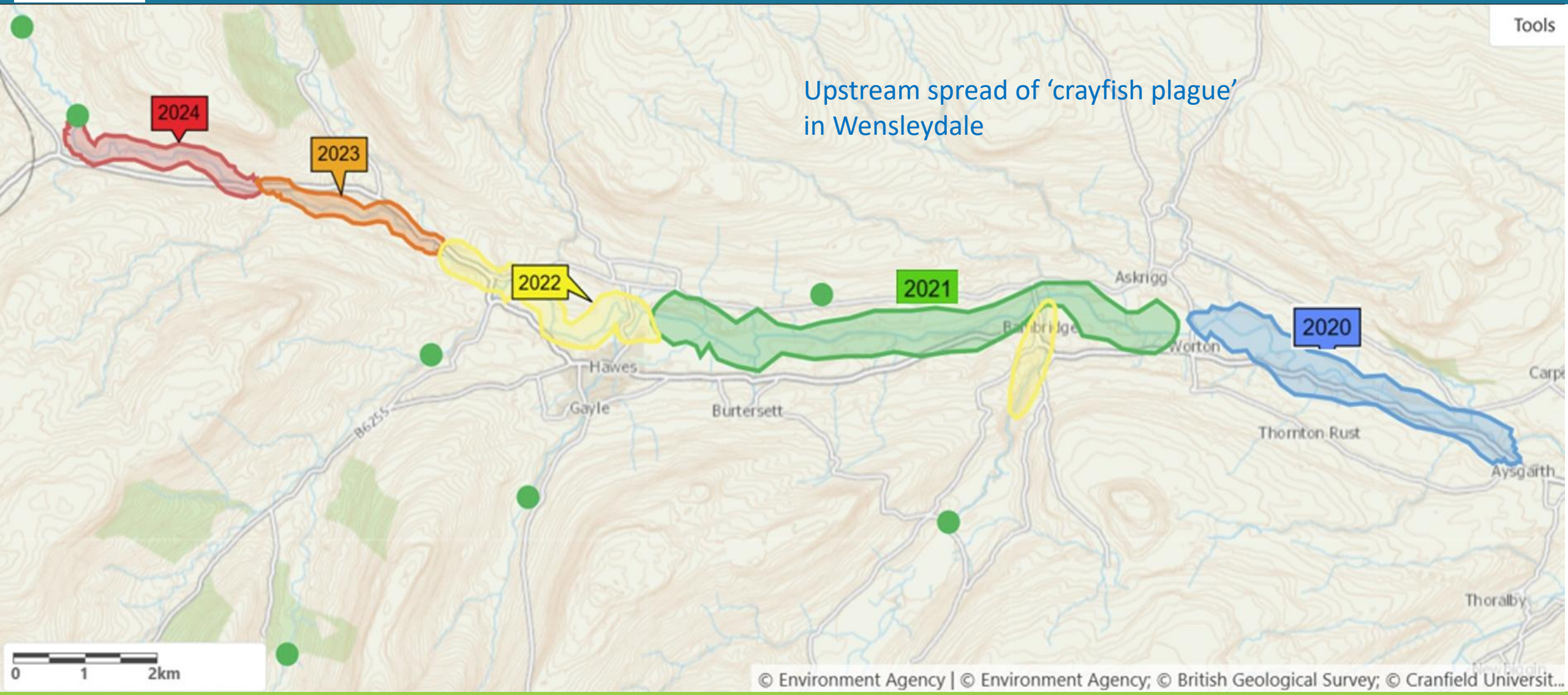
Fish and Crayfish


White-clawed crayfish


Tools
Upstream spread of ‘crayfish plague’ in Wensleydale
2024
2023
2022
2021
2020
Askrigg
Worton
Hawes
Gayle
Buttersett
Thornton Rust
Aysgarth
Thoralby
B6255
0
1
2km
© Environment Agency | © Environment Agency; © British Geological Survey; © Cranfield Universit...

Development of an eDNA-based lake fish classification tool – Collection of data from English Lakes

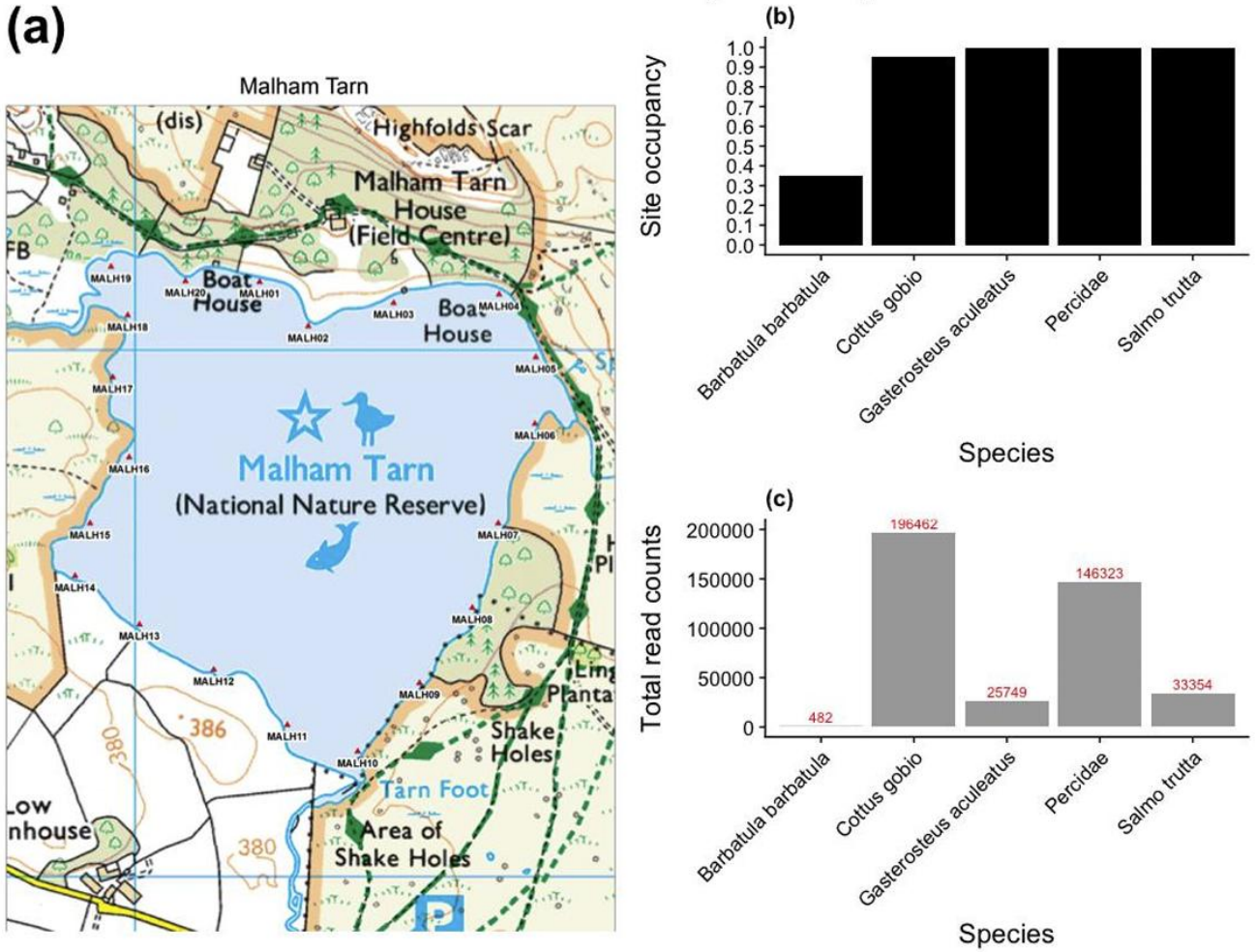
Final Report, February 2020

Project manager: Dr Bernd Hänfling

Malham Tarn



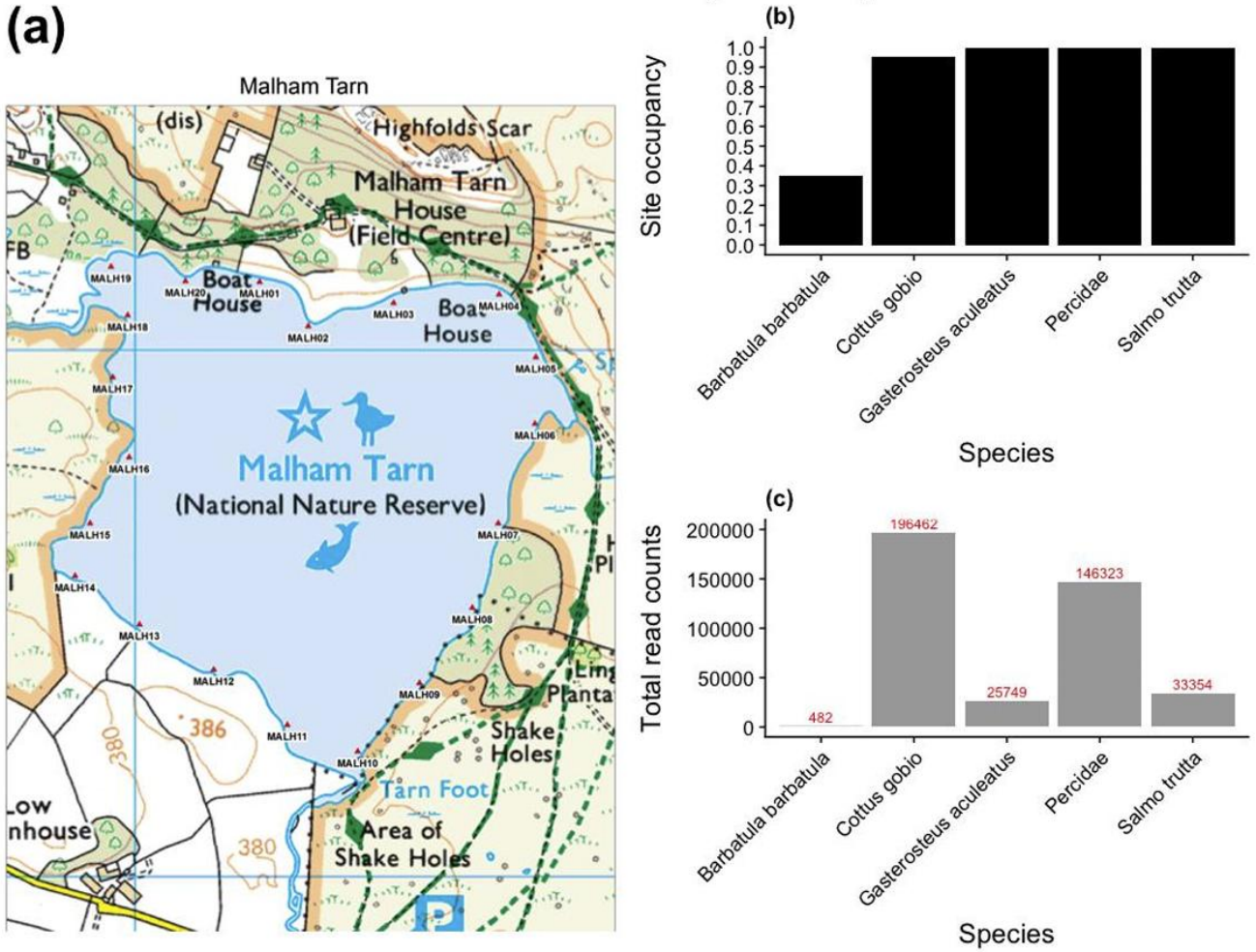
Malham Tarn (MALH)



Known fish species recorded by eDNA

1. **Bullhead** *Cottus gobio*
2. **Perch** *Percidae*
3. **Brown trout** *Salmo trutta*
4. **Three-spined stickleback** *Gasterosteus aculaetus*
5. **Stone loach** *Barbatula barbatula*

Malham Tarn (MALH)



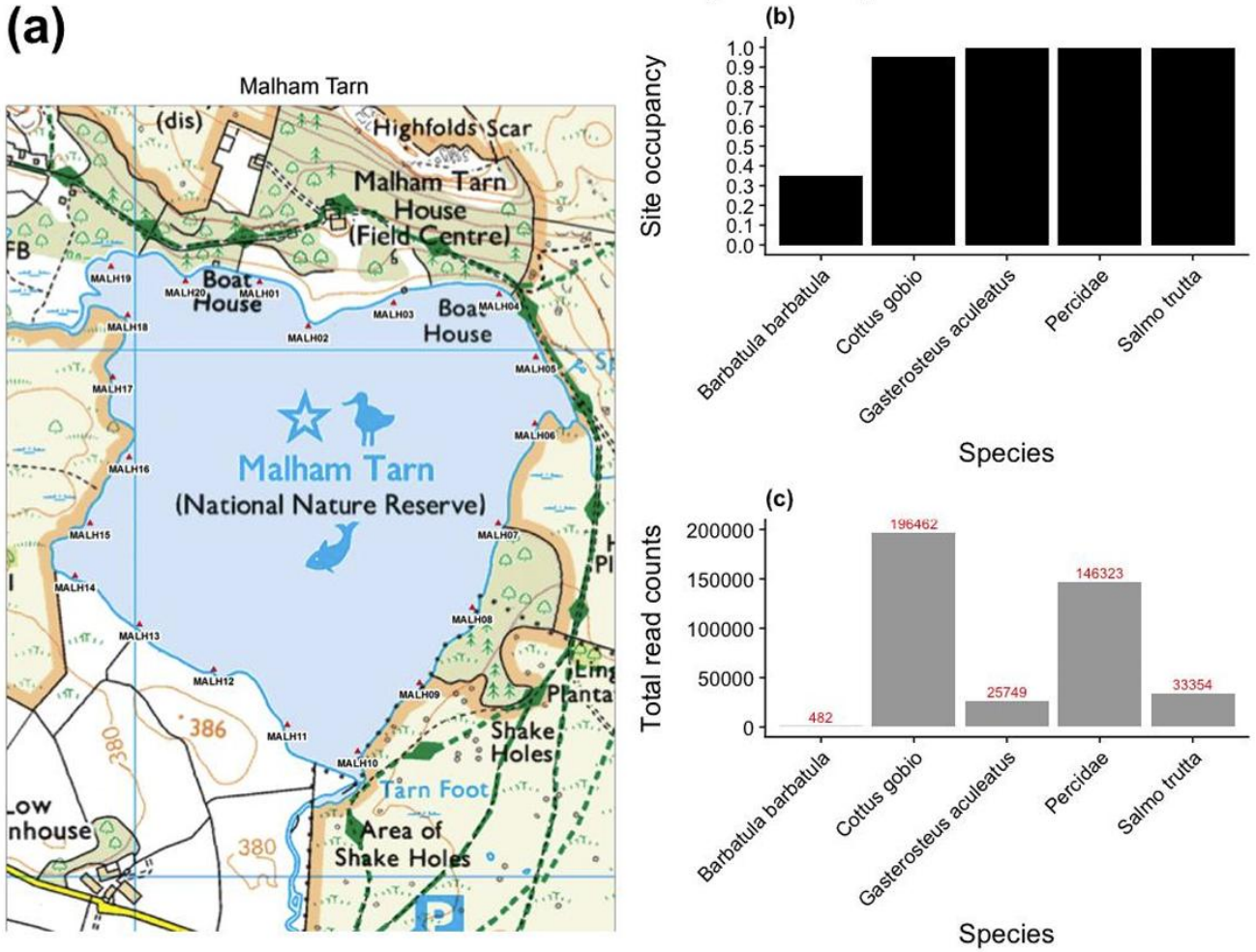
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5. **Stone loach** *Barbatula barbatula*

Unknown fish species recorded by eDNA…

- **nil**

Malham Tarn (MALH)



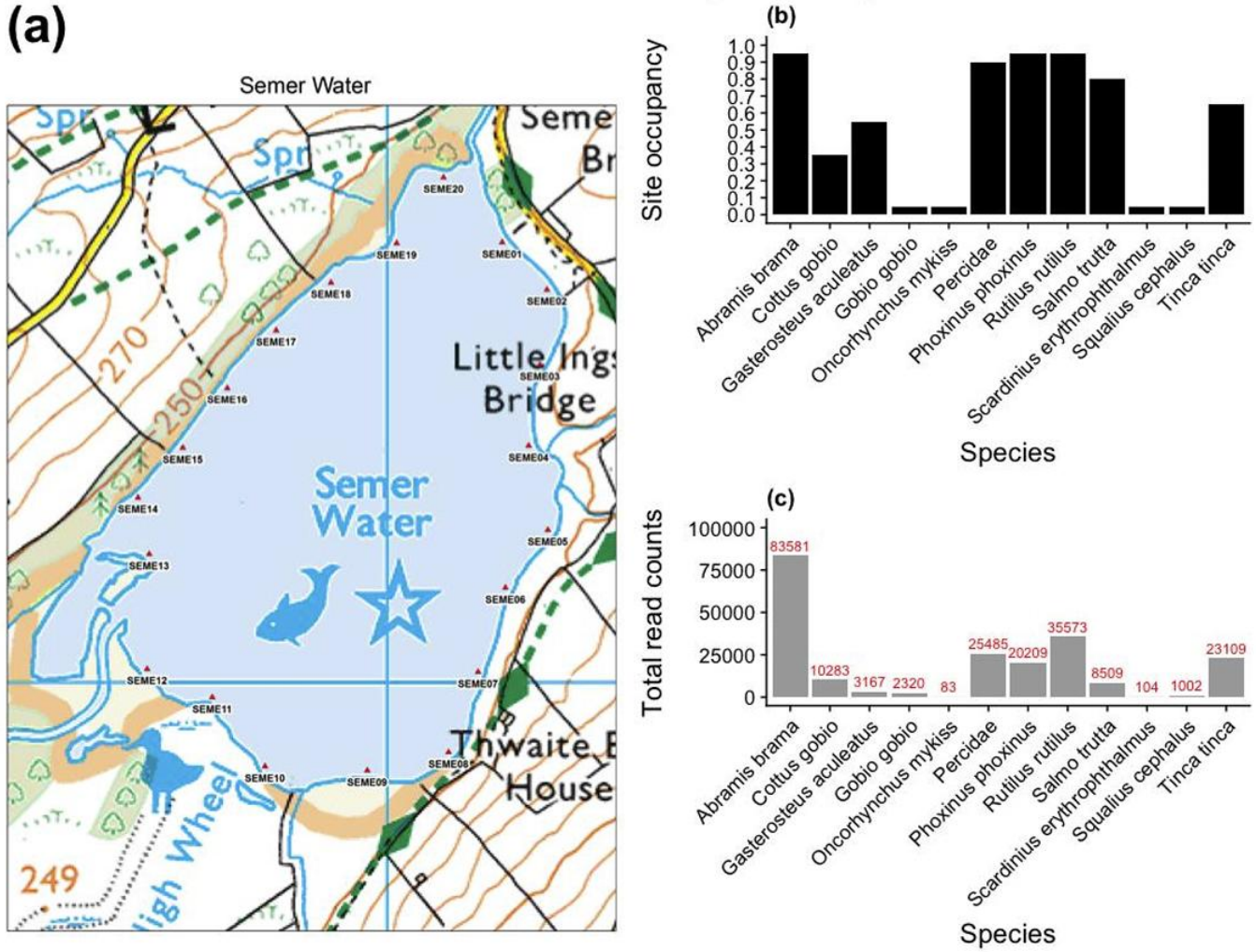
Known fish species recorded by eDNA…

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4. **Three-spined stickleback** *Gasterosteus aculaetus*
5. **Stone loach** *Barbatula barbatula*

Unknown fish species recorded by eDNA…
- nil

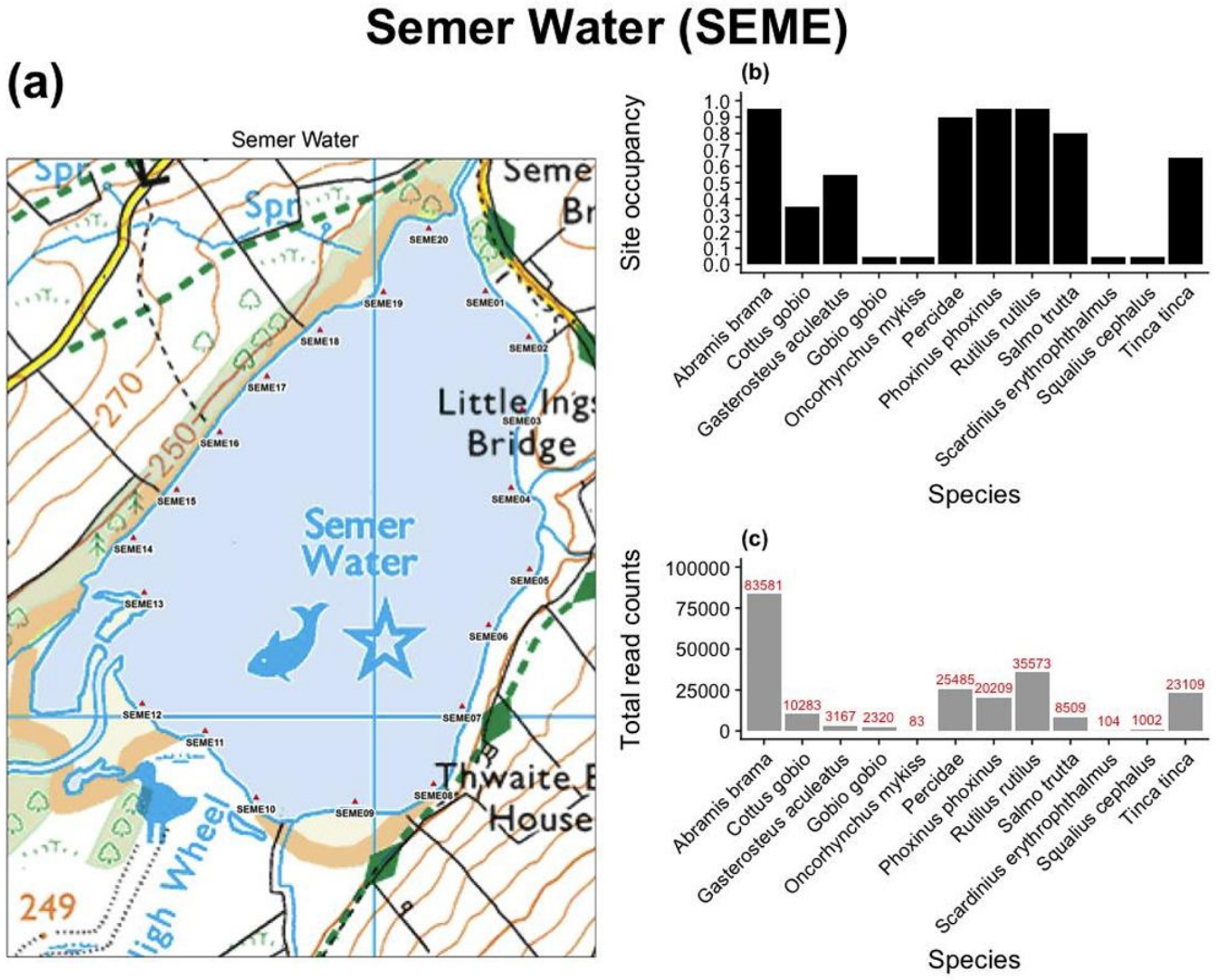
Known fish species **not recorded by eDNA…**
- nil

Semer Water (SEME)



Known fish species recorded by eDNA…

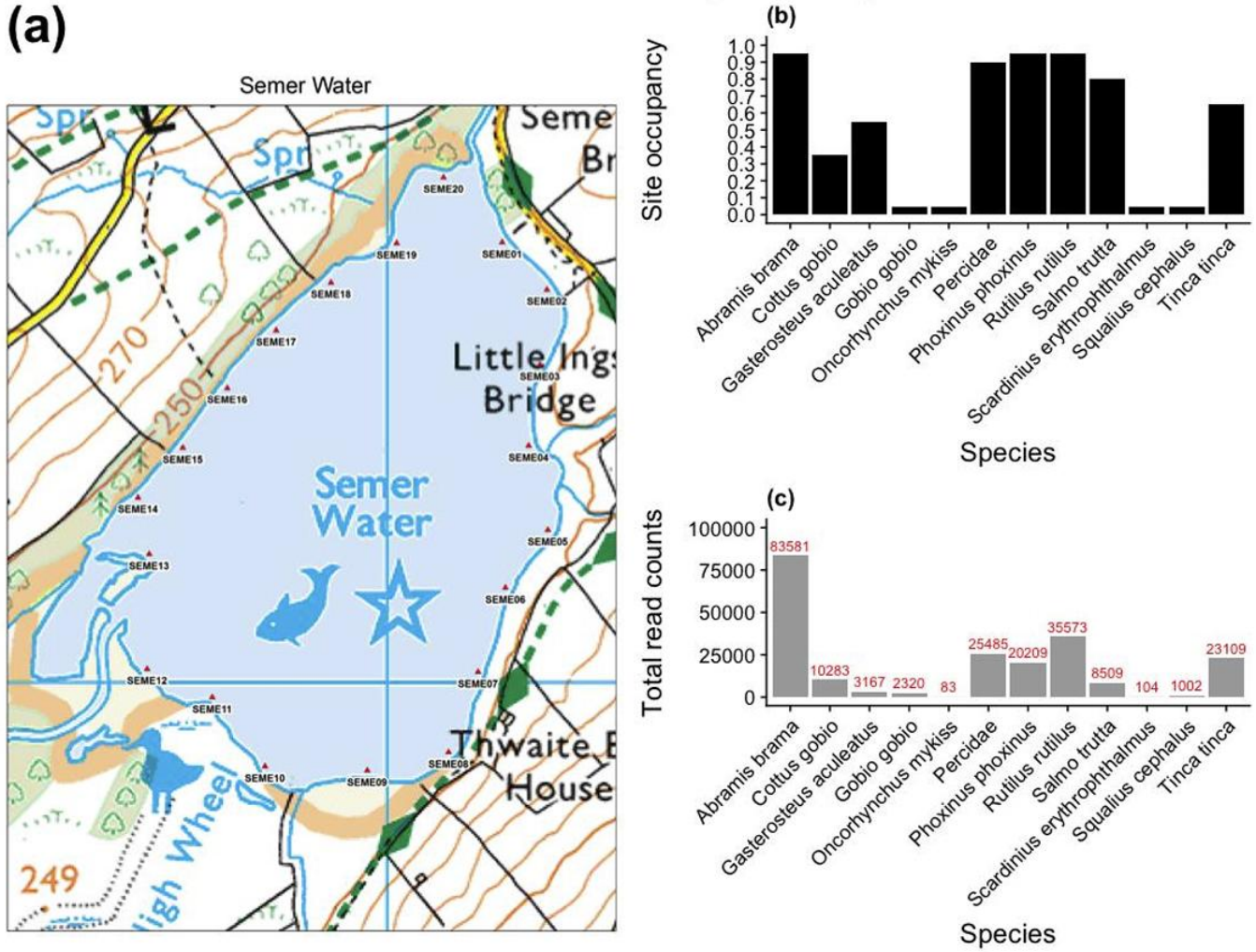
1. **Common bream** *Abramis brama*
2. **Common roach** *Rutilus rutilus*
3. **Perch** *Percidae*
4. ……
5. **Common minnow** *Phoxinus phoxinus*
6. **Bullhead** *Cottus gobio*
7. **Brown trout** *Salmo trutta*
8. **Three-spined stickleback** *Gasterosteus aculaetus*
9. ……
10. ……
11. ……
12. ……



Unknown fish species recorded by eDNA…

1. **Common bream** *Abramis brama*
2. **Common roach** *Rutilus rutilus*
3. **Perch** *Percidae*
4. **Tench** *Tinca tinca*
5. **Common minnow** *Phoxinus phoxinus*
6. **Bullhead** *Cottus gobio*
7. **Brown trout** *Salmo trutta*
8. **Three-spined stickleback** *Gasterosteus aculaetus*
9. **Gudgeon** *Gobio gobio*
10. **Chub** Squalius cephalus
11. **Rudd** *Scardinius erythrophthalmus*
12. **Rainbow trout** *Oncoryhnchus mykiss*

Semer Water (SEME)



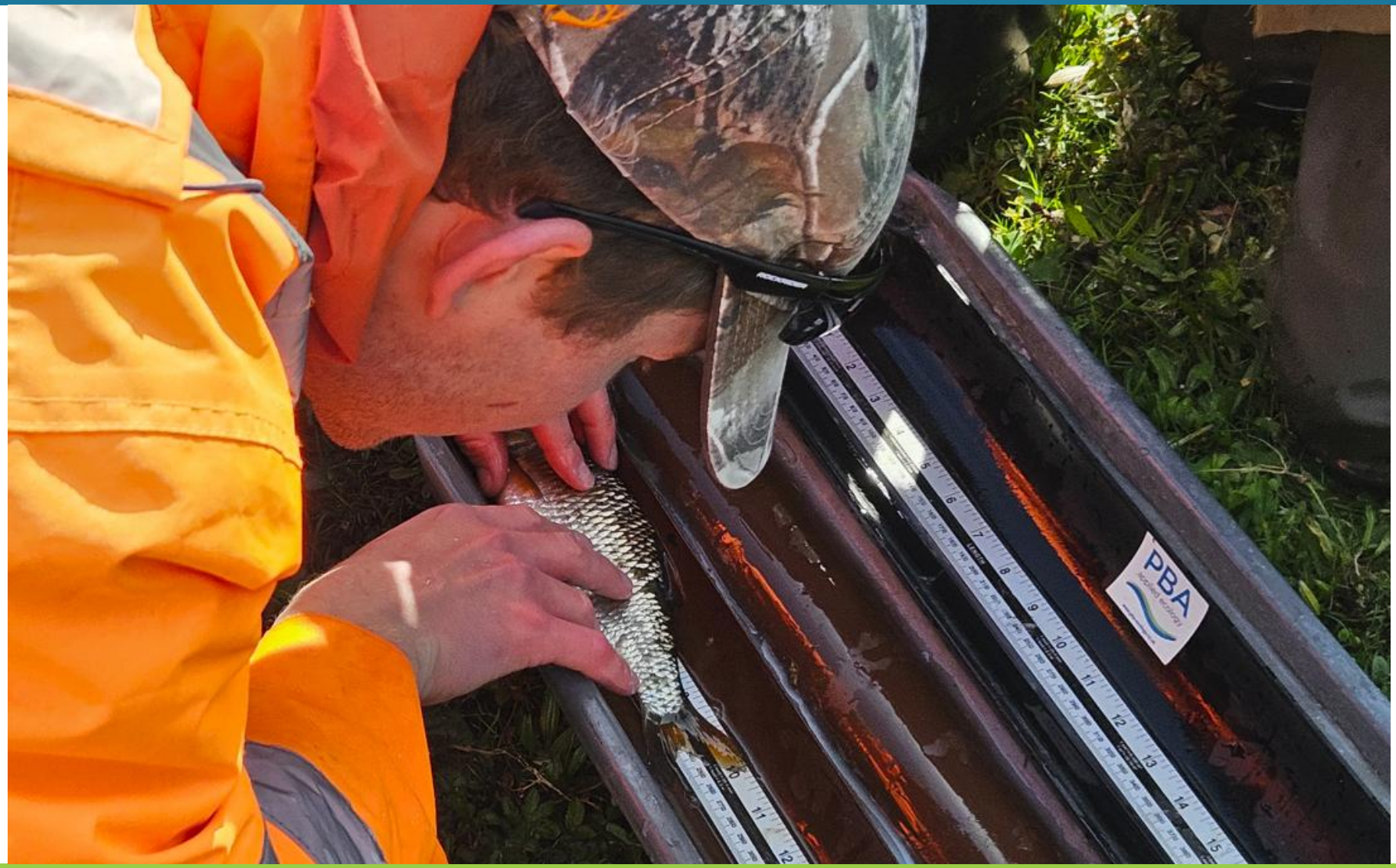
Fish species recorded by eDNA…

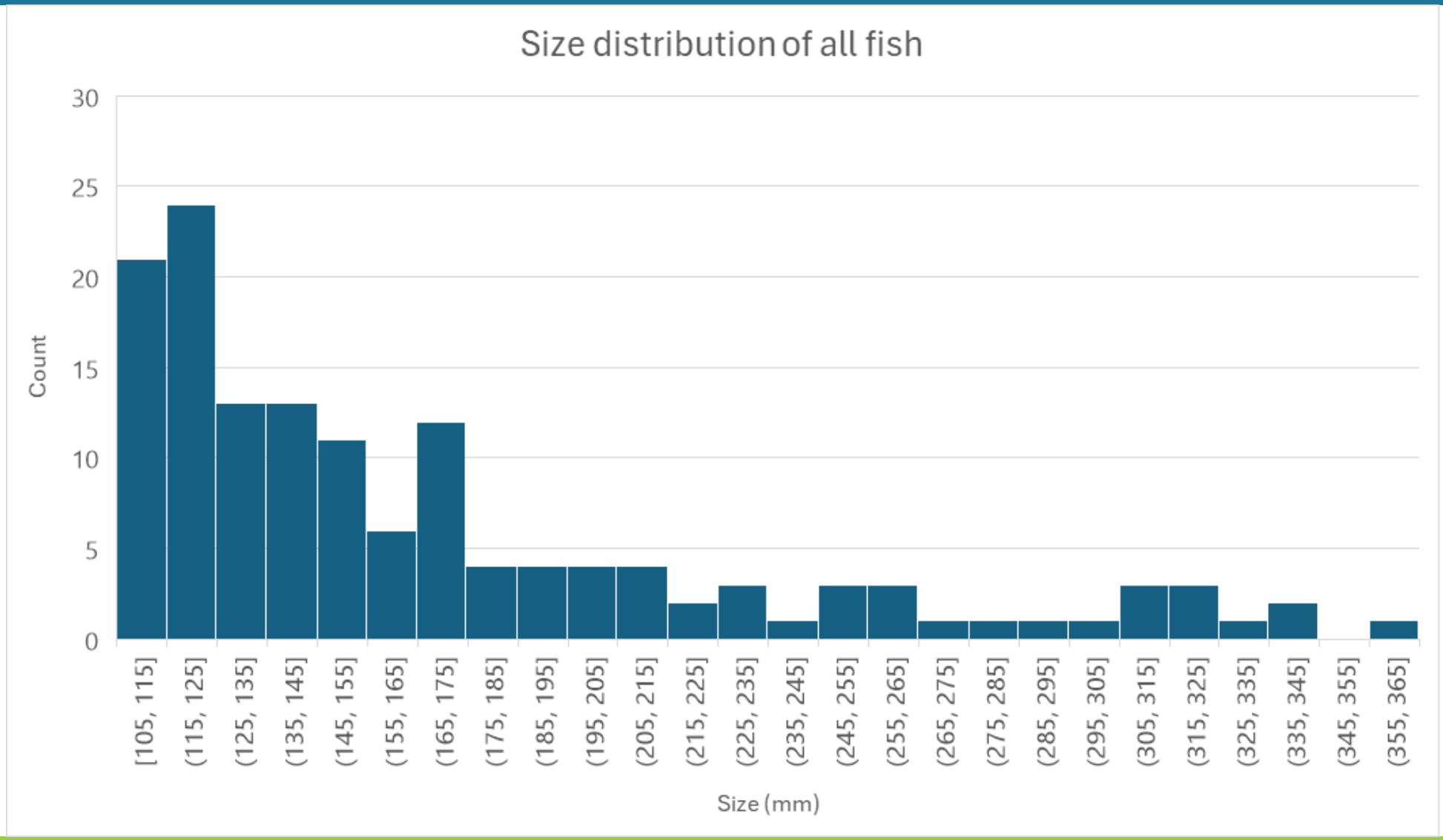
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2. **Common roach** *Rutilus rutilus*
3. **Perch** *Percidae*
4. **Tench** *Tinca tinca*
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12. **Rainbow trout** Oncoryhnchus mykiss

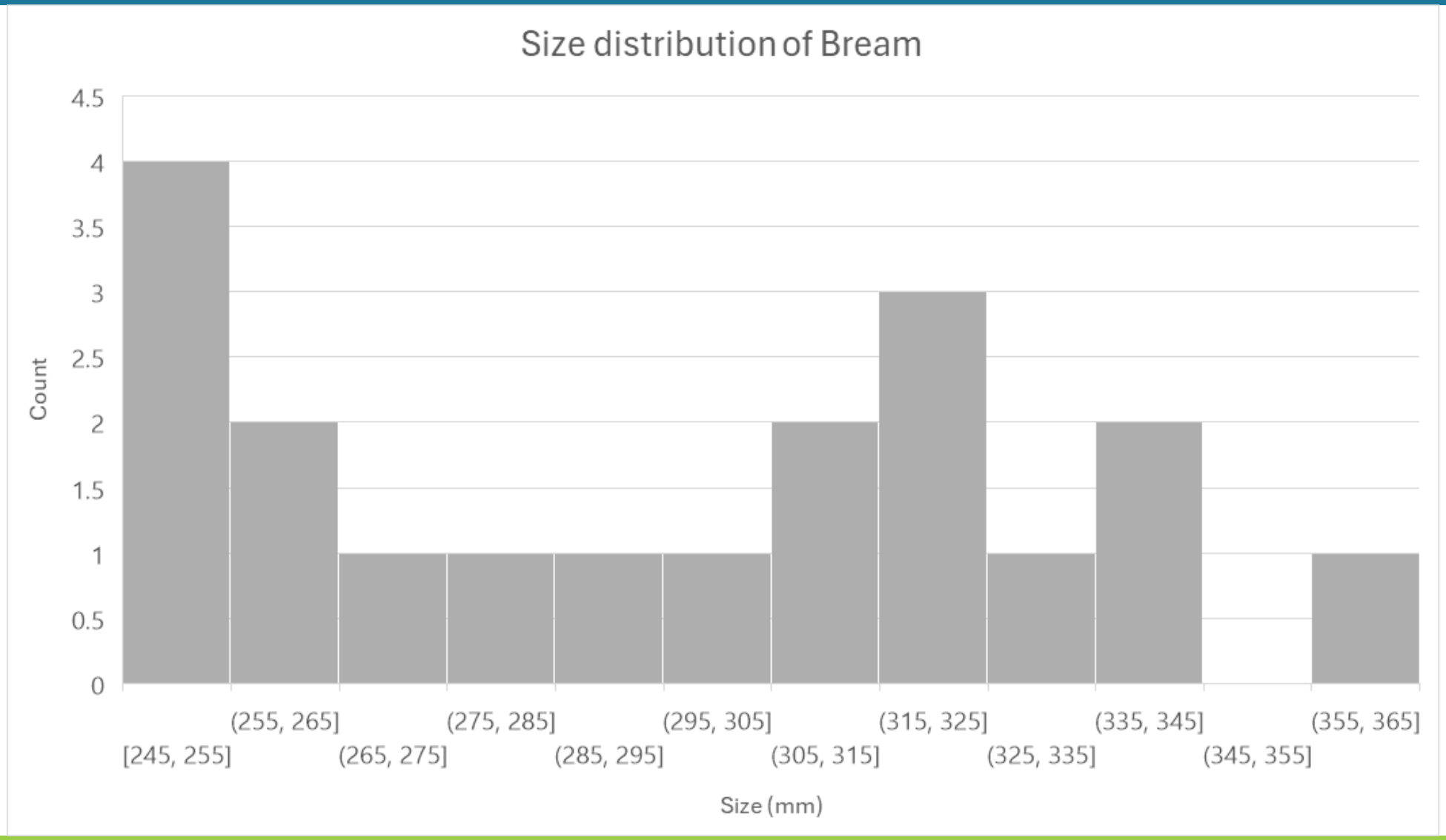
Known fish species **not recorded by eDNA**
Pike *Esox lucius*
European eel *Anguilla anguilla ??*

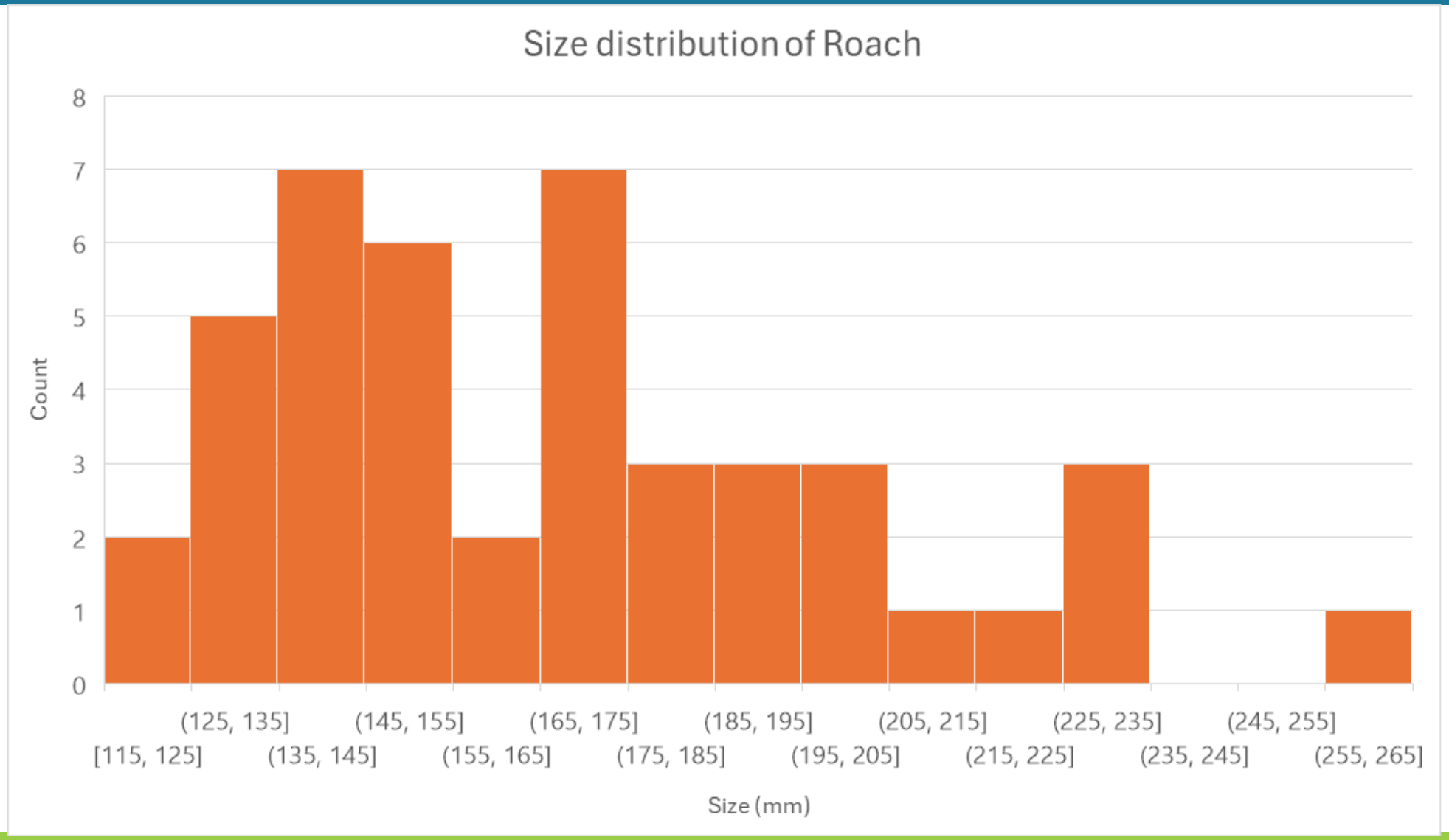


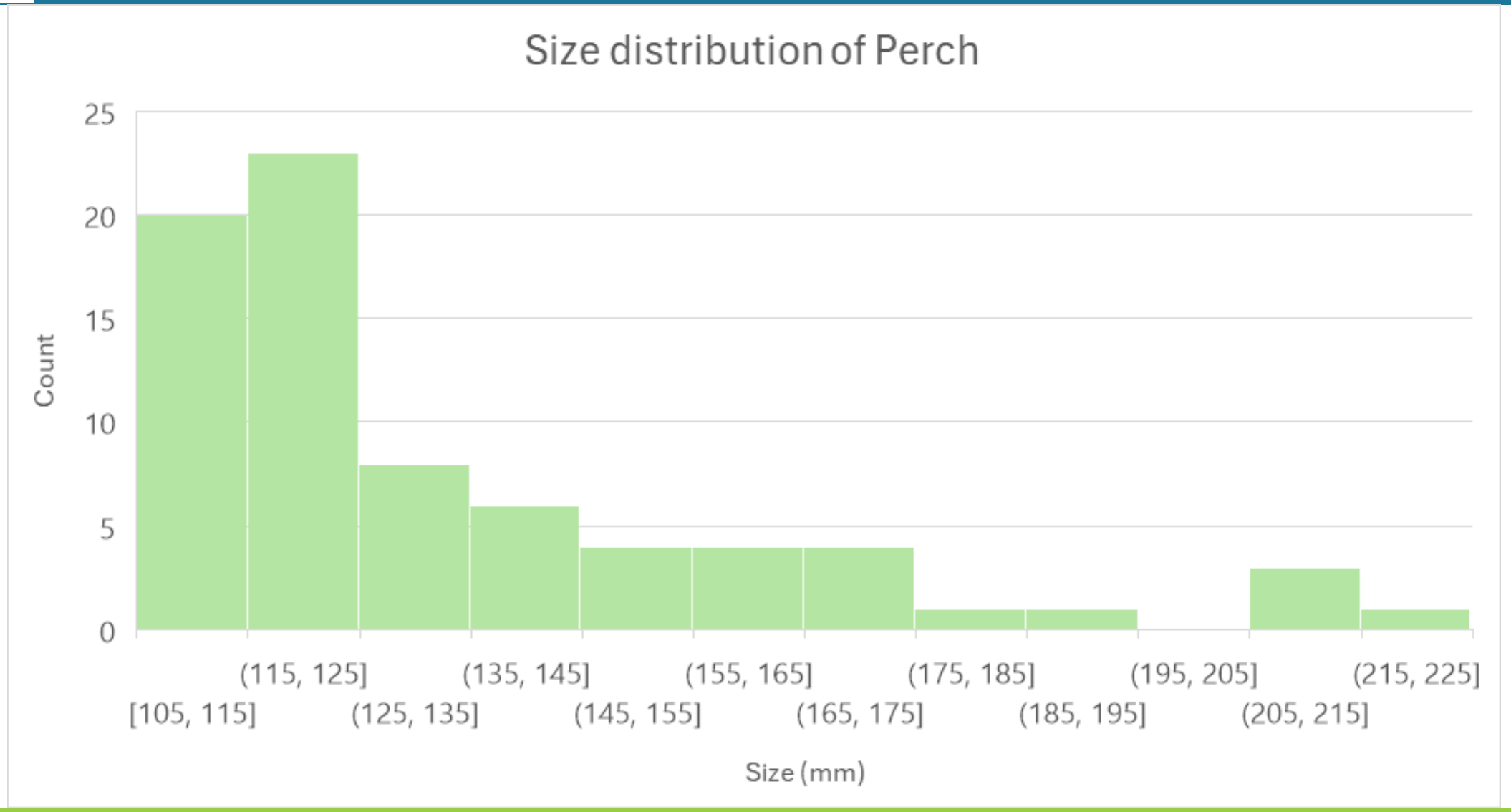

PBA
Ecology


PBA


Size distribution of all fish
Count
30
25
20
15
10
5
0
[105, 115]
(115, 125]
(125, 135]
(135, 145]
(145, 155]
(155, 165]
(165, 175]
(175, 185]
(185, 195]
(195, 205]
(205, 215]
(215, 225]
(225, 235]
(235, 245]
(245, 255]
(255, 265]
(265, 275]
(275, 285]
(285, 295]
(295, 305]
(305, 315]
(315, 325]
(325, 335]
(335, 345]
(345, 355]
(355, 365]
Size (mm)


Size distribution of Bream
Count
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
[245, 255]
(255, 265]
(265, 275]
(275, 285]
(285, 295]
(295, 305]
(305, 315]
(315, 325]
(325, 335]
(335, 345]
(345, 355]
(355, 365]
Size (mm)


Size distribution of Roach
Count
0
1
2
3
4
5
6
7
8
[115, 125]
(125, 135]
(135, 145]
(145, 155]
(155, 165]
(165, 175]
(175, 185]
(185, 195]
(195, 205]
(205, 215]
(215, 225]
(225, 235]
(235, 245]
(245, 255]
(255, 265]
Size (mm)


Size distribution of Perch
25
20
15
10
5
0
Count
[105, 115]
(115, 125]
(125, 135]
(135, 145]
(145, 155]
(155, 165]
(165, 175]
(175, 185]
(185, 195]
(195, 205]
(205, 215]
(215, 225]
Size (mm)


PBA
applied ecology

Added following the seminar – additional eDNA work & highlighting possible fish species introduction attempts

	Fish species recorded at Semer Water, PBA 2025						
		Local knowledge/fishing	eDNA Analysis				
			Ranking of read counts		Site occupancy (A=51-100%, B=11-50%, C=1-10%)		
	Source	PBA	Hänfling et al, 2020	PBA/UHI, 2025	Hänfling et al, 2020	PBA/UHI, 2025	
	Sample collection	n/a	**Feb-19**	**Nov-24**	**Feb-19**	**Nov-24**	
	Number of samples	n/a	20	10	20	10	
1	**Common bream** *Abramis brama*	Common	1	2	A	A	**Common bream**
2	**Common roach** *Rutilus rutilus*	Common	2	4	A	A	**Common roach**
3	**Perch** *Percidae*	Common	3	6	A	B	**Perch**
4	**Tench** *Tinca tinca*	not known	4	-	A	-	**Tench**
5	**Common minnow** *Phoxinus phoxinus*	Known	5	3	A	A	**Common minnow**
6	**Bullhead** *Cottus gobio*	Known	6	1	B	A	**Bullhead**
7	**Brown trout** *Salmo trutta*	Known (historic?)	7	5	A	A	**Brown trout**
8	**Three-spined stickleback** *Gasterosteus aculaetus*	Known	8	7	A	C	**Three-spined stickleback**
9	**Gudgeon** *Gobio gobio*	not known	9	-	C	-	**Gudgeon**
10	**Chub** *Squalius cephalus*	not known	10	-	C	-	**Chub**
11	**Rudd** *Scardinius erythrophthalmus*	not known	11	-	C	-	**Rudd**
12	**Rainbow trout** *Oncoryhnchus mykiss*	not known	12	-	C	-	**Rainbow trout**
13	**Pike** *Esox lucius*	Frequent	-	9 *	-	B *	**Pike**
14	**European eel** *Anguilla anguilla*	Known (historic?)	-	-	-	-	**European eel**
15	**Stone loach** *Barbatula barbatula*	Known (historic?)	-	8 *	-	B *	**Stone loach**
	Number of fish species recorded	10?	12	9	12	9	
	* low frequency eDNA results extracted from raw sequence data, these two species not included in 2025 UHI report.						