

Automated Fish Marking

Using The AutoFish System In Oregon



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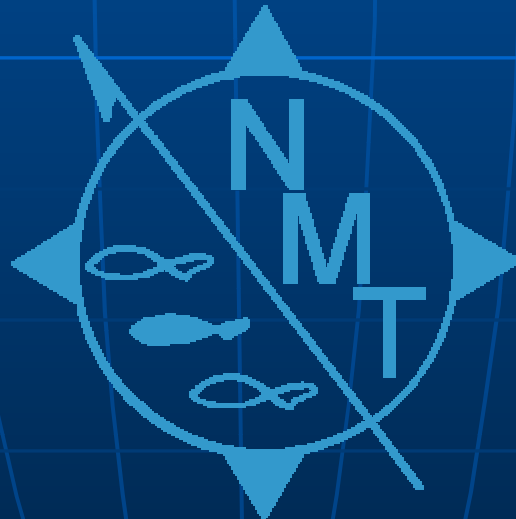
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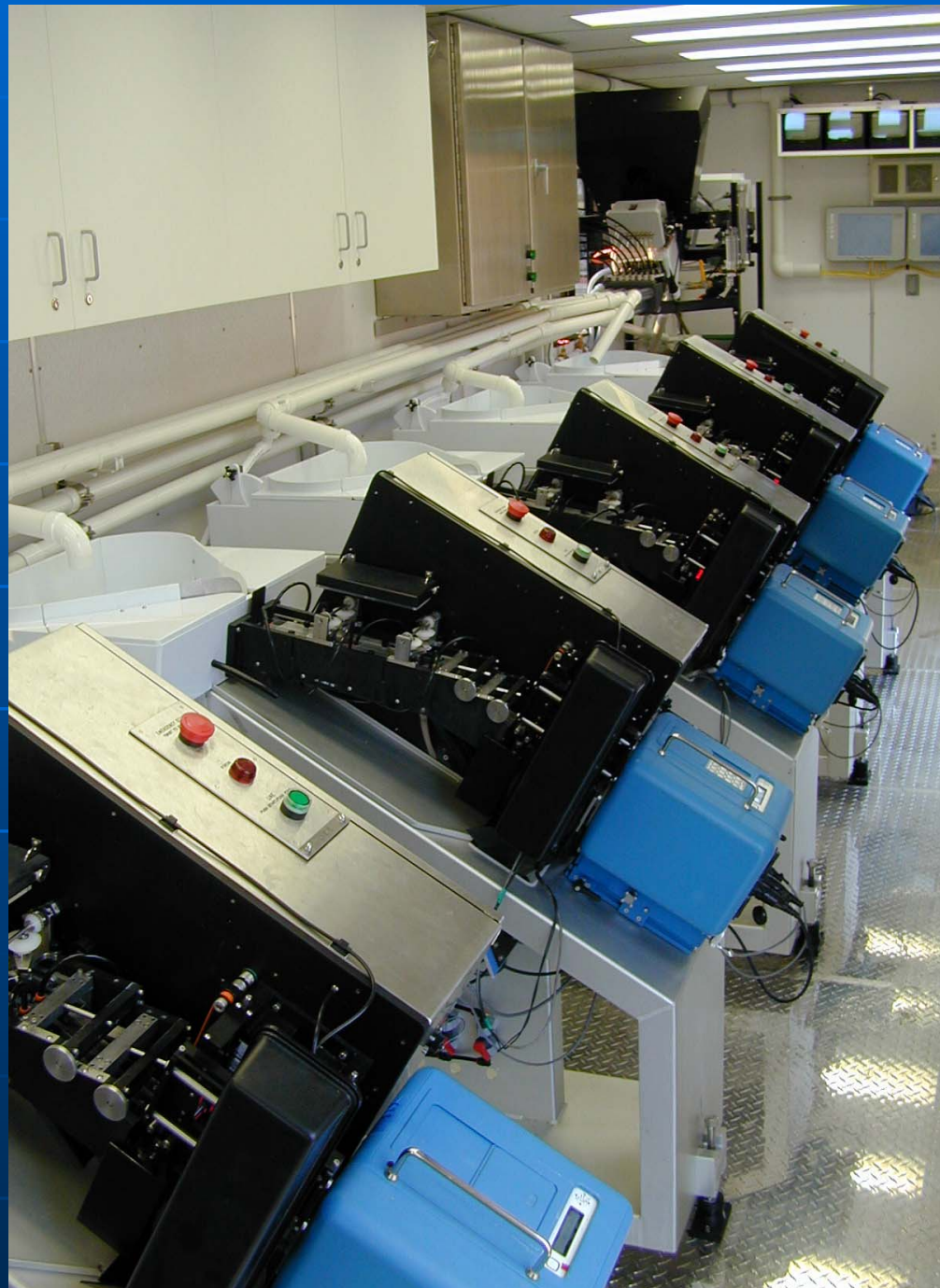
Tim C. Wright





SCT5:

- 1 Sorter
- 5 Adipose Fin Marking and Coded Wire Tagging Lines





AutoFish SCT: Sort, Clip, & Tag Overview

1. Fish are transferred into the holding trough inside the trailer
2. Fish are sorted by size and distributed to one of the five marking and tagging lines
3. Fish are snout tagged and/or adipose fin marked
4. Successfully processed fish are sent back to the hatchery receiving pond

1. Fish transfer into the SCT5

- Fish are crowded in pond and transferred by dip-nets into the trailer holding trough



2. AutoFish Sorter

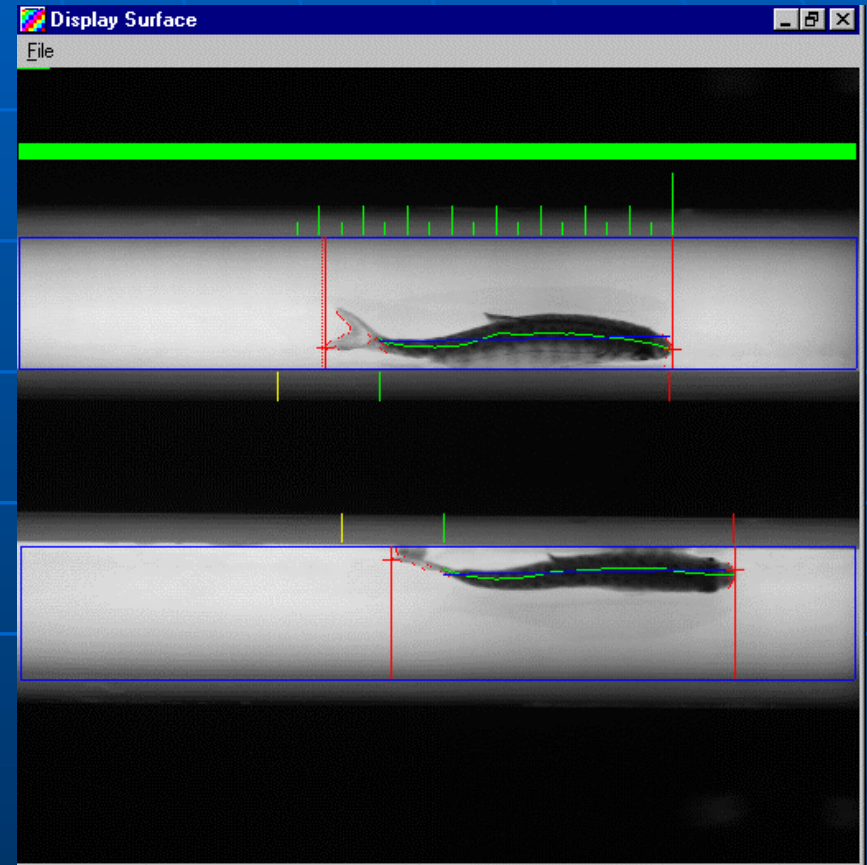
- Fish are netted from the holding trough inside the trailer into the sorter's Volitional Entry (VE)



Fish in Volitional Entry



- Total length for each fish is measured to the nearest 0.1 millimeter

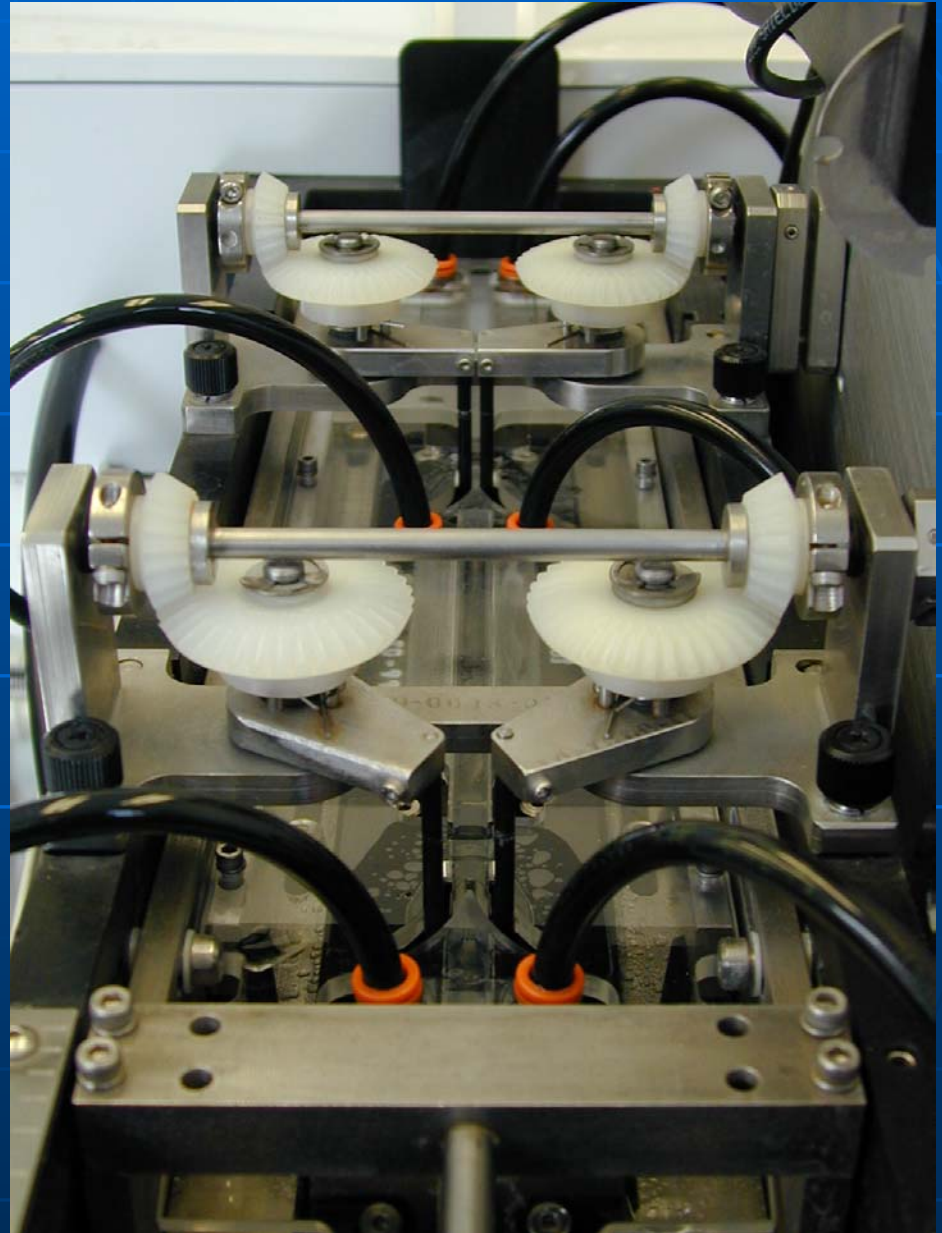


3. Fish enter one of the five adipose fin marking and Coded Wire Tagging lines

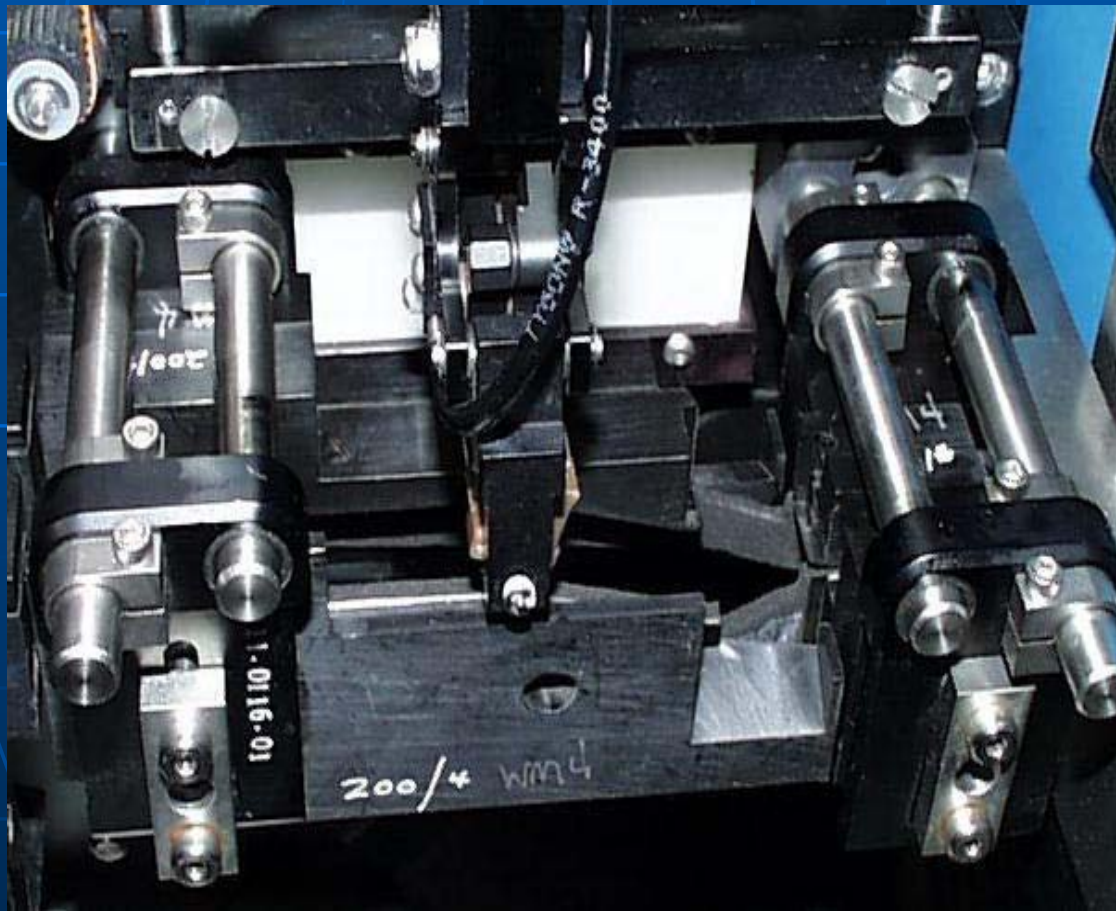
- Fish are diverted from the sorter to the marking line set up for the appropriate size range.



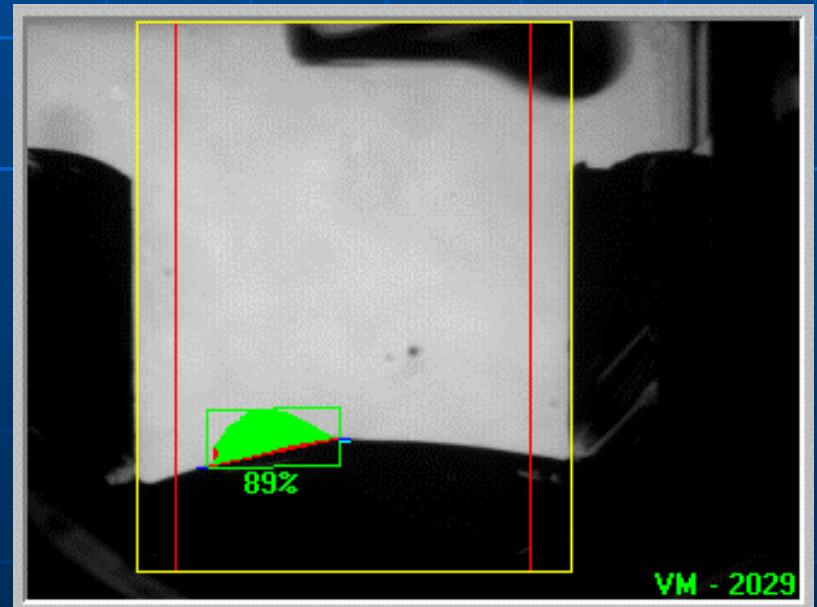
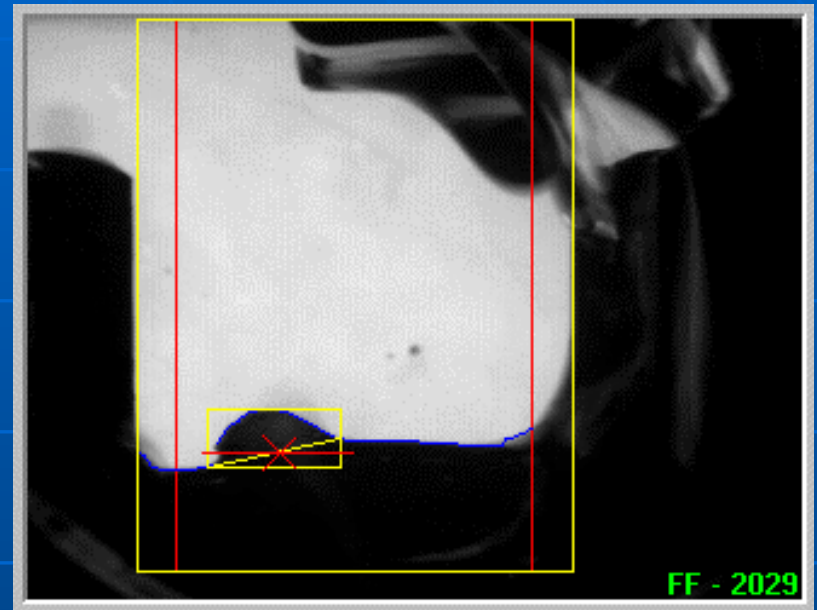
- Fish enter the gate channel where they move through a series of infrared sensors into the clamping area



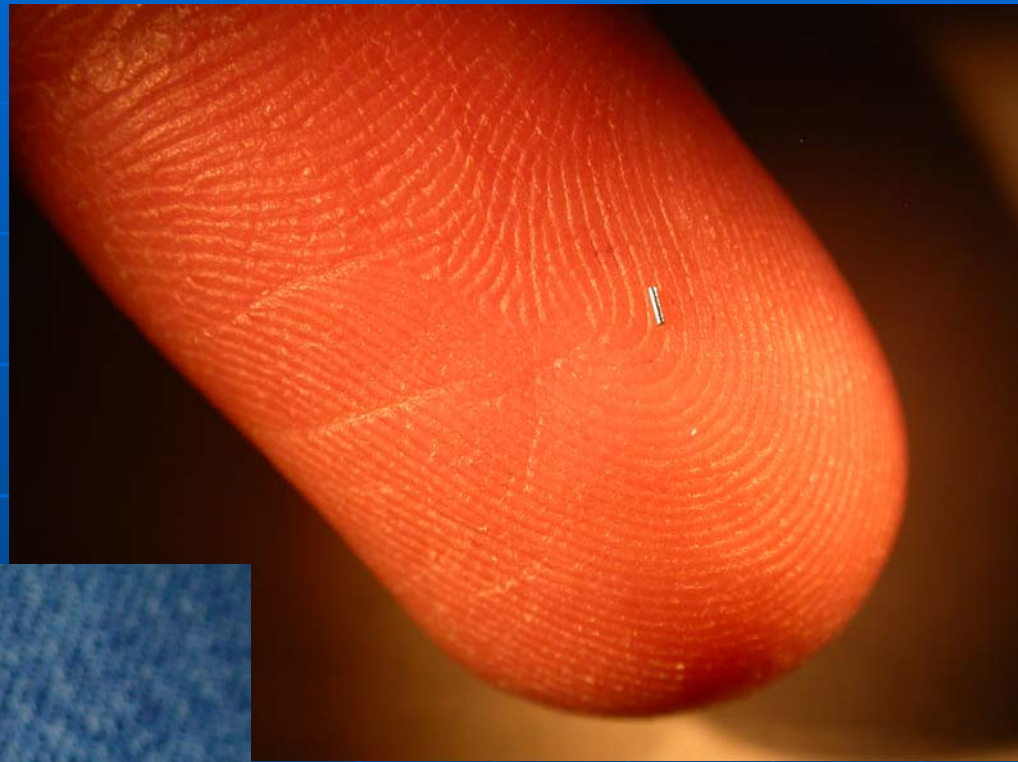
- Fish are stabilized in foam clamps for adipose fin marking and/or tagging.



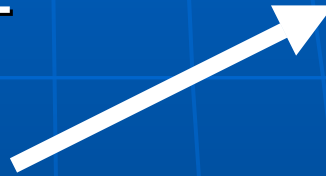
- The imaging system locates the adipose fin and sends the clipper to the precise location for fin marking
- After clipping, the imaging system verifies that the fin has been adequately removed



- While the adipose fin is in the process of being removed, a Coded Wire Tag may also be injected into the snout tissue

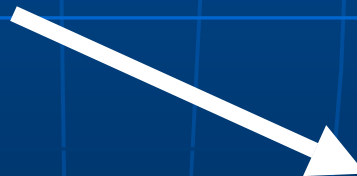


- The Quality Control Device detects the presence of a CWT and the computer verifies adipose fin removal



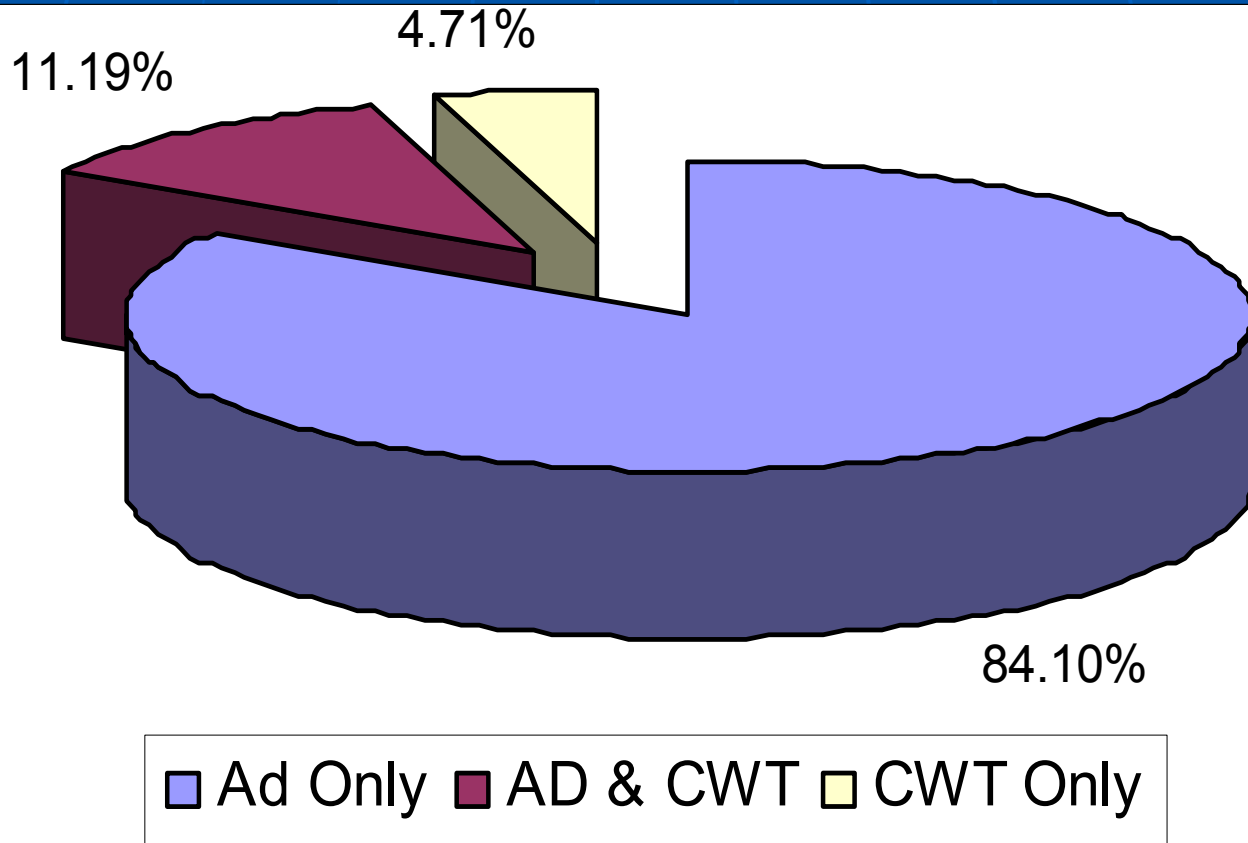
OR

- The Quality Control Device does not detect a CWT and/or the fish fails the verify mark process



Percentage of Mark Types Total

Cole M. Rivers & Leaburg



Total Fish Processed: 2,835,068

Cole M. Rivers Fish Hatchery



- Total Number of Fish Processed at Cole M. Rivers Hatchery

- 2,256,948 Fish

- Average Fish Processed per Run Time Hour

- 3401 Fish per Hour

Leaburg Fish Hatchery



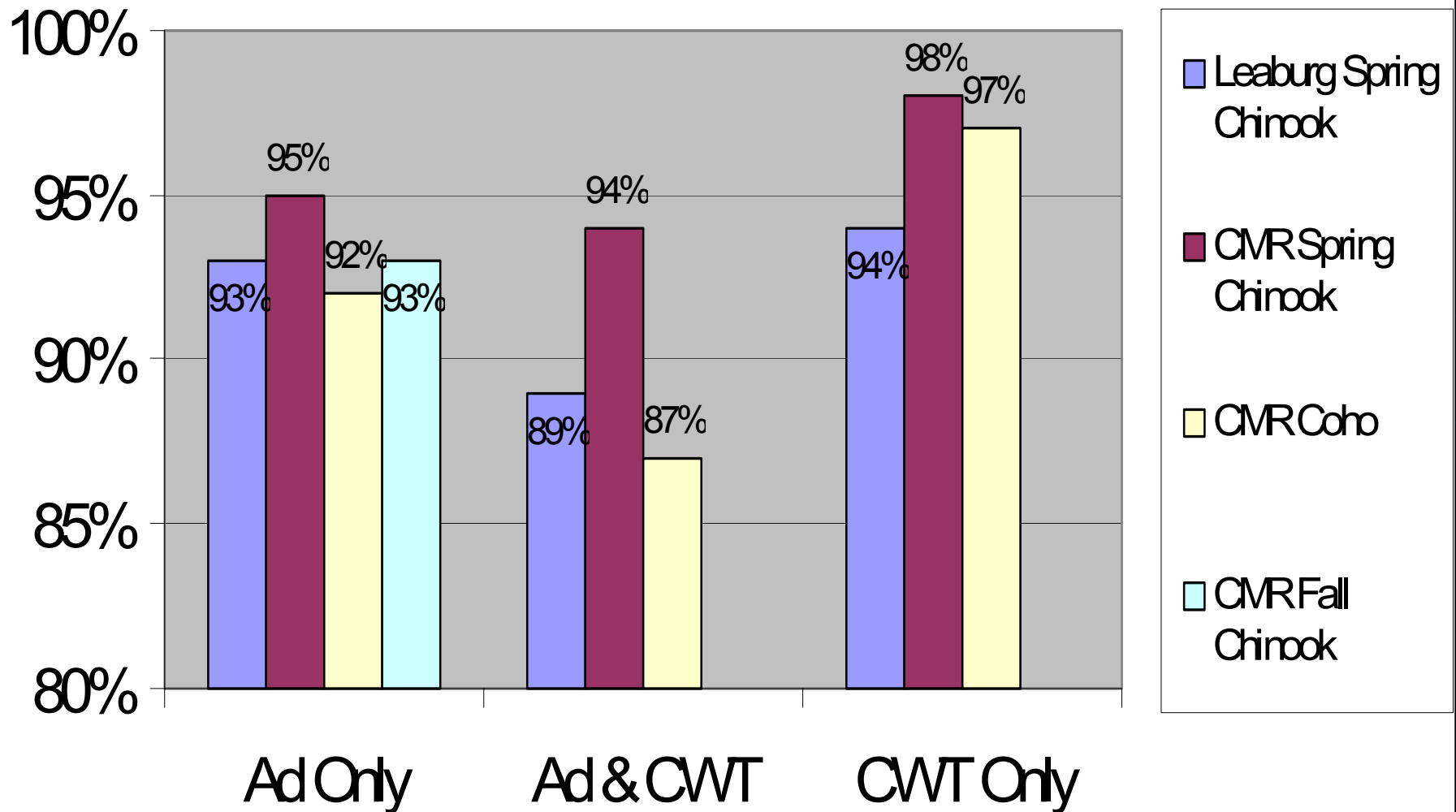
- Total Number of Fish Processed At Leaburg Hatchery

- 578,120

- Average Fish Processed Per Run Time Hour

- 3104 Fish per Hour

Percentage of Success on First Pass



Fish I.D Criterion For Successful Adipose Fin Marks

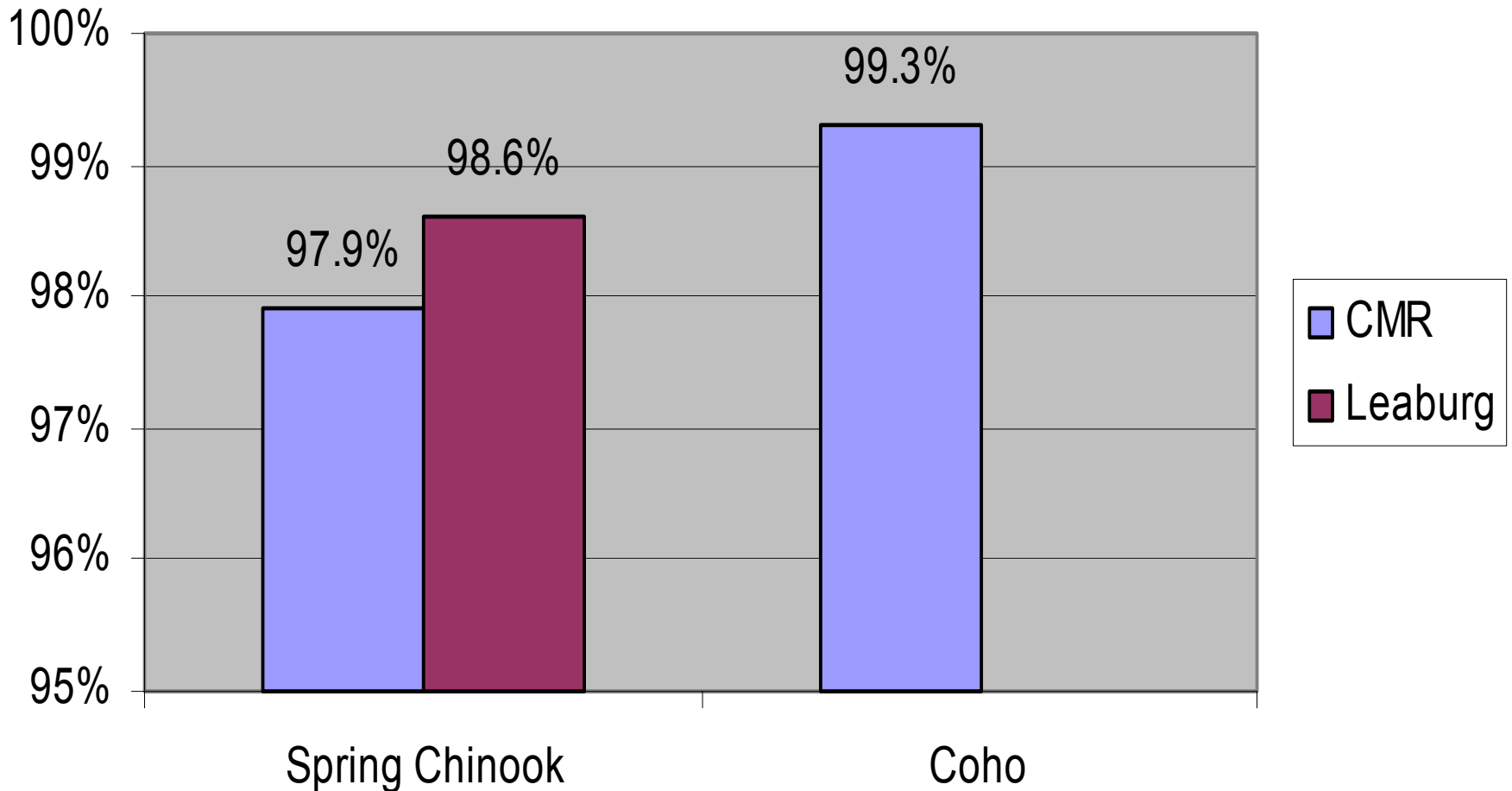
- >75% of adipose fin removal constitutes an acceptable mark
- More conservative than hatchery reporting requirements established by ODFW

Range of Successfully Processed Fish in Individual Ponds

- 95.3% to 100%

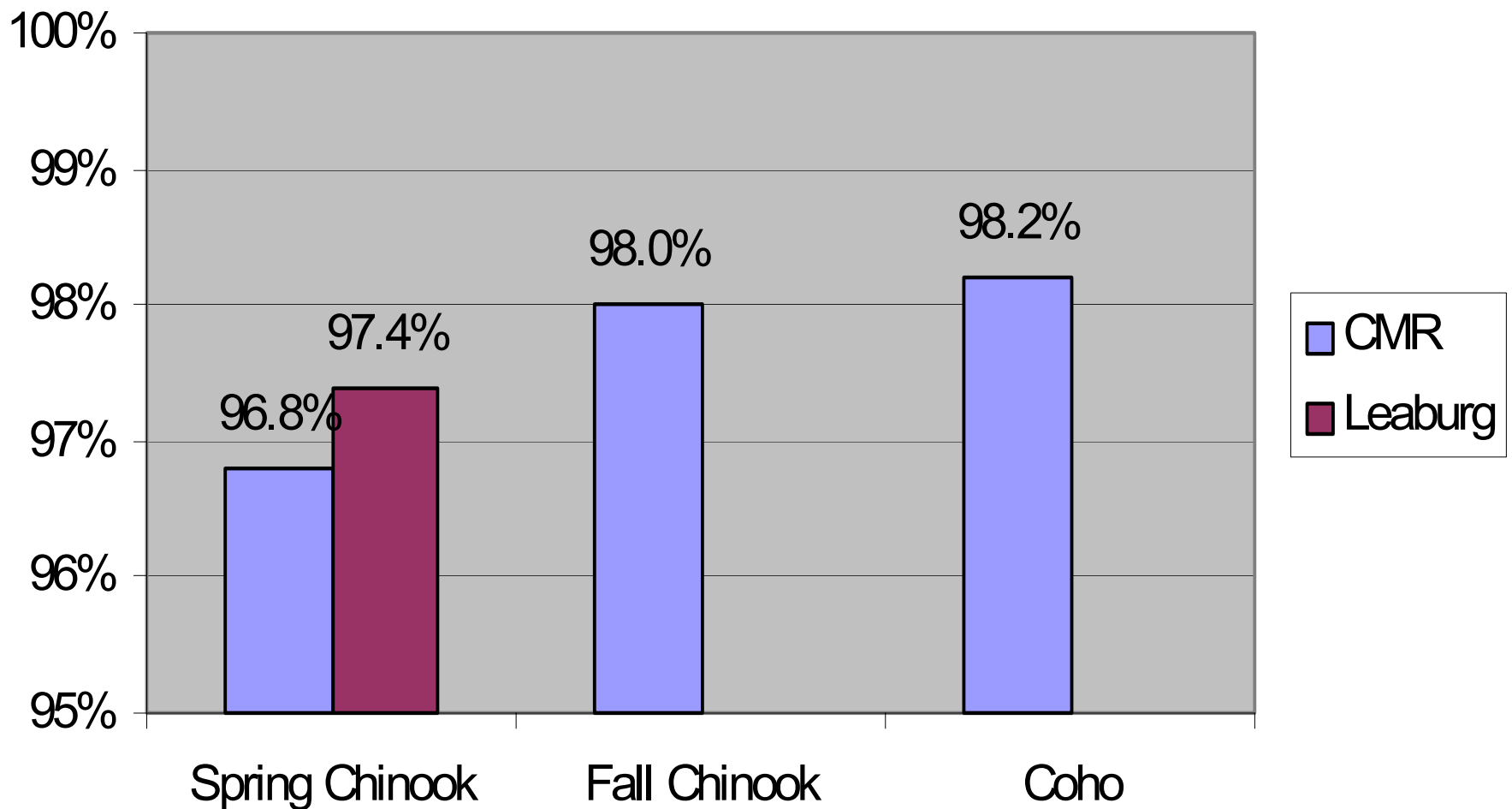
Initial Quality Checks

Adipose Mark Only

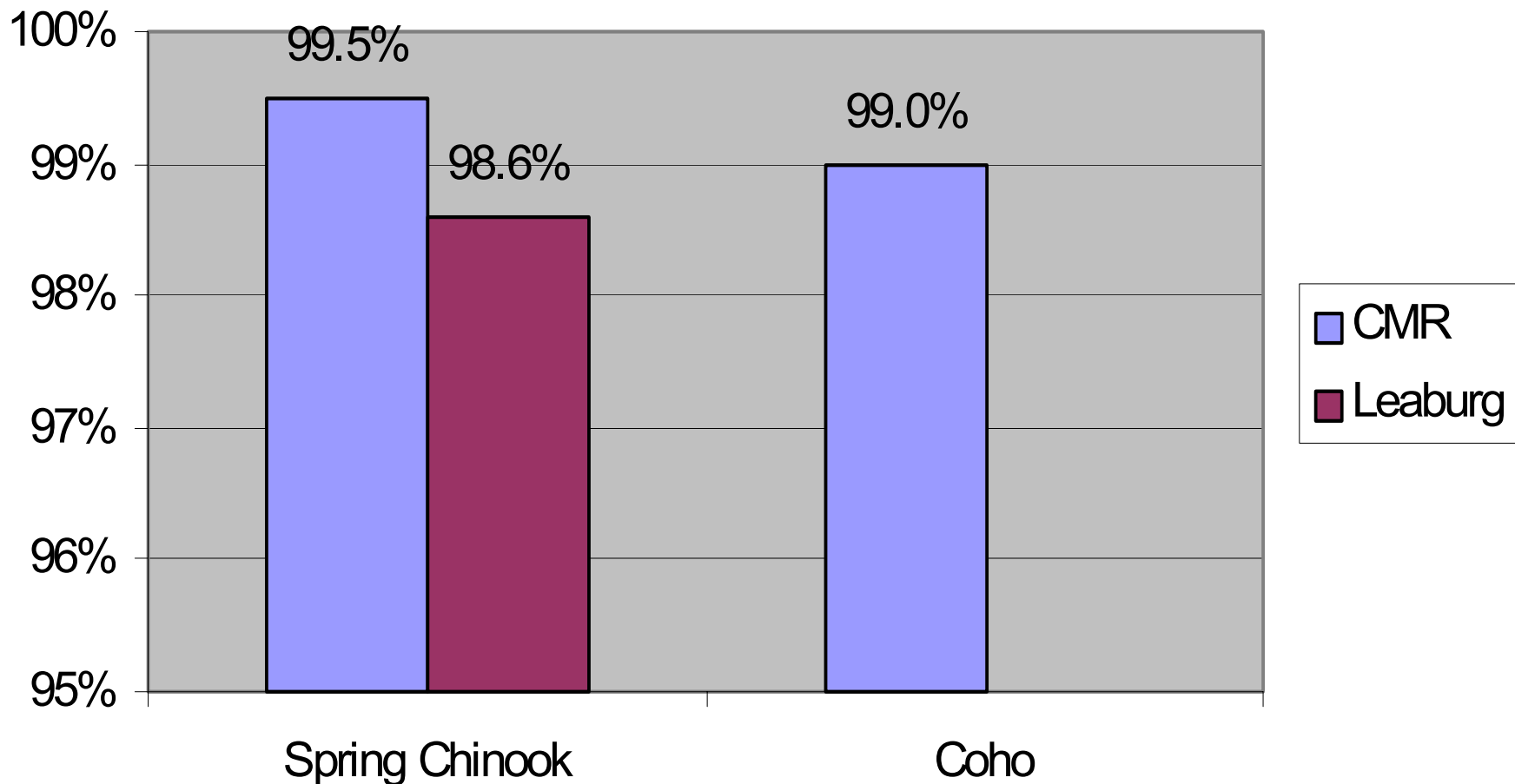


Initial Quality Checks

Adipose Mark + CWT

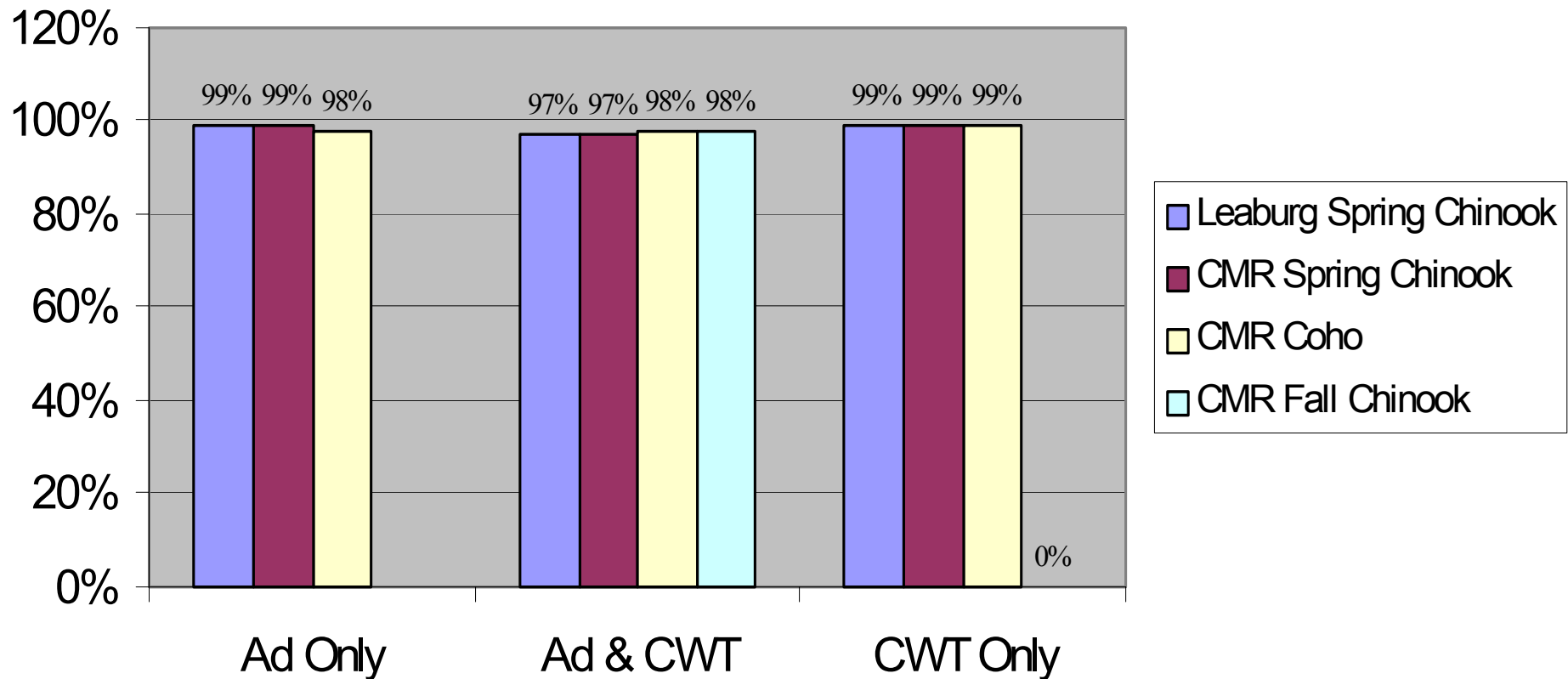


Initial Quality Checks CWT Only



Initial Quality Checks

Initial Quality Checks



Conclusions

- 1. Fish marked per time period is within the range of manual marking expectations
- 2. Fin mark quality and tag retention rates are high and comparable with manual marking operations
- 3. Potential to expand on fish marked per time period

Conclusions

- 4. Technical constraints
 - A. Sorter improvements
 - B. Fish size variability
 - C. Learning curve for operating the AutoFish system

