

DIPAC's Thermal Marking Program



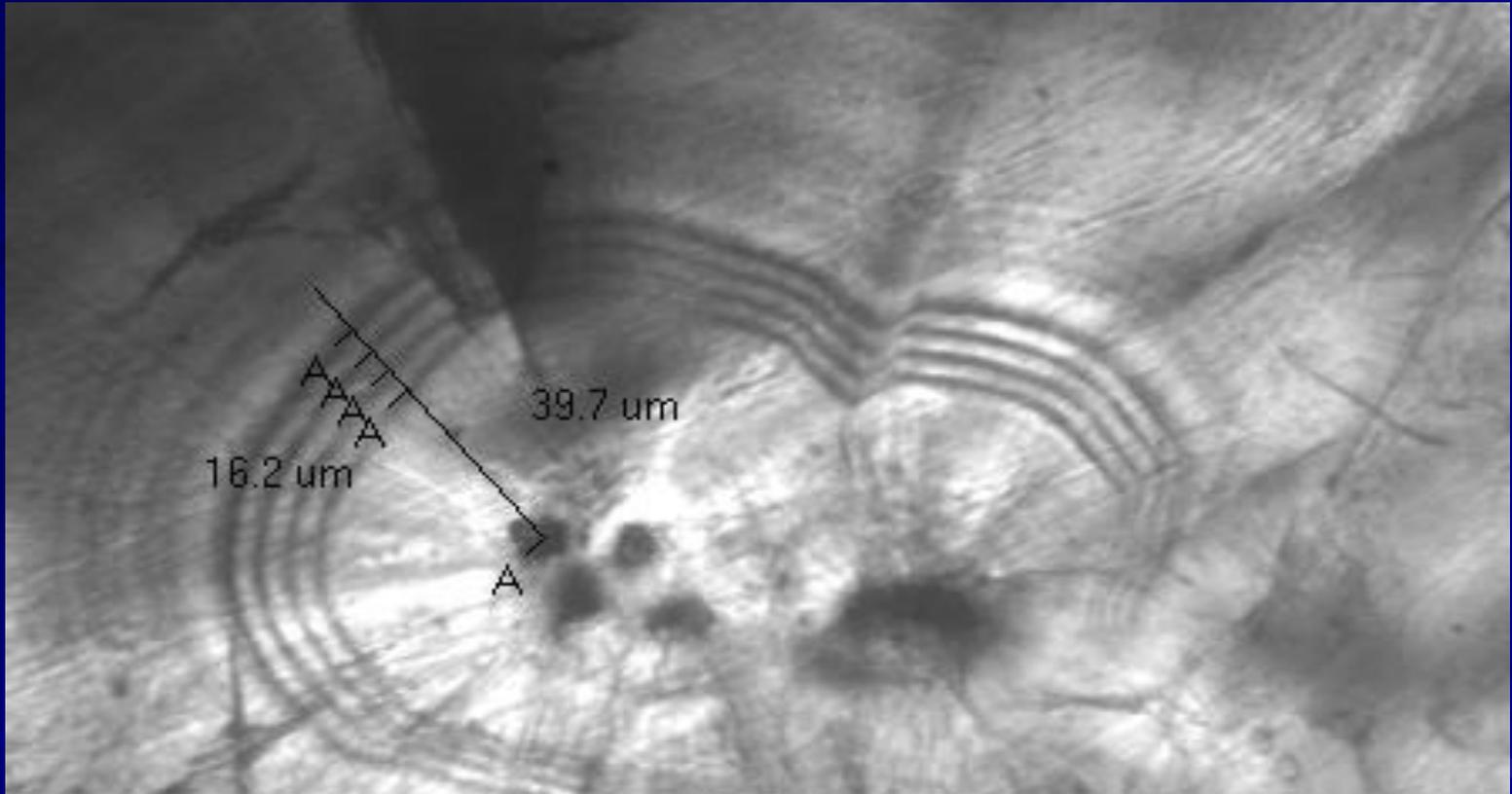
Presented by:

Michael Wunderlich – R & E Coordinator

Presentation Outline

1. Thermal Mark Ring Width
2. Lab Techniques
3. Dry Marking

1. Thermal Mark Ring Width

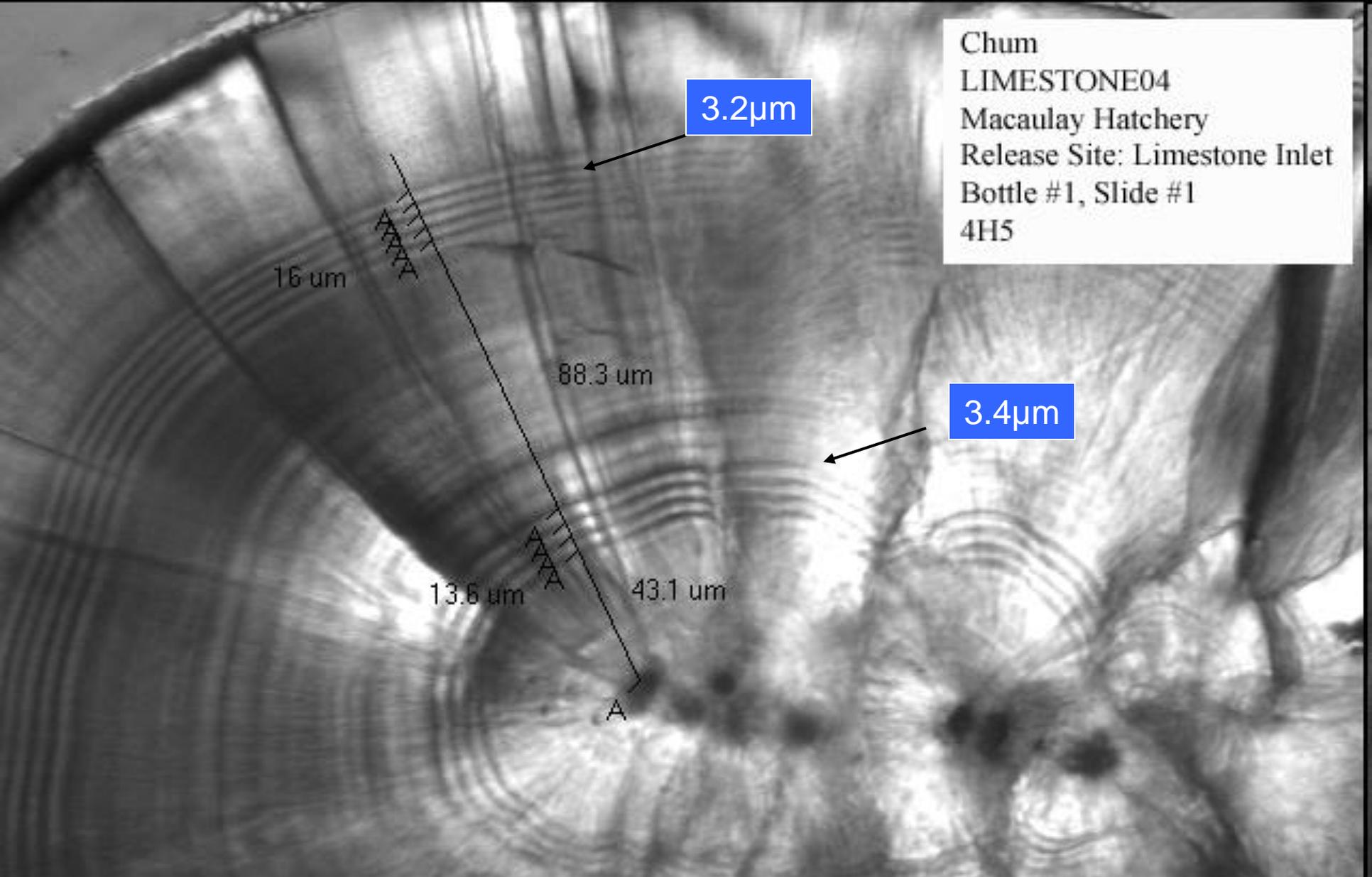


$$16.2\mu\text{m} / 4 \text{ rings} = 4.1\mu\text{m}$$

Facility	Species	Average Ambient Water Temperature During Marking	Average Ring Width (μm) for each cycle				
			36hr	24/48hr	24hr	18hr	12hr
Snettisham	Sockeye	3.5	3.2		2.1		
MSH	Coho	1.9		4.3	3.4		
MSH	Chum	9.6	7		6.3	4.9	3.6

- Measured ring width for each species at various cycle durations to look for a correlation
- Regular marks: 3-4 μm
- Narrow marks: <3 μm

Chum
LIMESTONE04
Macaulay Hatchery
Release Site: Limestone Inlet
Bottle #1, Slide #1
4H5



Regular Mark: 3-4 μm

CHUM
DIPAC07
MACAULAY

Release Site: AMALGA HARBOR 111-50,
BOAT HARBOR 115-10,
GASTINEAU CH 111-40,
LIMESTONE IN 111-90

Bottle #4, Slide #4
4H

25.1 μm

51.1 μm

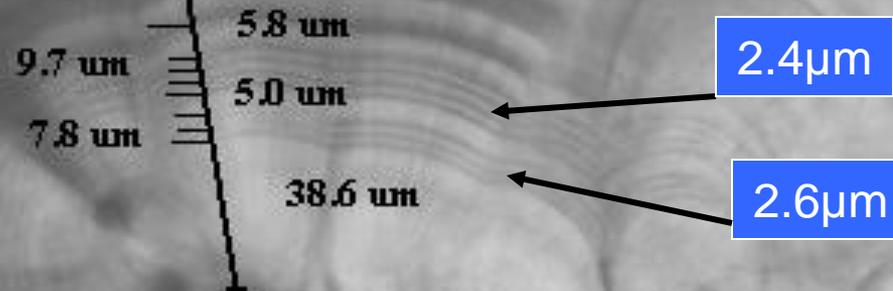
6.3 μm

Regular Mark: $>4\mu\text{m}$

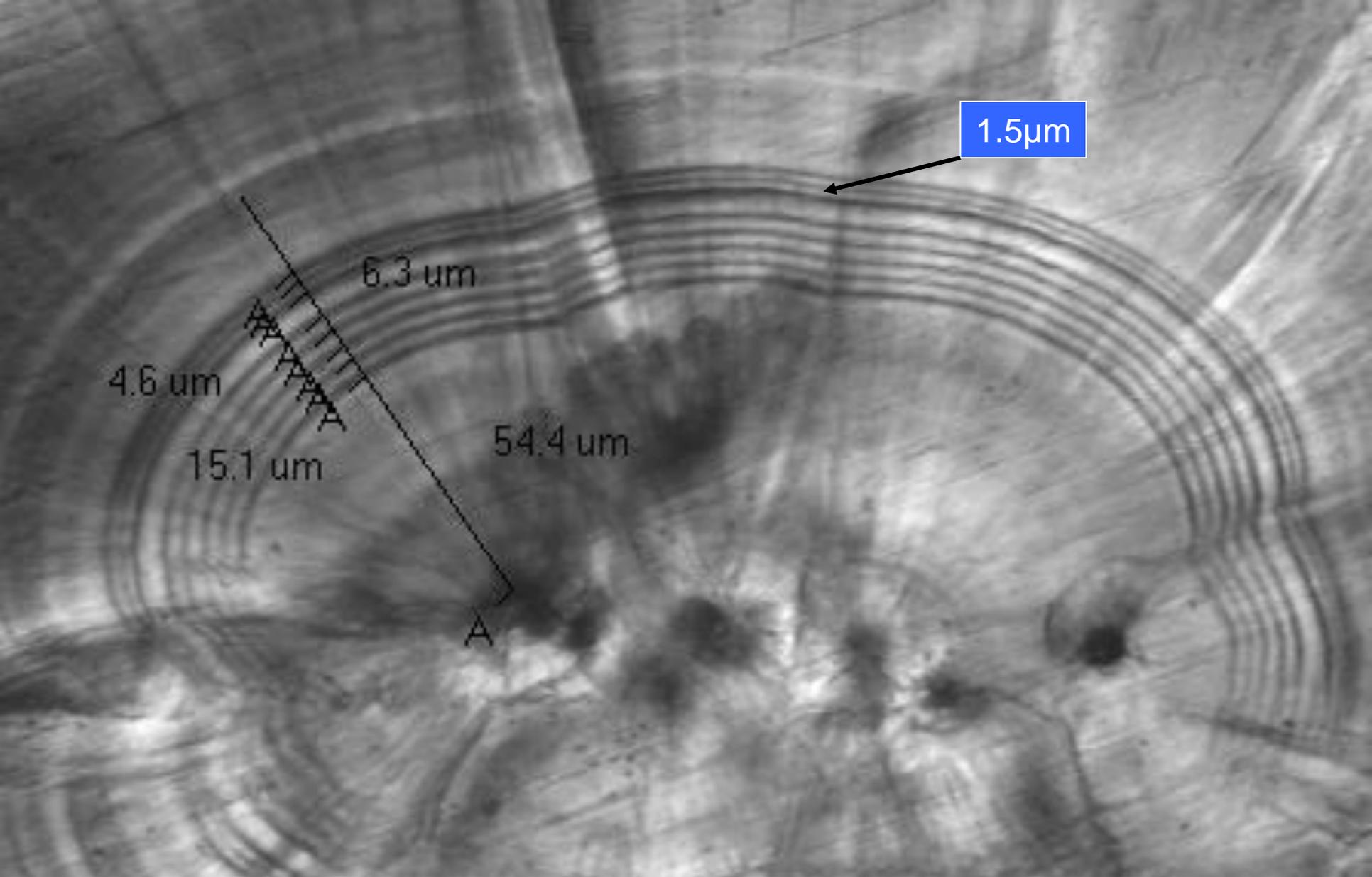
CHUM

3,4,1H5

VARIANT: Missing accessory five.

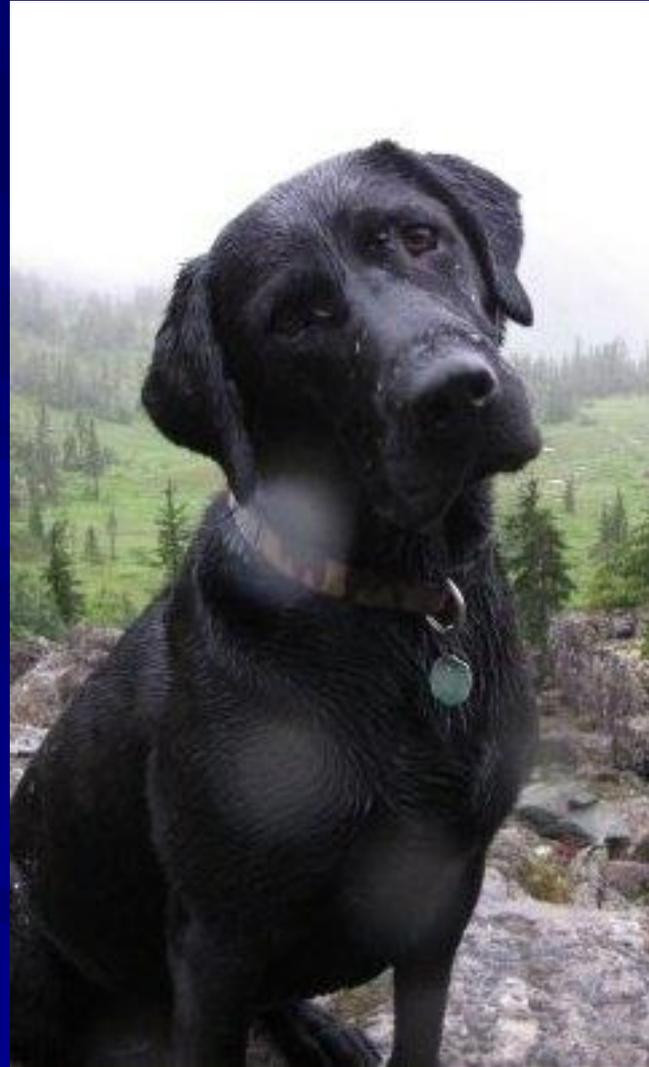


Regular Mark: $<3\mu\text{m}$



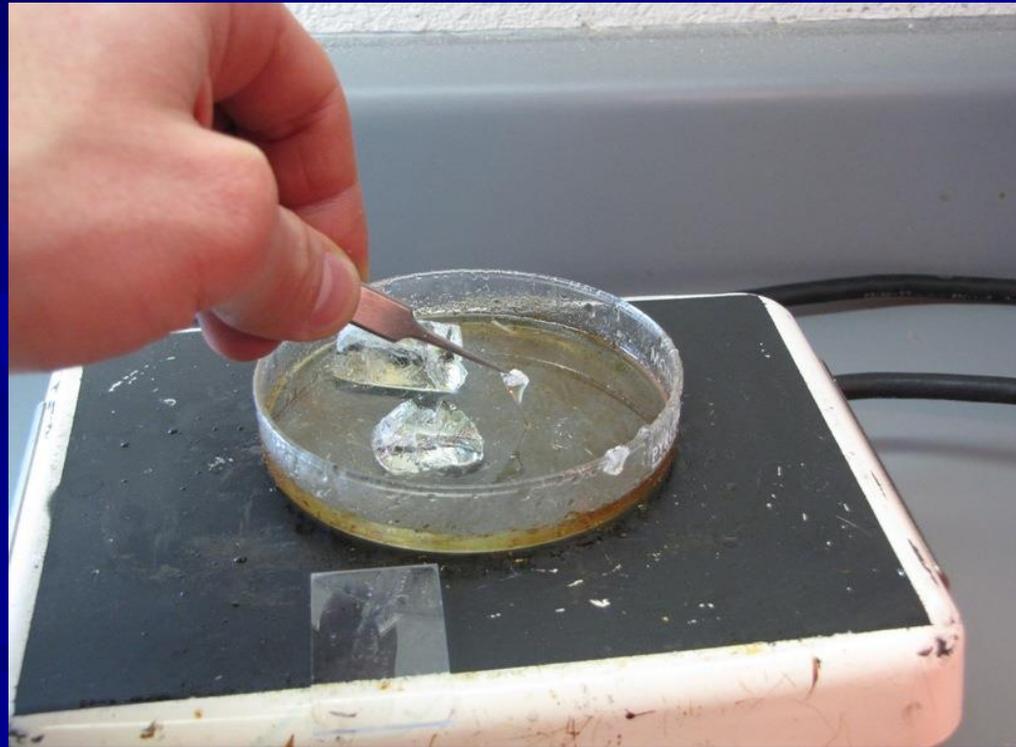
Narrow Mark: $<3\mu\text{m}$

2. Lab Techniques



■ Crystalbond Resin

- Reduces mounting time by 45 minutes/tray
- Saves \$2,000 annually

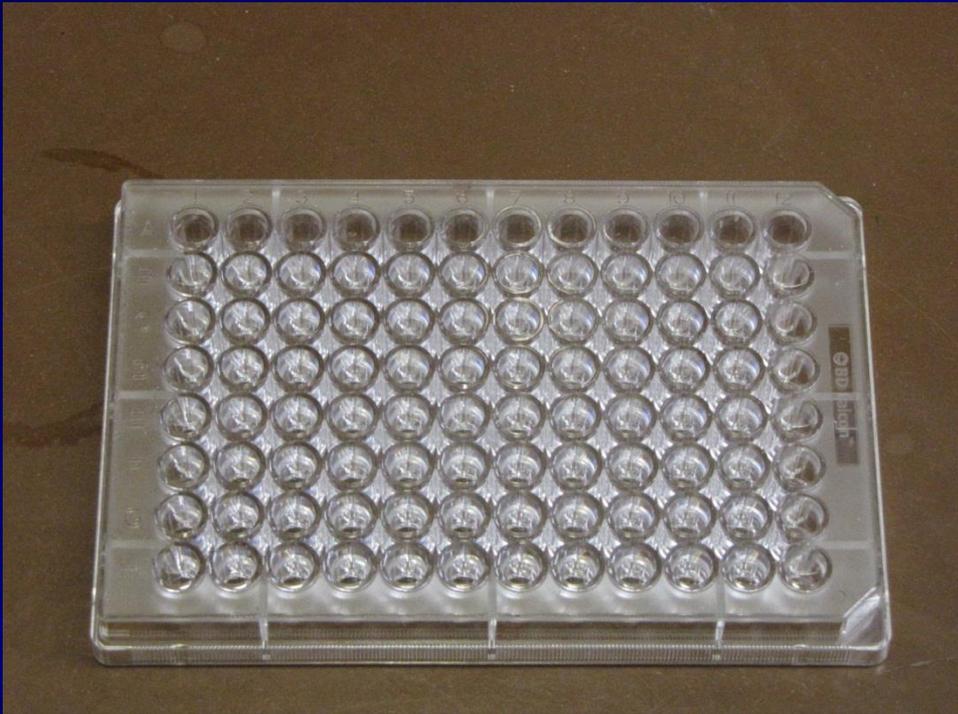


■ Reuse Slides

- Create blanks with archived slides
- Saves DIPAC \$4,000 annually



- Reuse ADF&G Costar Trays
 - Fish Pathology donates their used trays



3. Dry Marking

- **Question:** Can a dry mark be produced for a large hatchery operation?
- Traditional dry mark methods use misters or wrap incubation trays with cellophane
 - Not practical for large hatchery operations

Methodology:

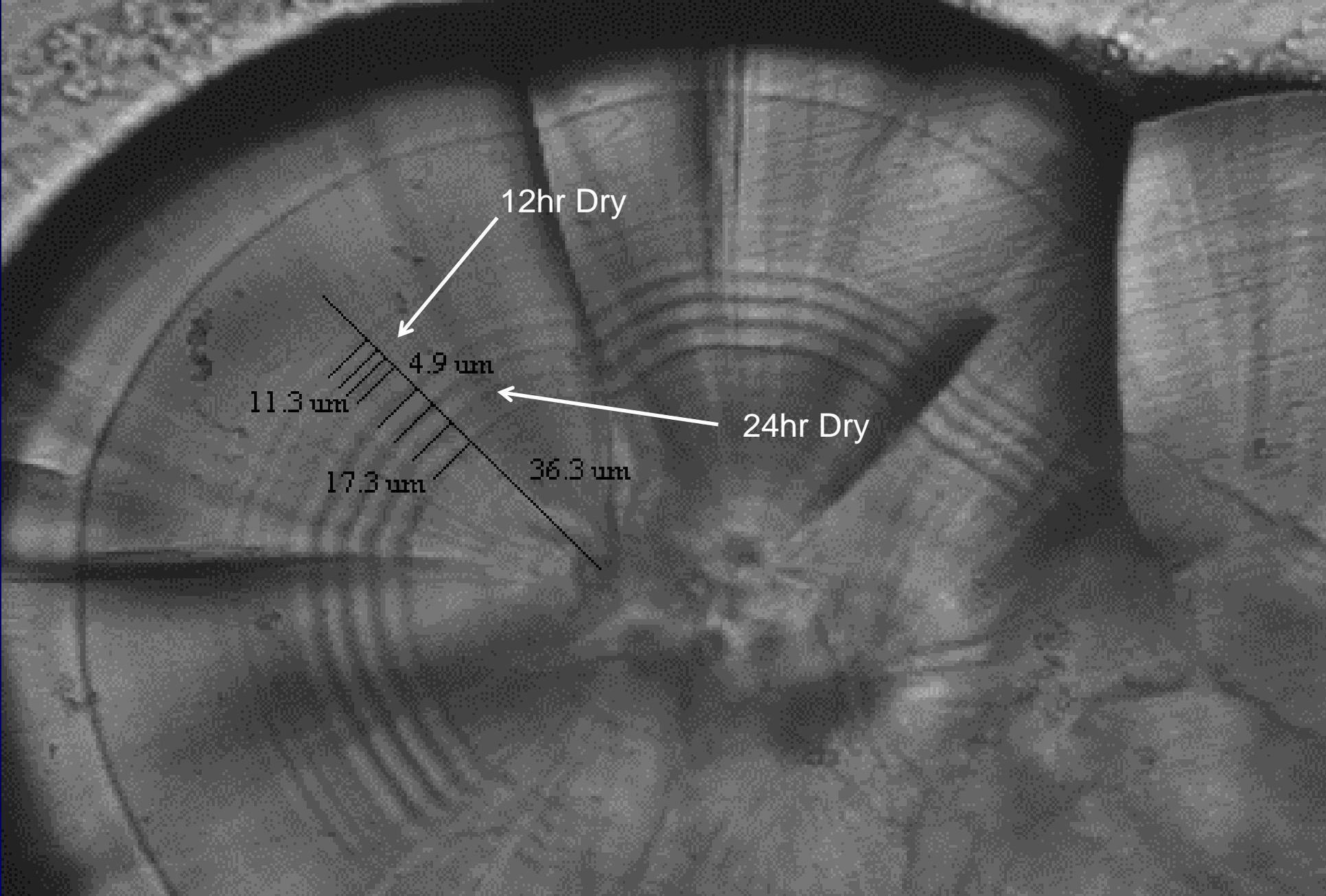
- Transferred ~800 eyed chum eggs
- Turned off ambient water, pulled drain plug, and exposed eggs to air



- Counted number of white eggs at end of each dry cycle to determine rate of mortality
- Mark Cycle Duration
 - 1st Band: (4x)24D:12W
 - 2nd Band: (4x)12D:12W
- Hatch Code: 4,4nH

Results:

- 24hr cycle produced a visible mark
- 12hr cycle produced faint mark
- Mortality rate = $<10\%$



4,4nH Voucher Photo

Future Projects:

- Conduct same experiment with larger volume of eggs
- Keep data loggers in incubation trays during dry marking

Questions?

