

# NMT NETWORK NEWS



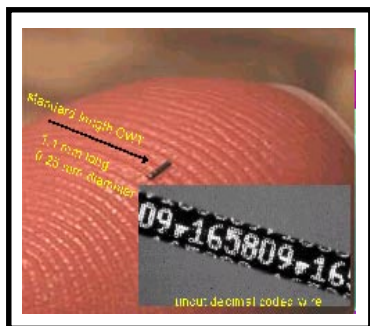
Northwest Marine Technology, Inc.

Pioneering solutions for the problems of aquatic resource management

Spring, 2000

## WIRE TAG READING MADE EASIER

For almost thirty years Northwest Marine Technology (NMT) has continued to improve the efficiency and quality of fish tagging and marking. Beginning in January 2000, all of the coded wire tags produced by Northwest Marine Technology bear easy to read laser etched decimal numerals rather than binary format. This change will essentially eliminate the training period required for new tag readers and provide relief for the experienced as well. Decimal Coded Wire Tags™ have the same high quality, inertness, and magnetic properties as the binary coded tags. Both "batch" and "sequential" codes are available for the same price. The new format makes the increasingly popular sequential tags much easier to read.



Standard sized Decimal Coded Wire Tag™ (1.1mm long) Much of the success of the tag results from its small size, extraordinary retention rate, and biological compatibility.

## Hatchery Reform

Pete Bergman and Frank Haw of NMT have spent the last year on a committee appointed by U.S. Senator Slade Gorton to reform the salmon hatchery practices in Puget Sound and Coastal Washington. The committee includes members from Northwest Indian Fisheries Commission, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the Washington Department of Fish and Wildlife. Wild stocks of chinook and coho in the area are depleted, and some are listed under the Endangered Species Act. Hatcheries have been criticized as part of the problem affecting natural stocks. The purpose of the committee is to establish a science-based process for using hatcheries to support natural stock recovery (e.g., by rearing wild fish for broodstock) and to allow fisheries directed solely toward hatchery fish (i.e., selective fisheries). Congress approved a \$3.6 million budget recommended by the group for its first year. A scientific review panel, including independent as well as agency scientists, has been appointed. Research grants totaling \$700,000 are being awarded and the project is well underway.

## WHERE IN THE WORLD.....

**World Aquaculture Society** - May 2<sup>nd</sup>-6<sup>th</sup>. Dr. David Solomon (the European Representative for NMT), Yong Huang (the Asia Representative for NMT), and Stan Moberly (Director of Marketing for NMT) will be attending a trade show in Nice, France.

**Western Division of American Fisheries Society** July 16<sup>th</sup> - 22<sup>nd</sup>. Stan Moberly, and Guy Thornburgh (CEO for NMT) will be at the Telluride, Colorado tradeshow.

**American Fisheries Society** - August 20<sup>th</sup>-26<sup>th</sup>. Stan Moberly and Yong Huang, will be at the St. Louis, Missouri tradeshow.

**World Fisheries Congress** - October 31<sup>st</sup> - November 3<sup>rd</sup>. Stan Moberly and Yong Huang will be at the tradeshow in Beijing, China.

Dr. David Solomon will join a dozen other Europeans on a week long tour of salmon tagging and marking activities in the Pacific Northwest. From October 9<sup>th</sup> - October 13<sup>th</sup>, representatives from Norway and several Baltic countries will study techniques suitable for tagging pen reared Atlantic salmon. The tour will include traditional hand operated coded wire tagging devices, the new fully automatic Marking and Tagging System (MATS), large scale elastomer marking, centralized tag processing laboratories and field sampling with the Wand and R Series Tunnel Detector™.

NMT sponsored a workshop in La Paz, Mexico during December 1999. David Kawahigashi, the Latin America Representative, emphasized the advantage of Visible Implant Fluorescent Elastomer™ for marking shrimp.

For more information on tagging products, prices, copies of manuals, reference materials, employment opportunities, etc., visit our web site at [www.nmt-inc.com](http://www.nmt-inc.com)

## JOB ANNOUNCEMENTS

**General Manager** - WorldMark, Inc. located in Olympia, Washington. Startup company seeks ambitious manager to coordinate automated tagging of millions of juvenile Pacific salmon. See our website at [www.nmt-inc.com](http://www.nmt-inc.com) for full description and requirements, or contact Laura Jefferts at (360) 299-9100; [ljefferts@nmt-inc.com](mailto:ljefferts@nmt-inc.com) to request information.

**Fish Biologist** - Northwest Marine Technology located in Olympia, Washington. See our website at [www.nmt-inc.com](http://www.nmt-inc.com) for full description and requirements, or contact Mary Woodgate at (360) 754-2500 [woodgate@nmt-inc.com](mailto:woodgate@nmt-inc.com).

## EQUIPMENT SALE

NMT is offering a substantial discount on a set of field equipment which includes a Hand Held Wand Detector™, a Hand Held Multishot CWT Injector™, a MagniViewer™ and 10,000 Coded Wire Tags™. This package can be purchased for only \$11,000. (USD), a savings of over \$2,000. The offer expires July 31, 2000.

## Conveyor Belt System For Automatic Detection of CWT Herring

Scientists at the Pacific Biological Station in Nanaimo, British Columbia (Canada Department of Fisheries and Oceans) are planning a Coded Wire Tag™ mark/recapture of Pacific herring this spring. In 1999, they prepared for the year 2000 project by investigating techniques to live capture and tag the fish, and also engineered a conveyor system to electronically sample large volumes of herring landed at fish processing plants.

At the Allied Pacific Processors facility in Vancouver, British Columbia, one of NMT's R9500 Tunnel Detector™ was installed with a conveyor belt and deflector gate (to shunt tagged fish from the belt after being detected in the R9500 tunnel). In the pilot study the system's capacity was 30 to 40 tons of herring per hour.

During all seventeen trials with known placed CWT™ tagged herring on the conveyor belt, the tagged fish were successfully detected. Sixteen of the seventeen detections resulted in successful gating of detected fish (the single failure was due to a mechanical issue with a simple remedy).

Given the success of the pilot project, tagging began in February 2000, with detection at the processing plants during the March/April fishery.

For more information on the herring project contact the principle investigator, Jake Schweigert, Pacific Biological Station, Nanaimo, BC, Canada phone (250) 756-7203, e-mail [schweigertj@pac.dfo-mpo.gc.ca](mailto:schweigertj@pac.dfo-mpo.gc.ca). For a seven minute video of the electronic detection system in action, contact NMT on Shaw Island.

In late February 2000, Dr. Aril Slotte Denmark visited Jake's project. Soon, Denmark is beginning a pilot project of their own to assess status of herring stocks. *Contact Dr. Slotte at [aril.slotte@imr.no](mailto:aril.slotte@imr.no)*

## WANDERFUL PROJECTS

(Editors note: Recently, two projects each ordered at least 10 wands. Here's what they are being used for.)

The Florida Fish and Wildlife Conservation Commission's Marine Research Institute, and Mote Marine Laboratory are using Wands to recover CWT tagged red drum (*Sciaenops ocellatus*) released into the Alafia river system in Tampa Bay, Florida. The three year project is designed to evaluate the optimum size, time and location for release of the hatchery and juvenile red drum. The 4.0 to 6.0 inch fish are coded wire tagged prior to release. The Wands are used during sampling to identify coded wire tagged fish. The tagged fish are returned to the lab where the coded wire tags are removed and read.

*Contact: Brent Winner  
[brent.winner@dep.state.fl.us](mailto:brent.winner@dep.state.fl.us)*

The Colorado River Recovery Program uses Wands in their effort to recover wild stocks of razorback suckers (*Xyrauchen texanus*) and bonytails (*Gila elegans*). Both are endangered species endemic to the Colorado River basin. While wild fish caught during population estimates are PIT tagged, hatchery fish are identified by the presence of a coded wire tag. The Wands allow hatchery fish to be identified and therefore eliminated from the wild fish population estimates.

*Contact Frank Pfeifer  
[frank\\_pfeifer@fws.gov](mailto:frank_pfeifer@fws.gov)*

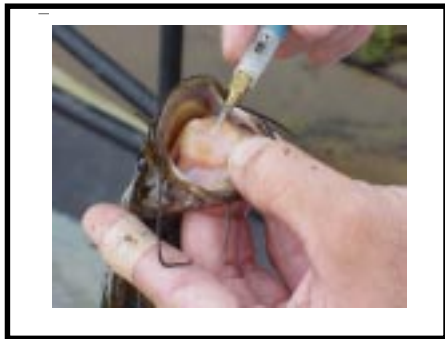
## Tailwater Tagging

**Dr. Phil Bettoli**, a principle investigator at Tennessee Tech University reports that a graduate student team at the United States Geological Service Cooperative Fishery Research Unit recently finished their "tagging chores" by stocking over 68,000 rainbow trout and brown trout into the Hiwassee River in Southeast Tennessee. All of the trout were tagged with NMT blank tags and had an adipose fin-clip to identify them as tagged fish. Different cohorts of fish were tagged in different body locations so that researchers could describe mortality and growth rates of the different cohorts, and their return to the creel. The Hiwassee River has long been a popular destination for trout anglers in the Southeast, but until the USGS team began their research, little was known regarding the fate of stocked fish in that and other popular tailwaters. Tag retention from NMT's MKIV Injectors™ was exceptional (97%), especially considering that all tagging was done without the use of a Quality Control Device™. Since they began studying the fate of stocked trout in Tennessee tailwaters, the Tennessee Tech researchers have microtagged and stocked 310,000 trout into six tailwaters. Final reports are available for five of the tailwaters they have studied, and the Hiwassee River report will be out this summer. *Contact Dr. Bettoli at [pbettoli@ntech.edu](mailto:pbettoli@ntech.edu)*

## TONGUE TAGGED

**Gene Jones of the Bellevue Fisheries station in Iowa developed a unique field method for tagging flathead catfish of the Mississippi River using Visual Implant (VI) Alpha™ tags.**

The tag location was based on experimental tagging during the fall of 1998. Fish were tagged in various places. Tags were placed in every fin of the fish, the mouth, and at the base of the pectoral and pelvic fin in the fleshy portion of the joint. Tag site selection was based on the readability and retention of the VI™ tag. The flathead catfish has very thick skin, which contains a large amount of pigment leaving few good visual tagging sites. The tongue was the best location on a flathead catfish where reduced pigmentation resulted in good visibility and readability of the tag.



**The best area for tag placement is in the middle of the tongue. This area of the tongue has the least pigment, which makes the tag more visible.**

### The Procedure

The procedure requires two people. The flathead is held by one person with a hand placed under the belly of the fish and the other hand wrapped around the caudal peduncle. This process renders them motionless better than 90% of the time. Larger fish are harder to handle because the caudal peduncle is too large to grab.

The second person or the tagger, lips the fish between the thumb and index finger (be cautious with large fish). The fish may struggle slightly. If this occurs, the person holding the fish should squeeze the caudal peduncle a little harder. All fish handled during the study were tagged without sedation of any kind. The mouth opened fully forces the tongue out for easier tagging. The VI tag injector is inserted from the side of the tongue patch (see photo).

To insure proper placement, insert the tagging needle tip in fully, riding just below the skin surface for the best tag readability. Then remove the tagger and leave the tag in place. This is done by, depressing the tip downwards, pushing the plunger, and retracting the tagger. With practice this process becomes quicker and easier.

### Results

The number of flatheads tagged in the first year of the project was 565. The catfish were fin clipped for tag retention identification. The total number of recaptures was 16 with 100% tag retention, of which all could be read with the naked eye.

One flathead (tag #117), tagged on the 9th of June, was recaptured on the 27th of August. The insertion point on the tongue created by the tagger was completely healed over, making tag loss nearly impossible. The adipose fin had healed over (but not regenerated) and the right pelvic fin was almost fully regenerated. This all happened in less than three months.

Contact Gene Jones at (319) 872-4976

## Announcing

NMT's new MagniViewer™ is a hand held, battery operated device used to magnify and view NMT's unique Coded Wire Tags™. The MagniViewer™ combines a twenty five power microscope, a high intensity light and magnetic reading pencil to view both individual tags and spools of coded wire tag.

The diverter gates for the R9500™ and R8000™ Tunnel Detectors™ have a standard dual counter (i.e., two way count of tagged and untagged fish). An optional Quad Counter™ will count four ways via use of a foot switch that diverts signals from the detector to one of two dual counters. This allows for counts of tagged/untagged fish that are either adipose fin clipped or unclipped; or counts of tagged/untagged fish that are either chinook or coho, etc.

Use of the Air Driven Elastomer Machine™ is expanding rapidly. They are already being used with projects in Colombia, Australia, France, Panama, Japan, Venezuela and Mexico; as well as Washington, Connecticut, Florida, Massachusetts, and Hawaii.

The Anacortes Division of NMT has produced four of the automated Marking and Tagging System™ trailers. They are actively deployed in the Puget Sound region where they adipose fin clip and Decimal Coded Wire Tag™ millions of juvenile chinook and coho salmon.

The Anacortes Division has also developed a machine that sizes and sorts juvenile salmon automatically. The fish are never touched by human hands, are not anesthetized, and are measured on the fly at the rate of two per second. The machine can sort to within a half millimeter accuracy of total length for fish ranging from 50mm to 200mm. The Salmon and Trout Sorter (SATS) will first be used with the Marking and Tagging System (MATS) for mass marking of Pacific salmon, and later developed into a stand alone model for hatchery use throughout the world.

This belongs in the Guinness Book of World Records. Gary Schurman is a Fish and Wildlife Biologist IV, for Washington State Department of Fish and Wildlife. During his twenty-seven years of coded wire tagging for the Department, his section has processed more than 230 million juvenile salmon and steelhead. Laid nose to tail, that many tiny fish would stretch over 12,700 miles, halfway around the equator!

The Lotek-NMT archival tag can now geolocate directly from observed light down to a substantially greater depth. A new light detector's range has been expanded by over three decades (a factor of 1000 greater sensitivity). In normal tuna habitat for example, that is expected to allow light to be seen another 150 meters deeper. The onboard processing algorithms also have been improved, leading to better geolocation in dim light.

### Moving On.....

We regret to announce that Mary Woodgate, a Fish Biologist at NMT for six years, is relocating to Cambridge, England with her family. We will miss Mary's expertise and enthusiasm for fish tagging technology. Mary can still be contacted at NMT through the middle of April, 2000.

**NEED ASSISTANCE WITH YOUR EQUIPMENT?  
Contact one of NMT's Service Representatives**

Martin Adams	R Series Rectangular Tunnel Detectors	mnadams@nmt-inc.com
Brad Hansen	Elastomer Air Injector System & Quality Control Device	techsupport@nmt-inc.com
Doug Hogue	Hand-Held Wand Detector, Portable Sampling Detector & Archival Tags	djhogue@nmt-inc.com
Kevin Nash	Multishot CWT Injector	techsupport@nmt-inc.com
Helen Riggins	VIalpha System	techsupport@nmt-inc.com
Mike Simmering	Shipping/logistics	msimmering@nmt-inc.com
Paul Weiss	MKIV Injector and Cutters	pweiss@nmt-inc.com
	For advice on tagging techniques please contact the biology office	biology@nmt-inc.com

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NMT Network News is a mechanism for communication, information transfer and coordination between agencies, groups and persons involved in fisheries enhancement and management. Our goal and hope is that you will be informed and motivated to respond to articles printed here by contacting the authors for more information or to offer your own experiences. And of course, we hope that you will submit your own articles to share with and inform others.

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