

RECAPTURES, RECAPTURES: Read all about it!

Database documents more than 100 recaptured tarpon



Since 2005, anglers participating in the Tarpon Genetic Recapture Study have been helping researchers gain insight into this fascinating species. When anglers catch a tarpon and collect a DNA sample for the study, they are contributing valuable information to a growing database.

Biologists use the database to identify when a tarpon has been caught and sampled more than once. Biologists refer to these fish as recaptures. The database now includes more than 100 documented recaptures. The following reports share some of the information being gained from recaptured tarpon.

Learning about seasonal movements of adult tarpon

To examine the movements of tarpon, researchers classify recaptures according to the season and the size or life history stage of the tarpon. Peak fishing season for large tarpon in most of Florida usually corresponds with spawning season, April through July. The remaining months comprise the off-season.

The map indicates where an adult tarpon was caught and sampled off Apalachicola beaches (“C”) during the July 2007 sampling season. It was recaptured two years later in May 2009 off Captiva (“R”). This tarpon’s journey of more than 280 miles represents the farthest distance yet between initial capture and resampling events for a fish in this study.



DNA samples also documented the travels of two other Gulf coast tarpon to the Florida Keys. Both were caught in Charlotte Harbor in August 2010. One was recaptured in March 2011 in Islamorada; the other, in April 2011 off Key West.

Several other spawning-season recaptures demonstrate a connection between estuarine systems of the central Gulf coast of Florida. In 2010, a tarpon caught during a June tournament in Boca Grande Pass was recaptured in August inside Tampa Bay. And a tarpon caught inside Charlotte Harbor in May 2010 was recaptured the following May at the mouth of Tampa Bay.

Such recaptures will continue to provide information about ranges and patterns of movement and the linkages or connectivity, if any, between certain spawning grounds and off-season locations.

Learning about juvenile and subadult tarpon habitats

Four tarpon in the ever-growing Tarpon Genetic Recapture Study database were caught and recaptured nearby during the same off-season. The recaptures occurred in four different areas of the southern peninsula of Florida: the Tampa Bay area, the Ten Thousand Islands, Turkey Creek south of Merritt Island, and north of Miami Beach. All involved immature fish, indicating there are juvenile or subadult tarpon habitats throughout southern Florida that support tarpon even during the winter months.

Another juvenile tarpon was caught and sampled in the Loxahatchee River system in June 2007, then recaptured 810 days later by the same angler in September 2009, approximately two miles from its original capture location. This recapture event shows that a river system can be an important habitat for a subadult tarpon for multiple years.



Each of these four tarpon was recaptured (“R”) less than five miles from its initial capture location (“C”).

To receive a free tarpon DNA sampling kit and refills, call toll-free 800-367-4461, e-mail TarponGenetics@MyFWC.com, or visit one of about 200 participating locations statewide where you can also drop off your samples.

Attention: The study’s e-mail address will change in fall 2012. Expect an update.



How FWC biologists identify individual tarpon using DNA fingerprinting techniques

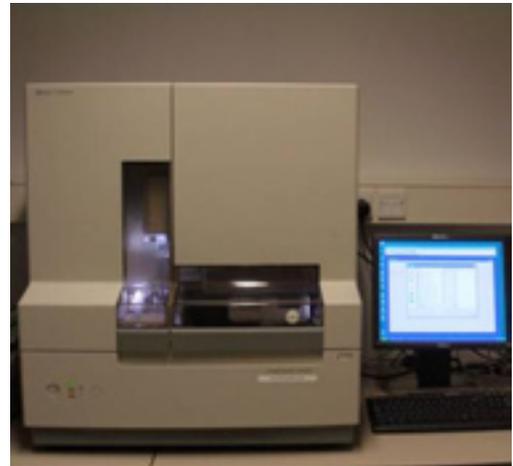
The most important part of the process is step one: anglers collecting and returning DNA samples from *any tarpon, anywhere, any size* for processing in the genetics laboratory at the Florida Fish and Wildlife Conservation Commission's (FWC) Fish and Wildlife Research Institute (FWRI). Without angler assistance, there would be no Tarpon Genetic Recapture Study.

Once a tarpon DNA sample arrives at the lab in St. Petersburg, scientists remove the skin cells from the abrasive sponge and place the material in a small tube containing a soapy solution with enzymes. This solution breaks down the cell membranes and releases DNA from the cell nuclei. Adding saltwater and alcohol causes the DNA to clump together and allows scientists to extract it in a dehydrated form that they can reconstitute by adding water.

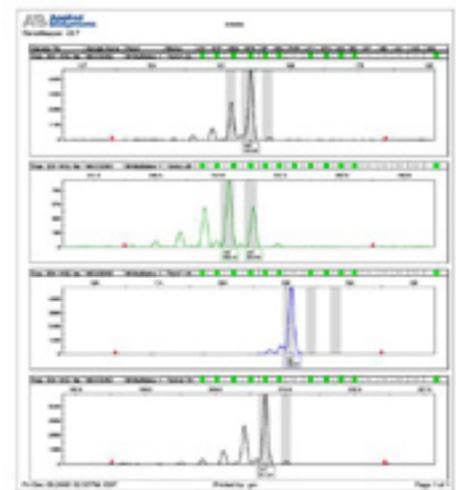
A process of rapid heating and cooling called a polymerase chain reaction uses primer chemicals to further isolate repeating segments of DNA, called microsatellites. Scientists can replicate (copy) those segments that are unique to tarpon, as if they were running tarpon DNA through a photocopier.

Tarpon samples next go into a DNA analyzer (A) that can read the genetic profile, or genotype, of up to 96 tarpon at a time. The machine prints out images displaying peaks that represent each tarpon's genotype (B).

The final step is to "read" the DNA, using 10 different primer chemicals to distinguish 10 microsatellites. The resulting image reflects the unique DNA of each individual fish. If the peaks for all microsatellites match those of a previously sampled tarpon in the database, the reading indicates a suspected recapture. Only after a second scientist checks and confirms the match does the study record a recaptured tarpon. By following this procedure, scientists can identify a tarpon's unique DNA "fingerprint" with odds of an error at less than 1 in a billion.



A



B

All peaks must match exactly for scientists to consider the tarpon a recaptured fish.

The importance of the Atlantic tarpon recreational fishery to Florida's economy

Tarpon support a lucrative recreational catch-and-release fishery that infuses millions of dollars into Florida's economy. Dr. Tony Fedler, fisheries economist with Human Dimensions Consulting in Gainesville, surveyed resident saltwater fishing license holders to assess the direct and total economic impact of tarpon fishing on the local economies of the Everglades, the Caloosahatchee and Charlotte Harbor area, and the St. Lucie River system. Results from Fedler's economic analyses, summarized here, were presented at the fourth International Bonefish and Tarpon Symposium in Dania Beach in November 2011.



Tarpon Fishery's Regional Economic Benefits

	EVERGLADES	CHARLOTTE HARBOR	ST. LUCIE RIVER
Saltwater anglers that target tarpon	19%	41%	21%
Direct expenditures on tarpon (millions)	\$102	\$64	\$11
Total economic impact (millions)	\$174	\$109	\$19
Number of jobs	1,800	1,100	820
Personal income (millions)	\$53	\$33	\$10
State tax (millions)	\$11	\$7	\$5
Federal tax (millions)	\$13	\$8	\$6

The dollars and cents of a tarpon DNA sample: From start to finish, the cost for researchers to create a DNA sampling kit and then process a returned sample in the St. Petersburg laboratory is only about \$3.35! It is a very inexpensive way to learn more about tarpon.

A call to tarpon anglers in Florida's Panhandle and northern Gulf

Mid- to late summer brings great tarpon fishing to Florida's Panhandle as large tarpon migrate to the northern Gulf of Mexico in great abundance and linger to feed in the productive Mississippi River plume. Not so abundant are tarpon DNA samples from this part of Florida.

Biologists took the opportunity in June to tell Panhandle tarpon guides about the Tarpon Genetic Recapture Study. Tom Morgan, owner of Apalach Outfitters in the heart of historic downtown Apalachicola, hosted the special event. Captain Christian Yeargens secured a nice prize basket supplied by Mote Marine Laboratory and project sponsors. In February 2012, a tarpon workshop for the public will be held at the Apalachicola National Estuarine Research Reserve. The workshop will raise awareness of this study and other tarpon research in the region, as well as encourage more angler participation in these projects.

We urge all tarpon anglers—especially those in the northern Gulf—to carry a DNA kit and sample their fish, so scientists can continue to link together movement patterns and habitat usage. We need your samples!

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Timmons

Scrape means **SCRAPE!**

Don't waste in haste: don't waste your opportunity to sample your tarpon by rushing through the scraping process. It takes only a few seconds, but you must use enough pressure to get skin cells on the sponge. Silver or white indicates that you have removed enough tissue to extract DNA. Without a good scrape, scientists will not be able to determine whether you have captured a previously sampled fish. Proper technique tremendously increases the odds that scientists will be able to identify your tarpon as a unique individual.



Sampling tip: wipe away the slime with one side of the sponge, then flip the sponge over to scrape and remove skin cells for a good DNA sample.

Top 10 samplers in 2011

1. Mike Badarack
2. Jon Mallory
3. Paul D'Antoni
4. Mark Bennett
5. Robert McCue
6. Jeff Malone
7. T.J. Stewart
8. Carl Ball
9. Skip Nielsen
10. Dave Kostyo



Top sampler goes wild on fly

This year's top sampler, Mike Badarack, had a banner year of catching tarpon along the Atlantic coast. He returned more than 200 DNA samples, and yes, he caught them on fly. Mike collected many of his samples this fall when he discovered a juvenile tarpon feeding frenzy that lasted several days. He immediately called for backup sampling supplies. Perhaps he knew that Jon Mallory was running a close second. On the other end of the size spectrum, Paul D'Antoni was busy catching the behemoths swimming around Key West waters.

It will be great to see whether the juvenile tarpon sampled in 2011 get recaptured as adults several years from now, as this is the long-term objective of the study. We are fortunate to have so many anglers sampling all sizes of the tarpon they catch. Thank you all for your dedication to tarpon research.



Rehwoidt

Top Image: Mike Badarack with his trusty fly rod

Bottom Image: The study team needs DNA from tarpon of all sizes—even this juvenile, photographed for the study as an example of a small fish caught on fly. The angler immediately released the fish after taking a DNA sample.

To view general catch-and-release information, visit MyFWC.com/Marine, select "Outreach and Education" and select "Fishing Resources."

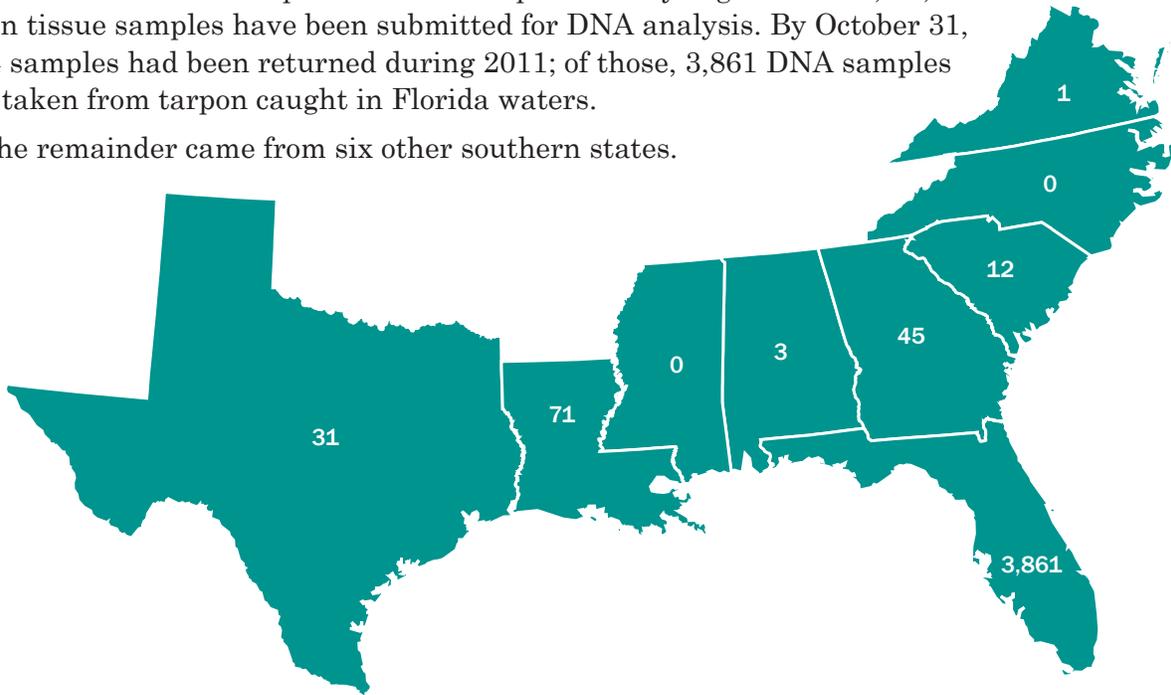


MacInnis

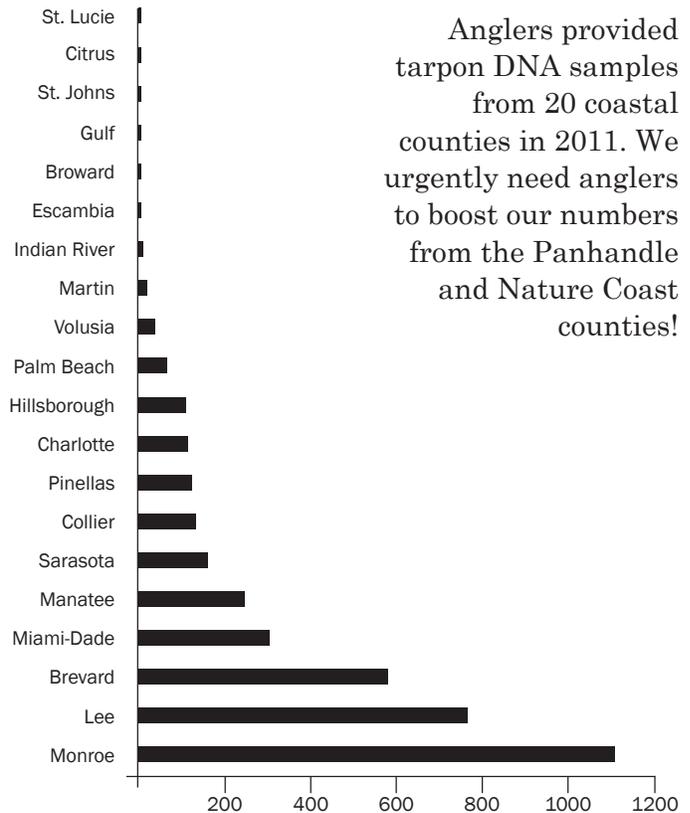
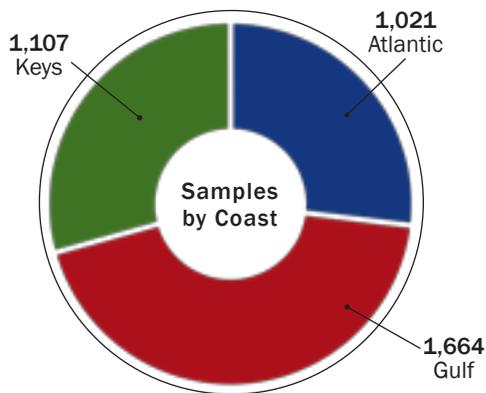
Anglers reach new sampling heights

The number of tarpon DNA samples returned each year is growing by leaps and bounds. Since the Tarpon Genetic Recapture Study began in 2005, 12,834 tarpon tissue samples have been submitted for DNA analysis. By October 31, 4,024 samples had been returned during 2011; of those, 3,861 DNA samples were taken from tarpon caught in Florida waters.

The remainder came from six other southern states.



Within Florida, distribution of samples by region was fairly even. Most adult tarpon were sampled along the Gulf coast; most juvenile tarpon, along the Atlantic coast, where sampling increased 178% over 2010 numbers. Keys anglers increased submissions 64% and returned more DNA samples in 2011 than ever before. Thank you, anglers!



Anglers provided tarpon DNA samples from 20 coastal counties in 2011. We urgently need anglers to boost our numbers from the Panhandle and Nature Coast counties!

Congratulations!

Congratulations to the anglers who won random drawings and special challenges this year. Remember, even if you catch one tarpon all year, that single DNA sample can help advance our understanding of tarpon distribution, movement, habitat preferences, and survival. Without samples, there are no recaptures. Without recaptures, we gain no new information, so please scrape every one that you can. Your next tarpon might be a recapture.

Random raffles

Bruce Shrock, Myakka City
Jess Mesmer, Fort Myers
Lee Roberts, Sarasota
Iain Nicolson, Houston, Texas
Doug Johnston, Largo
Chad Manning, Apollo Beach
Steve Ward, Coppell, Texas
Cameron Guenther, Riverview
Roy MacDowell, III, Wayland, Massachusetts
Rick Murphy, Homestead



Schouest

Bimonthly drawings

January-February: Frederick Lieb, Bokeelia
March-April: Craig Korczynski, Royal Palm Beach
May-June: Brian Jill, Palm Harbor
July-August: Cameron Gorski, Sarasota;
Lance Schouest, Houma, Louisiana
September-October: Randy Dalzell Sr., Palm Bay
November-December: Robert Gorta, Largo



Johnson

Special challenge

Robert McCue collected 84 samples from Charlotte Harbor during May and June and returned them by the July deadline to win the 2011 Dave Markett challenge.

2011 Sponsors*

Thank you to all the individuals and businesses that contributed their valuable time and great products for angler drawings, prizes, and event gift baskets. We are grateful for their support in helping to instill sportsmanship and enthusiasm for the Tarpon Genetic Recapture Study.

Bass Pro Shop of Fort Myers, Black Tip GraFX, Bob's Machine Shop, Breathe Like A Fish, Cabela's, Clyde Butcher Venice Gallery & Studio, Coastal Angler Magazine, Cutco Cutlery, Corp., Dave Markett, Dawson Agency, Discount Tackle, D.O.A. Fishing Lures, Economy Tackle/Dolphin Dive, El Capitan Sports Center, Inc., Florida Fish and Wildlife Conservation Commission, Fran Bays, Jeannie Johnson/Quadruple Gallery, J.L. Marine Systems, Inc./ Power Pole, John B's Fly & Light Tackle, Kathy Zimmerman/SnookZGraphics, Mote Marine Laboratory, Mr. Bones, New Pass Grill & Bait Shop, SeaSucker, Shepard's Red Barn, Tropical Seas, West Marine, Wojcik & Short Associates, and Woody Wax.

* Donations were provided by these entities as program support through Mote Marine Laboratory.

Star samplers

We salute the 409 anglers who returned DNA samples by Oct. 31. The following anglers, listed in alphabetical order, each provided at least five samples during the same period of 2011:

100+

Mike Badarack
Mark Bennett
Paul D'Antoni
Jon Mallory
Jeff Malone
Robert McCue
T.J. Stewart

50-99

Raymond Baird
Carl Ball
Chris King
Dave Kostyo
Paul MacInnis
Skip Nielsen
Frank Ortiz
Bouncer Smith

30-49

Jeff Hagaman
Dave Markett
Billy Miller
Rick Murphy
Troy Sapp
Tom Stephens, Jr.

20-29

Nestor Alvisa, Jr.
Joel Bickford
Vinnie Biondoletti
Michael Camilli
Mike Clark

Frederick Lieb
John Manuel
Paul Messick
Bill Miller
Vincent Parkinson
Marcus Poffenberger
Artie Price
Pete Rapps
David Rhea
Owen Schroeder
Clark Wright, Jr.

10-19

Jeremiah Acevedo
Chris Barron
Marty Benson
Steve Bowler
Bruce Bowman
Roger Burge
Richard Burson
Monty Cabe
Justin Cauffman
John Crawford
Dave Dennison
Jeffri Durrance
Ozzie Fischer
Phil Hartman
Bob Heagey
Jim Huddleston
Tim Humphries
Bill Jones
John Kipp
Russell Kleppinger

Craig Korczynski
Jim Lemke
John McLay
Heather Messick
John Mester
Clark Nash
Jeff Owens
Mary Quinette
Lee Roberts
Lance Schouest
Robert Taylor
Ted Wilson
Gerald Winkler
Jay Withers
Clark Wright

5-9

Craig Abbott
Andy Allen
Eduardo Andreu
Bill Bowers
Meghan Brunelli
Cody Chivas
Shaun Chute
Logan Clark
Marshall DeMott
Judy Devores
Mark Dillingham
Rick DuJardin
Alex Fajet
Bob Flynn
Marcia Foosaner
Steve Friedman

Reed Giasson
Tom Goshorn
Rick Grasset
Brian Hart
James Harter
Scott Irvine
Chrissie Jackson
John Jackson, III
Chet Jennings
Grant Johnston
Jesse Karen
Ken Knudsen
Luke Maglich
Chad Manning
Mark Maus
Robert May, III
Mike McDonald
Jeff Naiman
Mike O'Brien
Dave Robinson
James Roehm
Walter Ruda
Tom Shadley
Dale Sparling
Todd Stamps
Robert Thomas
Jeff Totten
Mason Tush
Larry Weiner
Gene White
Mike Wilson
Nick Winger
Ryan Young

Every angler who returned five or more tarpon DNA samples during 2010 received a shirt.

Anglers who returned a DNA sample in 2010 also received a waterproof decal for their boat, truck, or tackle box.

Volunteer tarpon anglers and DNA samplers come in all sizes and are all invaluable to this study. Great job, volunteer tarpon anglers!

Check out the 2009 decal prominently displayed on Thomas Coffey's kayak as Walt Ruda takes a photo of the prize catch.

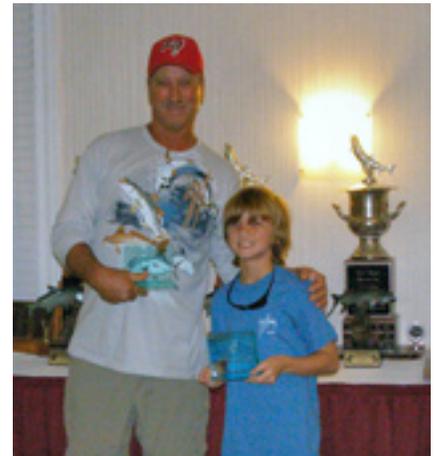


Ruda

Participating 2011 tournaments

These tournaments allowed presentations about the study at tournament events, distributed sampling kits to anglers, offered incentives, or otherwise encouraged anglers to collect DNA samples from the fish they entered in competition.

Angry Crab Tarpon Tournament
Cape Fear Rods Golden Fly Invitational Tarpon Tournament
Charleston Harbor Tarpon Release Tournament
Don Hawley Invitational Tarpon Tournament
Ed Alber Tarpon Rodeo All-Release Tournament
Faro Blanco Invitational Tarpon Tournament
Gold Cup Invitational Tarpon Fly Tournament
Kayak Fishing Classics Tarpon Fever
Key West Fishing Tournament
Ladies Tarpon Tournament
Marathon International Tarpon Tournament
Outback Golden Fly Tarpon Tournament
Professional Tarpon Tournament Series
Raymond James Boca Grande Classic
Redbone @ Large La Siesta Sunrise/Sunset Tarpon Tournament
Robert James S.L.A.M. Celebrity Tournament
Sarasota Sportsfishing Anglers Club Tarpon Tournament
Scientific Anglers Women's World Invitational Tarpon Series
Suncoast Tarpon Roundup
Tampa Yacht and Country Club Tarpon Tournament
Tarponian Tournament
Women's Professional Tarpon Tournament Series



Mike Clark and grandson Logan Clark claim angling awards during the 2011 Suncoast Tarpon Roundup banquet in St. Petersburg. Tournament rules require anglers to take a DNA sample from each released tarpon.

Community outreach

The following organizations and community event sponsors also provided education and outreach opportunities to promote awareness of the study.

Apalach Outfitters
Backcountry Fly Fishing Association
Fishing and Hunting Expo
FishOn Fishing Club of New Port Richey
Flint Creek Outfitters Father's Day Expo
Florida Fly Fishing Expo 2011
Florida Guides Association annual meeting
FWC-FWRI MarineQuest
Hernando County Fishing Club

Hunt for Reds
Mangrove Coast Fly Fishing Club
Stuart Rod & Reel Club
Tampa Tribune Outdoor Expo and Boat Show
The James P. Gills Family YMCA Kids' Fishing Festival/Ecofest
West Marine's Fishing Frenzy, Jacksonville
West Palm Beach Fishing Club

Study news

Louisiana sends bayou samples our way!

The Louisiana Department of Wildlife and Fisheries has officially joined the Tarpon Genetic Recapture Study and made it part of that state's research plan. Anglers from Louisiana provided 71 tarpon DNA samples in 2011. We welcome their participation in this cooperative research effort.



Florida Sea Grant video available soon

Florida Sea Grant and IFAS Information and Communication Services at the University of Florida got together with fishing guides from Tampa Bay and the Ten Thousand Islands to create an educational video that will show anglers how to take a tarpon DNA sample and why they should participate in this study. The film will be ready for release in early 2012. Thank you, Sea Grant, for funding this project.



Grant promotes outreach in Monroe County

The Tarpon Genetic Recapture Study recognizes the Islamorada Fishing and Conservation Trust for its funding support to Mote Marine Laboratory to enhance the study in Monroe County. The number of samples returned from the Keys went up 64% from last year and more than doubled along the east coast.



Learn more about the study

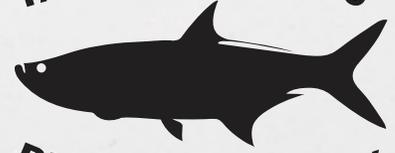
Do you belong to a group of avid tarpon anglers? Invite a Tarpon Genetic Recapture Study staff member as a guest speaker to one of your meetings. We can prepare a presentation to cover topics of interest to your group. Just contact us at TarponGenetics@MyFWC.com and we will be happy to discuss the possibilities.



A researcher talks tarpon at the West Palm Beach Fishing Club.



**TARPON GENETIC
RECAPTURE STUDY**



2011 Review

Bennett



Florida Fish and Wildlife
Conservation Commission
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Saltwater
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Tarpon artwork © Diane Rome Peebles



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