

Brood Year 2023 Mark Characteristic Report



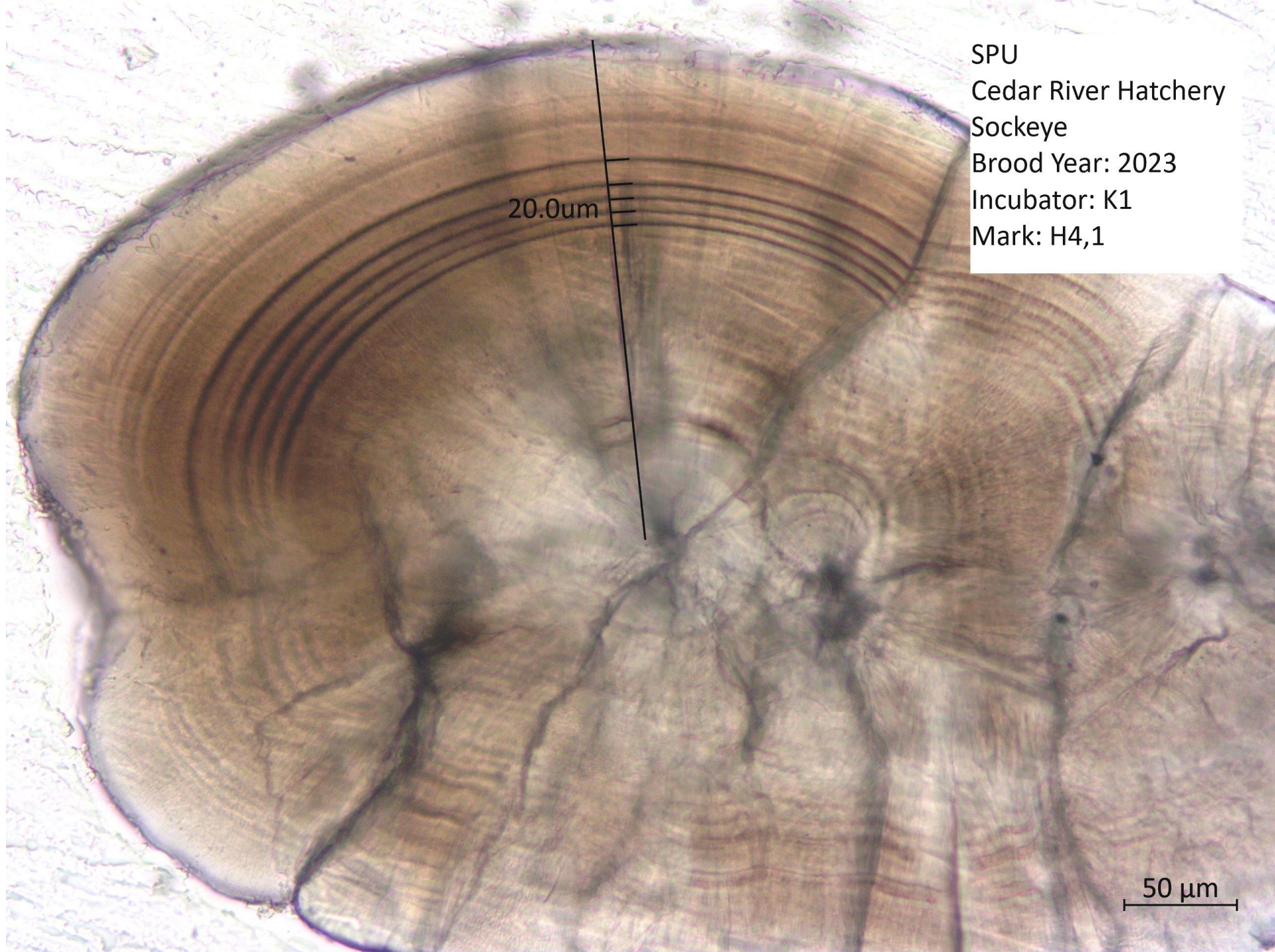
Carol Volk
Seattle Public Utilities
Cedar River Hatchery
Ravensdale, WA

Sagilith
Michael Wunderlich

May 2024

EARLY - H4,1

[illegible]



SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

Incubator: K1

Mark: H4,1

50 μ m

SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Mark: H4,1

18.0um

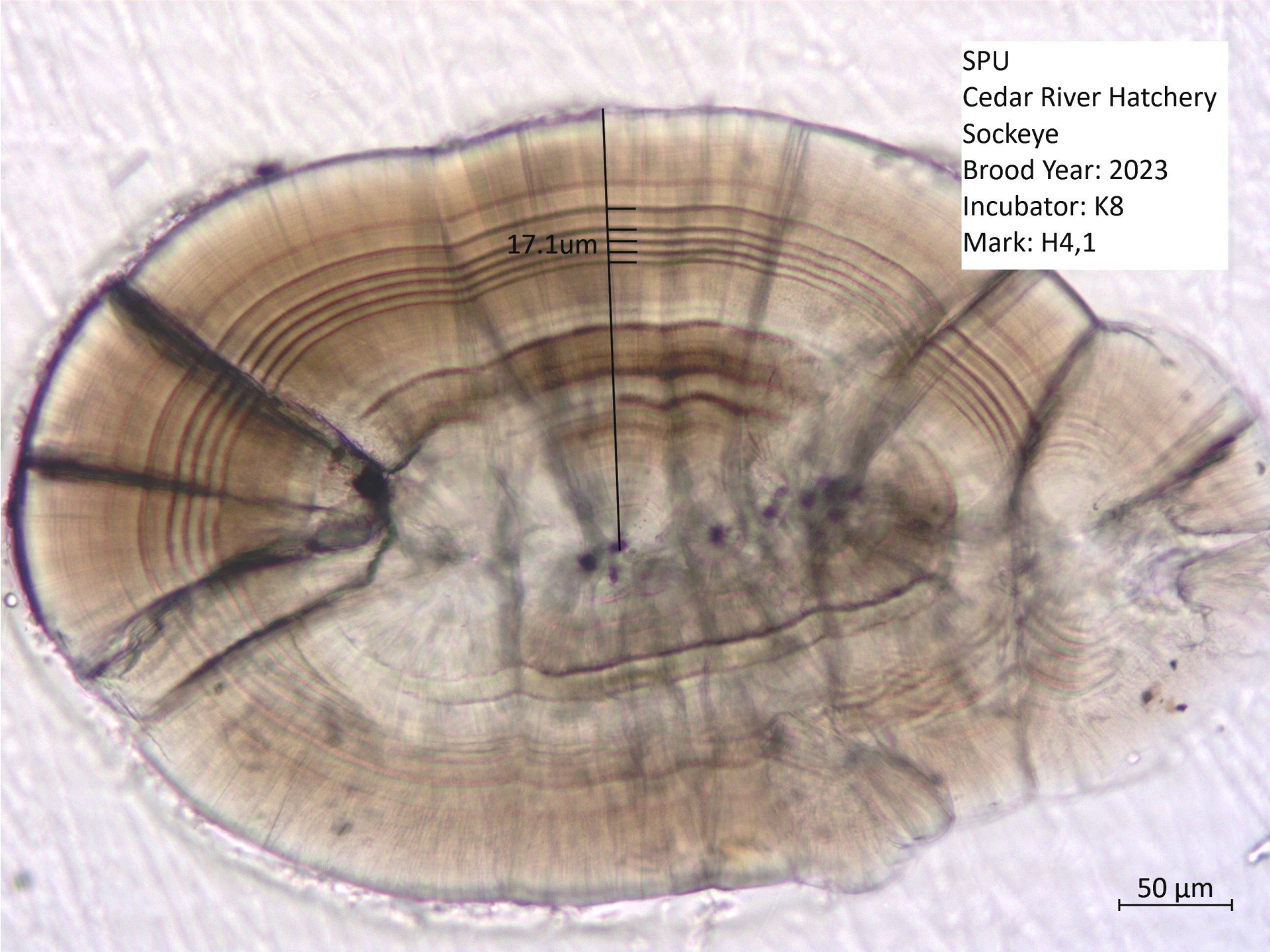
50 μ m



SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K8
Mark: H4,1

17.1um

50 μm



SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K19
Mark: H4,1

19.3um

50 μm



SPU

Cedar River Hatchery

Sockeye

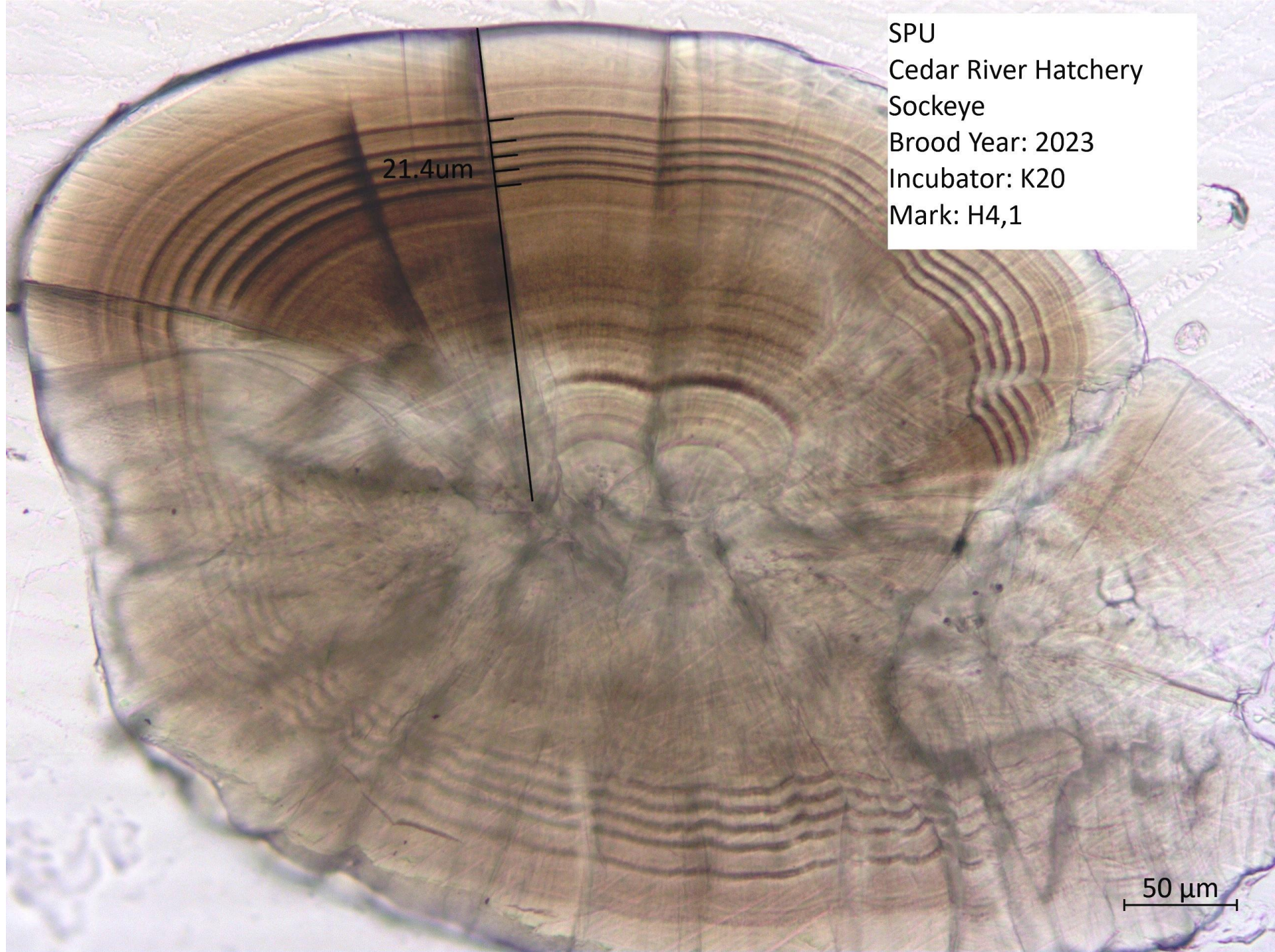
Brood Year: 2023

Incubator: K20

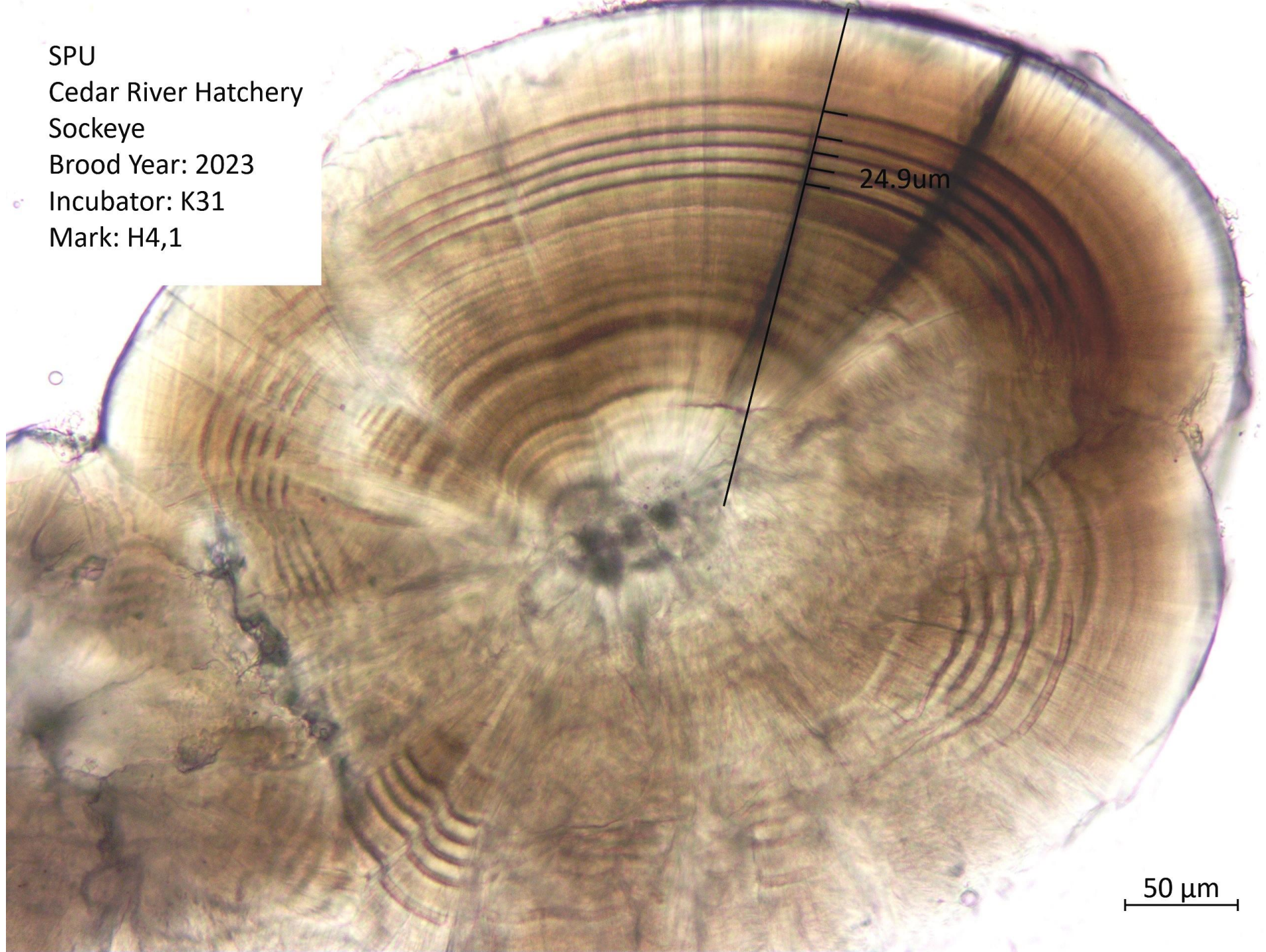
Mark: H4,1

21.4 μ m

50 μ m



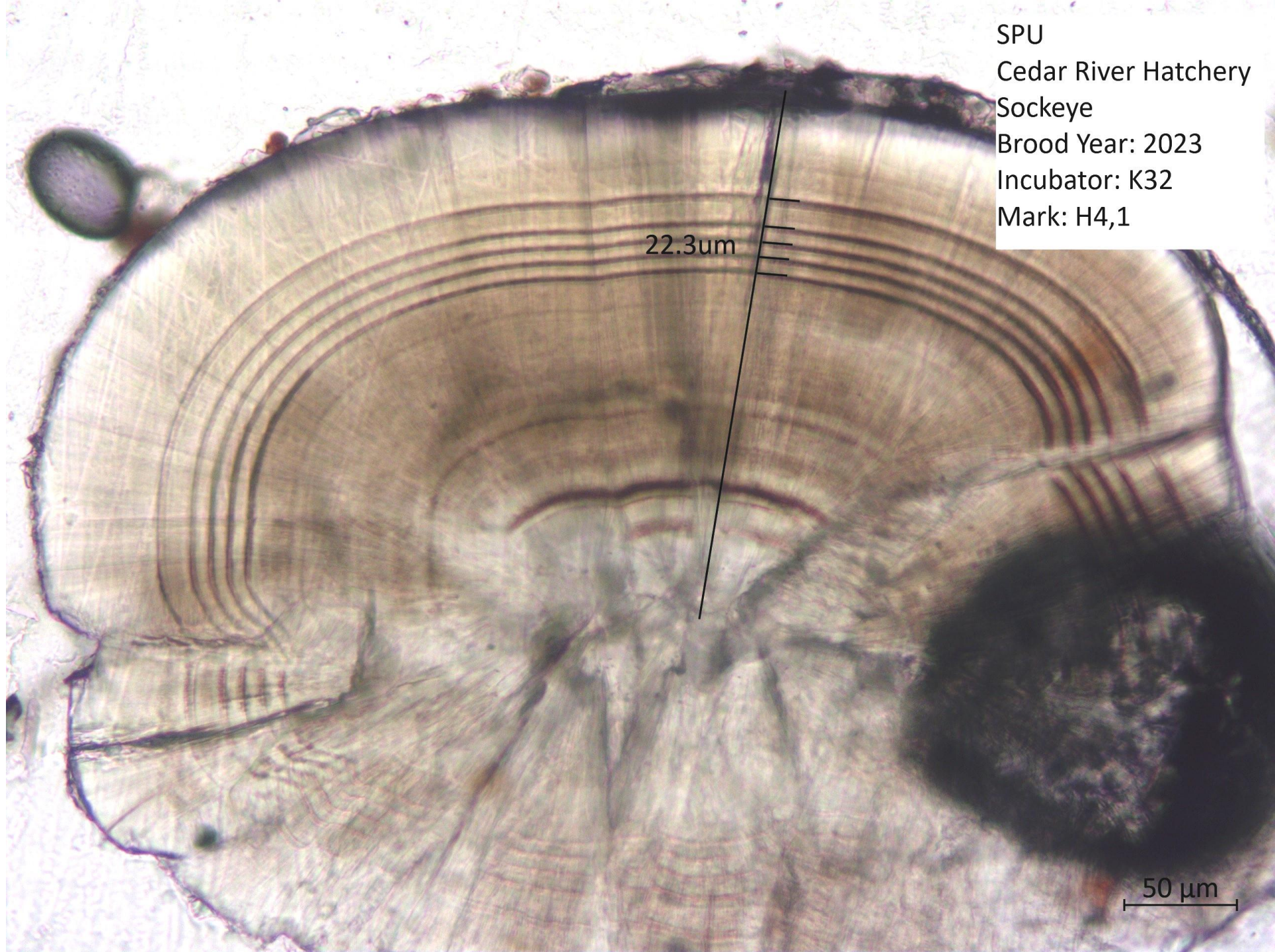
SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K31
Mark: H4,1



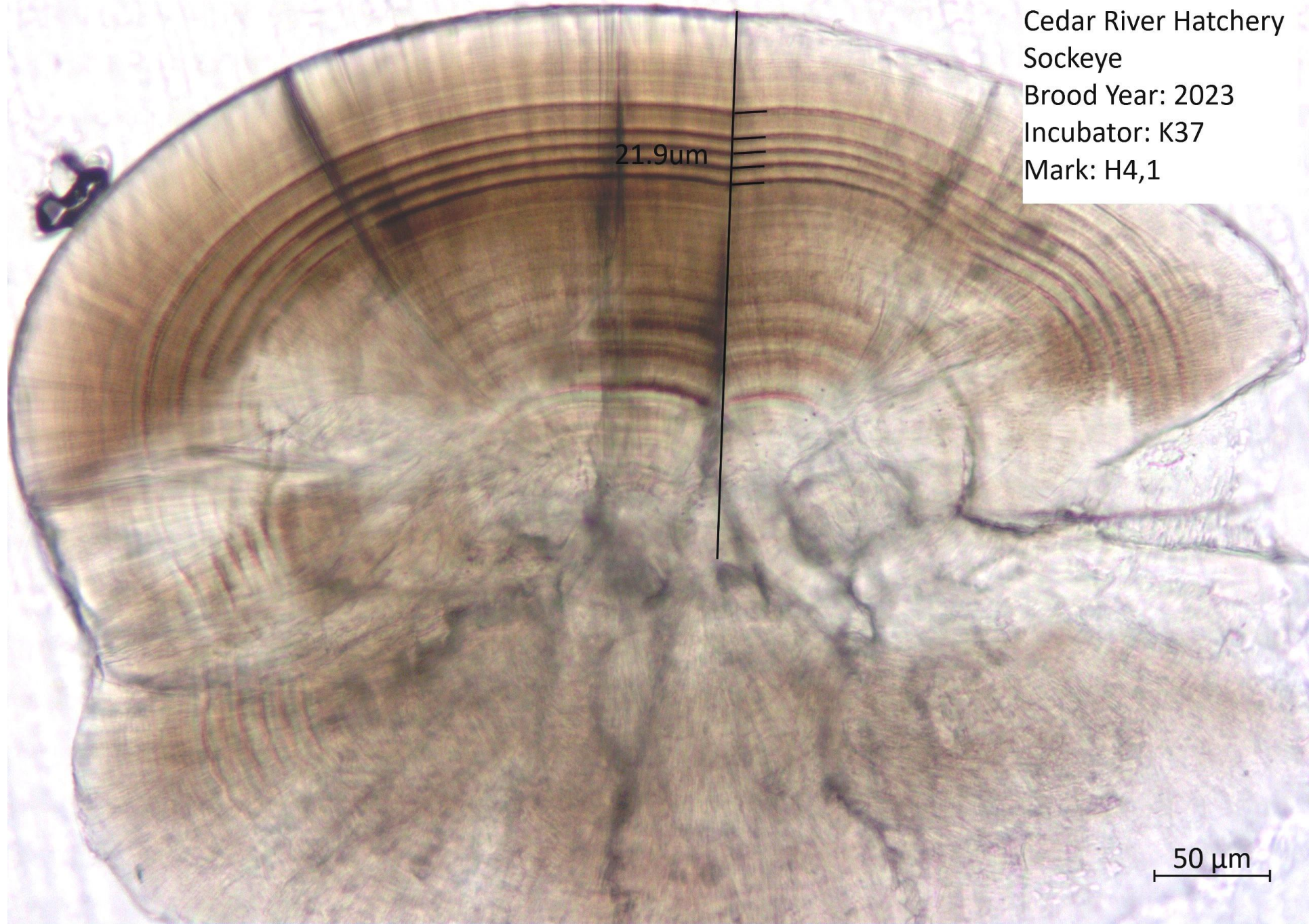
SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K32
Mark: H4,1

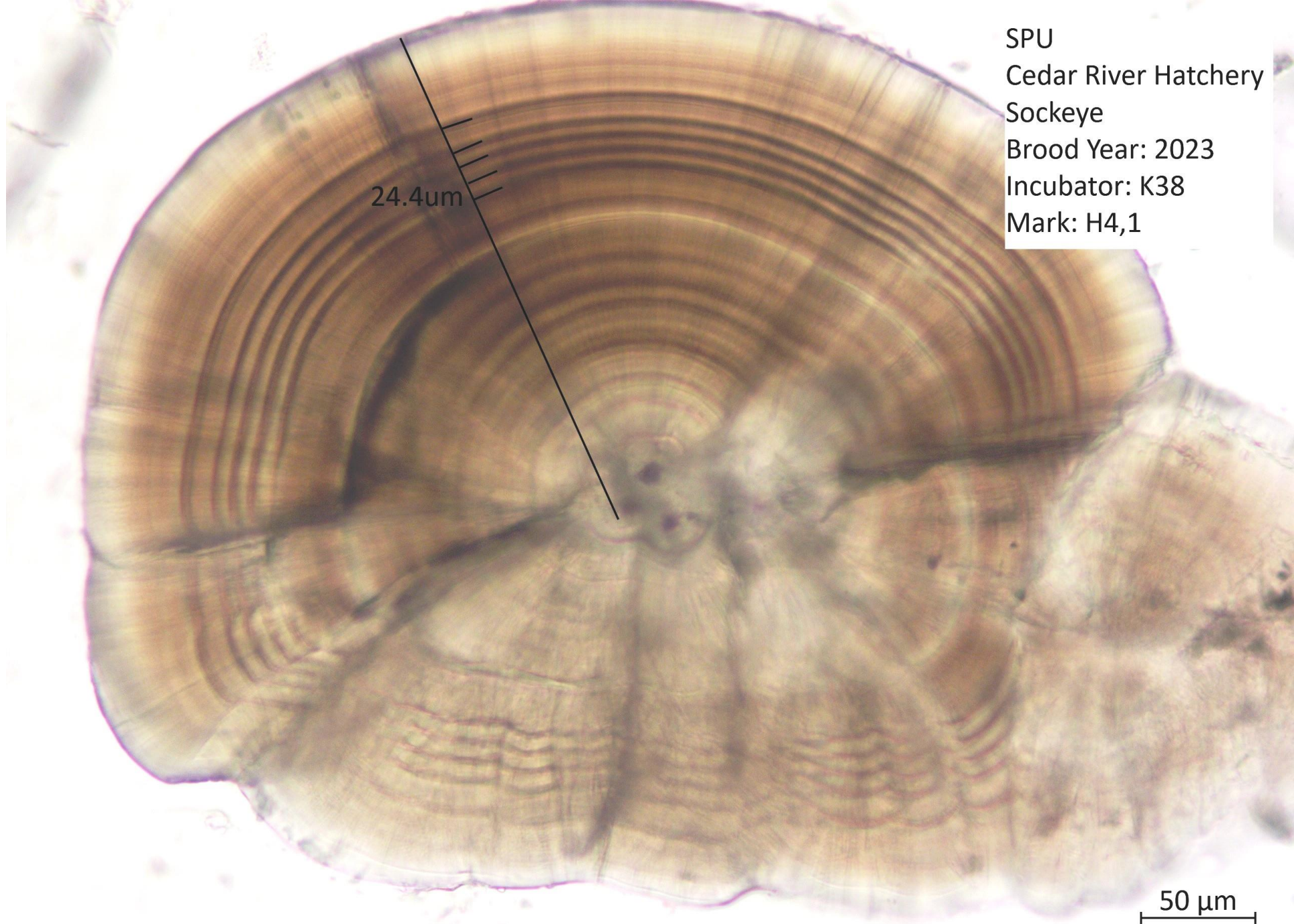
22.3um

50 μ m



SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K37
Mark: H4,1





SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

Incubator: K38

Mark: H4,1

EARLY EXTENDED - H4,1,1

[illegible]

SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K14
Mark: H4,1,1

21.9um

50 μ m



SPU

Cedar River Hatchery

Sockeye

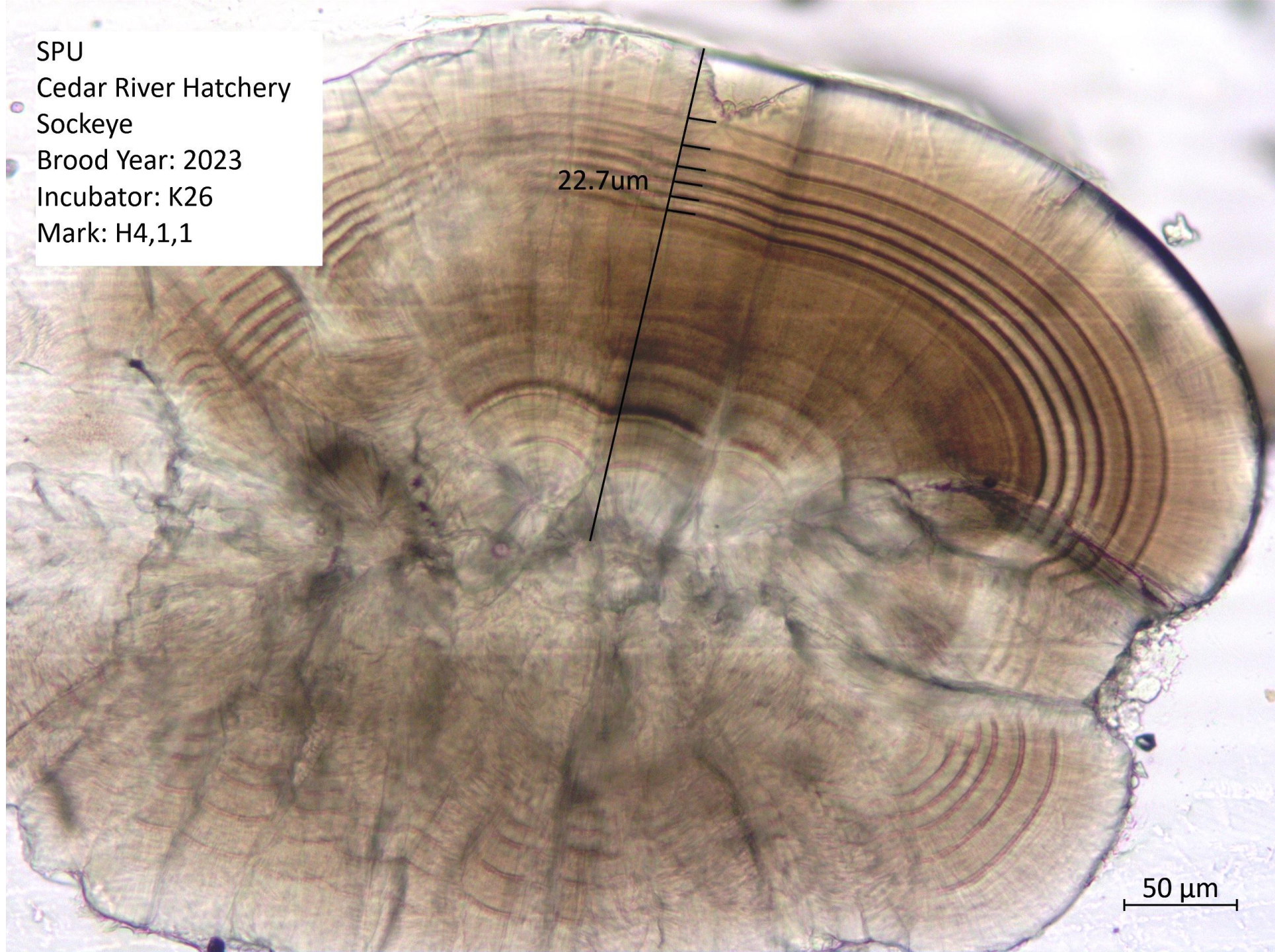
Brood Year: 2023

Incubator: K26

Mark: H4,1,1

22.7 μ m

50 μ m



MIDDLE - H4,3n

Middle H4,3n																																
HATCH	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24

SPU

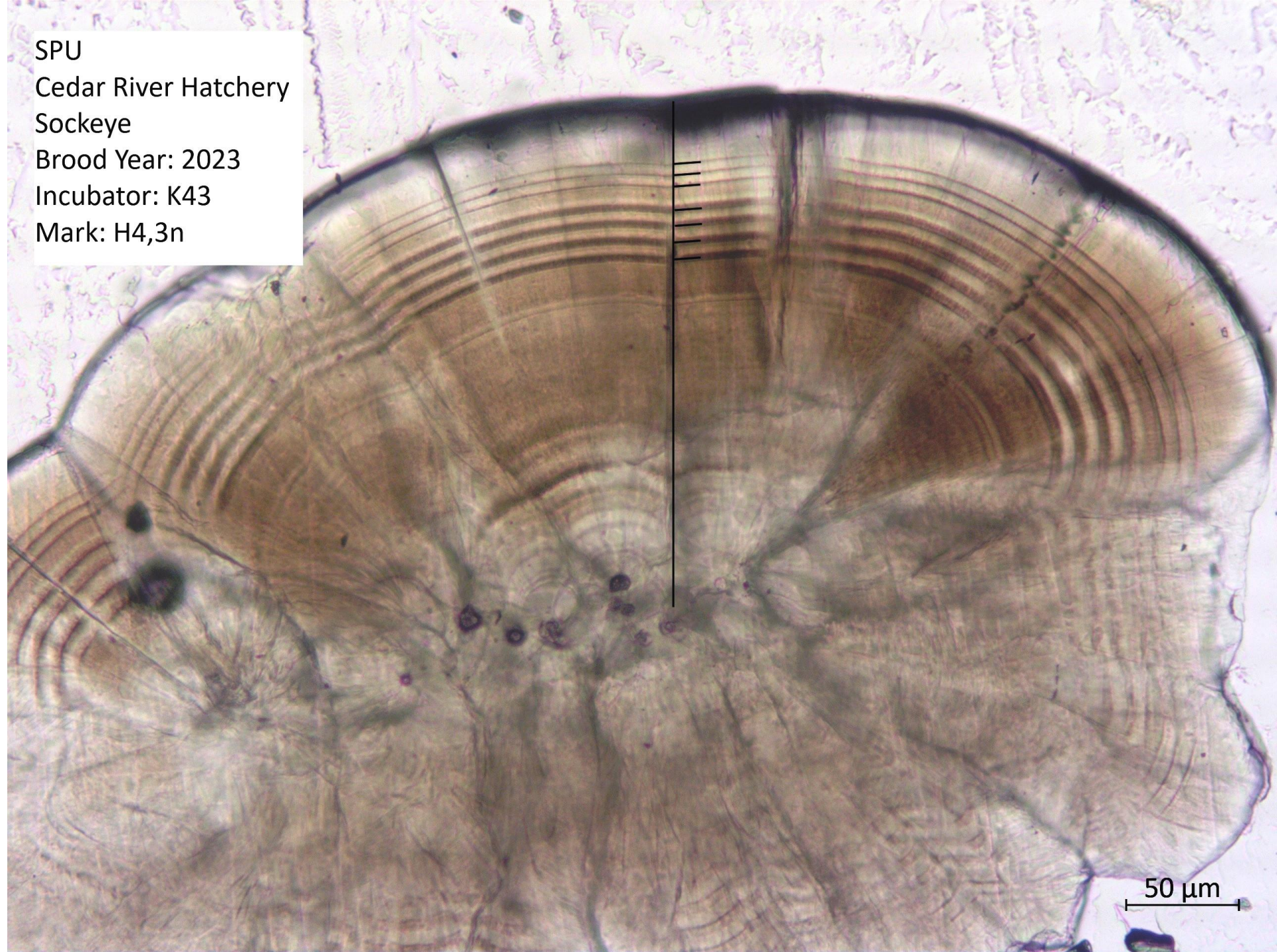
Cedar River Hatchery

Sockeye

Brood Year: 2023

Incubator: K43

Mark: H4,3n



50 μ m

SPU

Cedar River Hatchery

Sockeye

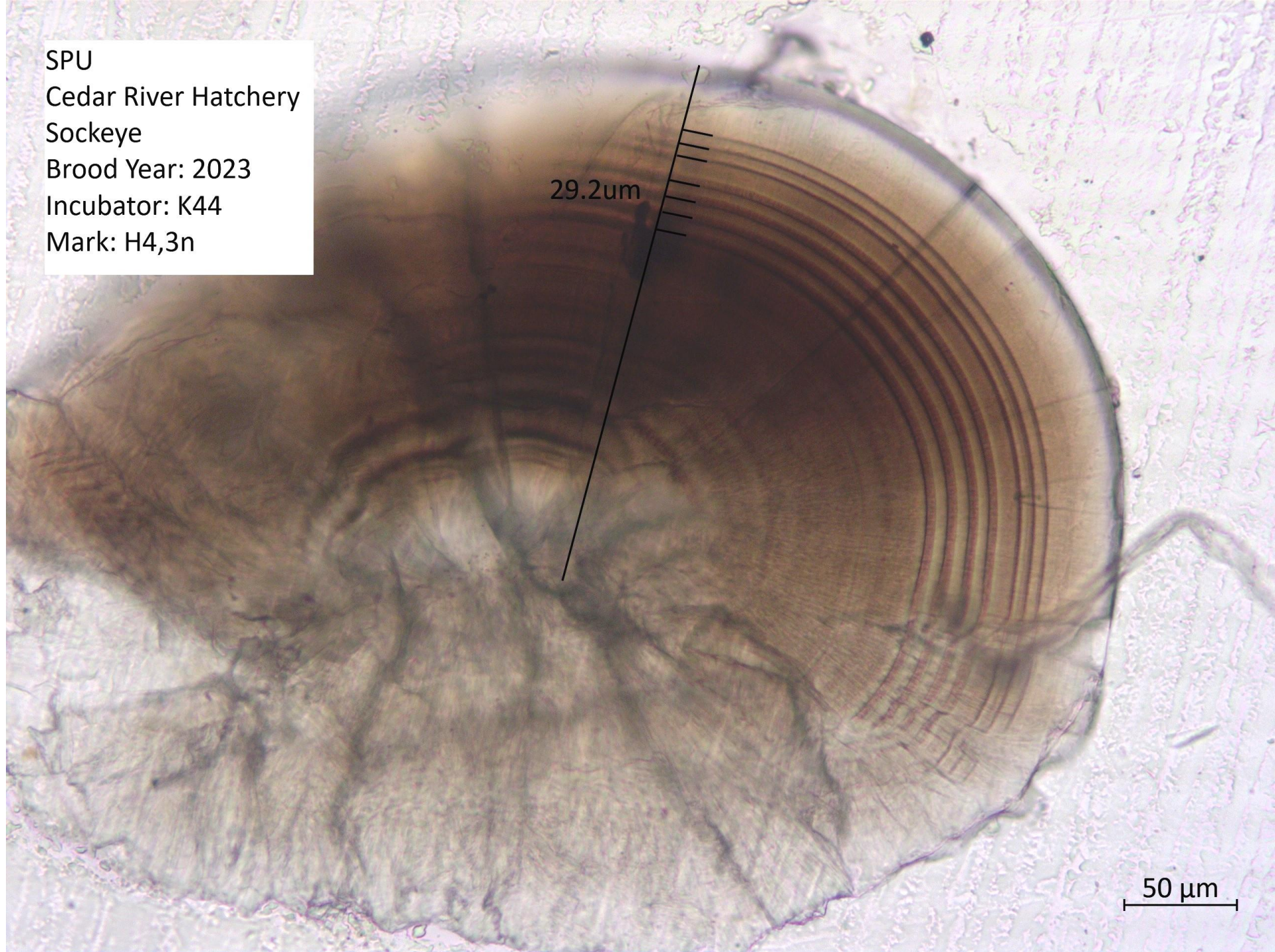
Brood Year: 2023

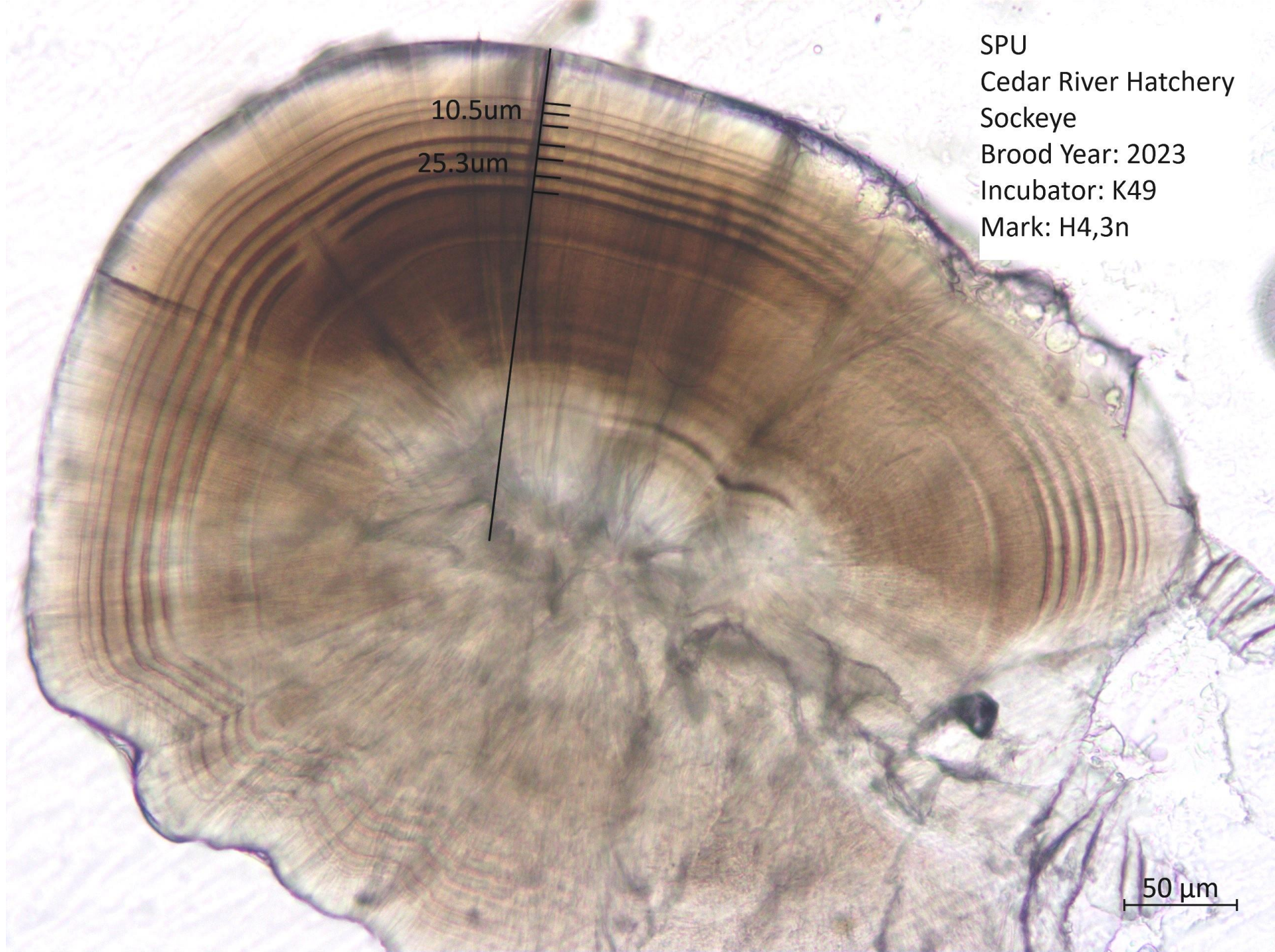
Incubator: K44

Mark: H4,3n

29.2um

50 μm





SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

Incubator: K49

Mark: H4,3n

50 μm

SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

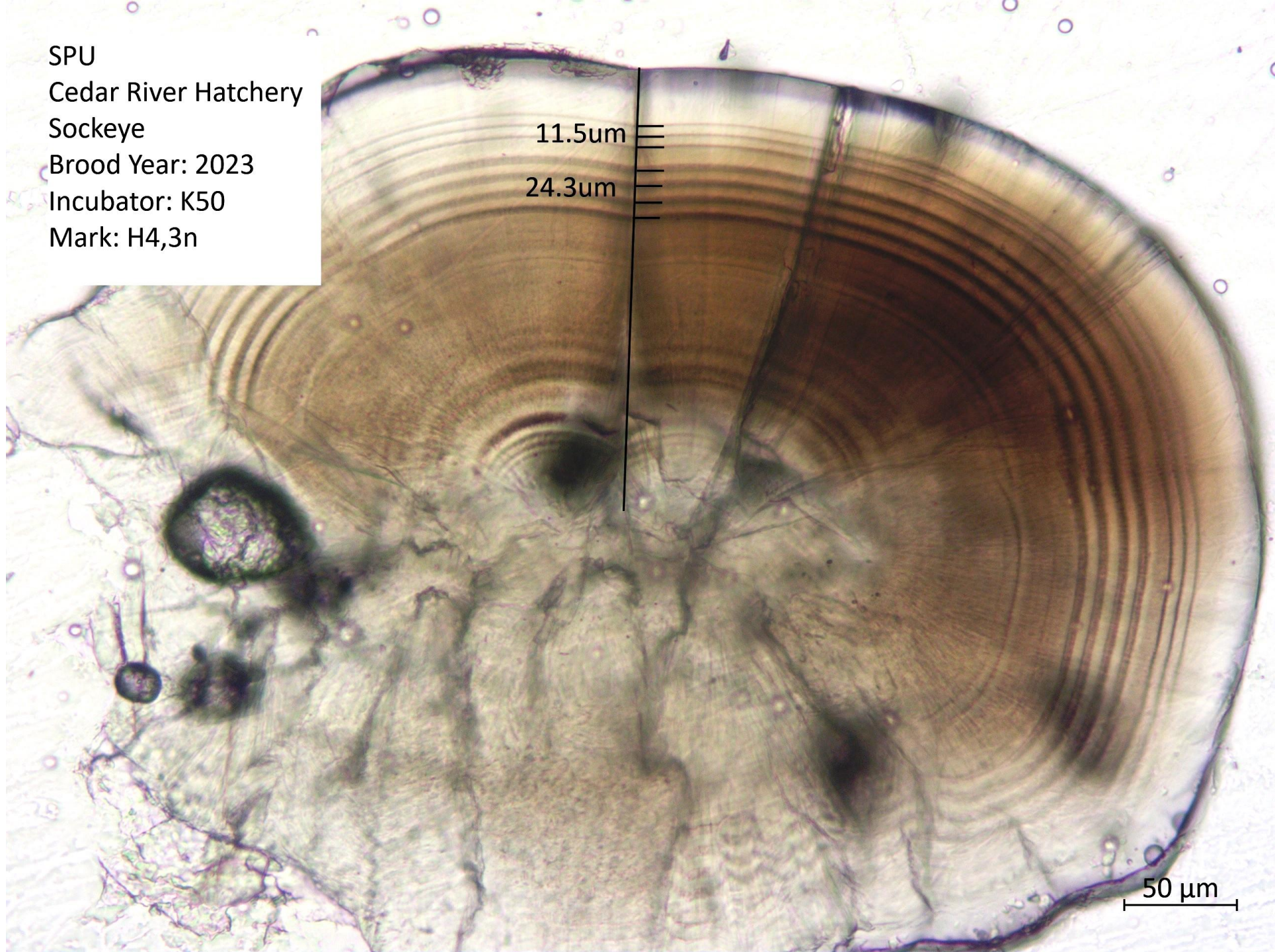
Incubator: K50

Mark: H4,3n

11.5um

24.3um

50 μ m



SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

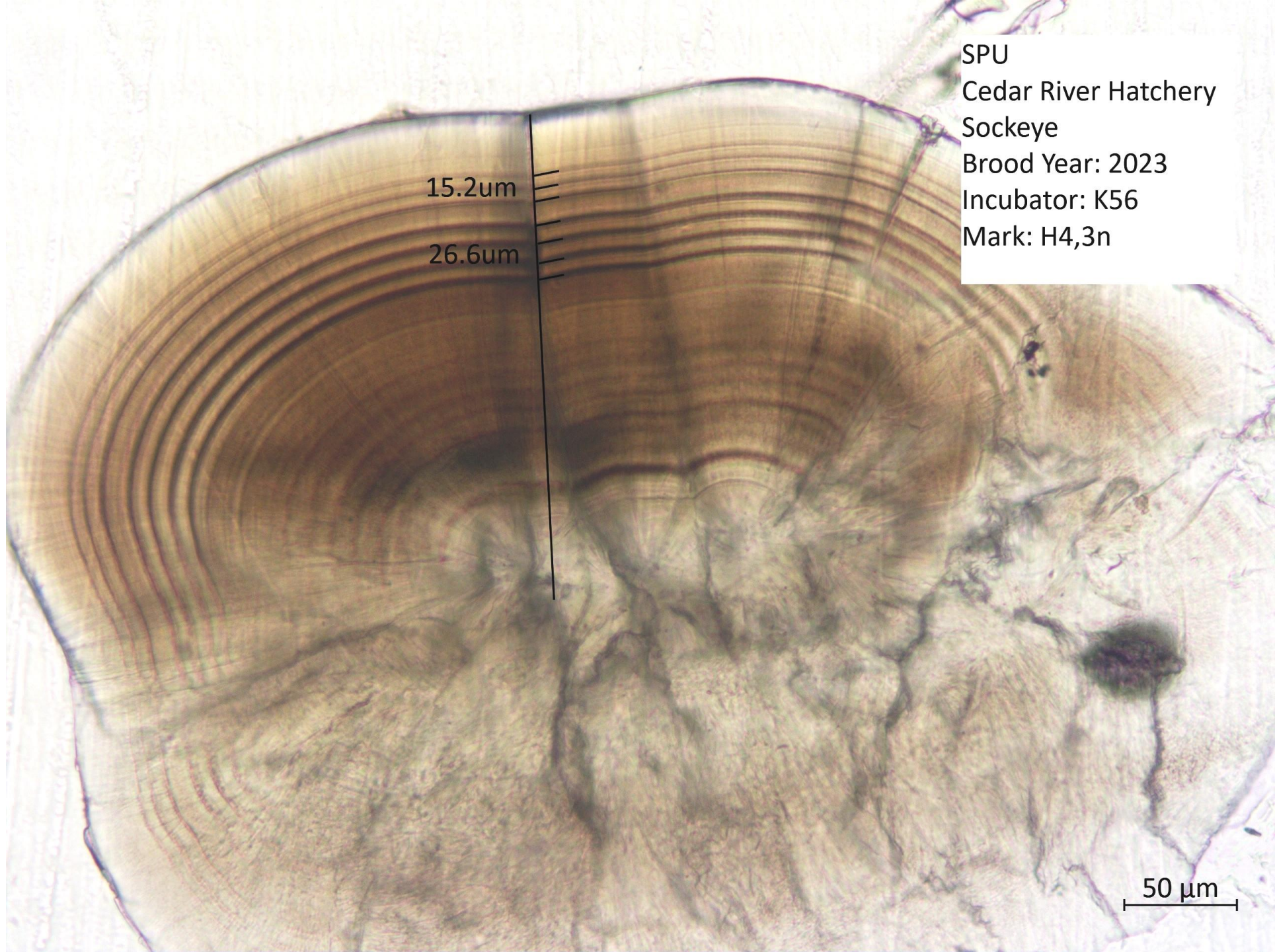
Incubator: K56

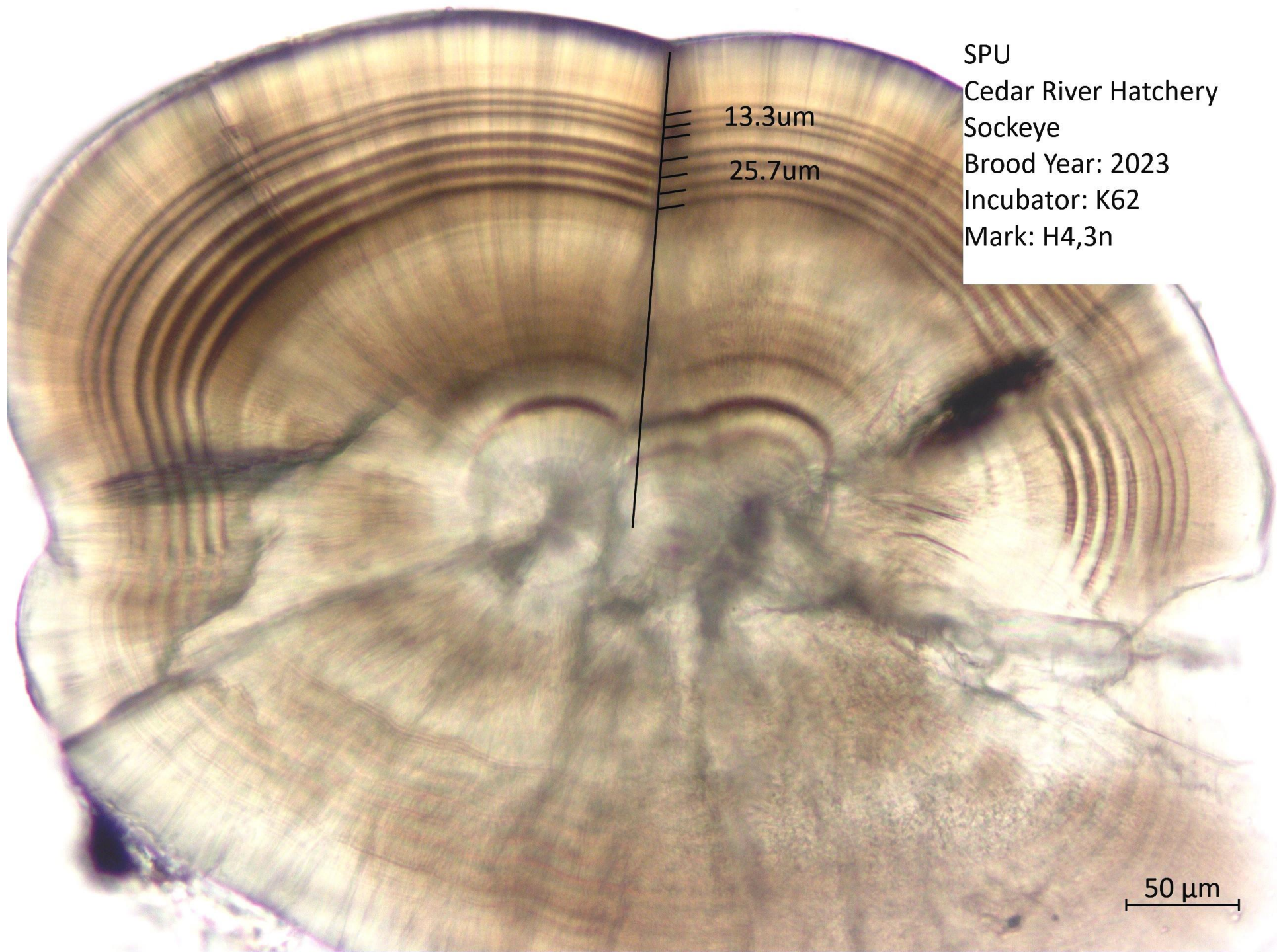
Mark: H4,3n

15.2um

26.6um

50 μ m





SPU

Cedar River Hatchery

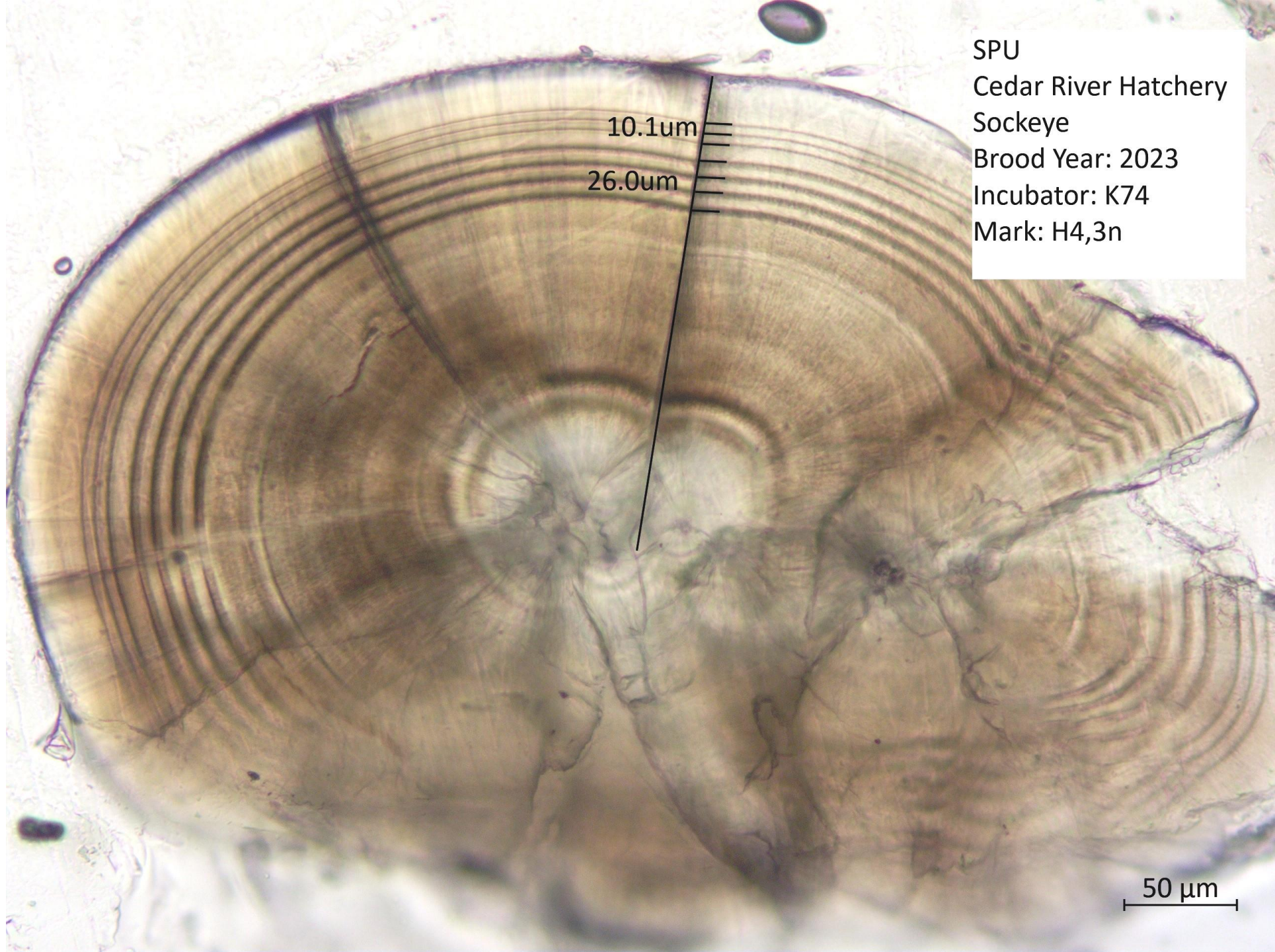
Sockeye

Brood Year: 2023

Incubator: K62

Mark: H4,3n

50 μm



SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

Incubator: K74

Mark: H4,3n

10.1μm

26.0μm

50 μm

SPU

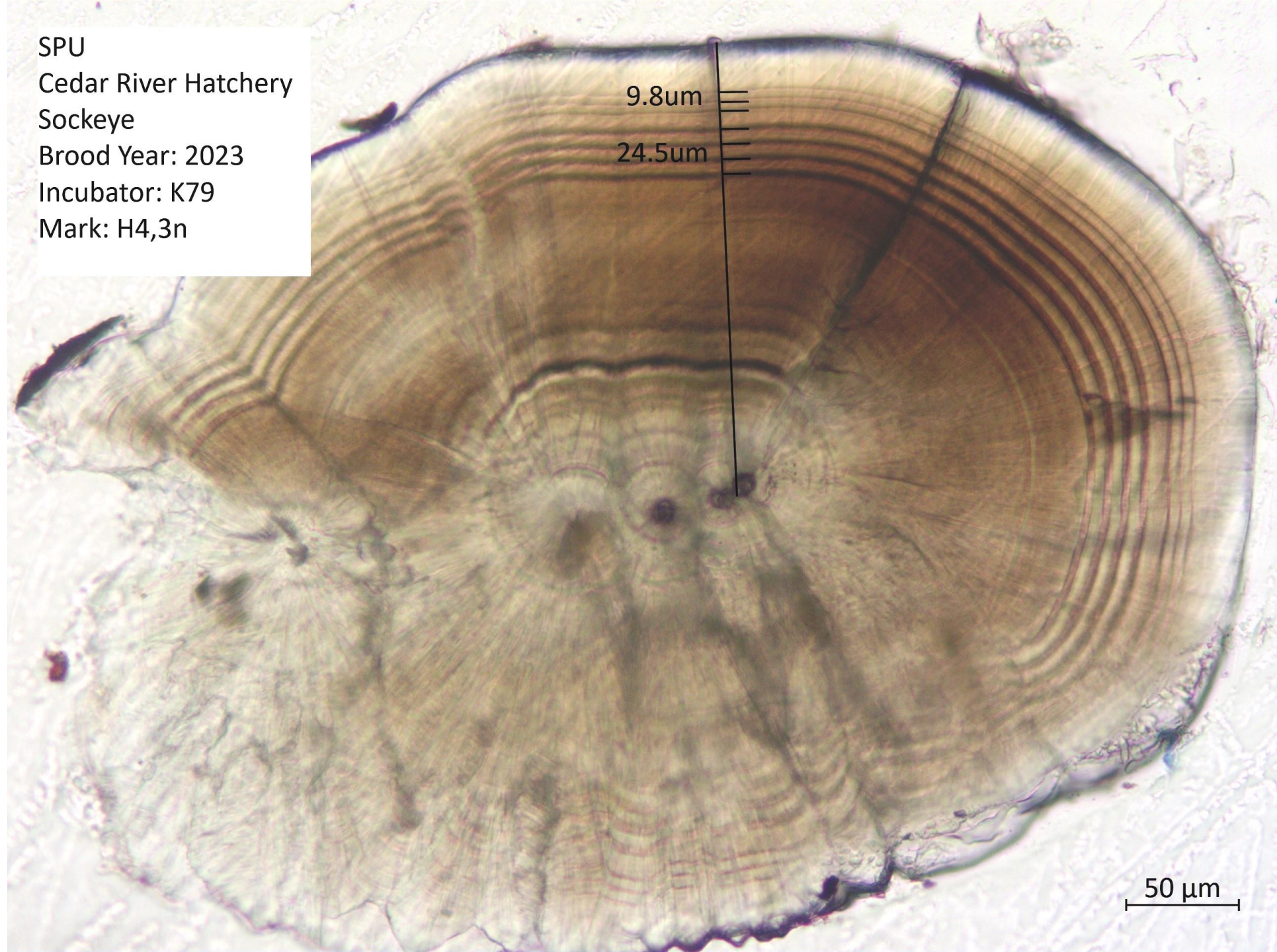
Cedar River Hatchery

Sockeye

Brood Year: 2023

Incubator: K79

Mark: H4,3n



SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

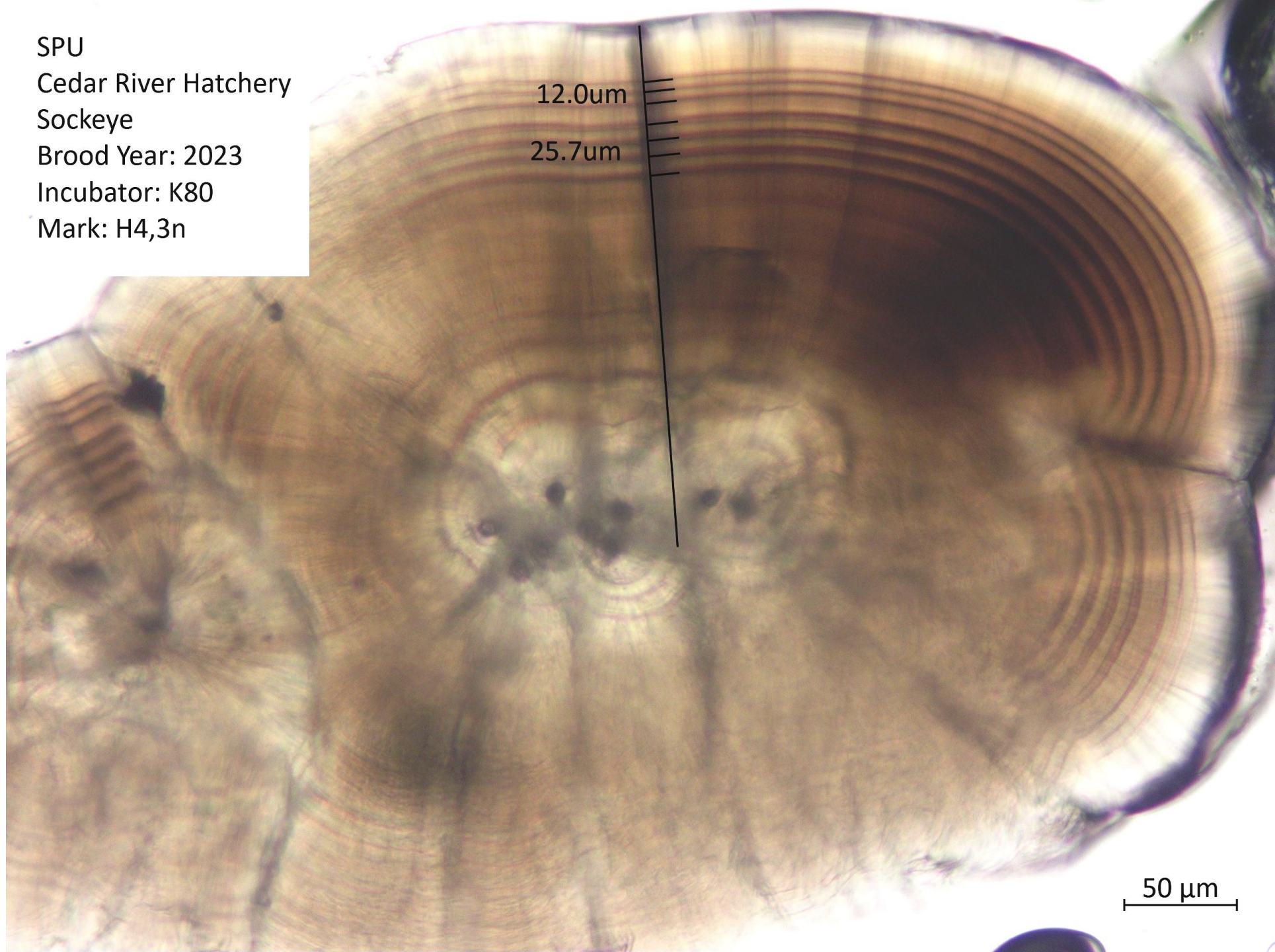
Incubator: K80

Mark: H4,3n

12.0um

25.7um

50 μ m



SPU

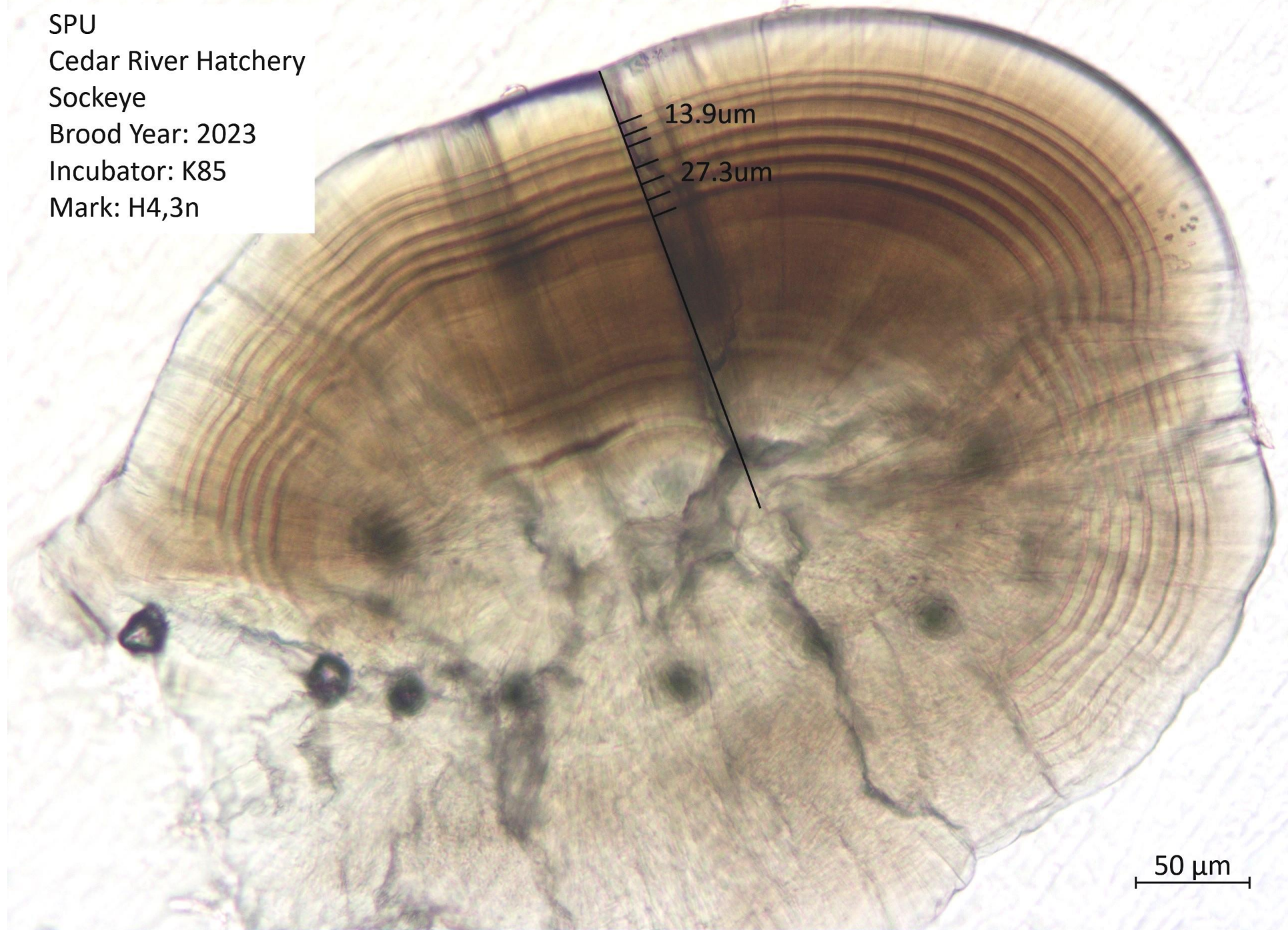
Cedar River Hatchery

Sockeye

Brood Year: 2023

Incubator: K85

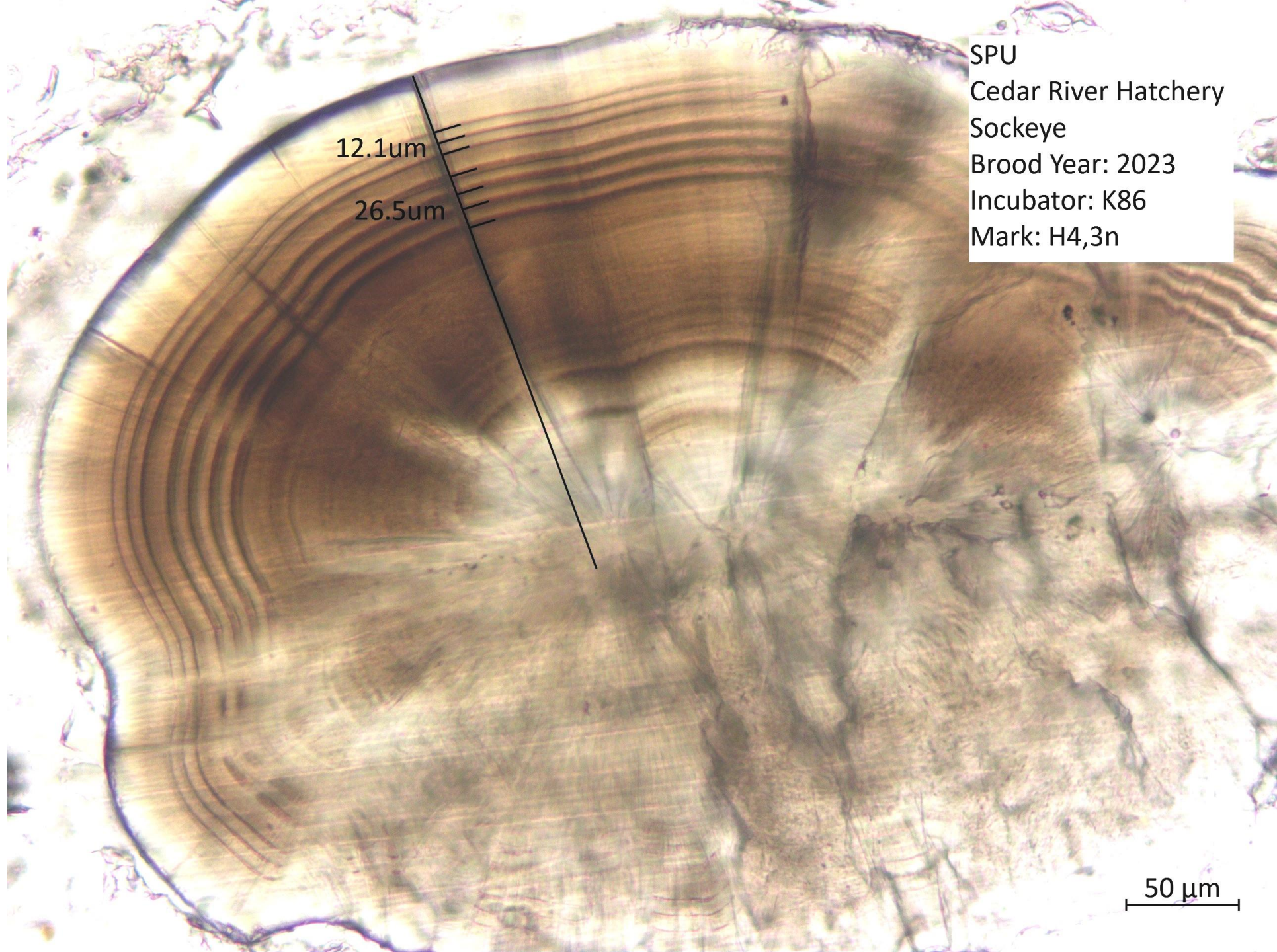
Mark: H4,3n



13.9μm

27.3μm

50 μm



SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

Incubator: K86

Mark: H4,3n

12.1um

26.5um

50 μ m

SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

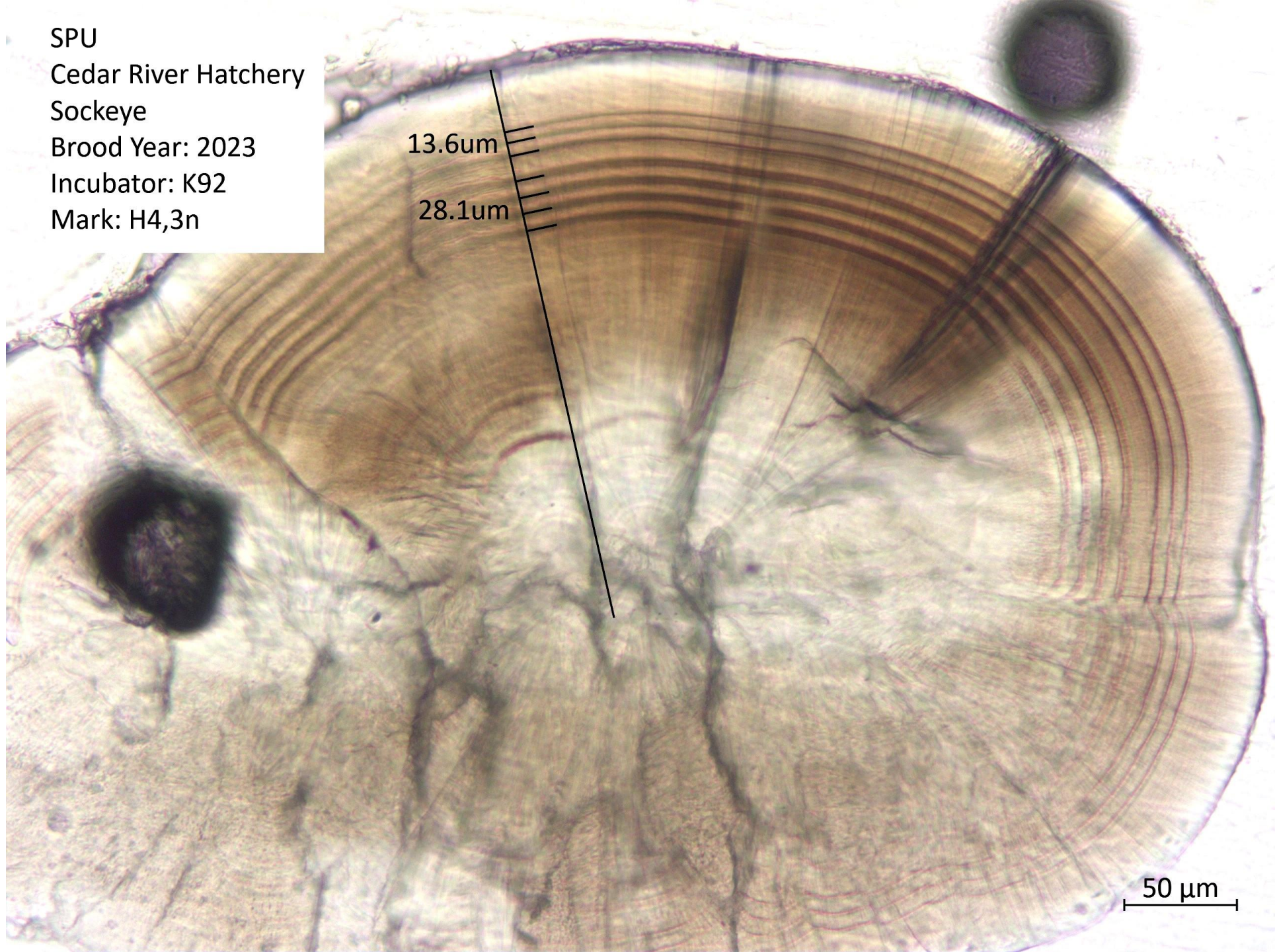
Incubator: K92

Mark: H4,3n

13.6um

28.1um

50 μ m



SPU

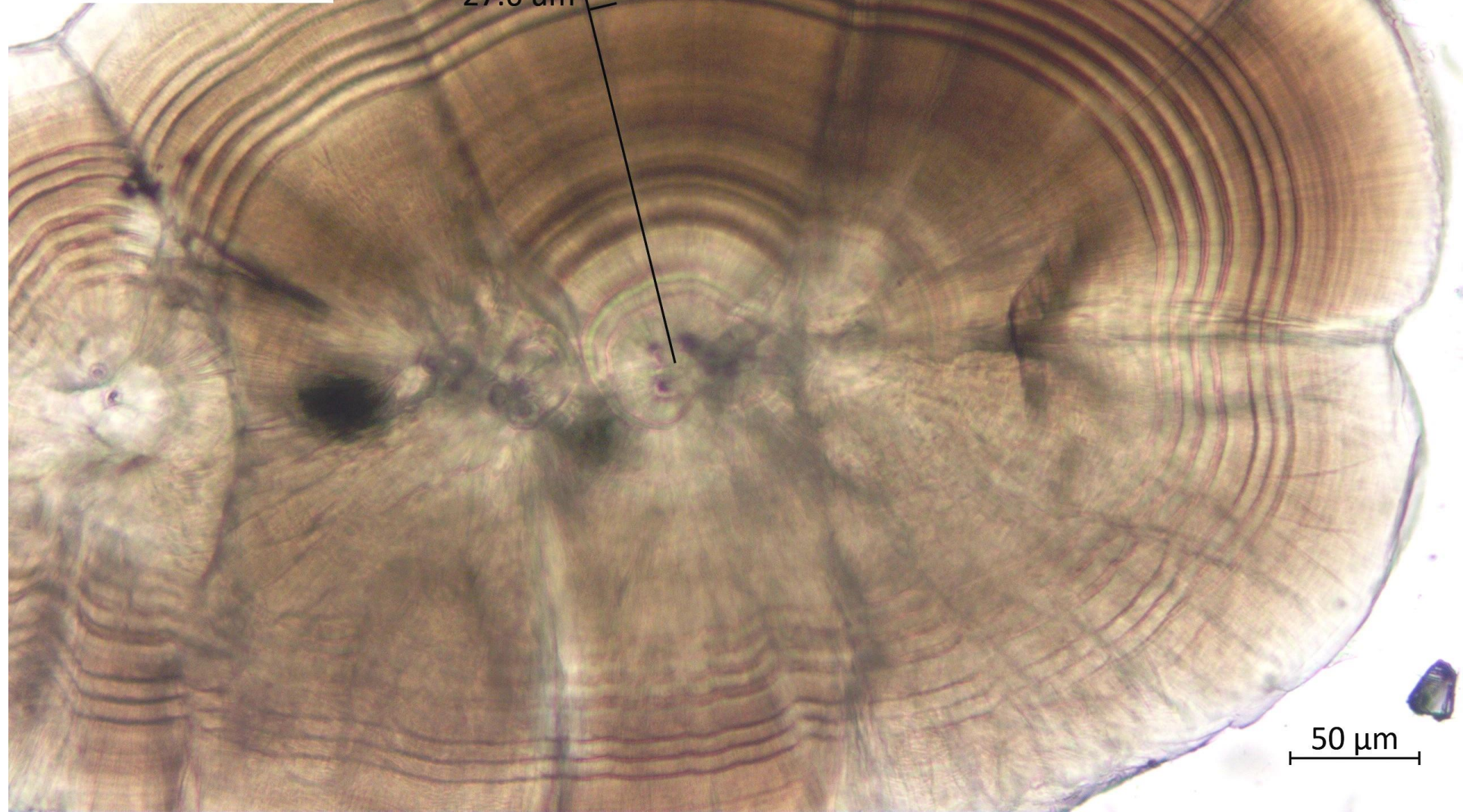
Cedar River Hatchery

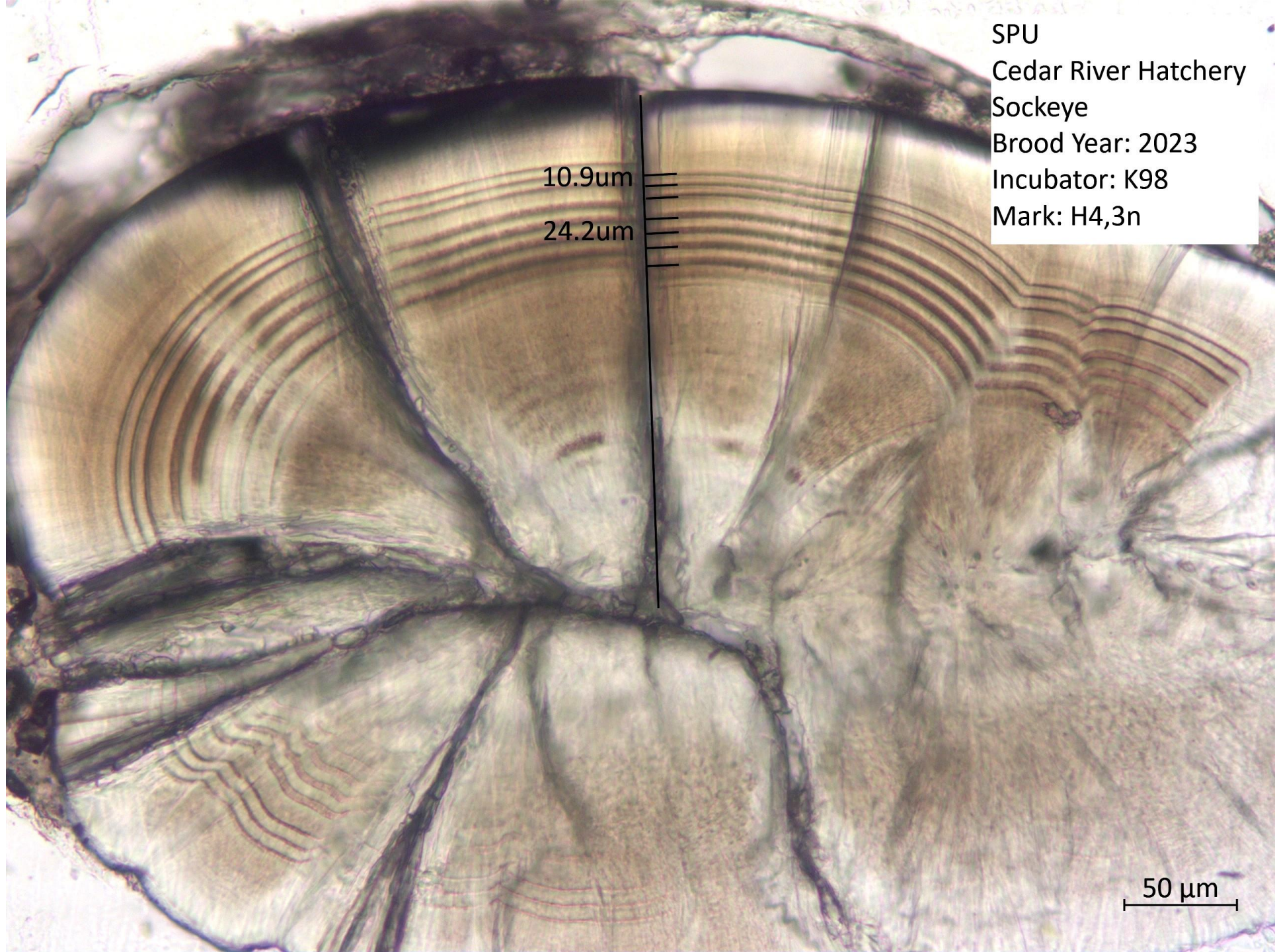
Sockeye

Brood Year: 2023

Incubator: K97

Mark: H4,3n





SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

Incubator: K98

Mark: H4,3n

10.9um

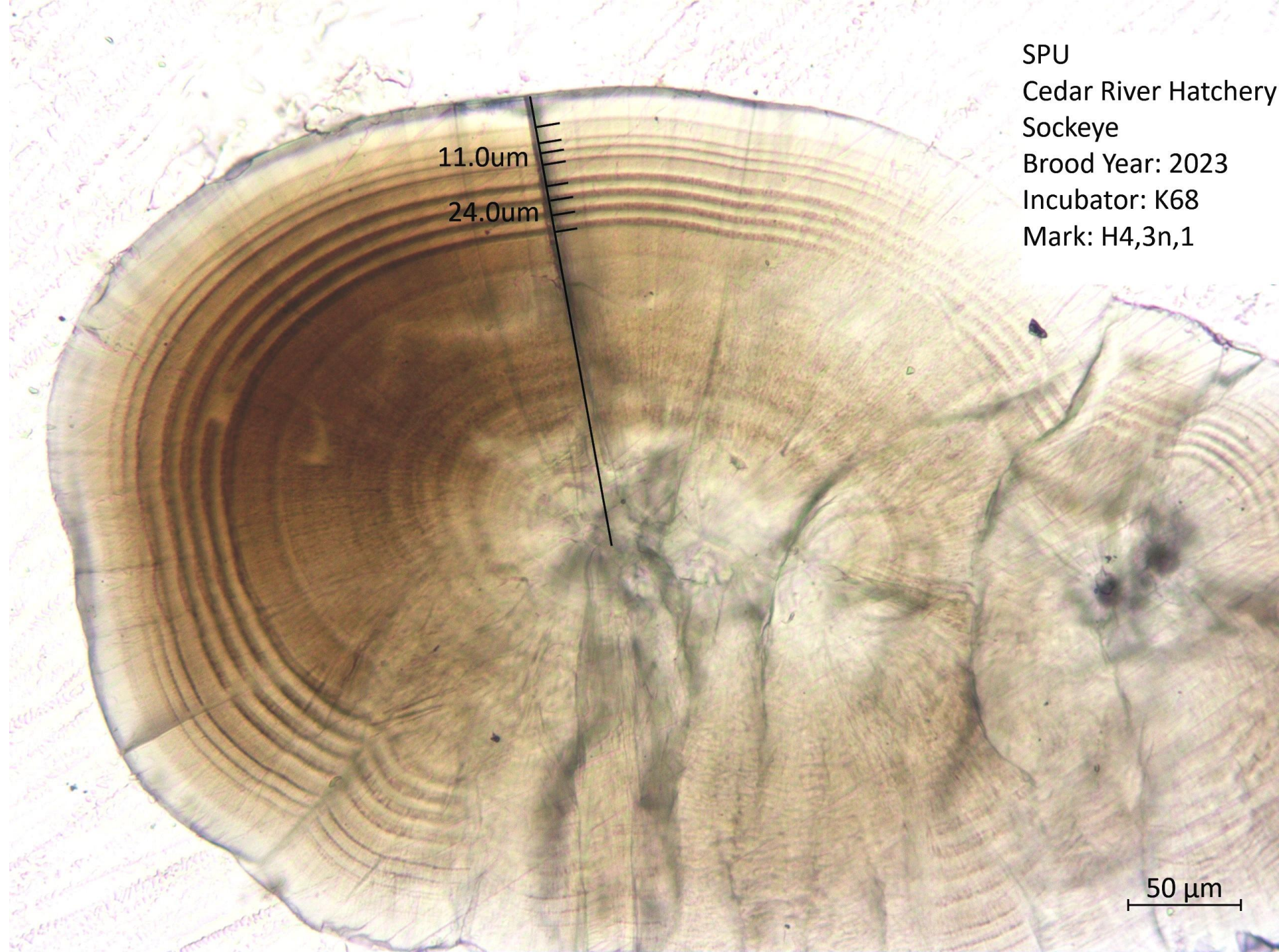
24.2um

50 μ m

MIDDLE EXTENDED - H4,3n,1

Middle - extended rearing H4,3n,1																																								
HATCH	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24		

SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K68
Mark: H4,3n,1



11.0um

24.0um

50 μm

LATE – H3n,4

[illegible]

SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

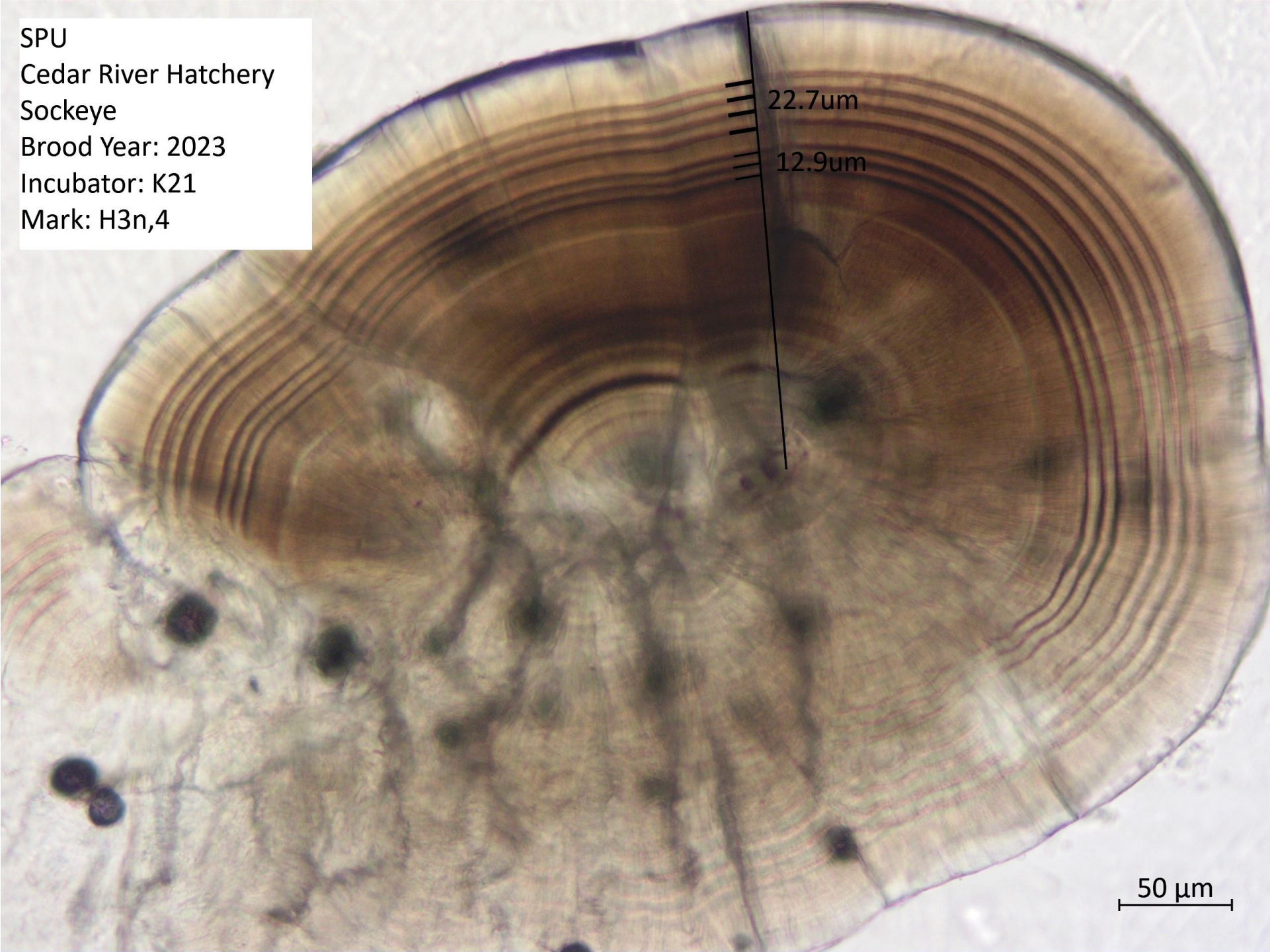
Incubator: K21

Mark: H3n,4

22.7 μ m

12.9 μ m

50 μ m



SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K22
Mark: H3n,4

21.1μm
10.7μm

50 μm

10.7 μ m

50 μm

SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K34
Mark: H3n,4

22.8um

12.5um

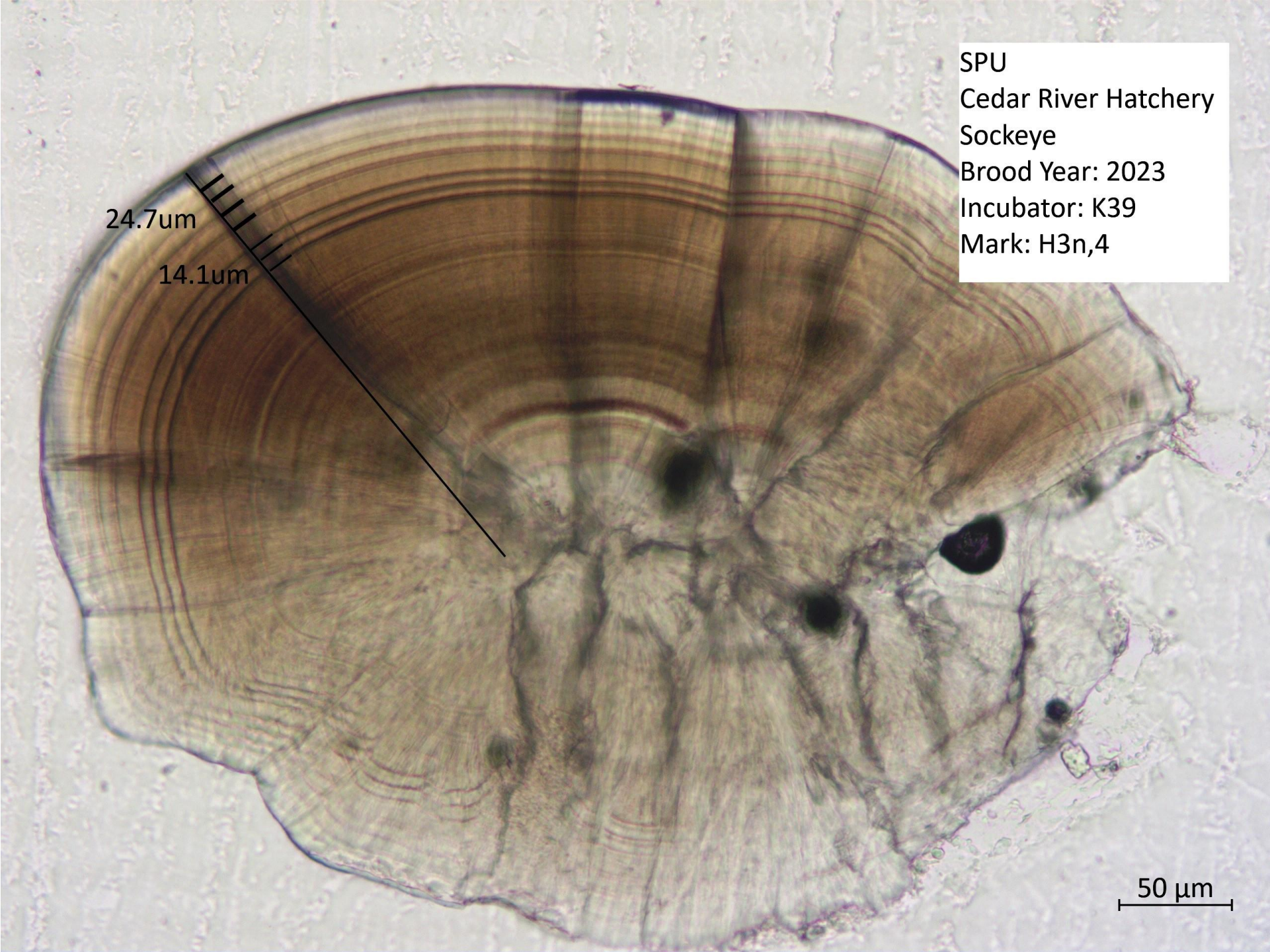
50 μ m

SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K39
Mark: H3n,4

24.7 μ m

14.1 μ m

50 μ m



SPU

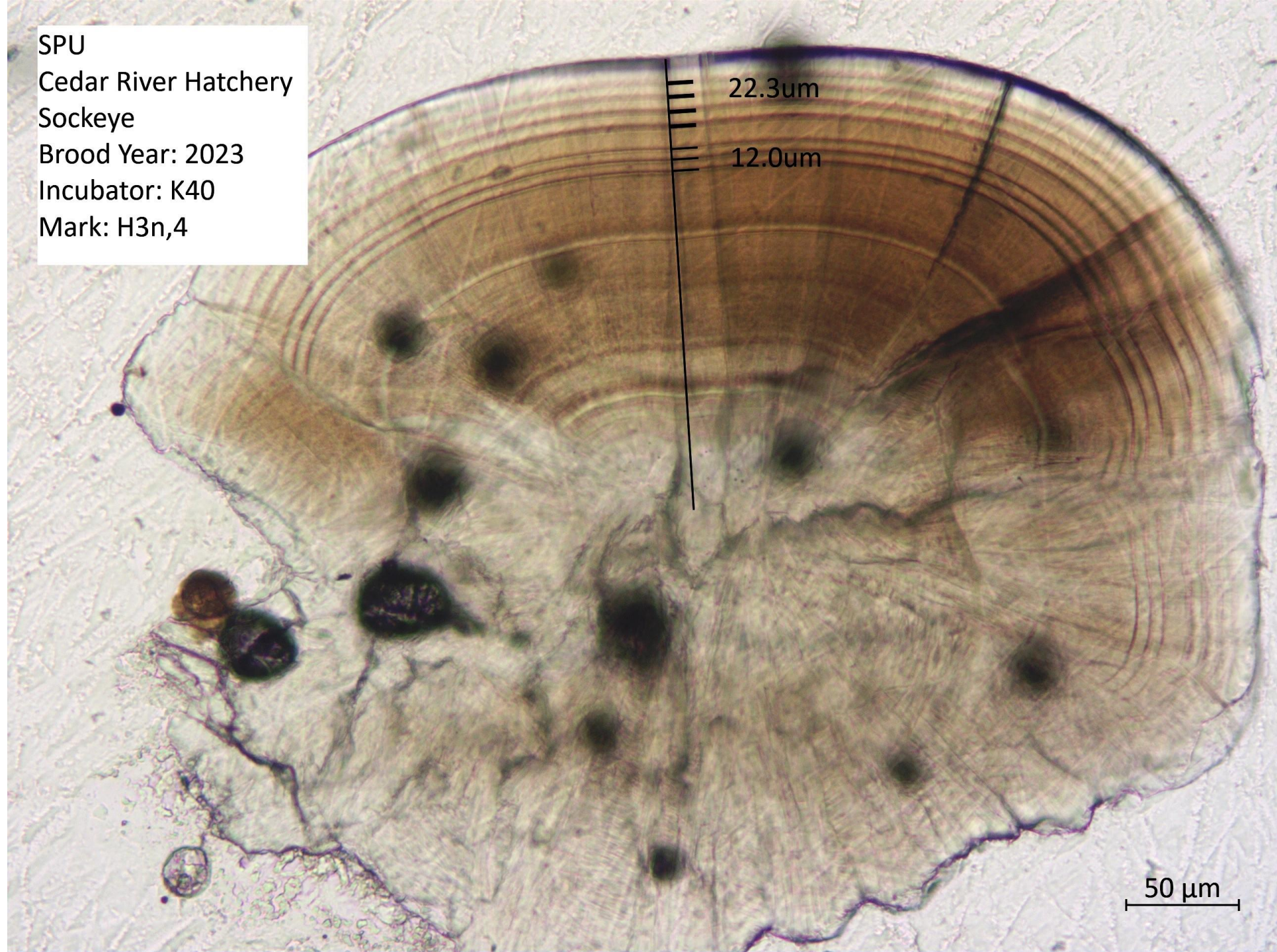
Cedar River Hatchery

Sockeye

Brood Year: 2023

Incubator: K40

Mark: H3n,4

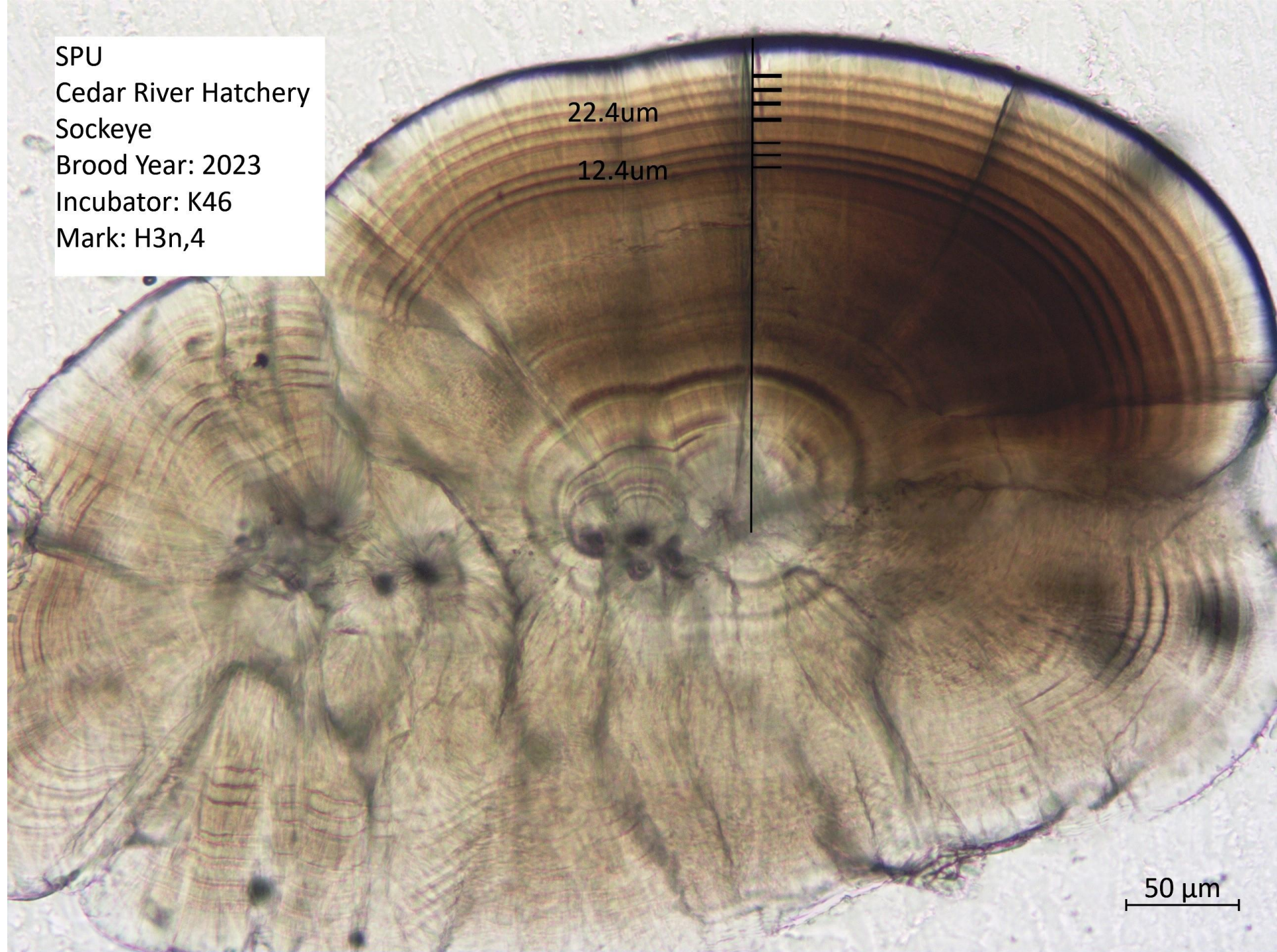


22.3um

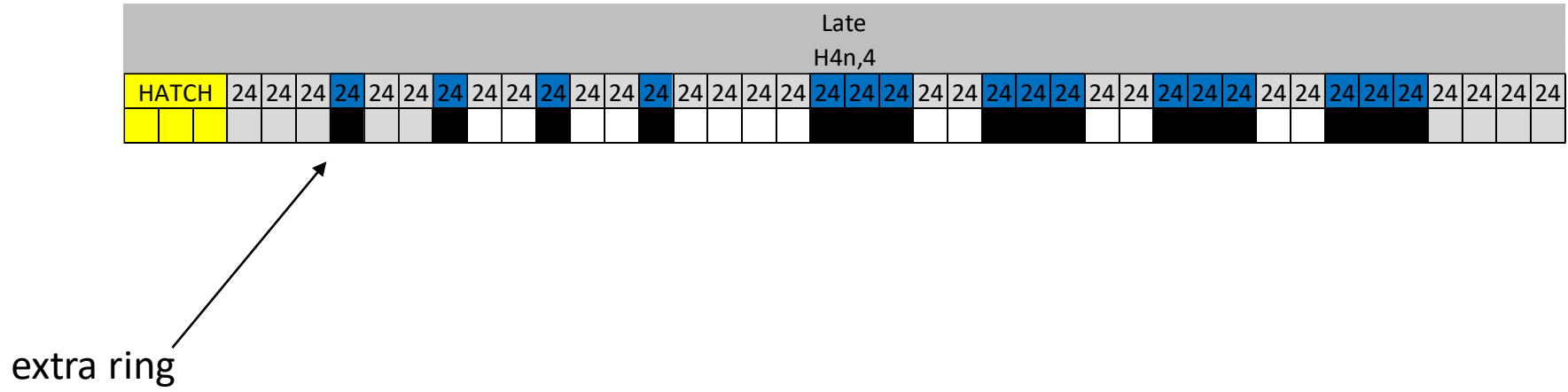
12.0um

50 μm

SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K46
Mark: H3n,4



VARIANT - H4n,4



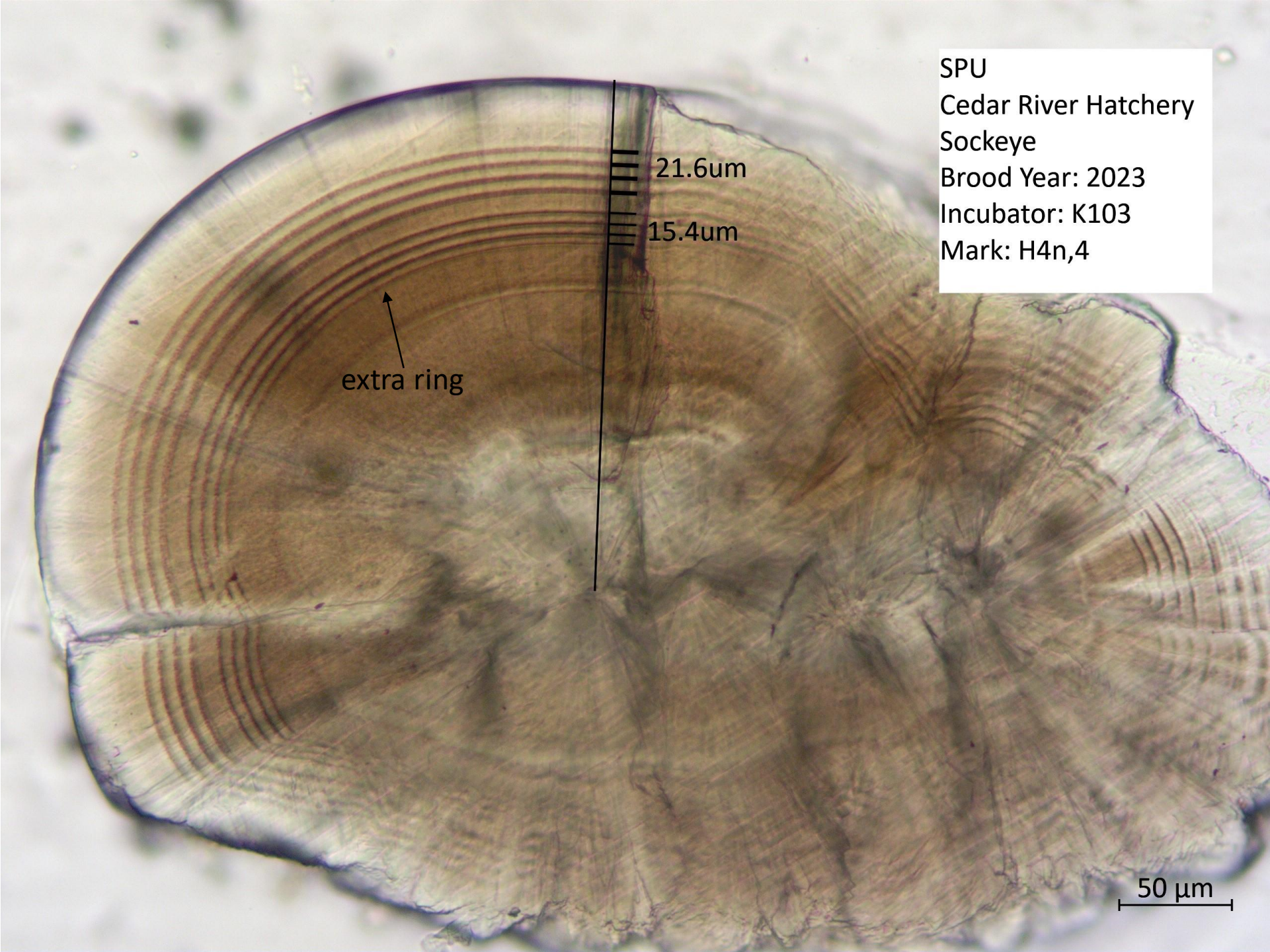
SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K103
Mark: H4n,4

extra ring

21.6um

15.4um

50 μ m



SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K110
Mark: H4n,4

24.5um

17.9um

50 μ m

SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

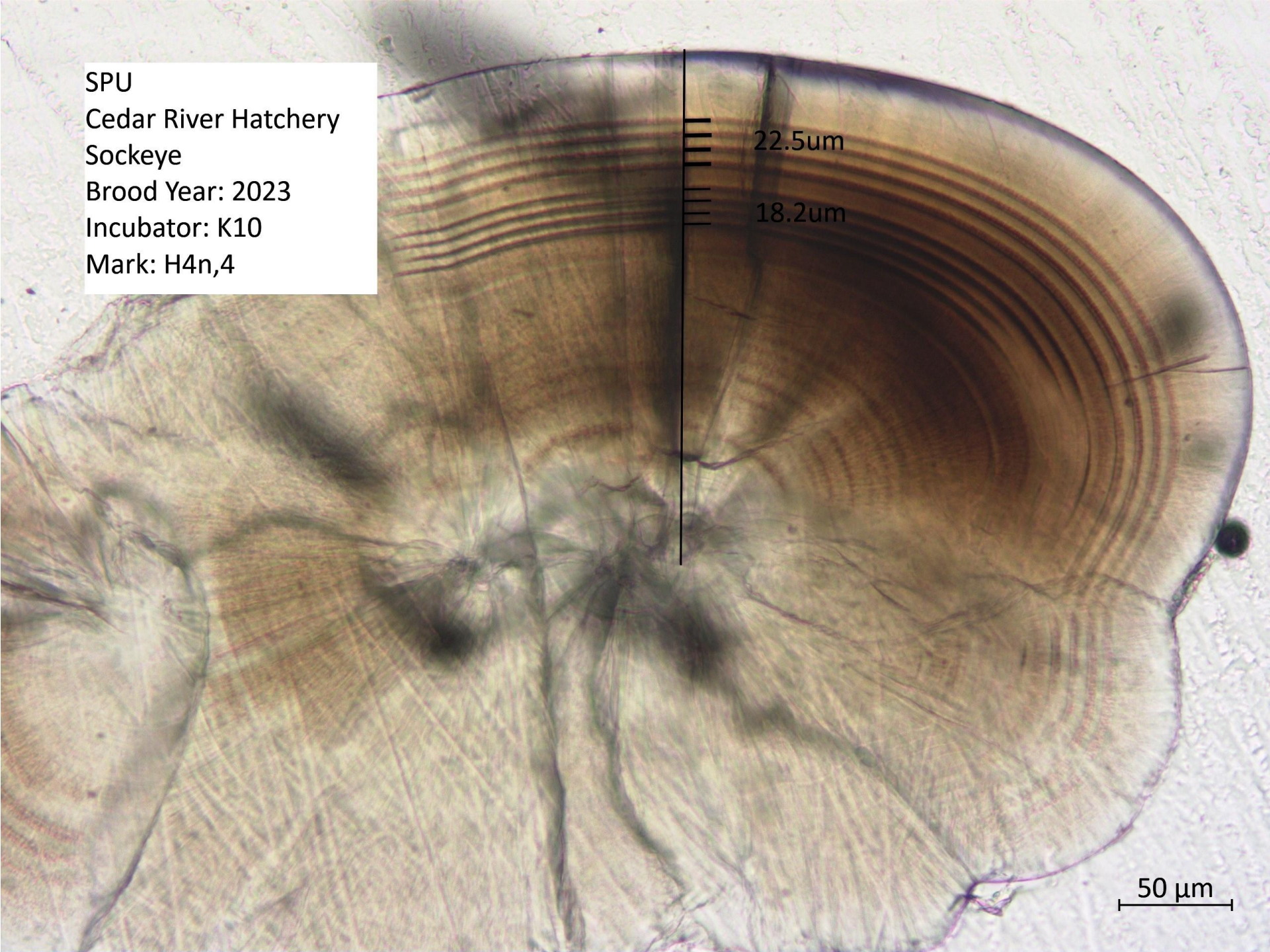
Incubator: K10

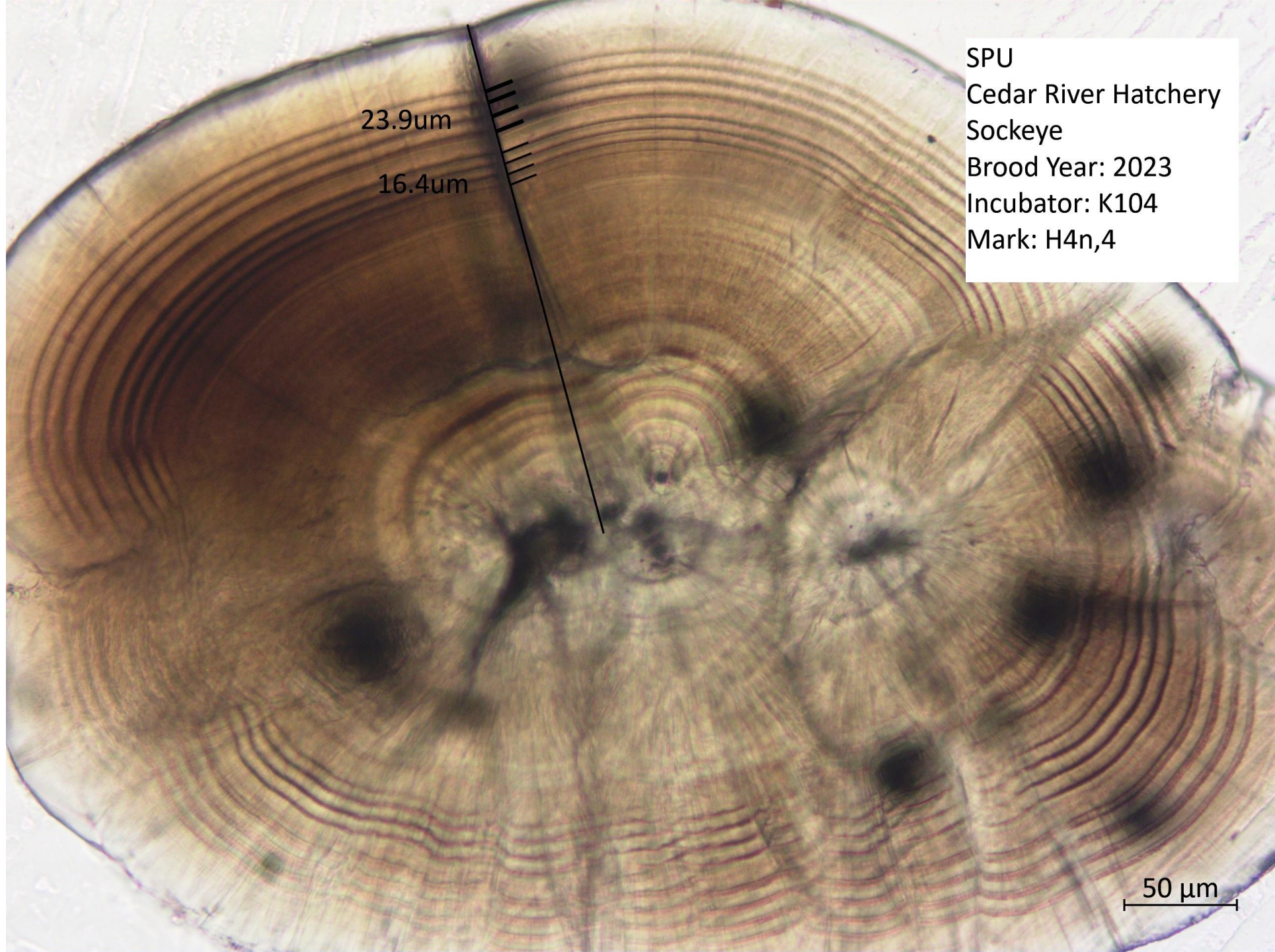
Mark: H4n,4

22.5um

18.2um

50 μ m





SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K104
Mark: H4n,4

23.9um

16.4um

50 μm

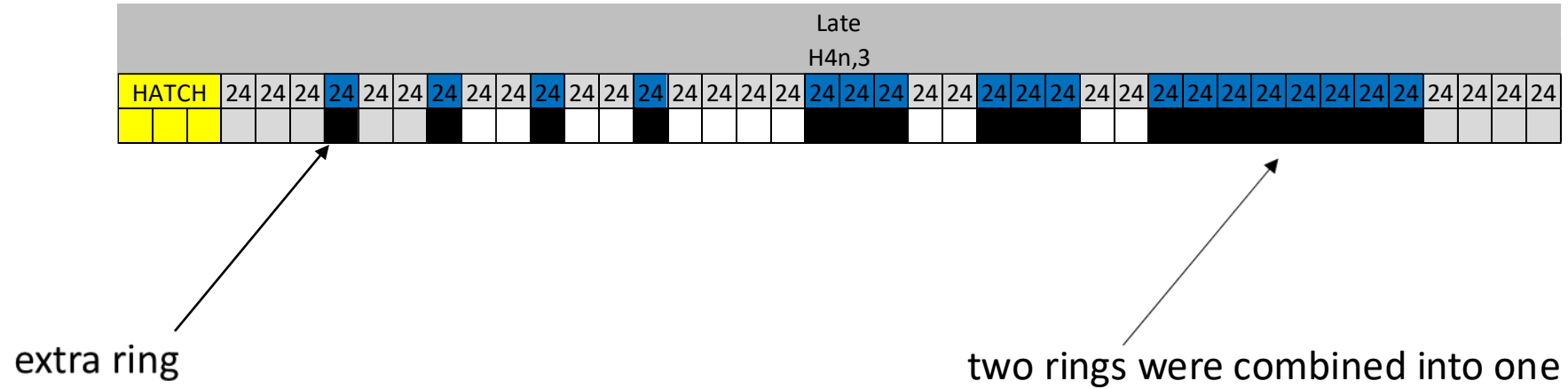
SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K16
Mark: H4n,4

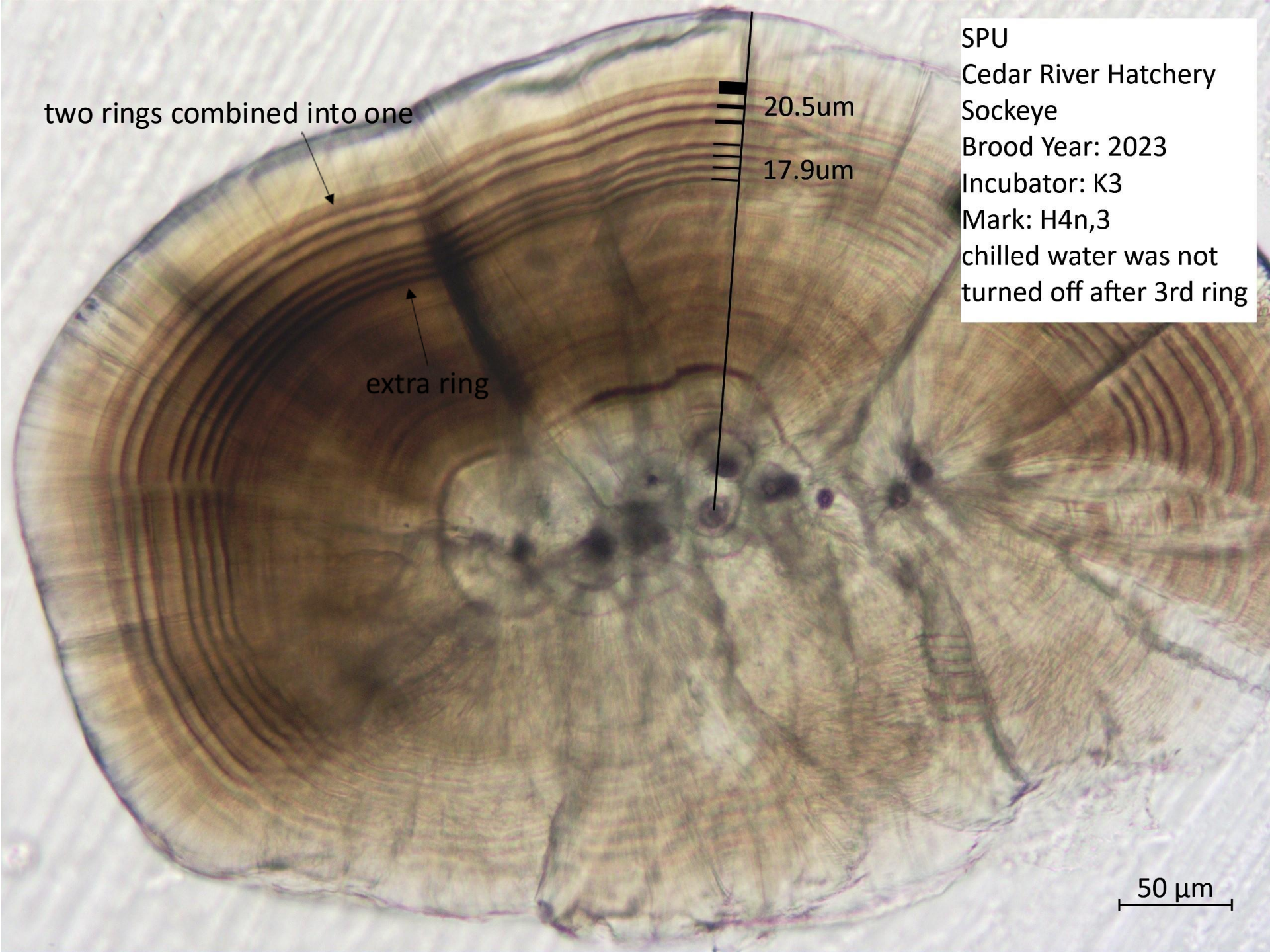
23.2um

16.6um

50 μ m

VARIANT - H4n,3





two rings combined into one

extra ring

20.5um

17.9um

SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

Incubator: K3

Mark: H4n,3

chilled water was not
turned off after 3rd ring

50 μm

SPU

Cedar River Hatchery

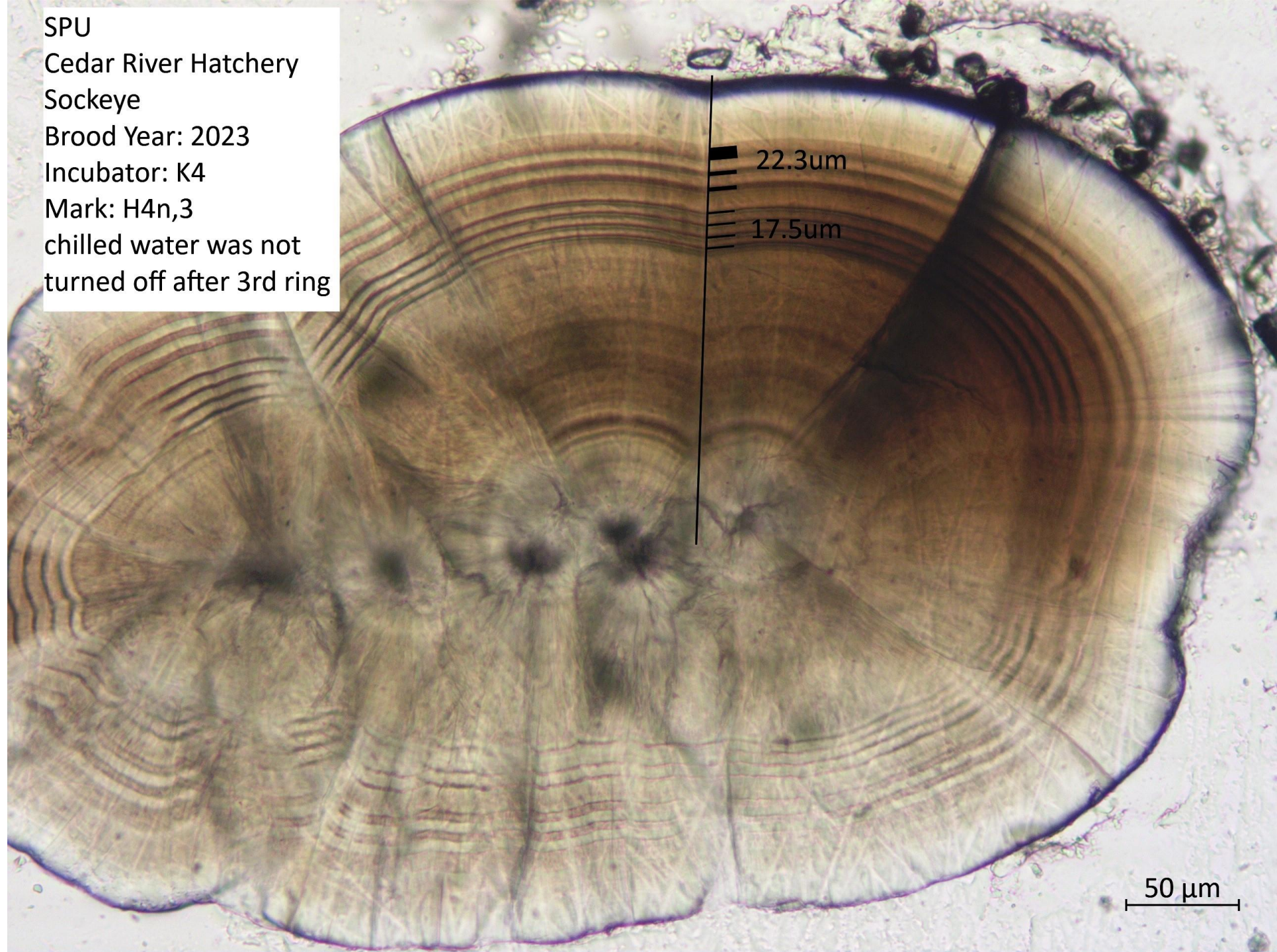
Sockeye

Brood Year: 2023

Incubator: K4

Mark: H4n,3

chilled water was not
turned off after 3rd ring



50 μm

VARIANT – H3n,3

Late H3n,3																																		
HATCH	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24

one ring missing

one ring missing

19.8um

14.9um

SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

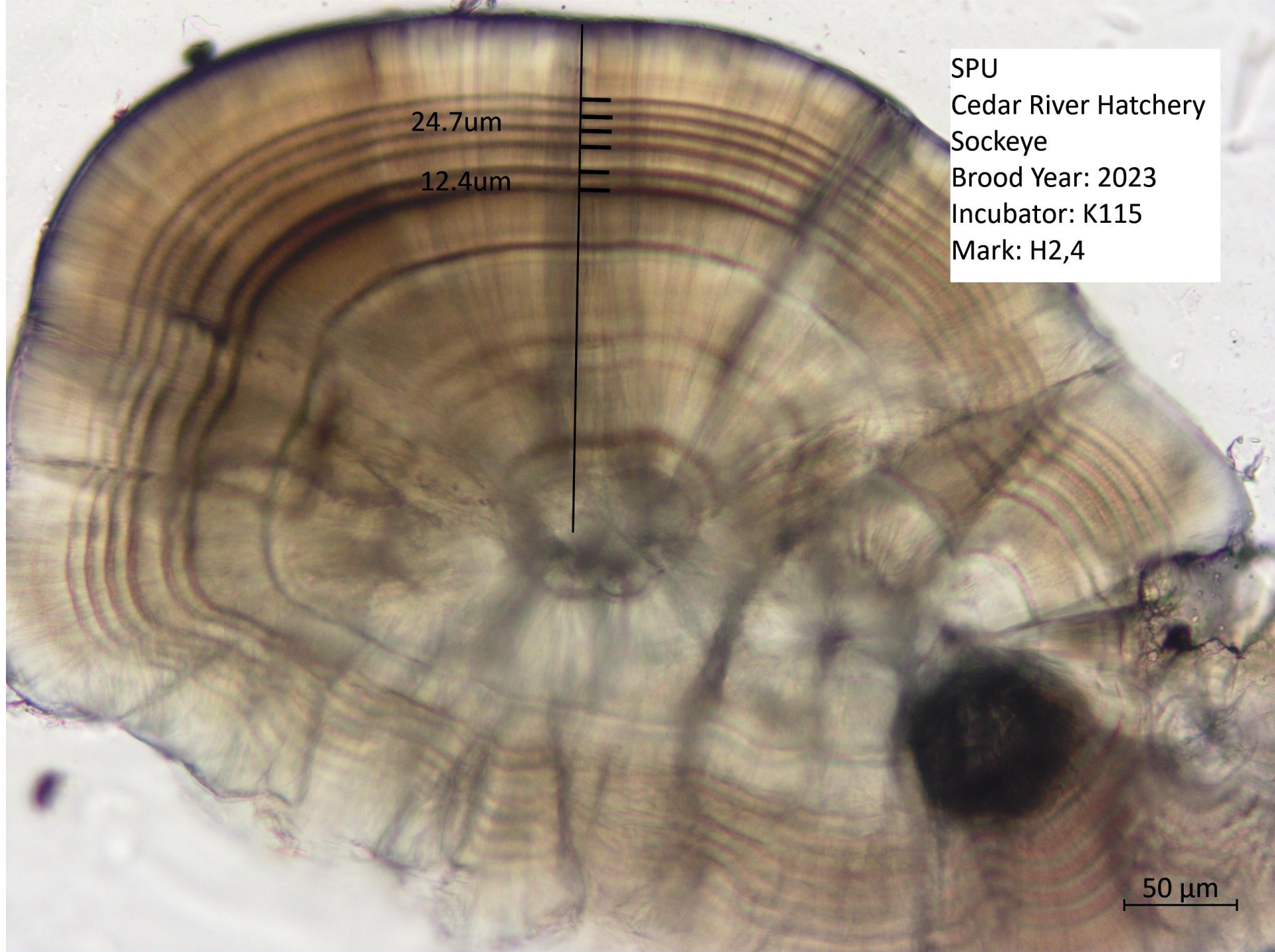
Incubator: K52

Mark: H3n,3

50 μ m

BAKER – H2,4

[illegible]



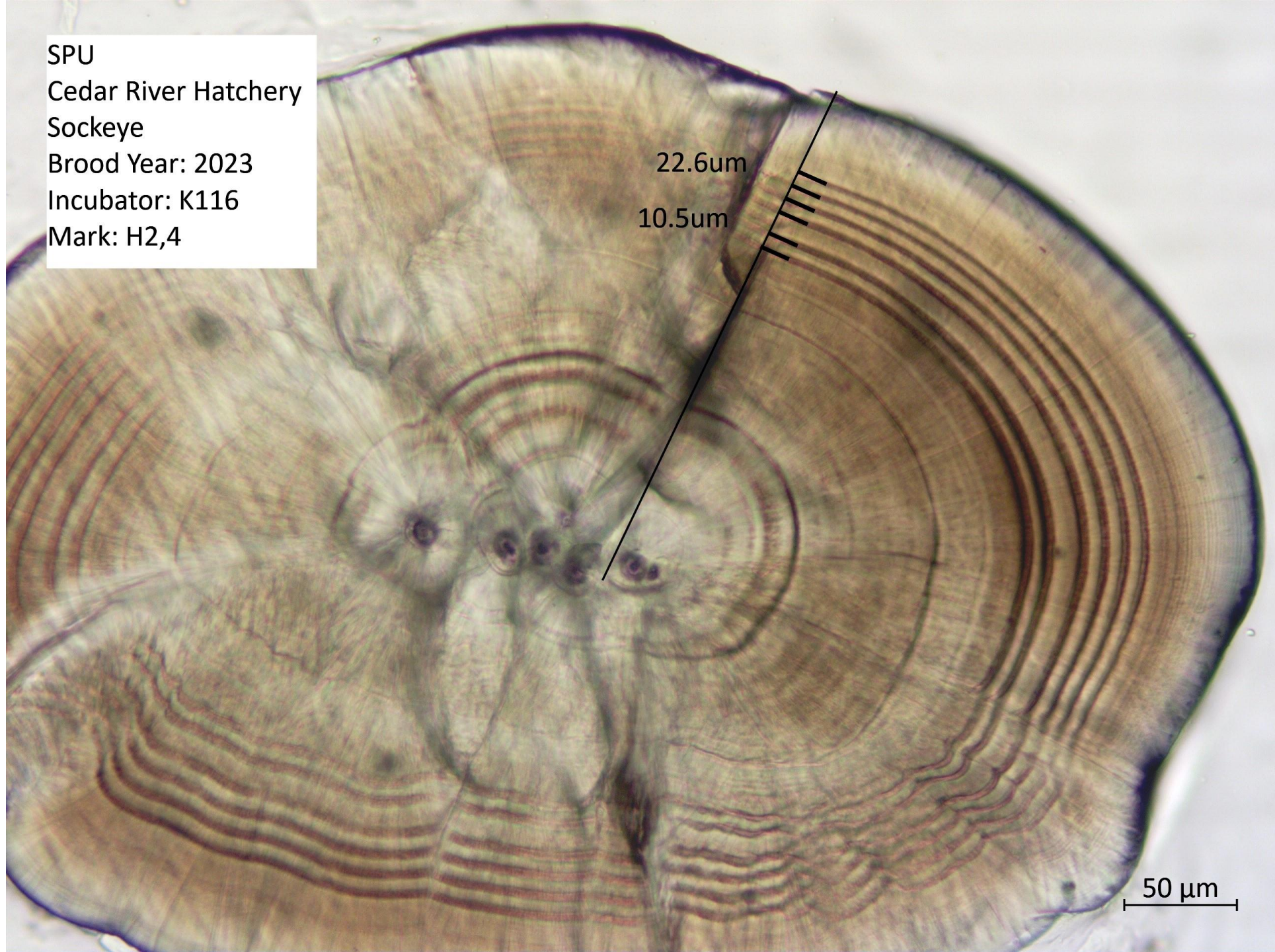
SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K115
Mark: H2,4

24.7um

12.4um

50 μ m

SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K116
Mark: H2,4

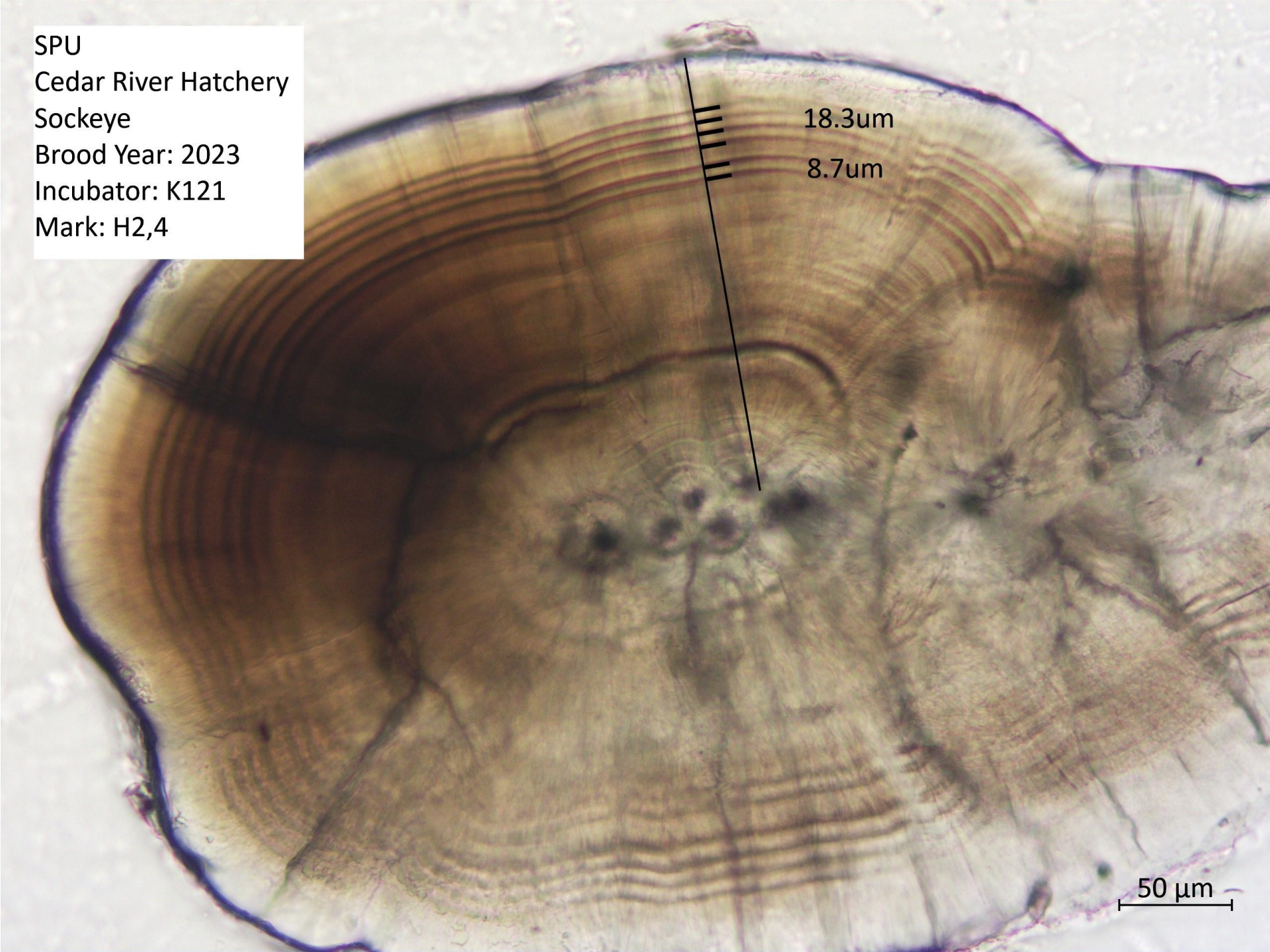


22.6um

10.5um

50 μ m

SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K121
Mark: H2,4



18.3um

8.7um

50 μm

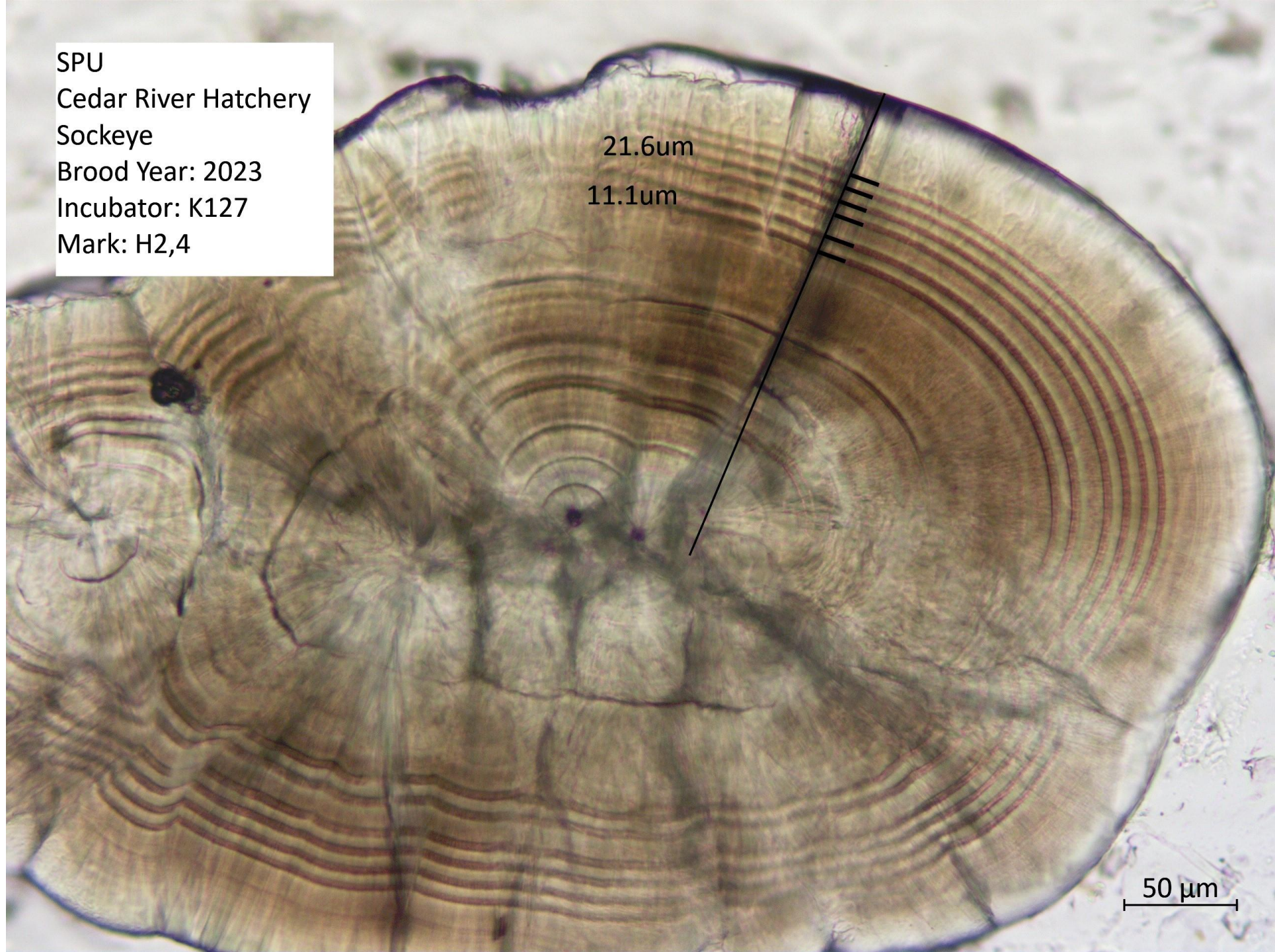
SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K122
Mark: H2,4

23.3um

10.7um

50 μ m

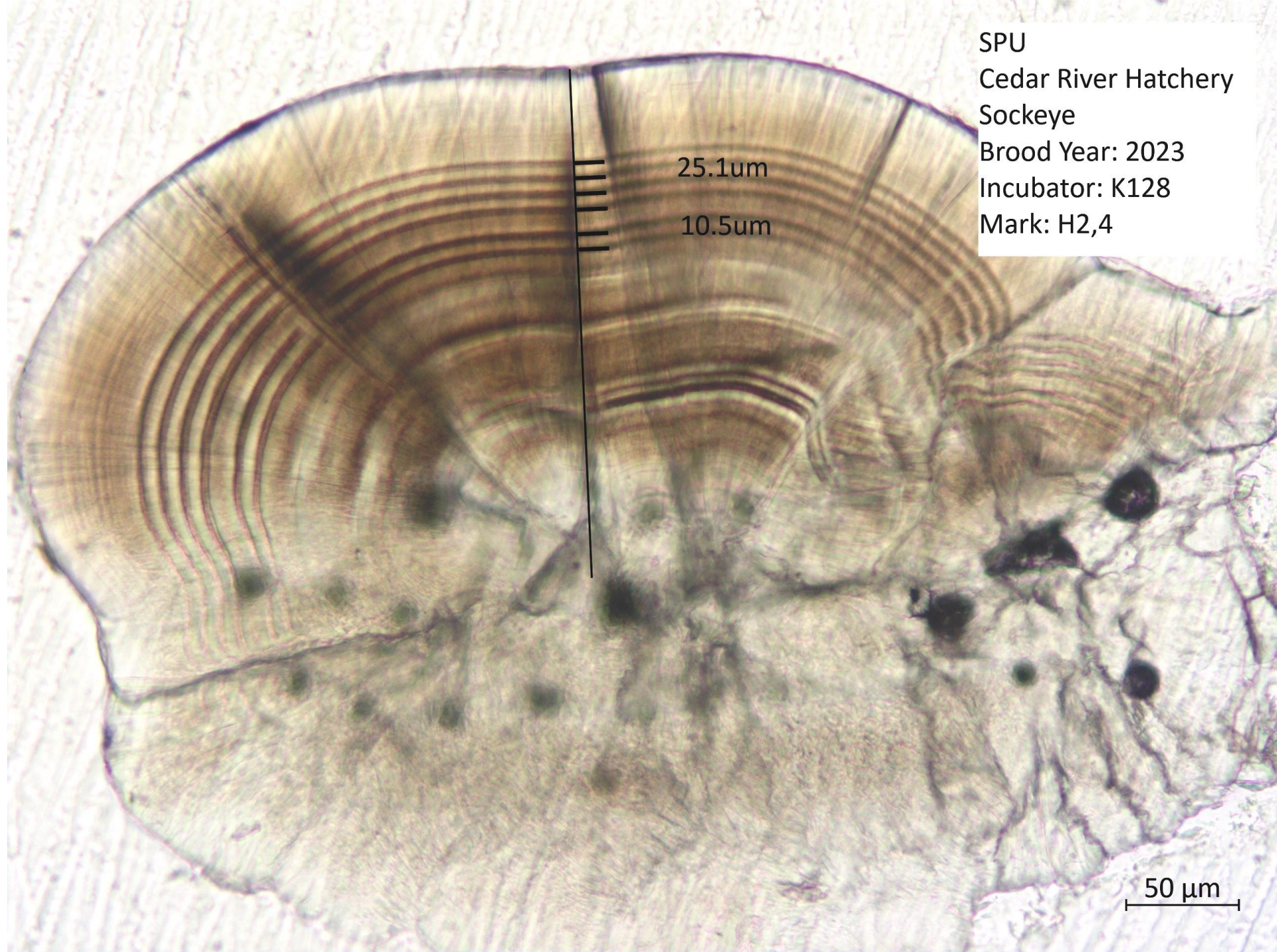
SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K127
Mark: H2,4



21.6um
11.1um

50 μm

SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K128
Mark: H2,4



25.1um

10.5um

50 μm

BAKER EXTENDED – H2,4,1

[illegible]

SPU

Cedar River Hatchery

Sockeye

Brood Year: 2023

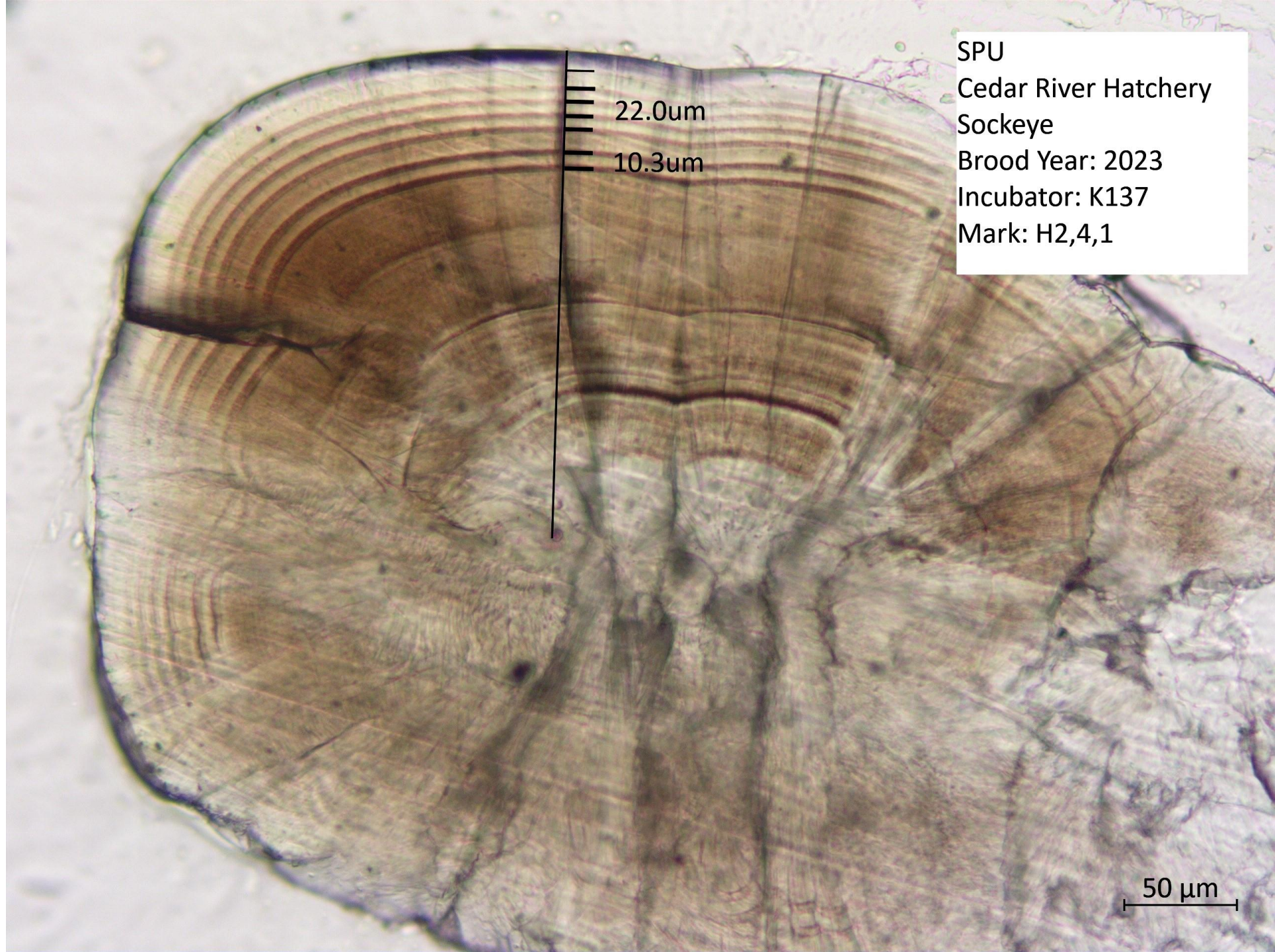
Incubator: K137

Mark: H2,4,1

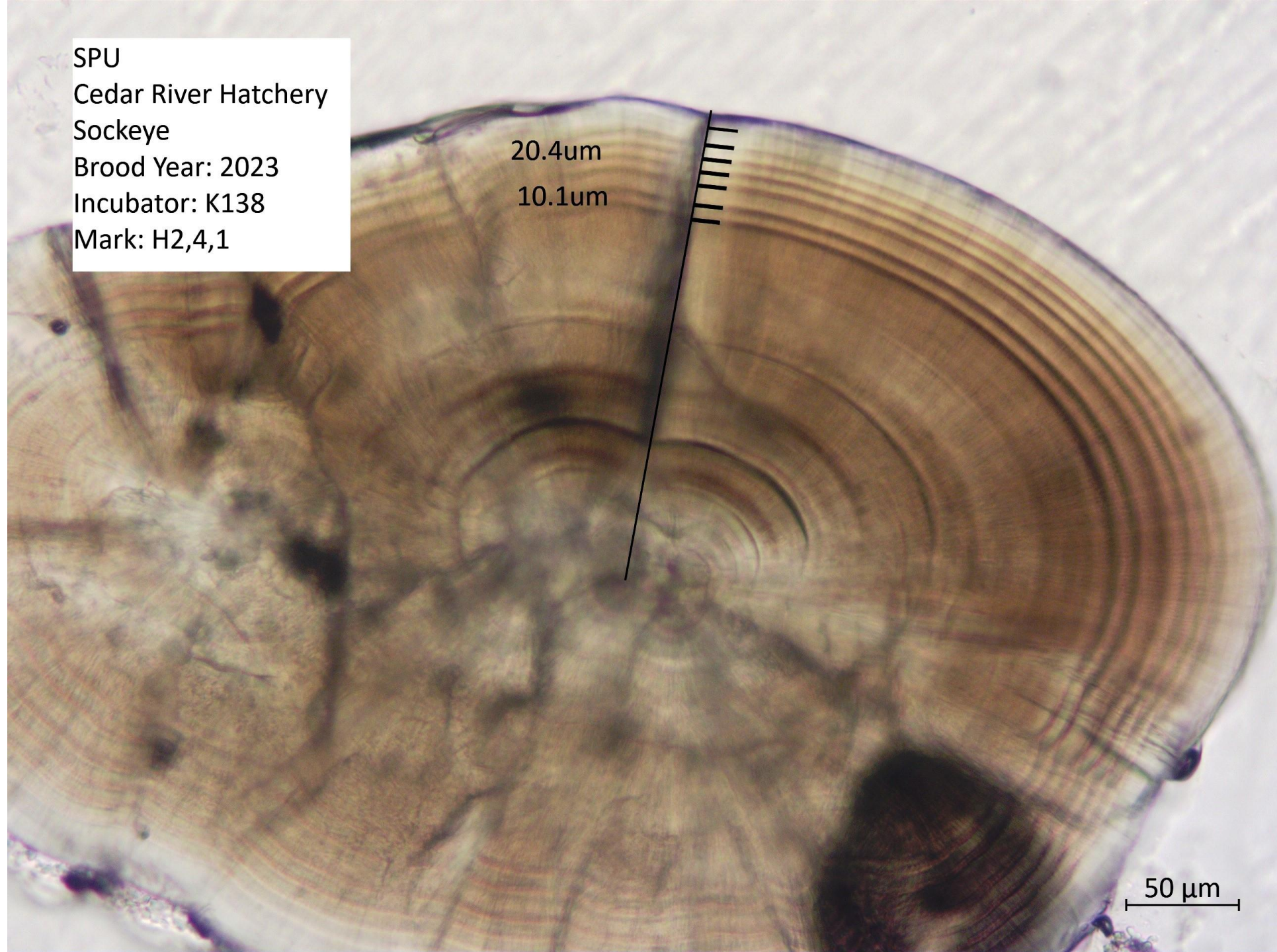
22.0um

10.3um

50 μ m



SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K138
Mark: H2,4,1



20.4um

10.1um

50 μm

VARIANT – H2,2/1

BAKER - extended rearing H2,2/1																																					
HATCH	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	

two missing rings

SPU

Cedar River Hatchery

Sockeye

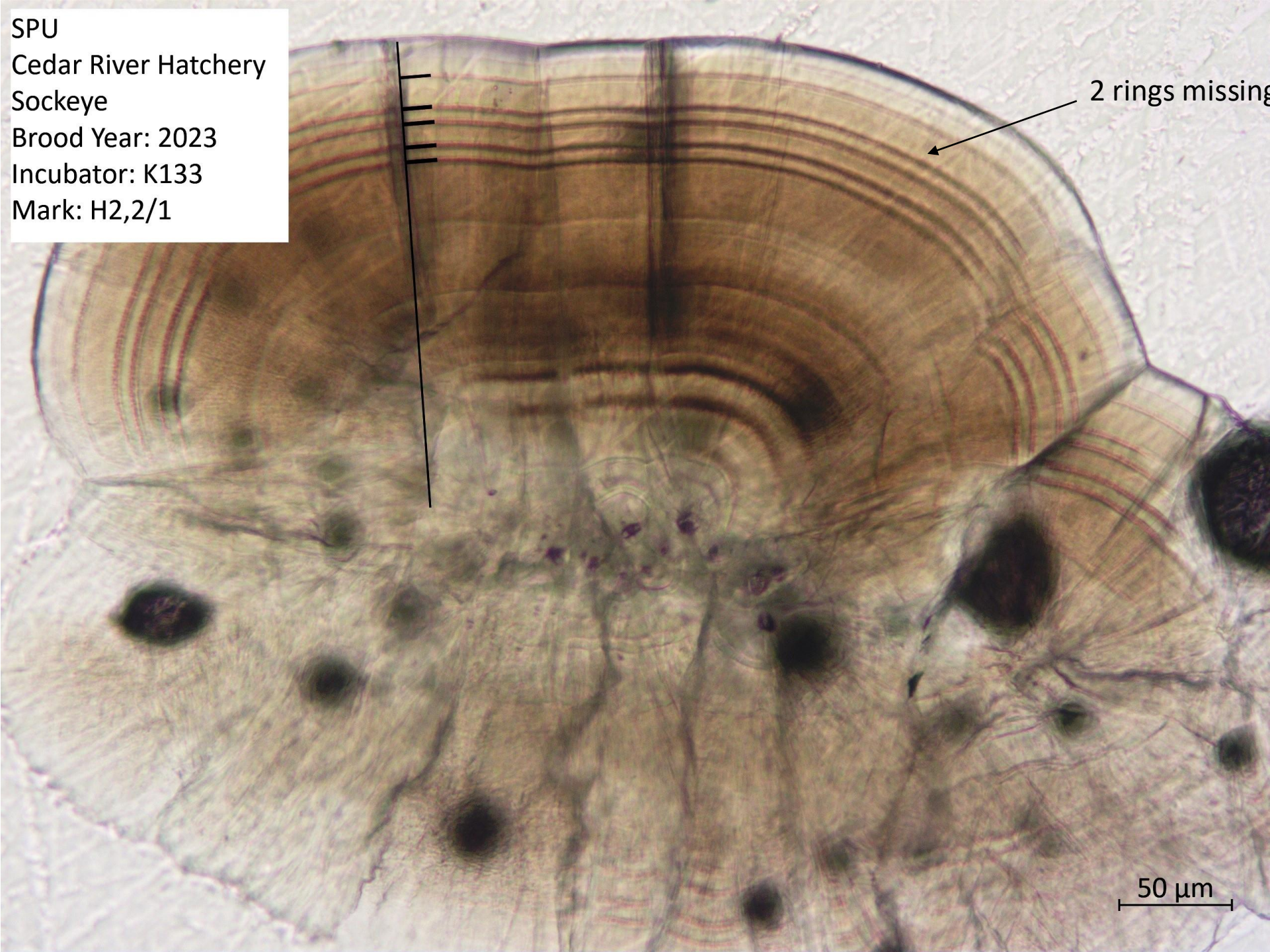
Brood Year: 2023

Incubator: K133

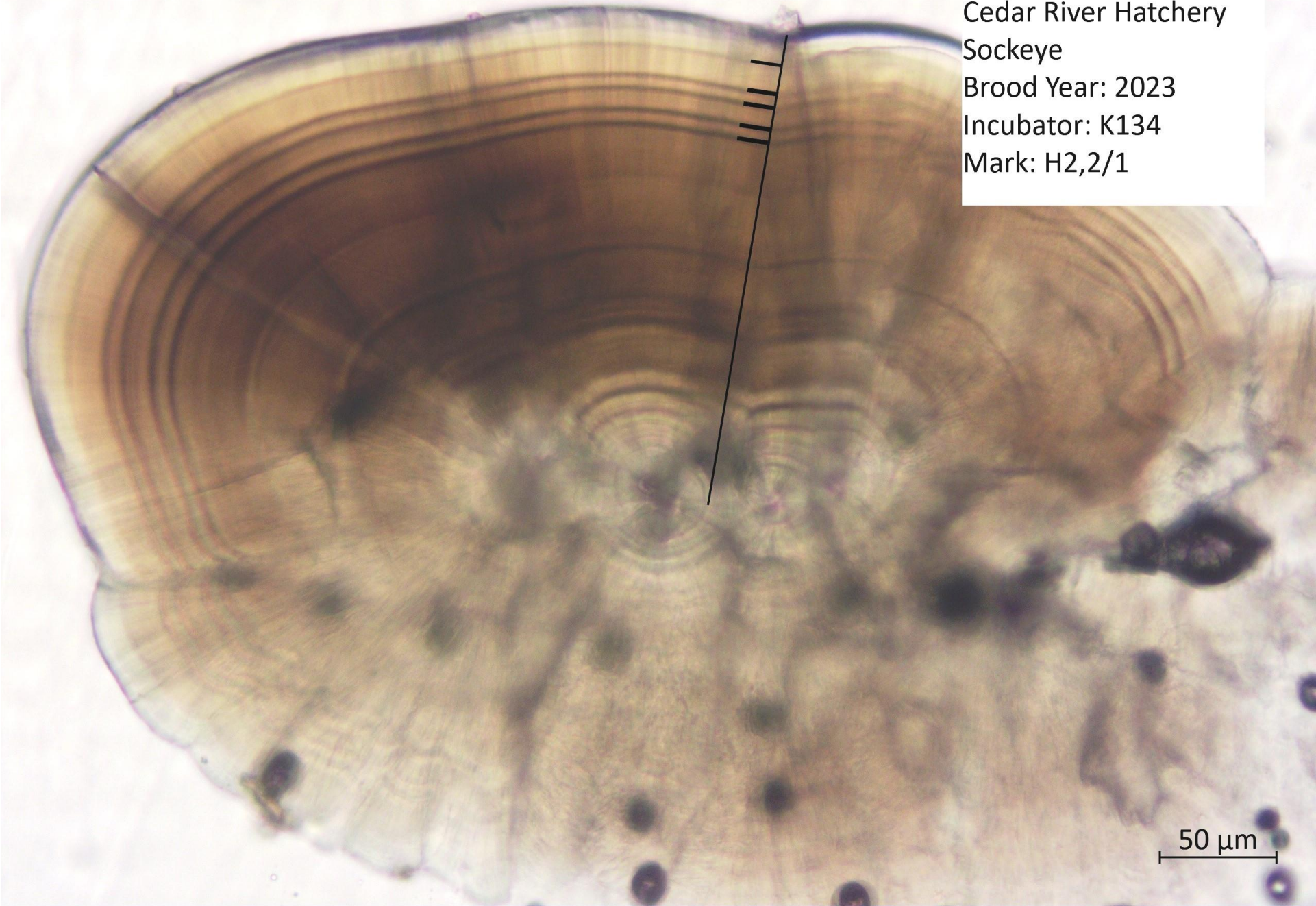
Mark: H2,2/1

2 rings missing

50 μm



SPU
Cedar River Hatchery
Sockeye
Brood Year: 2023
Incubator: K134
Mark: H2,2/1



50 μm