather enough data across all tagging zones to estimate a regional discard mortality rate for dolphin in recreational fisheries in the Western Central Atlantic Ocean and Caribbean Sea.

North American Journal of Fisheries Management

ISSN: 0275-5947 print / 1548-8675 online
DOI: 10.1002/nafm.10348

ARTICLE

Estimating Discard Mortality for Dolphinfish in a Recreational Hook-and-Line Fishery

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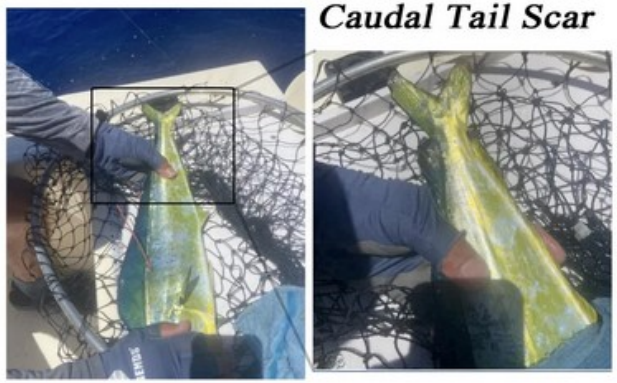
Abstract

Minimum length limits are used to manage Dolphinfish *Coryphaena hippurus* in the U.S. South Atlantic, but rates of discard mortality are unknown for this fishery and others throughout the species' worldwide range. We estimated discard mortality for Dolphinfish in the U.S. South Atlantic, Caribbean, and Gulf of Mexico recreational hook-and-line fishery by using conventional tag–recapture data. Overall, 4,648 Dolphinfish were tagged in these areas between 2002 and 2018 through the efforts of cooperating (fishery-dependent) taggers as well as research scientists who employed gear types and fishing styles representative of the recreational fishery for this species. The condition of each tagged and released fish was classified as good or poor depending on hook trauma, bleeding, and postrelease swimming behavior. Numbers of tagged and recaptured fish in each release condition were used to estimate condition-specific discard mortality by fitting a relative risk model. The model assumption of 100% survival of fish in good condition was scaled downward by using numbers of dying fish in good condition from tank holding and satellite tagging experiments. An overall median rate of discard mortality (0.248; 95% credible interval = 0.053–0.389) for the fishery was estimated by summing the products of each condition-specific mortality rate and the proportion released in each condition. Given relatively high discard mortality rates (>20%), the results suggest that alternative management strategies (e.g., mandatory retention of hook-traumatized individuals contributing to a bag limit, regardless of size), educating fishers on the use of alternative gear types (e.g., circle hooks), modifying fishing practices (e.g., trolling with heavy drags to reduce rates of deep hooking), or a combination thereof may be more effective solutions than minimum size or bag limits to control the rates of fishing mortality for Dolphinfish.

Recreational harvest represents an increasingly greater proportion of the take in a variety of fisheries around the world (Cooke and Cowx 2004, 2007). Along with a global increase in recreational landings (Cooke and Schramm 2007), the number of dead discards in recreational fisheries has also increased (Davis 2002). Discarding in recreational

Unusual Observations

Of the past 1,326 dolphin tagged and 143 dolphin kept, *Killin' Time II* caught, tagged, and released 5 pompano dolphin (*Coryphaena equiselis*). Based on this catch frequency, it is an unusual observation and worthy of including a note in this section. We have heard that pompano are more prevalent in areas around the Azores and eastern Atlantic but little is known regarding the species movement ecology and behavior. Pompano can be distinguished from common dolphin due to the lack of a pointed anal fin, a deeper but narrowly forked caudal tail, and a square (not oval) tongue tooth patch. In addition to providing occasional observations on the occurrence of pompano in the Florida Straits, the Killin' Time II team have also sent in photos of bizarre scars they found associated with some individuals they have caught and tagged. For example, the image in the lower left shows a dolphin that is missing the majority of it's caudal tail yet it was still able to hit a bait. Lastly, on occasion, loggerhead sea turtles and silky sharks have been observed with dolphin while fishing aboard Killin' Time II providing unique observations to note that relate to pelagic food webs and species-species interactions.



Caudal Tail Scar

PHOTO: DON GATES

LOGGERHEAD TURTLE ENCOUNTERED WITH DOLPHIN. PHOTO: WESS MERTEN

SILKY SHARK ENCOUNTERED WITH DOLPHIN. PHOTO: WESS MERTEN

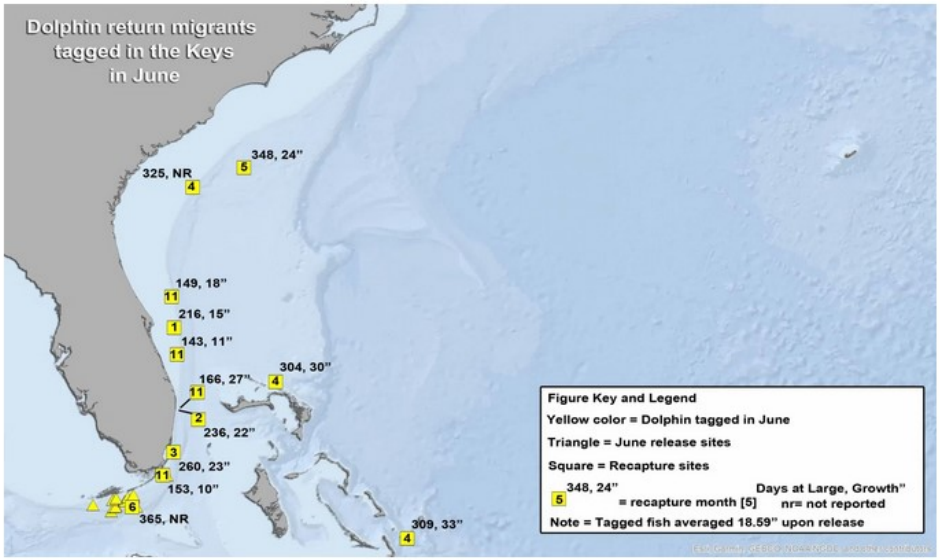
Movement Types

Of the 18 different movement types (image below) observed through the Dolphinfish Research Program, nine have been documented by the *Killin' Time II* fishing team. One of the main movement types that has not been observed through their effort is a Florida tagged fish recaptured in the Mid-Atlantic Bight in a year subsequent to when it was tagged. These movement types are defined as annual revisits and the team has produced 3 annual revisits for Florida and 2 for the South Atlantic Bight.

Table 2 Number of dolphinfish recaptures grouped by movement type generated by *Killin' Time II* fishing off Cudjoe Key, Florida, from 2003 to June 24, 2021. FL = Florida; SAB = South Atlantic Bight; NC = North Carolina; MAB = Mid-Atlantic Bight.

Movement Types	*Number of Recaptures*
FL Instate	136
FL Bi-Annual Revisit	7
FL Annual Revisit	3
FL to SAB Annual Revisit	2
FL to SAB	3
FL to NC	19
FL to MAB	4
FL to CARIB	2
FL to BAHAMAS	4
Total	180

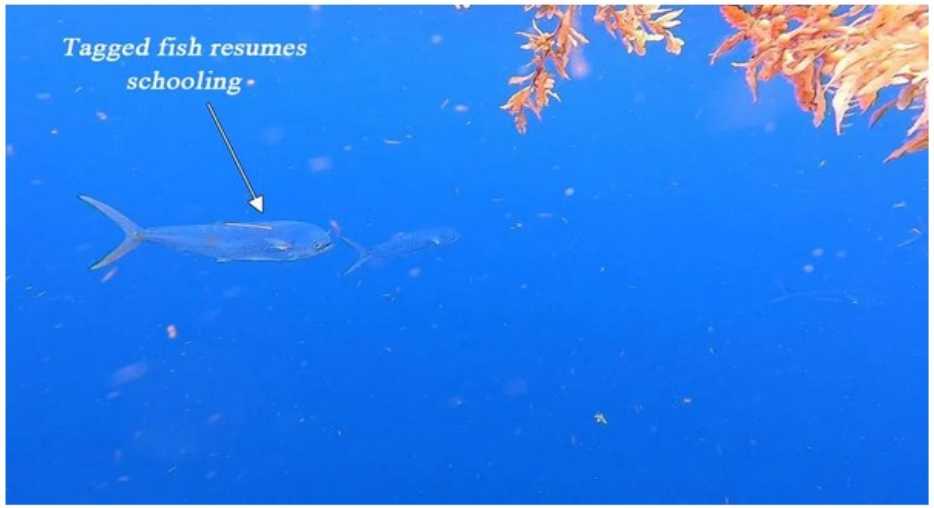
Growth



Killin' Time II's tagging effort is responsible for showing drastic changes in growth of dolphin in a relatively short amount of time. In the figure to the left, both of the dolphinfish recoveries in the Bahamas were tagged by *Killin' Time II* and both 18" fish grew 30 to 33" fork-length in 304, and 309 days, respectively. These examples when examined as a weekly growth rate equate to .69 and .74"/week. The recaptured fish ranged in size from 48" to 51" fork-length and likely weighed more than forty-five pounds.

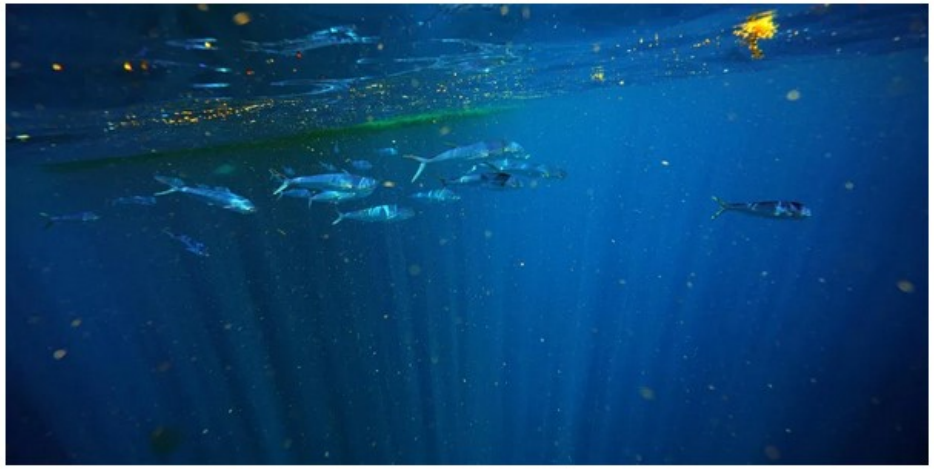
Schooling Behavior

While conducting field work aboard *Killin' Time II*, we have accumulated hours of in water observations and footage. These experiences have led to documenting the speed at which a tagged fish will resume schooling with a school of dolphin (within minutes), and the co-occurrence with large sea turtles and sharks. We have also extensively documented how dolphin meander around floating objects such as wooden pallets and *sargassum* mats and set the stage for how small dolphin can be studied independent of fishing activity.



A FISH TAGGED AND RELEASED BY KILLIN' TIME II RESUMES SCHOOLING. PHOTO: WESS MERTEN

SCHOOL OF DOLPHIN FOUND ASSOCIATED WITH A LOGGERHEAD TURTLE. PHOTO: WESS MERTEN



SCHOOL OF DOLPHIN EMERGING FROM A SARGASSUM MAT. PHOTO: WESS MERTEN

Thomas Flyer Approaching 3000th Tagged Mahi!


Photo: Scott Kerrigan

In the charter vessel category, **Captain Jimbo Thomas** and his brother, **Rick**, who operate the Miami-based charter boat ***Thomas Flyer*** just surpassed 2,850 dolphin tagged for the DRP this past month! **Captain Thomas** tagged his first dolphin for the DRP in 2005, and it took 370 outings with an average of 8 fish released per outing to amass 2,850 releases. A total of 32 fish have been recovered from their effort. Each year, the ***Thomas Flyer*** averages 170 dolphin tagged. Their best year was 2007 when they tagged 342 dolphin. The average size fish they release is 18.44 inches, but 10 percent are actually larger than Florida's legal limit with some dolphin tagged and released as large as 30 inches. Congratulations to the ***Thomas Flyer*** fishing team and thank you for your participation!

500 Tagged for *Wam-Jam!*

Another private recreational vessel, ***Wam-Jam***, owned and operated by **David Warner** and **Charlie Jamison**, recently tagged and released their 500th fish off Marathon, Florida, which puts them among a half dozen other private vessels that have dedicated time while fishing offshore to tag more than 500 dolphin for the DRP. Congratulations Team ***Wam-Jam*** and thank you for your participation!

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June 2021

Support Our Tagging Program.

Help our tagging program continue to grow and advance data collection on dolphin. There are two ways to support our effort. You can make a tax-deductible donation to the **Beyond Our Shores Foundation** (click here to donate) or purchase a kit, shirt/hat in our online shop (click here to shop).

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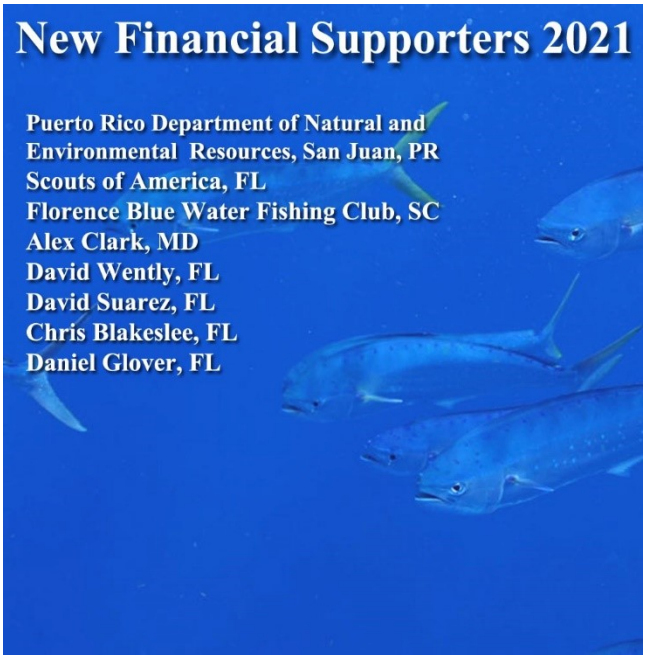

New financial supporters since the last newsletter. Thank you!!

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