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## Atlantic Tarpon *Megalops atlanticus*



### ***History of Gulf of Mexico Tarpon***

Tarpon, frequently referred to by anglers as “silver kings” are a prized game fish of saltwater anglers along the Gulf Coast. Once thought to be uncatchable due to their sheer size and power, tarpon helped shape the Gulf Coast from Florida to Texas. Tarpon were the sportsman’s fish of the early 1900s, and fishermen from all over the United States, including several future presidents, flocked to coastal cities for a chance to catch one of these magnificent fish. These fishermen brought in thousands of dollars to the local businesses and guides who made their living tarpon fishing. For decades, this fishing craze spanned the entire northern Gulf of Mexico, with Port Aransas, Texas (formally Tarpon, Texas) being called the “1950s tarpon capital of the world”. However, as tarpon

populations in the northern Gulf of Mexico began to decline in the 1960s, so did the number of tarpon fishermen. Tarpon declines are thought to result from a combination of fishing pressure and coastal development altering rivers and estuaries where juvenile tarpon reside until adulthood.

In the past, almost all captured tarpon were brought back to port for fishermen to pose with. However, today's tarpon fishery is primarily catch and release, with few tarpon kept as trophies. While tarpon are not consumed in the United States, they are considered a delicacy in some African countries, and are served during special occasions such as marriage ceremonies and festivals. They are also harvested in many Latin and South American countries for their meat and roe.

### ***Biology of the Silver King***

Tarpon are an ancient fish, and they have an incredibly interesting biology.

- Tarpon can grow to over 8 feet long and well over 200 pounds.
- Tarpon are one of the most fecund (i.e. fertile) fish species; an individual female is capable of producing over 20 million eggs per year!
- Tarpon have a ***physostomous*** (fi-sauce-toe-mus) swim bladder, which allows them to extract oxygen from air in addition to obtaining oxygen through their gills. This modified swim bladder allows tarpon to live in oxygen poor environments where most other fish species can't. This is also why tarpon they are able to roll or leap into the air mid-fight.
- Tarpon are a slow-growing fish, requiring about 10 years to reach sexual maturity and having the potential to live over 80 years.
- Not much is known about tarpon spawning in the Gulf of Mexico, but it is thought that they will form large groups and then travel over 100 miles offshore to spawn. The tarpon eggs will then hatch and the larvae will slowly make their way back to the Gulf Coast estuaries.

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## ***Tracking the Silver King***



Understanding the movement patterns and spatial ecology of an organism is crucial to aiding in management and conservation practices. Presented here is a summary of some of the tagging projects on these mighty “flats” fish.

**1998:** Dr. Randy Edwards at the Mote Marine Laboratory conducted a study on the movement pattern of tarpon in Florida waters using acoustic tags. After tagging the fish, he tracked the individuals from a small vessel using instruments known as hydrophones and receivers for short periods of time. 27 tarpon were tagged and tracked starting in Boca Grande Pass in southwest Florida. Of these, all but one survived, which provided an estimate of post-release mortality.

Click [here](#) to read the study (Edwards 1998).

**2012:** SPOT (Smart Position or Temperature Transmitting) tags are satellite tags that transmit geographic location of tagged individuals to satellites whenever they break the surface of the water. In 2012, Dr. Neil Hammerschlag and his team SPOT tagged 10 tarpon off southern Florida. When tagging tarpon, they found that large, mature fish were virtually absent from southern Florida in winter, and the majority of the migratory group arrived in late spring (mid-to late-April) and fall. These fish would depart the region to travel northward by early summer (late June).

Click [here](#) to read the study (Hammerschlag et al. 2012).

**2012:** Another type of satellite tag is the PAT (Pop-up Archival Transmitting) tag. These tags record and archive data while deployed and are programmed to pop off the animal after a specific number of days. Once the tag reaches the surface, it transmits data whenever a satellite is passing overhead. Drs. Luo and Ault deployed PAT tags from 2002-2010



on Atlantic tarpon in the central western Atlantic, Gulf of Mexico, and Caribbean Sea. Information transmitted from 42 PAT tags showed that all individuals strongly preferred shallow waters. Occasional deep dives occurred around new or full moon phases, and thus are thought to be associated with spawning activity.

Click [here](#) to read the study (Luo and Ault 2012).

**2018:** A team of researchers tagged 22 Atlantic tarpon that could be tracked by hydrophones set up in southern Florida and along the Atlantic coast. Whenever these acoustically tagged fish swim within a detectable distance of these hydrophones, the hydrophone will log the unique tag identifier for each fish, which can later be downloaded by researchers. The benefits of using these acoustic tags are that they can be implanted in smaller individuals, are cheaper to deploy, and can track fish for long periods. These findings suggest broad connectivity among individuals and across regions, highlighting the importance of collaborative management practices across state boundaries.

Click [here](#) to read the study (Griffin et al. 2018)

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## ***Local Tarpon Research***



***What's the problem?*** Tarpon have been studied in other parts of the Gulf of Mexico (e.g. Florida), but we know less about the tarpon we see off our coast. These fish were once abundant throughout the coastal waters of Mississippi and Alabama, but a combination of habitat loss and overharvesting has reduced their populations. Given the cultural significance of tarpon, we sought to better understand their movements, migrations, and habitat along our coast.

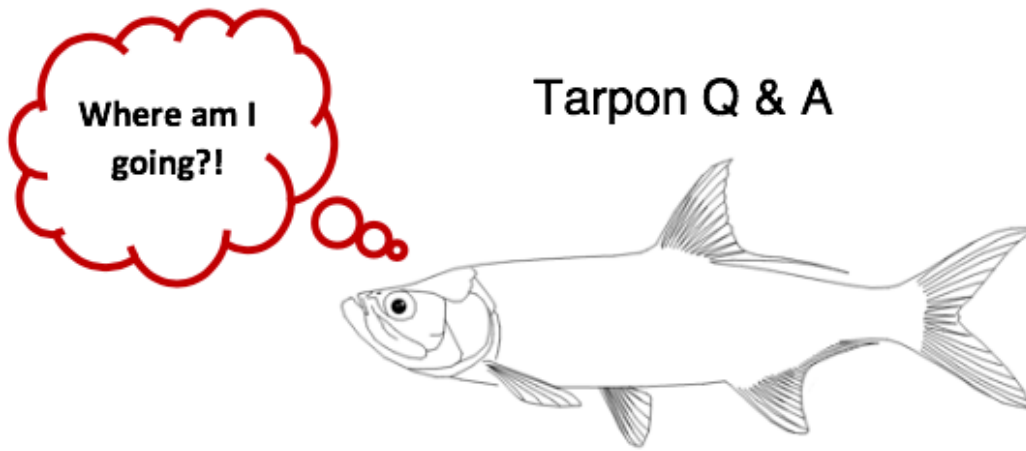
***How did we address it?*** Electronic tags can provide insight into the movement patterns of highly migratory fishes, including habitat use and migration. One commonly used electronic tag is a Smart Position or Temperature (SPOT) tag. This tag transmits a position estimate to an orbiting satellite system known as ARGOS using a physical principle known as the Doppler Effect. The Doppler Effect is the change in frequency of a wave when the source of the wave and the observer are moving relative to each other (imagine an approaching train). However, the fish has to be at the water's surface for a SPOT tag to transmit data. In other words, SPOT tags provide a way to estimate positions on animals that (at least occasionally) come to the surface.

***What did we do?*** Thanks to the dedicated help of nearly a dozen local tarpon fishing experts, we were able to deploy SPOT tags on 10 tarpon in 2018. These tarpon were caught on their annual westward migration.

***What did we find?*** So far, the SPOT tags have been working really well. Over the past month, the tags have transmitted over 5,000 messages, and have generated nearly 1,000 position estimates (note not all messages provide successful position estimates). In general, these tarpon are moving west, often stopping at the Chandeleur Islands; however, a few have ventured offshore before returning inshore and resuming their westward migration.

***What does it mean?*** The information we're collecting from these 10 fish will help us better define critical habitat areas for these fish, and may even provide insight into their spawning behaviors.

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We have gotten an overwhelming amount of positive response and interest in our 2018 tarpon tagging project, and we can't get enough! Here are some of the top questions that people have been asking.

**Q1: Were all the tarpon tagged at the same spot?**

*A1: All of the 2018 tagged fish were caught in roughly the same area with the help of fishermen competing in the Alabama Deep Sea Fishing Rodeo and the Rotary Tarpon Tournament (Mobile, AL).*

**Q2: What does each red dot on the maps represent?**

*A2: Each red dot represents a point in time when the tag was at the surface and communicated with the satellite network. The tag has to be at the surface long enough to communicate with the network when a satellite is in the area for the tag to send its data to us.*

**Q3: How often will the maps be updated?**

*A3: Introducing...Tarpon Tuesday! On the first Tuesday of every month we will post updates and maps for each tagged tarpon on our Facebook page: <https://www.facebook.com/MarineFisheriesEcology/>*

**Q4: Are these fish travelling over land?!**

*A4: As with everything, there is some degree of error associated with satellite tags. These fish are not swimming over land, but are more likely near land. Further, the lines are drawn as the crow flies from point to point, rather than the more logical paths traversing across the water.*

**Q5: Can I get in on the tagging action?**

*A5: Unfortunately, the satellite tags we use are very expensive, so we only have a finite number of tags that we are able to put out each year. Due to this expense and the permits required to tag these fish, we are not able to allow recreational fishermen tag these fish. However, stay involved on our*

Facebook page for monthly updates on our tagged fish!

We love hearing from you! Be sure to follow and like us on Facebook (MSU Marine Fisheries Ecology, link in the Footer of this newsletter) for more monthly updates!

### #Tag us!

Help share our research and monthly updates on our tarpon tagging project by using the hashtags #tarpontaggingproject and #MSUfisheries when sharing any and all tarpon information!

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## Thanks for your support!

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**TARPON**  
(*Megalops atlanticus*)  
**TAGGING PROJECT**

Once common throughout the northern Gulf of Mexico, scientists estimate that populations have declined by as much as 90% since the 1940's. Several factors have contributed, including historical overfishing, habitat loss, and harvest in other parts of the world. Tarpon grow slowly, reach large maximum sizes, and can live for more than 50 years, which makes it even harder for their populations to recover once they're strained.

At Chandealeur Brewing Company, we're committed to the conservation of tarpon. We understand that fishing is more than a simple pastime; it's a part of our heritage. To help ensure tarpon populations continue to recover, we're pleased to introduce the Tarpon Tagging Box. **A portion of the proceeds from the sale of each Tarpon Tagging Box goes to support local tarpon migration research.** Join us in our efforts to ensure Gulf tarpon are here for generations to come.

TARPON TAGGING  
RESEARCH IN COOPERATION BY  
**Sea Grant**  
Mississippi-Alabama

*We want to thank Gulf Coast Fisherman readers, coastal Mississippi/Alabama anglers, and the Chandealeur Island Brewing Company for their enthusiastic support of our tarpon tagging efforts. With your help, we'll continue to learn more about these incredible fish so we can ensure their populations rebuild into the future.*

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I'm Marcus Drymon, an Assistant Extension Professor at Mississippi State University and a Marine Fisheries Specialist at Mississippi-Alabama Sea Grant. I'd like to hear from you - please send any comments or questions to [marcus.drymon@msstate.edu](mailto:marcus.drymon@msstate.edu), and click on the links below for more information on my website and Facebook page.



Contributing authors shown with their favorite fishes: Extension Associate Amanda Jefferson (triggerfish, left), and Extension Program Associate Emily Seubert (sharpnose shark).



Facebook Website

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