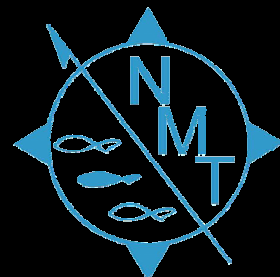


Looking Back: 35 Years of Coded Wire Tagging



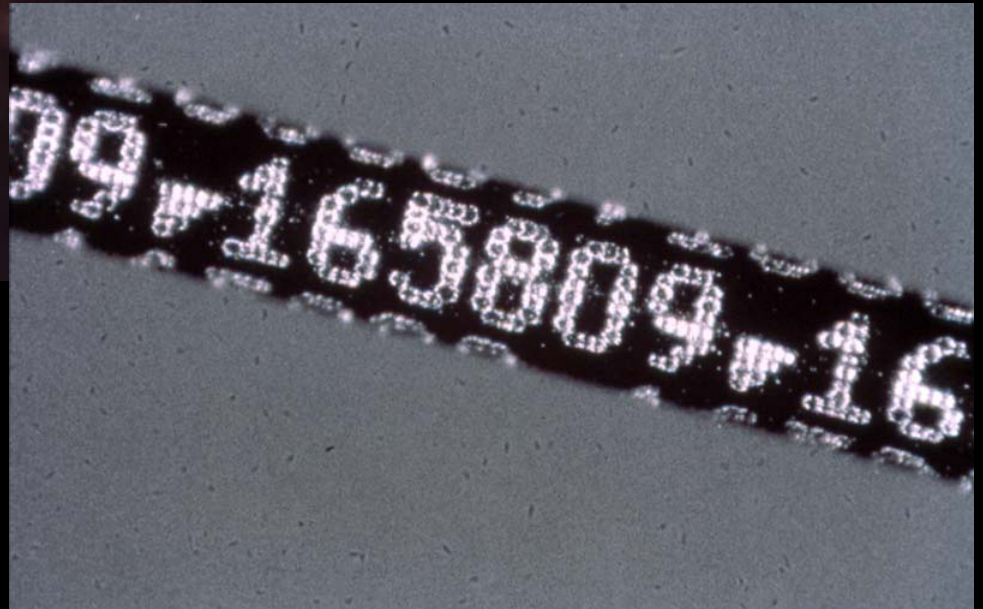
Geraldine Vander Haegen
Northwest Marine Technology

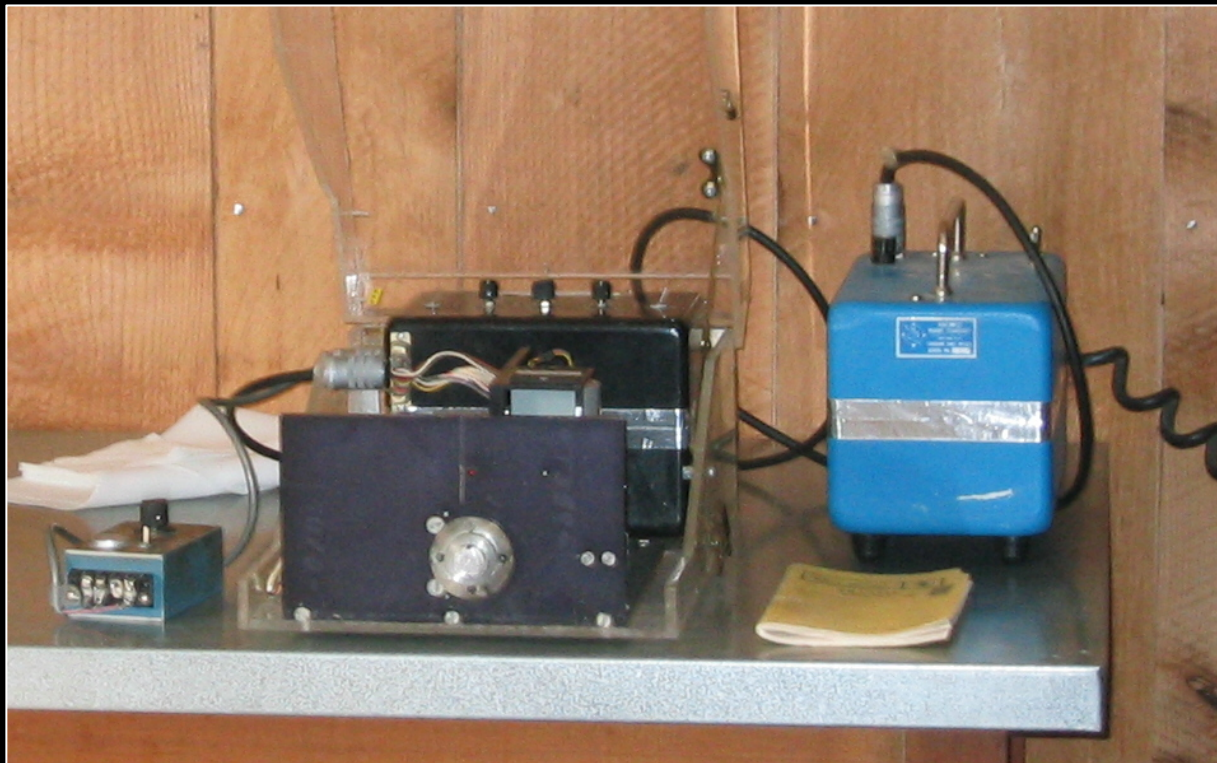


The beginning...

- 1964: Keith and Pete published "A coded wire identification system for macro-organisms" in Nature (color coded tags)
- 1967: The first reliable tag injector, the Mark 0.0 was invented, as were Binary Coded Wire Tags.
- 1971: NMT was incorporated and the MK I invented
- 1974: 5 Million Tags and 10 Mark I Injectors produced. The First Mark I injector was sold to Canada.

The more things
change...











PNW CWT Program

- CWT releases
 - Over 1.1 billion salmonids released with a CWT
 - Put end to end, the tags would reach about 690 miles
 - Put the tagged fish end to end and they would reach ~52,000 miles
- CWT recovery
 - Over 5 million CWTs recovered in the PNW



Tagging in 2005



- 46,000,000 salmon were tagged
 - 37.8 million Chinook
 - 5.8 million coho
 - 2.3 million other species, mainly steelhead
- 6 states and provinces
- 38 different entities
- 300 different release locations
- ~95% of tagged fish were hatchery releases

Sampling in 2003



- 227,700 coded wire tags were recovered
- 6 states and provinces
- 1,500 different recovery locations
- More than ½ the recoveries at hatcheries
- 62% recovered with electronic detection
 - Chinook: 50% electronic/50% visual
 - Coho: 80% electronic
- Largest single recovery day – 5,500 tags on October 14th

Worldwide Use

- There is virtually no animal that we haven't been able to tag successfully with CWT.
- This remains the smallest tag available, and much smaller animals can thus be identified with CWT than with other tags.
- CWT have consistently high retention rates for the life of the animal.

Great Lakes

- Marking and tagging all hatchery fish will provide information about:
 - The abundance of wild fish;
 - The success of fish stocking, specific stocking methods, and rehabilitation efforts;
 - Age, growth, survival, and movement of stocked fish;
 - Etc.



White Seabass Tagging in CA.

- CWT used to evaluate a stock enhancement program for white sea bass.
- Systematic sampling and volunteer returns are used to recover tags.
- Over 1 million CWT releases.



Ohrid trout Tagging in Macedonia and Albania

- Lake Ohrid is one of the oldest lakes in the world, and has a several unique species.
 - Ohrid trout spawn in underwater springs at depths to 100 m.
 - Slow growing; 7 years to reach 1 kg and 3 years to attain the minimum landing size of 32 cm.
- Overfishing has led to a restocking program.



Eel Tagging in Norway

- Researchers coded wire tagged 100,000 European elvers and released them into fresh water streams or into the brackish water of Roskilde Fjord.
- Tags recovered in stream and fishery showed that stocking in the streams did not increase eel populations, but stocking elvers in Roskilde Fjord is valuable to the fishery.



Blue Crab Tagging in Chesapeake Bay

- CWT used to evaluate a stock enhancement program for blue crab.
- Hatchery reared crab are tagged to distinguish them from wild crab.
- Lobsters, crayfish and shrimp also CWT.



Naked Carp Tagging in China

- Naked carp is a critical food source for people and migrating birds, and is part of religious ritual.
- CWT used to evaluate a stock enhancement program for naked carp in Qinghai Lake.



Clam Tagging in WA

- WDFW enforcement used CWT identify clams from a closed beach.
- In a sting operation, clams were recovered at buyers after illegal harvest.



Mealworms: Tag Retention through Metamorphosis

- 0.18 g larvae tagged with CWT
- Larvae underwent molts and metamorphosis to adult beetles.
- 65% survived, and 93% retained tags.



CWT Data from Live Fish

- Just detecting the presence or absence of CWT can give a lot of information.
- In sturgeon, used scutes to further encode year classes.
- Use wand detector to discriminate sites.



CWT Longevity Records

- Sturgeon, Missouri River, 24 years
- Lake trout, Lake Huron, 18 years
- White seabass, CA, 10 years
- Chinook @ 7-8 yrs
- Coho @ 5-6 yrs
- Snook, FL, 6 years (and counting)

