NMT Network News

Northwest Marine Technology, Inc.

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Decimal Coded Wire Tags Help Herring Researchers off the Coast of British Columbia

by Dan Yule

Scientists with the Department of Fisheries and Oceans (DFO) Canada have initiated a study to better understand herring spawning site fidelity throughout the coast of British Columbia. Herring roe is sold primarily to markets in the Orient where the highest quality roe will sell for as much as CDN$11.00 per pound. Because the roe fishery is economically important, DFO managers need to understand if the coastal herring are comprised of several large stocks or numerous smaller stocks. To answer this question, researchers have initiated a project using Decimal Coded Wire Tags (DCWT).

In overcoming difficult logistic challenges, DFO researchers have exhibited remarkable innovation. First, techniques for capturing, tagging and releasing relatively unharmed herring at sea had to be developed. DFO scientists then collaborated with consultant Thyra Nichols to develop a specialized tagging table for use on a purse seine vessel. The table maximizes tagging rates and minimizes handling time and stress under often-adverse field conditions. The Canadian researchers also developed a tagging jig for the *MK IV automatic tag injector* that aids placement of the DCWTs in the nape musculature. Controlled pen experiments were conducted to identify a tagging technique that maximized retention and minimized mortality. Approximately 50,000, 250,000, and 150,000 adult herring were released with tags throughout the coast in 1999, 2000 and 2001, respectively. Tag recoveries allow biologists to link commercial catch sites with tag-and-release sites.

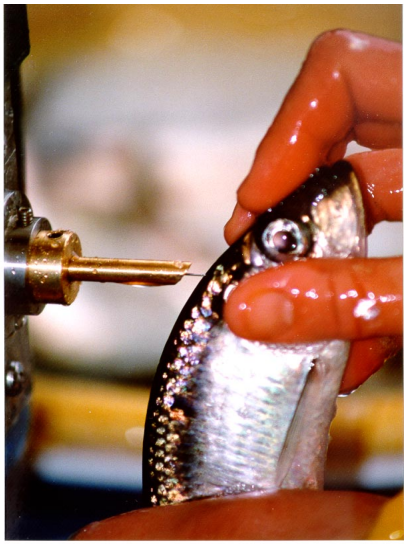


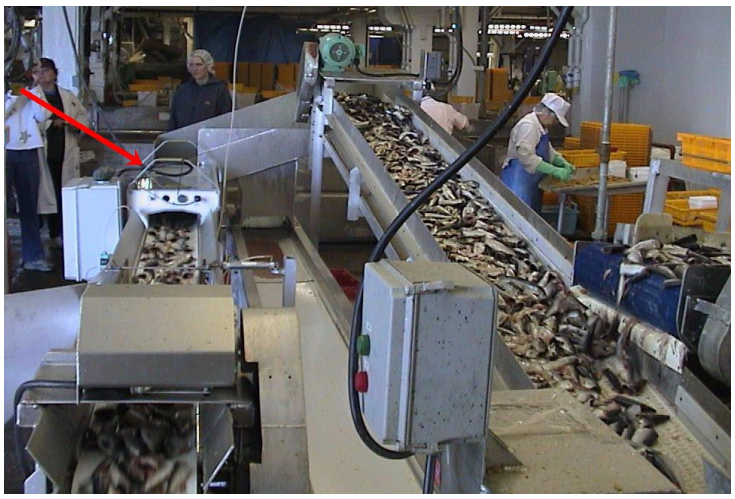
Photo of a herring being tagged with DCWT and a MKIV Automatic Tag Injector.

Fisheries researchers from the Department of Fisheries and Oceans, Canada capture herring for tagging off the coast of British Columbia by using a seine net. The fish are then tagged at a station set up on the boat deck.

Results from studies by Jake Schweigert of DFO and Aril Slotte from the Norwegian Research Council will be presented at the International Council for the Elxploration of the Sea (ICES) meeting in Oslo, Norway this fall.

Canadian Herring Project cont...

Developing the technique to recover DCWTs from commercial catches provided an entirely different set of challenges. Plant processing of the prized roe occurs about a month after the fishing season. Processing lasts for several weeks each spring at rates of from 8 to 20 tons per hour. The research team hoped that they could take advantage of electronic detection afforded by the DCWT technology. Pilot trials were conducted to determine if tagged fish could be swept off a conveyor belt using the signal provided by an NMT rectangular (*R-9500)* detector. Working cooperatively with scientists from J.O. Thomas and Associates and plant engineers at roe processing plants, DFO scientists have developed a system that will allow the scanning of up to 30 tons of herring per hour per plant. The tag recovery process occurs on carcasses after the roe has been removed or "popped"; thus, impacts on plant operations are minimal. Each time a tag is detected, the belt is swept and from 20-50 herring are deflected into a basket. A handheld *Wand* detector is then used to isolate the tagged individual.



After the roe is removed , herring carcasses are scanned for decimal coded wire tags as they leave the plant on conveyor belts.

The position of the R-9500 coded wire tag detector is denoted with an arrow. Photograph courtesy of : Linnea Flostrand, DFO.

Preliminary study results have been very encouraging. An estimated 6,700 tons of herring were searched during 2000, comprising about 23% of the BC roe herring catch (Schweigert and Flostrand 2000). The recovery system in 2000 was quite durable and had minimal down time; enabling 94% of the herring processed at the plant to be searched for CWTs. Results from three different 2001 plant recovery systems are not yet available.

A total of 109 tags were recovered in 2000 from 1999 releases. Most of the tagged fish were recovered in close proximity to their release sites; however, there were three especially notable recoveries. Two tagged herring released in the Strait of Georgia were recovered from Sydney Inlet on the west coast of Vancouver Island and one tagged herring from the Queen Charlotte Islands was recovered at East Higgins Pass in the Central Coast (Schweigert and Flostrand 2000). With only one year of tag recovery, it is premature to draw many conclusions but DFO researchers expect to utilize this powerful technology to better understand the biology of British Columbia herring stocks. Ultimately the results from this tagging study should lead to more informed decision-making.

To learn more about this program please contact Jake Schweigert, Department of Fisheries and Oceans Canada, Science Branch, Pacific Region, Pacific Biological Station, Nanaimo, British Columbia V9R 5K6, Phone : 1-250-756-7203, E-mail: schweigertj@pac.dfo-mpo.gc.ca.

References

Schweigert, J., and L. Flostrand. 2000. Pacific herring coded wire tagging study: 1999 releases recovered in 2000. Canadian Technical Report of Fisheries and Aquatic Sciences 2335: 33 p.

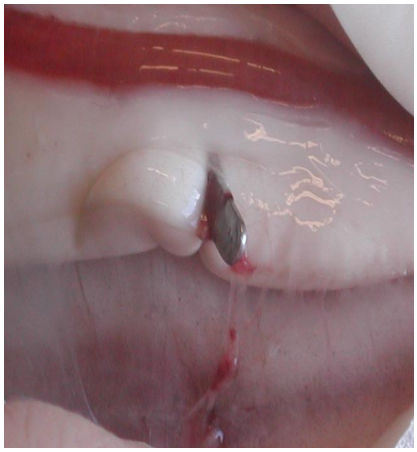
Herring Tag Study in Norway

By Aril Slotte

The project, "Evaluation of Coded Wire Tag Technology (CWT) for Mass Marking of Norwegian Spring Spawning Herring", is funded by the Norwegian ResearchCouncil in Bergen, Norway.

The first task has been to test whether tag retention and tagging mortality would improve with the use of CWT's compared to traditional internal steel belly tags (20x4x1)mm, and whether these parameters vary with tagging season and gonad development. Three experiments have been conducted: one in June 2000, another in October 2000, and a third in January 2001.

In each experiment 400 fish were tagged with both tag types and released to sea pens. The mortality, compared to a control group of non-handled fish, and the tag loss was recorded during periods of three months. The tag loss and tagging mortality was found to be 0-1% regardless of tag type and season. However, fully mature herring tended to have the traditional steel belly tags penetrating their gonads. This did not affect the mortality during a three months period, but it could have effects on a longer term. This would not be a problem with CWTs, which were injected into the muscular tissueof the neck such as in the photo on cover page.



Above photo showing traditional steel belly tag. As the herring matures the belly tags often severe the gonads of the herring.
This is the type of tag that is being compared to the Coded Wire Tag in the research at Bergen, Norway.

Where in the World....

North America:

American Fisheries Society annual meeting to be held in Phoenix, Arizona August 21-23.
NMT will be represented by Director of Marketing, Stan Moberly, Biologist, Jim Webster and Customer Service Representative, Ken Molitor. Please, stop by the tradeshow booth and see what is new at NMT!

NMT plans to attend the 63rd Midwest Fish and Wildlife Conference to be held in Des Moines, Iowa December 9-12th.

Europe:

Dr. David Solomon will represent NMT at the ICES meeting this year in Oslo,Norway, September 26-28.

Also, Dr. Solomon plans to lecture on NMT's MATS (Mass Automated Tagging System) to a meeting of the Fish Veterinary Society in Cambridge, England on October 24th.

Asia:

Stan Moberly and Asian Representative, Yong Huang will travel Japan where they will attend the Japan Salmon Research Association Annual meeting in Sapporo on Hokkaido Island. At the meeting Stan will present a keynote speech in the session of "Latest Technology Development of Tagging and Tracking Salmon" on August 31st.

Moving On....

Dan Yule of the NMT Biological Services staff has accepted a job in that will allow him to pursue field work. NMT appreciates the hard work and excellent service that Dan Yule provided. Customers that wish to contact the NMT Biological Services staff should direct inquiries to: Dan Thompson, Biologist
at: dthompson@nmt-inc.com
or phone: 360-596-9400 x 11

....What is next?....

NMT Network News invites you to send in photos and articles for use in future publications. Submission does not need to be legnthy. The NNews is also wanting to feature key researchers that are using NMT products. Send us *NEWS* on your latest project!
Email to: office@nmt-inc.com

NMT Product Spotlight

New upgrade parts for NMT's Coded Wire Tag Handheld "Multishot" Injector include new designs for the drive roller and the "cutting edge" of cutter edges!

The new and improved drive roller features a urethane tire bonded to a stainless steel hub eliminating slippage, between ratchet and hub, due to added dimensional stability of the new materials. This is a dramatic advancement in design over the phenolic drive rollers made in the past.

Stainless steel cutters for the Handheld "Multishot" Injectors will now be coated with a special micro thin material that improves cutting life. This coating increases surface hardness of the cutter by 40-50%. Routine care and cleaning are still necessary for the maintenance of the cutter.

The new drive roller and coated cutter will be standard in all new Handheld "Multishot" Injectors and can be ordered as a separate upgrade part. **Call NMT for details 360-468-3375**

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