Red Drum (*Sciaenops ocellatus*) Fin Clip Program and Tarpon (*Megalops atlanticus*) Genetic Recapture Program

FWC AGREEMENT NO. 07114

FINAL REPORT
OCTOBER 1, 2007 – MAY 23, 2008

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MML TECHNICAL REPORT NO. 1273
Red Drum (*Sciaenops ocellatus*) Fin Clip and Tarpon (*Megalops atlanticus*) Recapture Programs

**FINAL REPORT**
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A. **Collaborate in Research to Demonstrate the Benefits of Red Drum Stock Enhancement in a Large Estuarine Ecosystem**

The Angler Red Drum Fin Clip Program based at Mote Marine Laboratory is a component of Project Tampa Bay (PTB), a FWC Florida Fish and Wildlife Research Institute (FWRI), FWC Stock Enhancement Research Facility (SERF), and Mote Marine Laboratory (MML) partnership. The goal of PTB is to demonstrate the effectiveness and benefits of responsible stock enhancement in a large estuarine system. Since 1999, 4.2 million red drum were reared at FWC SERF and released by SERF and FWRI staff into the Alafia and the Little Manatee River's located on the eastern shoreline of Tampa Bay.

To evaluate survival, distribution, and contribution of the hatchery-reared red drum to the fishery, MML, in collaboration with FWRI and SERF staff, developed the Angler Fin Clip Program (AFCP) as an additional assessment component of PTB. The goal of the MML- AFCP is to engage anglers in providing red drum tissue samples and corresponding capture information for the evaluation of hatchery-reared red drum contribution to the fishery and for the determination of their optimal size at release and optimal release habitat. Resulting data from all PTB assessment components will be used to formulate management recommendations to develop an effective and responsible approach to use hatchery-releases as a tool to enhance and restore fisheries state-wide.

**Participants**
Primary partners in this project were FWC- FWRI and FWC-SERF. Partnerships with additional agencies and Florida west coast businesses were developed to keep the angler community informed of project progress and to increase angler participation in the Fin Clip Program. Additional partnerships included Progress Energy (PE), Fishing for Others, Inc., United Parcel Service, Sea Grant Manatee County Extension Office, Sea Grant Charlotte County Extension Office, APG Electric, University of Florida Tropical Fish Laboratory, as well as numerous guide organizations, angler clubs, bait and tackle shops, marinas, regional radio and television programs, and boater and angler supply shops on Florida's west coast from Citrus to Lee County (Figure 1).

Partners in the AFCP included Gina Russo (SERF) and SERF volunteers who promoted the program at angler events, through the media, and by visiting participating bait and tackle shops in Pinellas, Hillsborough, and Manatee Counties. Billy Wheat and Steven Candileri (FWRI) Fisheries Dependent Monitoring (FDM) provided program information and fin clip kits to anglers during
creel surveys in Hillsborough and Pinellas Counties and assisted with sampling red drum at tournaments. Cynthia Armstrong (PE) promoted the program in Citrus and Hernando Counties by visiting participating bait and tackle shops and providing kits and handouts at angler presentations. Roger DeBruler, Sea Grant Charlotte County Extension Office promoted the program by encouraging angler involvement and distributing Fin Clip Kits community presentations in Charlotte County. John Stevely, Sea Grant Manatee County Extension Office provided Fin Clip Kits to anglers.

The AFCP was directed by Carole Neidig, Staff Scientist (MML) and assistance was provided by Thomas King, Ph.D., Senior Biologist (MML). In addition, a Redfish Team was developed that included MML and SERF staff, volunteers, college interns, high school students, residents at Westminster Shores Retirement Community (Bradenton), and professional guides who provided their valuable time and support. The AFCP Redfish Team were instrumental in assembling Fin Clip Kits, processing fin clip samples, visiting bait and tackle shops, providing information to anglers, posting signage, collecting fin clip samples and angler information at tournaments, promoting public support, participating in the 1st Hunt for Reds in October Kids Fishing Clinic and tournament, encouraging angler fish data retrieval at angler and community events, and obtaining products from local and national businesses for the angler reward program. Redfish Team members that assisted at MML, field events, and at Westminster Shores Retirement Community during this report period included: John Angiolini, John Arbuckle, Fran Bays, Don Catero, Capt. Ric Ehlis, Tory Emory, Capt. Fred Everson, Jimmy Feid, Sondra Fox, Charlie Halley, Chris Halley, Bill Halstead, Jessica Harris, Capt. Ron Harter, Capt. Bobby Hilbrunner, Marcia Kagan, Thomas King, Mary Latta, Capt. Ray Markham, Joe Mazza, Cindy McClure, John McClure, Roger Mitchell, Jackie Mousoulias, Capt. Geoffrey Page, Gail Perry, Catherine Prachthauser, Shirley Reynolds, Barbara Ries, Jack Rounds, Gina Russo, Barry Stipp, Diana Skapura, Kenneth Sotherlund, Bob Steskal, Maki Tabuchi, Joe Ungarelli, Karina Vega, Martin Vogel, Billy Wheat, Ellen White, Heather White, Sean White, John Winans, Jerri Winans, Janice Wojick, and Bernie Waxman.

Project Posters
Posters (Figure 2) reflecting the extended fin clip sampling area from Tampa Bay north to Citrus County and south to Lee County continued to be distributed. Posters were mailed or delivered to participating bait and tackle shops, marinas, and angler and boater suppliers. A letter was included with each poster to describe the program and requested that shop managers and their staff help to inform anglers of the range expansion.

Angler Educational Materials
Several handouts supplemental to the Fin Clip Program were distributed to anglers requesting Fin Clip Kits, provided to anglers at events, and provided to bait and tackle shops. These included:

- FWC “Regulation” publication,
• Participating Bait and Tackle Shop list,
• PTB stick-on measuring tape,
• "Project Overview and How To Take a Fin Clip", and
• "Project Update" including highlights of hatchery-reared redfish returns from the AFCP and FWC Fisheries Dependent Redfish Creel Sampling. The Project Overview and Update handouts were also distributed to Bait and Tackle shops for display, as well as distributed at angler events.

The Project Overview (Figure 3) handout promoted the AFCP and provided an overview of the FWRI and MML partnership. The Project Update (Figure 4) included hatchery fish capture information from the AFCP and the FWC Fisheries Dependent Creel Sampling. The Project Update was revised in October 2007 to include genetic results provided by FWRI in September 2007. The Project Update was also revised in January 2008 to provide anglers with information on 2008 events. The next revision to the Project Update will be after receiving additional angler sample genetic results from FWRI, expected in May 2008. Electronic versions of the Project Update were sent to G. Russo (SERF) and to C. Armstrong (PE) for additional distribution.

**Fin Clip Kits**

Fin Clip Kits (Figure 5) were modified as needed based on angler feedback. Kits contain the supplies needed for anglers to take tissue samples from red drum, were easy to use, and could be easily stored in the angler’s tackle box or cooler. Each Kit consisted of a 5" x 7" 2.0 ml thick medium duty zippered plastic bag (Rand, Pawtucket, RI) which contained:

- instruction postcard (Figure 6) - (5" x 6½") included the following: a schematic of "How to Take a Fin Clip" with written instructions, a schematic of "How to Measure A Red Drum", and the Redfish Hotline phone number,
- scissors,
- hotline telephone number decal,
- pencil, and
- 2" x 3" 2 ml thick medium duty zippered plastic bags (4) each displaying two printed adhesive labels:
  - fish information label for anglers to record fish capture information - date, time, total length, weight, and whether fish was kept or released,
  - angler information label - name, address, telephone number. In addition, the Redfish Hotline number was displayed on the bottom of the label.

The outside of each Fin Clip Kit displayed a Project Tampa Bay decal and a label informing anglers of the extended sampling range of Citrus to Lee County. In addition, a label on the back of each bag recognized Progress Energy for a donation made to the Redfish Fin Clip Program.
Each month MML volunteers assemble Fin Clip Kits and fin clip sample bags to keep a target inventory of at least 500 kits at hand for distribution. M. Kagan assembled kits at MML. J. Mazza, D. Catero, and S. Reynolds provided residents at Westminster Shores Retirement Community in Bradenton with instructions on how to assemble kits and sample bags. Kit supplies were provided to the community and/or completed kits were picked up as needed by J. Mazza, T. King, C. Neidig, or S. Reynolds. G. Russo provided volunteer assistance at SERF in producing additional kits for outreach events and for bait and tackle shops when needed.

In November 2007, Fin Clip Kits consisting of a plastic box containing fifty 10ml plastic vials of 20% ETOH and data forms were distributed to two AFCP participants for testing. The new kit was developed from discussions with Michael Tringali (FWRI) and Maryanne Higham (FWRI) concerning an alternative method for red drum sample collection that would not require that the angler refrigerate or freeze the sample. The new kit is similar to that used in the Tarpon Genetic Project and will be available to additional anglers after receiving feedback from the two anglers currently testing the kits. The kits would be convenient for wade and kayak anglers who may not have access to a cooler to keep samples cold in hot weather.

**Bait and Tackle Shops**

Monthly, MML volunteers phoned participating bait and tackle shops to promote the AFCP, ask if fin clips needed to be retrieved, offer laminated project posters, Fin Clip Kits, and fin clip sample bags. In addition, G. Russo coordinated with MML/SERF volunteer Jack Rounds to visit bait and tackle shops located in the Ruskin and Riverview areas to pick up fin clips and bring the samples to SERF for MML pick-up. G. Russo also assisted with collecting samples from shops located in Clearwater, St. Petersburg, and Tampa. Because of employee turnover at many of the shops, shop visits were valuable for keeping staff and angler customers involved in the program.

C. Armstrong (PE) assisted with calling or visiting shops in Citrus and Hernando Counties. T. King (MML) assisted with collections in Pinellas and Manatee Counties and retrieved samples brought to SERF and transported them to MML for processing. T. King also organized and delivered samples to FWRI for genetic evaluation. J. Arbuckle and J. Mazza assisted with retrieving samples from Sarasota to Venice. In April 2008, Alexis Trotter (FWRI) assisted with retrieving samples from shops in Punta Gorda and Naples when she visited to pick up snook, *Centropomus undecimalis* samples.

As of May 2008, there were 98 participating bait and tackle shops (Figure 7). Shops were located from Yankeetown in Citrus County to Naples in Lee County. Additional shops were also contacted and will be listed upon confirmation.
To help prevent the loss of fin clip samples in bait shop freezers, plastic boxes (4"x 5"x 2.5") were purchased and distributed to each shop. Each box displayed a PTB logo and a Hotline telephone number sticker provided by G. Russo.

**Media Coverage**

Media coverage is valuable in promoting Project Tampa Bay and the Fin Clip Program. The following media coverage occurred during the report dates.

October 2007, **Fish Buzz TV**. Video coverage of C. Neidig presenting the PTB and the Angler Red Drum Fin Clip Program. This is an Internet TV station that focuses on fishing tips, interviews with captains and recreational anglers, fishing gear demos, boat reviews and a variety of other fishing and boating-related videos.

October 2007, **Saltwater Angler Magazine** featured an article titled “Tournament Benefits Redfish Fin Clip Program”.

October 13, 2007. C. Neidig provided an overview of Project Tampa Bay Fin Clip Program and promoted the Hunt for Reds in October Red Drum Tournament on the “Afishinado” Fishing Show WTAN 1340 AM.

October 14, 2007. C. Neidig provided an overview of Project Tampa Bay Fin Clip Program on “Let’s Talk Fishing” WQYK 1010AM.

October 20, 2007. C. Neidig presented an overview of the Project Tampa Bay Fin Clip Program on the “Capt. Mel Berman Show”, WFLA 970AM.

October 20, 2007. C. Neidig presented an overview of the Project Tampa Bay Fin Clip Program on the “Florida Sportsman Fishing Show” WBNA 1040AM.

October 21, 2007. C. Neidig presented an overview of the Project Tampa Bay Fin Clip Program on “Let’s Talk Fishing” WQYK 1010 AM.

January 2008. Water Life Magazine promoted the 5th Annual Kids Cup Tournament and participation by MML and FWC.

March 13-14, 2008. The **Fox Sports Network (FSN) FLW Outdoors/Addictive Fishing** crew filmed the MML Redfish Team collecting fish samples and interviewing anglers for fish capture information at the Sarasota FLW Redfish Tour event. In addition, they conducted an interview with C. Neidig at MML about PTB and the AFCP. The segment aired on FSN on April 16. The FLW has been a tremendous supporter in allowing us to be a partner in their events, collecting several thousand fin clips. At one of their tournaments held in Terra Verde eight fin clips were identified as being from hatchery fish. The fish were caught from mid Tampa Bay to south Sarasota Bay.
March 20, 2008. Waterline Magazine promoted the 5th Annual Kids Cup Tournament and participation by MML and FWC.

May 2008, Capt Bill Miller promoted the AFCP on his television program "Hooked on Fishing" broadcast on the Brighthouse Network.

Outreach
During the report period the following events were attended to promote the Project Tampa Bay Redfish Fin Clip Program and/or to collect fish samples:

October 13, 2007, B. Wheat (FWRI-FDM) represented the Fin Clip Program at the Capt. Mel Spring Tournament held at Fort DeSoto. He collected more than 30 fin clips, distributed project hand-outs and Fin Clip Kits to anglers.

October 28, 2007, 57 red drum fin clips, fish capture data, and angler information were collected by T. King, C. McClure, E. White, Capt. R. Ehlis, and Capt. R. Markham at the 1st Annual Hunt for Reds in October Spot Catch and Release Spot Tournament, St. Petersburg.

February 16, 2008, 50 red drum fin clips, fish capture data, and angler information were collected by C. Neidig, T. King, F. Bays, J. Mousoulias, B. Steskal, and J. Wojick at the Flatsmasters Qualifier, Punta Gorda.

February 21 - 22, 2008, 292 red drum fin clips, fish capture data, and angler information were collected by C. Neidig, T. King, F. Bays, G. Perry, J. Ungarelli, C. McClure, B. Hilbrunner, and R. Ehlis at the FLW Redfish Tour, Punta Gorda.

March 2, 2008, B. Steskal, F. Bays, and C. Neidig attended the Frank Sargeant Outdoor Exposition held at the Tampa Fairgrounds. The AFCP was promoted and products for use as angler prizes and for a silent auction to raise funds for the AFCP were collected.

March 8, 2008, more than 100 red drum fin clips samples and fish capture information were collected by C. Neidig, F. Bays, T. King, B. Steskal, and J. Feid at the IFA Redfish Tour, Punta Gorda.

March 11, 2008, C. Neidig and T. King presented the AFCP at Mote Legislative Day held at the Capitol, Tallahassee.

March 13 - 14, 2008, more than 200 red drum fin clip samples were collected by C. Neidig, F. Bays, C. Halley, J. Feid, R. Mitchell, J. Arbuckle, and S. Deiter at the FLW Redfish Tour, Sarasota.
March 21 - 22, 2008, C. Neidig and T. King presented the AFCP at the Stinky Joe Tournament, Clearwater. Twenty-five red drum samples were provided by anglers during the catch and release event.

April 19, 2008, B. Wheat (FWRI-FDM) represented the AFCP at the Capt. Mel Spring Tournament held at Fort DeSoto. He collected more than 40 fin clips, distributed project hand-outs and Fin Clip Kits to anglers.

April 19, 2008, 68 red drum samples were collected by T. King, J. Mousoulias and J. Feid at the Kid's Cup Tournament, Punta Gorda.

April 19, 2008, MML, PE, SERF, Sea Grant staff and local businesses participated in the 5th Annual Kid's Cup Tournament held in Fisherman's Village, Englewood. The tournament theme was "Teaching Kids about the Environment through Fishing". The tournament supported the Don Ball School of fishing program in Charlotte County Schools. The Don Ball School of fishing is an extra curricular program offered to seventh grade students in the Charlotte County middle schools at Port Charlotte, Murdock, Englewood and Punta Gorda. Local fishing guides, commercial captains and other knowledgeable 'watermen' meet with students to teach and explain about fishing, tactics, techniques, places to fish, tides, hooks, the use of cast nets and other local-specific subjects. More than 400 kids have graduated from the program. The top five Kids Cup anglers on April 27 were invited to fish on the final day of the ESPN2 Oh Boy! Oberto Redfish Cup (all expenses paid) on the ESPN2 Redfish Cup stage at Laishley Park in Punta Gorda.

At the Kids Cup Tournament MML, PE, SERF, and Sea Grant along with local businesses addressed questions concerning the movement of adult red drum captured during a tournament event and released after weigh-in in the local waters. Do they return to the area in which they were captured or do they stay in the area in which they were released? Often, in tournaments fish are captured 100+ miles from the weigh-in site and released in the local waters. With red drum tournaments becoming more numerous in the spring and fall we know little of the movement of this fish after capture and release.

The Kids Cup presented the above groups with the opportunity to work in partnership with numerous scientific and community groups to provide preliminary data for these movement questions and to also provide the community and Children's Fishing School with a scientific project that could be followed via the internet <www.kidscuptournament.com>. At the Kids Cup, 20 slot size red drum were surgically implanted with Vemco acoustic transmitters (purchased by sponsors) by MML, PE, and SERF staff and volunteers. Surgical procedures followed those developed by C. Armstrong (PE) and C. Neidig (MML). All of the fish caught during the tournament were measured, fin clipped, and externally marked with
dart tags. A subsample of implanted and dart tagged, dart tagged only, and non-tagged fish were held for 48-hr to determine mortality. One fish implanted with a non-functioning transmitter died during the first 24 hrs post-surgery.

Fish were released at Fisherman’s Village and were monitored by manual tracking (Sea Grant staff and volunteers) and by fixed receiver stations. Resulting fish movement data will be relayed to the community and used in the kids fishing classes and by researchers. Results will be reported in subsequent reports.

April 19, 2008, the AFCP was represented by S. Fox and B. Halstead at Marine Quest, St. Petersburg.

April 19, 2008, MML provided 80 fin clip kits and associated AFCP handouts to the Citrus County Builders Association Tournament, Crystal River.

April 25 – 26, 2008, 174 red drum fin clip samples were collected by F. Bays, C. McClure, B. Steskal, J. McClure, B. Hilbrunner, C. Halley, C. Halley, J. Harris, and T. Emery at the Oberto Redfish Cup, Punta Gorda.

May 10 - 11, 2008, 180 red drum fin clip samples were collected by F. Bays, T. King, and J. Feid at the Flatmaster Redfish Tournament, Punta Gorda.

May 15, 2008, C. Neidig presented the AFCP at the APG Electric Annual Fishing Tournament held in Clearwater.

Meetings and Workshops
The following meetings were attended by Redfish Project staff and / or volunteers:

October 3, 2007, C. Neidig, N. Brennan, and T. King met with Sea Grant, Progress Energy, and FWC staff to review the 4th Annual Kid’s Cup Tournament held in Fisherman’s Village, Englewood in April 2007 and to plan for the 5th Annual event in April 2008.

January 16, 2008, C. Neidig attended the Marine Stock Enhancement Board Meeting held at FWRI, St. Petersburg, FL.

February 27, 2008, C. Neidig, N. Brennan, J. Struve met with Sea Grant, Progress Energy, and FWC staff to evaluate the experimental design for a movement and dispersal study included as part of the 5th Annual Kid’s Cup Tournament held in Fisherman’s Village, Englewood in April 2008.
February 26, 2008, F. Bays met with Arthur Allison, Fishing for Others to plan for the 2nd Annual Hunt for Reds in October Tournament and Kids Fishing Clinic to be held in October 2008.

March 17, 2008, staff and volunteers from MML, Progress Energy, SERF, and the UF Tropical Fish Laboratory conducted a CO$_2$ trial at SERF in preparation for the 5th Annual Kid’s Cup Tournament, Punta Gorda.

May 21, 2008, C. Neidig attended the Spatial Data and Modeling Workshop held at MML.

Abstracts and Scientific Conferences
In February 2008, the following MML / FWC partnership studies were presented at the World Aquaculture Conference, Stock Enhancement Session, Orlando:

C. Neidig presented “Preliminary Evaluation: An Angler Based Fin Clip Program for Assessing Red Drum, _Sciaenops ocellatus_ Hatchery Contributions in Tampa Bay, FL. USA” authored by Carole Neidig, Ken Leber, Mike Tringali, Thomas King, and Chris Young.

D. Roberts (SERF) presented “Effects of Release Habitat and Time at Liberty on Dispersal, and Habitat Selection of Hatchery-reared Juvenile Red Drum _Sciaenops ocellatus_ In the Alafia River Estuary, Florida” authored by Carole Neidig, Daniel Roberts, Cynthia Armstrong, Thomas King, and Ken Leber.

Reward Program
Bob Steskal, Fran Bays, and Roger Mitchell (MML volunteers, Donation Coordinators) acquired items for the Angler Reward Program from numerous local and national businesses. Businesses providing in-kind or cash donations were sent a thank you letter, tax deduction information, Mote Aquarium passes, and if the in-kind contribution was over $500.00, they received a Mote Laboratory Corporate Membership.

In November 2007, F. Bays and K. Vega assembled and mailed 40 angler prize packages containing an assortment of donated products. Prize recipients were picked randomly from anglers that had provided fin clip samples during the previous six months. A project update and a thank you letter were included in each package. Additional prize packages will be distributed to anglers in June 2008.

Commencing in June 2008, a certificate will be mailed to the top four bait and tackle shops that provide red drum DNA samples. The certificate can be displayed in the shop and will provide the shop with recognition for their support.
**Angler Contributions**

As of April 21, 2007, 2,124 anglers (Figure 8) participated in the PTB AFCP by providing 8,377 red drum fin clip samples (Figure 9) and fish capture information. Total lengths of fish sampled ranged from six inches (152mm) to 39 inches (990mm) with a mean length of 21 inches (529mm) (Figure 10). Sixty-nine percent of the fish sampled were within the legal slot size (18 – 27 inches), 24.7 percent were undersize, and 5.9 percent were reported as being over the slot limit (Figure 11). Sixty-eight percent of the slot size fish were recorded as released.

At MML the fish capture data and angler information were recorded in an Excel Database. Data recorded included: fish capture information (date, time, and location of capture), fish length (standard and total) and if the fish was released or kept. Each fish sample was assigned an identification code which included a unique code for the angler that collected the sample. The angler name and address were also recorded in the database. Samples processed at MML were delivered to FWC Genetics on a regular basis.

No genetic result data was provided to MML by FWRI Genetics during this report period. Additional results are expected to be provided to MML in May 2008. Of the 4,700 PTB AFCP samples processed by FWRI Genetics as of September 2007, 51 red drum fin clips contributed by the PTB AFCP were determined to be from hatchery releases in Tampa Bay (Figure 12). Of the hatchery fish, 49 were released in the Alafia River and one (out of sync phase I) was released in the Little Manatee River. Of the hatchery fish identified as released in the Alafia River, 88 percent were released as phase I’s, 7.8 percent were Phase 2’s and 3.9 percent were Phase 3’s. Capture lengths ranged from 152 mm TL to 1,000 mm TL with 55 percent of the fish being slot size when caught.

Hatchery fish were captured from north Tampa Bay to south Sarasota Bay (Figure 13). The farthest distance from the original release site was 88 km. Days-of-freedom ranged from 210 to 1,144 days post-release.

Anglers providing address information with their fin clip samples were sent a Genetic Result / Thank You card (Figure 14) prepared by T. King. The card included the month and year of capture, fish length (SL and/or TL), and whether the fish sample was determined to be hatchery or wild.

To assist with providing hatchery fish results to FWRI, MML worked closely with FWRI, FDM staff Richard Cody and FWRI, Genetics staff M. Higham and M. Tringali to assemble capture data and genetics results from fish samples collected from anglers by FDM field samplers. This data as well as the angler fin clip data was provided to FWRI and SERF and included in updates provided to anglers.
B. Collaborate in Research to Estimate Recapture Rates and Examine the Interconnectivity of Tarpon Among Florida Estuaries

The Tarpon Genetic Recapture Study is a FWC Florida Fish and Wildlife Research Institute (FWRI) and Mote Marine Laboratory (MML) partnership. Prior to the partnership, scientists from FWC FWRI collected tarpon data from the possession tag program and from interviews with recreational anglers throughout the state (Kathy Guindon, FWRI, personal communication). The biological data collected was insufficient and incomplete and a new approach was necessary to provide information for assessing the success of tarpon stocks and determine if tarpon 'mix freely' between different bodies of Florida waters (K. Guindon, FWRI, personal communication).

In 2003, FWRI commenced a program to collect tarpon tissue samples for DNA analysis from fish caught primarily on Florida's west coast. In 2007, FWRI partnered with MML in an effort to increase angler participation in the tarpon sampling program and establish anglers as stakeholders by having them contribute DNA samples and well as corresponding capture data from fish caught around the state.

Participants
The MML portion of the Tarpon Genetic Recapture Program (TGRP) included C. Neidig, T. King (Senior Biologist) and assistance provided by MML volunteers J. Arbuckle, F. Bays, R. Mitchell, J. Mazza, and B. Steskal.

T. King and MML volunteers called bait and tackle shops, provided information to anglers, posted signage, promoted public support, encouraged angler fish data retrieval at angler and community events, and obtained products from local and national businesses for the Tarpon angler reward program.

Meetings
November 11, 2007, C. Neidig and T. King (MML) attended a Tarpon Project Progress and Planning meeting at FWRI. FWRI Tarpon Project staff directed by K. Guindon met with MML staff to discuss a timeline of event for the remainder of the year and plans for improving the project in 2008.

March 5, 2008, C. Neidig and T. King (MML) attended a Tarpon Project Progress and Planning meeting at FWRI with K. Guindon and D. Westmark to discuss plans for the project in 2008.

Posters
A project poster was developed by FWRI to advertise the new collection method of using a jaw scrape rather than a fin clip to collect DNA. Posters were distributed to participating bait and tackle shops. No changes were made to the poster during the report period.
DNA Sampling Kits
Based on suggestions made by FWRI and MML staff at the November 11th Tarpon Project meeting held at FWRI, several modifications were made to the DNA Sampling Kit. Modifications included adding space for anglers to record their contact information (address, phone number, and email address) on the back side of sample data slips. To modify existing sampling kits, a 4 in. x 5 in. label for the angler contact information was placed on the back of the kit plastic bag. A second modification was that a note was enclosed in each kit to inform anglers that a tarpon tag was not needed to collect a tarpon genetic sample unless the angler intended to remove the fish from the water. In addition, FWRI and MML confirmed that only green 3M© scrub pads would be used in kits, because they lifted more DNA than several other types of scrub pads that had been used.

Tarpon genetic sampling kits (Figure 15) consisted of:
- (3) data form slips printed on waterproof paper for the angler to record fish capture date, time, location, approximate total length, time it took to capture the fish, and angler contact information,
- pencil,
- (3) 20mL plastic vials of 20% ETOH storage solution,
- (3) rectangular pieces of 3M© green abrasive scrub pads,
- instructions for taking a DNA sample printed on waterproof paper, and a
- angler note.

Each sample vial included a label with a preprinted reference number provided by FWRI. Anglers were requested to record the reference number on the included data form slip for each sample. The front side of a Tarpon Sampling Kit displayed a Project decal. Kits were prepared by FWRI and MML for distribution to anglers and to participating shops for distribution.

Kit Distribution and Sample Collection Locations
Staff at FWRI established an initial group of bait and tackle shops in six regions of Florida to promote the Tarpon Program to local anglers, to provide sampling kits, and to accept samples from anglers. T. King and MML volunteers contacted additional bait and tackle shops to enlist their participation in the Tarpon Program. As of May 2008, there were 93 participating shops. The list of kit distribution and/or sample collection locations established by FWRI and MML is included in Figure 16. Fourteen shops were added since December 2007. Seven additional shops that have agreed to assist with the 2008 Suncoast Tarpon Roundup in St. Petersburg will be asked by MML if they will join the program. The state regions and the number of shops in each were as follows:
- Florida Panhandle (10),
- Nature Coast (7),
- Tampa Bay (24),

12
• Southwest (22),
• Southeast/FL Keys (15), and
• Northeast/East Central (15).

Shops were called at least once per month with more active shops called more frequently by MML to confirm if samples needed to be retrieved or if sampling kits or handouts were needed. Many shop managers called the FWC Hotline or T. King directly to request a pre-paid mailer to send samples directly to MML or FWRI. A record of shops by area was kept to track phone calls to shops and shop requests. During a phone call to a shop the following information was recorded:

- the name of the person contacted,
- date,
- request made by shop employee,
- number of kits or handouts sent,
- number of tarpon samples at the shop,
- information on whether the shop would mail the samples or if MML would need to retrieve samples. In November 2008, MML commenced asking shop managers for an email address and permission to send additional correspondence to the email address, if needed.

To help prevent the loss of samples in bait shops, plastic boxes (12"x 5"x 3.5") were purchased and one was distributed to each shop. Each box displayed a Tarpon Project logo on the lid and a FWC Hotline telephone number sticker provided by G. Russo on one side.

**Outreach**

To promote project awareness and engage angler participation, an outreach campaign was conducted by MML and FWRI. Outreach included displaying posters, distributing project information and a project newsletter, distributing DNA sampling kits to bait and tackle shops, and direct contact with anglers at angler events. The following media coverage promoted the Tarpon Genetic Recapture Program:

**October 2007, Jon Brett, Producer of Fish Buzz TV** ([www.fishbuzz.tv](http://www.fishbuzz.tv)) filmed video coverage of C. Neidig presenting the Tarpon Genetic Recapture Sampling Project. Fish Buzz TV is an Internet station that focuses on fishing tips, conservation issues, and interviews with captains and recreational anglers, fishing gear demos, boat reviews and a variety of other fishing and boating-related videos. Additional coverage was provided to Jon Brett by K. Guindon (FWRI).

**March 11, 2008, C. Neidig and T. King presented the program at Mote Legislative Day** held at the Capitol, Tallahassee
March 31, 2008, a FWRI press release was sent to the media to promote and encourage anglers to collect samples in 2008. The press release included input from the FWRI / MML Tarpon Genetic Recapture Program Team members.

April 19, 2008, a display of the Tarpon Genetic Recapture Program was presented by S. Fox and B. Halstead at Marine Quest 2008 held at FWRI. The display consisted of a trifold display board with photographs of how to take a genetic sample and data results from 2007. Newsletters and additional handouts were also provided to interested anglers. K. Guindon (FWRI) assisted at the display.

A newsletter (Figure 17) developed by K. Guindon (FWRI) and the FWRI and MML Tarpon Genetic Recapture Team was completed in December 2007 and mailed by FWRI to participating anglers in January 2008. The newsletter was distributed by FWRI and MML to anglers and participating shops to promote the program and provide results from 2007 to the stakeholders.

Commencing in June 2008, a certificate will be mailed to the top four bait and tackle shops that provide tarpon DNA samples. The certificate can be displayed in the shop and will provide the shop with recognition for their support.

Tournaments
A list of 19 tournaments that targeted tarpon was compiled by MML and FWRI staff from correspondence with anglers, internet searches, and from magazine and newspaper listings. The initial list included events from May to August 2008. As new events are identified, they will be added to the list and targeted to promote the program to participating anglers. The MML and FWRI staff established a schedule to cover the events in person or by providing materials for a representative to present the program to participating anglers.

April 25, 2008, sampling kits, newsletters, and a poster were sent to a representative of the TP Lucerne Gossman Memorial Tarpon Tournament, Everglades National Park.

April 25, 2008, sampling kits, newsletters, and a poster were sent to a representative of the Redbone Sunrise / Sunset Tarpon Event, Islamorada.

May 1, 2008, T. King presented the program to anglers at the 42nd Annual International Tarpon Tournament Captain’s Meeting, Marathon.

May 9, 2008, C. Neidig presented the program to anglers at the 32nd Annual Ladies Tarpon Tournament Captain’s Meeting, Marathon.

May 15, 2008, C. Neidig presented the program to anglers at the APG Electric Tournament Captain’s Meeting, Clearwater.
May 18, 2008, T. King presented at the 22nd Faro Blanco Invitational Tarpon Tournament Captain’s Meeting, Indigo Reef.

May 20, 2008, C. Neidig and K. Guindon represented the program at the Sarasota All Release Tarpon Tournament, Sarasota.

In April 2008, preparations were made with FWRI and the Suncoast Tarpon Roundup committee members to establish 14 bait and tackle shops that were kit distribution and sample collection sites for the event held on the west coast of Florida, primarily St. Petersburg. The committee members provided shop names and MML confirmed shop participation and provided them with supplies. The shops involved with the event included: Annies Bait and Tackle, Cortez; Pass-A-Grille Bait and Tackle, St. Pete Beach; Mastry’s Bait and Tackle, St. Petersburg; St. Petersburg Pier, St. Petersburg; South Shore Bait and Tackle, Ruskin; Gulfport Municipal Marina, Gulfport; Gandy Bait and Tackle, Tampa, Dunedin Complete Angler, Dunedin; Holy Mackerel Tackle, Pinellas Park; Dons Dock, Madeira Beach; North Skyway Pier, St. Petersburg; O’Neils Marina, St. Petersburg; Dogfish Tackle Company, Seminole; and The Bait Bucket, Tierra Verde. FWRI staff and volunteers arranged to call shops weekly and pick up samples each week for a quick turn around of sample analysis for the anglers.

Reward Program

B. Steskal and F. Bays (MML volunteers, Donation Coordinators) acquired items for the Tarpon Angler Reward Program from numerous local and national businesses. Businesses providing in-kind or cash donations were sent a thank you letter, tax deduction information, Mote Aquarium passes, and if the in-kind contribution was over $500.00, they received a Mote Laboratory Corporate Membership. In addition, businesses were recognized in the FWRI Tarpon Newsletter.

In December 2007, MML assembled 11 angler prize packages containing an assortment of donated products provided by Bob’s Machine Shop, Diiatchi, Fisherman’s Log, FWC Fish and Wildlife Research Institute, Get Smoked Gear, Hydro Glow, Lotion Potion, MirrOlure, Mote Marine Laboratory, Outback Steakhouse, Sea Sucker, and Stow Mate. Five prize recipients were selected by K. Guindon (FWRI) from anglers that had provided the most DNA samples in 2007 and six were chosen randomly from anglers that had submitted samples during the year. A thank you card printed by FWRI with a personnel note to the angler was included in each package.

Angler Contributions

K. Guindon (FWRI) provided the following update for the Tarpon Genetic Recapture Project. In 2006, 66 anglers contributed a tarpon fin clip sample to FWRI. As of November 30, 2007, 235 anglers contributed samples, 80 anglers were listed as anonymous and 155 provided their contact information. A total of 326 samples were contributed in 2006 and 1,011 samples were contributed in
2007. A total of four recaptures have been identified in state waters from the Miami, Florida Keys, Sanibel and Tampa Bay areas, resulting in a recapture rate of 0.365% (not all samples were used in the recapture rate calculations). The FWRI and Mote researchers have successfully identified a total of four recaptured tarpon.

Tarpon can be caught in Florida coastal waters year round, but late spring through fall is the primary period that the fish are targeted by anglers. During this time numerous tournaments are held, particularly on Florida’s west coast and in the Florida Keys. In addition to tarpon sample collections in Florida waters, FWRI has been successful in developing partnerships with anglers in other countries to help look at movement in the Gulf and Atlantic. In April 2008, MML was contacted by Capt. Todd Stamps from the South Carolina Coastal Conservation Association who requested if a group of members could obtain samples for FWC/MML from their local waters. They established two bait and tackle shops as kit distribution and sample drop off locations. Sampling kits and information were sent and they will commence sampling in June 2008.

The FWRI and MML Tarpon Genetic Recapture Team will continue to promote the program and involve anglers as stakeholders in obtaining DNA samples from any tarpon, regardless of size or location of capture. Anglers were kept informed through the Genetic Recapture Review Newsletter as well as the www.myfwc.com website. A Tarpon Genetic Recapture project section is under construction on the www.mote.org Center for Fisheries Enhancement website and will be available in June. The section will include links to the FWC website.
May 28, 2008

Luiz R. Barbieri, Ph.D.
Program Administrator
Marine Fisheries Research Section
FWC - Fish & Wildlife Research Institute
100 Eighth Avenue SE
St. Petersburg, FL 33701-5095


Dear Dr. Barbieri,

Please accept the enclosed document as our Final Report to the Florida Fish and Wildlife Conservation Commission for the above referenced project. The report covers work performed from October 1, 2007 through May 23, 2008. Section headings included in this report are as follows: (A) Collaborate in Research to Demonstrate the Benefits of Red Drum Stock Enhancement in a Large Estuarine Ecosystem and (B) Collaborate in Research to Estimate Recapture Rates and Examine the Interconnectivity of Tarpon among Florida Estuaries.

The invoice for this report was mailed under separate cover to your attention by the MML business office. On behalf of the Mote Marine Laboratory Center for Fisheries Enhancement we look forward to continuing our successful partnership with the Florida Fish and Wildlife Conservation Commission on these two valuable projects.

Sincerely,

Carole L. Neidig
Staff Scientist
Center for Fisheries Enhancement

Cc: Ken Leber, Ph.D., Terri Deppe, Rusty Holmes (MML Research Office)
FIGURES

1. *Centropomus undecimalis*. Average prey consumed during two hour feeding trials. Fin Clip Collection Area, Citrus County to Lee County.
2. *Centropomus undecimalis*. Relationship between mouth gape dimensions and prey dimensions relative to body length of common snook larvae.
3. Fin Clip Program Collection Area.
4. Project Tampa Bay Angler Fin Clip Program Poster.
5. Angler Fin Clip Program Overview.
6. Angler Fin Clip Program Update.
7. Red Drum Fin Clip Kit.
8. Instruction card included in Fin Clip Kit.
13. Size Distribution of Red Drum Under Slot, Within Slot, and Over Slot Size Sept. 2001 – April 2008 \((n = 8,377)\).
14. Size Distribution of Hatchery-Reared Red Drum Sampled by Anglers a. Based on Phase (1, 2, or 3) of Fish at Release \((n = 51)\).
15. Hatchery red drum capture locations.
16. Thank you for genetics results card sent to anglers.
Figure 1. Fin Clip Collection Area, Citrus County to Lee County.
Size Distribution of Red Drum Sampled by Anglers
Sept. 2001 – Jan. 2007 (n = 4,388)

Mean 20.84 in TL (529.34 mm)
Size Distribution of Red Drum Under Slot, Within Slot, and Over Slot Size

- **<18 in (<457.2 mm)**: 27% (n=1193)
- **18-27 in (457.2 - 685.8 mm)**: 67% (n=2942)
- **>27 in (>685.8 mm)**: 5% (n=253)

Total: n=4,388

68% slot size fish recorded as released.
Size Distribution of Hatchery-Reared Red Drum Sampled by Anglers Based on Phase (1, 2, or 3) of Fish at Release

- Phase 1 (25-45 mm SL): 1,340,098 = 0.003%
- Phase 2 (60-110 mm SL): 173,926 = 0.002%
- Phase 3 (150-180 mm SL): 72,368 = 0.003%

Total Released = 1,586,382
Figure 13. Hatchery red drum capture locations.
WE NEED FIN CLIPS FROM ALL SIZES OF REDFISH CAUGHT FROM CITRUS COUNTY TO LEE COUNTY. USING GENETICS, WE IDENTIFY HATCHERY REDFISH THAT WERE RELEASED IN TAMPA BAY.

Every Fin Clip you turn in is your chance to WIN A GREAT PRIZE!

TO RECEIVE A FREE FIN CLIP KIT, A LIST OF PARTICIPATING BAIT & TACKLE SHOPS OR REPORT A TAGGED REDFISH CALL:

REDFISH HOTLINE
1-800-367-4461

OR EMAIL: tagreturn@myfwc.com OR redfishlab@mote.org

Figure 1. Project Tampa Bay Angler Fin Clip Program poster.
CATCH REDFISH?

CLIP A FIN AND WIN!
WE NEED FIN CLIPS FROM ALL SIZES OF REDFISH CAUGHT FROM CITRUS COUNTY TO LEE COUNTY. USING GENETICS, WE IDENTIFY HATCHERY REDFISH THAT WERE RELEASED IN TAMPA BAY.

Every Fin Clip you turn in is your chance to WIN A GREAT PRIZE!

TO RECEIVE A FREE FIN CLIP KIT, A LIST OF PARTICIPATING BAIT & TACKLE SHOPS OR REPORT A TAGGED REDFISH CALL:

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OR EMAIL: tagreturn@myfwc.com OR redfishlab@mote.org

Figure 2. Project Tampa Bay Angler Fin Clip Program Poster.
Figure 3. AFCP Update.
Figure 3. Angler Fin Clip Program Overview.
Figure 4. Angler Fin Clip Program Update.
NEW EXTENDED RANGE
CITRUS COUNTY TO LEE COUNTY
ANGLERS PLEASE HELP!
FIN CLIPS FROM ALL SIZE REDFISH ARE NEEDED
TO DETERMINE THE SUCCESS OF
RELEASING HATCHERY-REARED REDFISH INTO TAMPA BAY!

You Can Help by Taking These Five Easy Steps:

1. Clip a nickel-size piece of fin from the end of the second dorsal (back) fin. (The fin will grow back).
2. Place the Fin Clip in a plastic bag provided in your Fin Clip Kit.
3. Record fish and angler information on the bag label.
4. Place fin clip on ice or freeze (prevents DNA from degrading).
5. Drop off Fin Clip at a Participating Bait & Tackle Shop.

The Fin Clip is analyzed using DNA technology to identify if the redfish was produced by a female spawned at the hatchery. This provides vital information on hatchery redfish survival, growth, distribution, and contribution to the fishery. Fin clips from wild redfish are used to profile the genetics of the population.

Anglers who turn in a fin clip with complete fish capture information are entered into drawings for great prizes donated by local and national businesses. Anglers are mailed a postcard with information on whether their fin clip was from a hatchery-reared or wild redfish.

In 1999, the FL Fish and Wildlife Conservation Commission, FL Fish and Wildlife Research Institute in partnership with Mote Marine Laboratory began Project Tampa Bay, a large scale redfish stock enhancement project, to increase recreational catches and determine the best and most cost-effective methods for stocking. More than 4.2 million juvenile redfish have been released by the FWC, Stock Enhancement Research Facility. Fin clips provided by anglers are essential in determining fish survival. Angler participation will help determine if responsible stocking can be a cost-effective addition to fisheries and habitat management tools.

To obtain a free Fin Clip Kit, a list of bait & tackle shops, or additional fin clip bags please call: Redfish Hotline 1-800-367-4461 or Mote Redfish Lab 941-388-4441 ext. 448, or email us at redfishlab@mote.org.

Thank You For Your Valuable Support! (PROJECT OVERVIEW - revised 10252007).
Project Tampa Bay - Redfish Stock Enhancement
A Florida Fish and Wildlife Conservation Commission and Motte Marine Laboratory Partnership

Provided by Carole Neidig, Staff Scientist, Mote Marine Laboratory, Center for Fisheries Enhancement, Sarasota, FL

Fin Clip Collection Area Extended Citrus County to Lee County

Goal of Project Tampa Bay: Demonstrate the effectiveness and benefits of responsible stock enhancement in a large estuarine ecosystem.

Objectives:
- Determine optimal size and habitat for stocking redfish in Tampa Bay.
- Increase the number of redfish available to anglers.

Results:
- Since March 2000, 4.2 million juvenile redfish of three size groups (Phase I \( \approx 1 - 1.8 \) in.; Phase II \( \approx 2.4 - 4 \) in.; and Phase III > 6 in.) have been released in the Alafia and Little Manatee Rivers.
- More than 1,543 anglers have provided 7,614 redfish fin clips using Free Fin Clip Kits.
- Of the fin clip samples analyzed by FWC for DNA, 80 have been identified as hatchery-reared redfish (51 collected by anglers using Fin Clip Kits and 29 from anglers providing redfish fin clips to FWC Fisheries Dependent Monitoring staff at boat ramps).
- Smallest was 6.8 in., largest was 28 in. [57 in slot (18”-27”), 21 under slot size, and 1 > 27 in.]
- Shortest time between release and capture was 106 days and longest was 1,150 days.
- Farthest distance a redfish was captured from its release site: 55 Miles = released in the fourth mile of the Alafia River and captured in South Sarasota Bay. Fish was a Phase I (1-1.8 in.) when released and at capture measured 27 in. TL. There were 827 days from release to capture.
- Hatchery fish capture locations include: Alafia River, Bullfrog Creek, Bahia Beach, Apollo Beach, Little Manatee River, Cockroach and Little Cockroach Bay’s, Piney Point, Bishop Harbor, Old Tampa Bay, Weedon Island, Lassing Park, Tarpon Key, Terra Ceia Bay, Miguel Bay, Manatee River, Perico Harbor, Palma Sola Bay, and north and south Sarasota Bay.
- There are 99 Participating Bait & Tackle Shops, valuable components of this project.
- In 2007, 180 anglers received prize packages with great donated products.

New in 2008:
- Junior Division (15 yrs. and younger), if a Junior, record after your name on angler contact information section of fin clip sample label. Special Year End Prizes! Contact information kept confidential.
- Tournaments to benefit MML Redfish Project: Stinky Joe’s “Fish on Lures” Trout Tournament March 21 & 22 (Osprey Bay Kayak); Hunt for Reds in October, October 25 & 26, Location TBA.
- Kids Fishing and Conservation Clinics: Hunt for Reds in October Kids Clinic, October 25, TBA. Additional Clinics in 2008-TBA.
- Fin Clip Kits with Vials of Preservative, No Sample Refrigeration or Freezing Required – Ask to try.

To obtain a free Fin Clip Kit, bait & tackle shop list, additional fin clip bags, or event information:

FWC Hotline 1-800-367-4461 or Mote Redfish Lab 941-388-4441 #448, or email redfishlab@mote.org.

Thank You For Your Valuable Support!
Figure 5. Red Drum Fin Clip Kit.
Figure 6. Instruction card included in Fin Clip Kit.
Figure 6. Distribution of all red drum ($n = 8,377$) sampled by anglers under slot, within slot, and over slot size.
Figure 7. Angler Fin Clip Program Participating Bait and Tackle Shops.
Figure 7. Tarpon Genetic Recapture Program 2007 Newsletter (FWRI/MML).
We need information about all REDFISH caught from Crystal River to Charlotte Harbor. Please call us at: 1-800-367-4461 OR EMAIL: redfishlab@mote.org

Thanks!

Redfish fin clips and the catch information that you provided are essential to evaluate the survival and distribution of hatchery-reared Redfish. With fin clips from wild Redfish, we can construct a genetic profile of the population.

The redfish fin clip(s) you provided was analyzed by the FWC Fish & Wildlife Research Institute Molecular Genetics Lab, using DNA microsatellite technology. Results:

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<th>Capture Date</th>
<th>SL/TL</th>
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<td>Wild/Hatchery</td>
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Figure. Angler Fin Clip Program Thank You postcard.