# Rotenone distribution and degradation, following eradication of invasive roach (Rutilus rutilus).

**Roar Sandodden, Helge Bardal and Svein Aune**
**Norwegian Veterinary Institute**

Veterinærinstituttet
*National Veterinary Institute*

# Introduction

- Roach native to southeastern parts – alien to middle parts of Norway
- Great potential to alter ecosystems following introduction

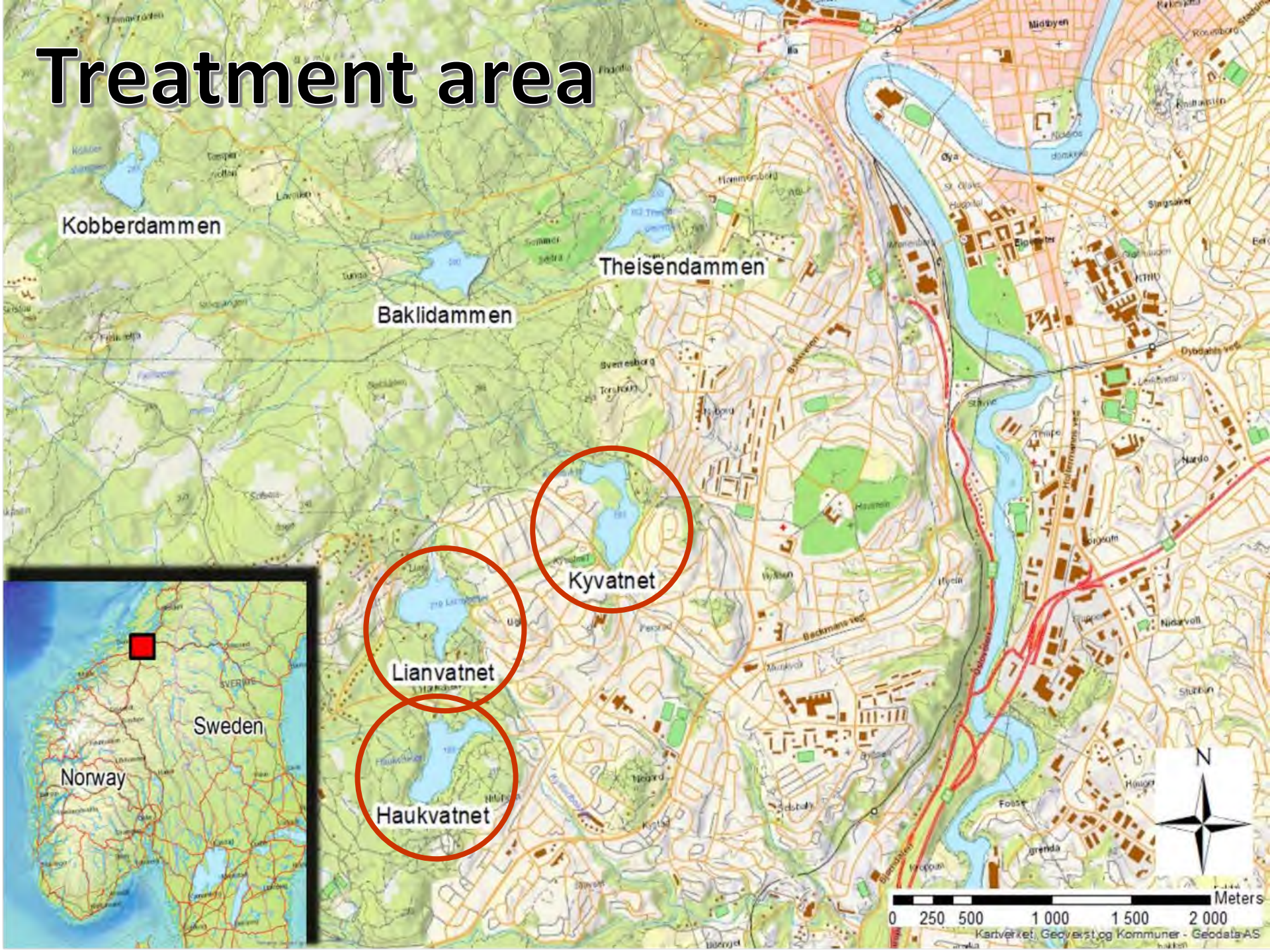
- Risk of spread to the city of Trondheims potable water source
- Potential to remove the roach from middle Norway

# CFT-Legumine (rotenone)

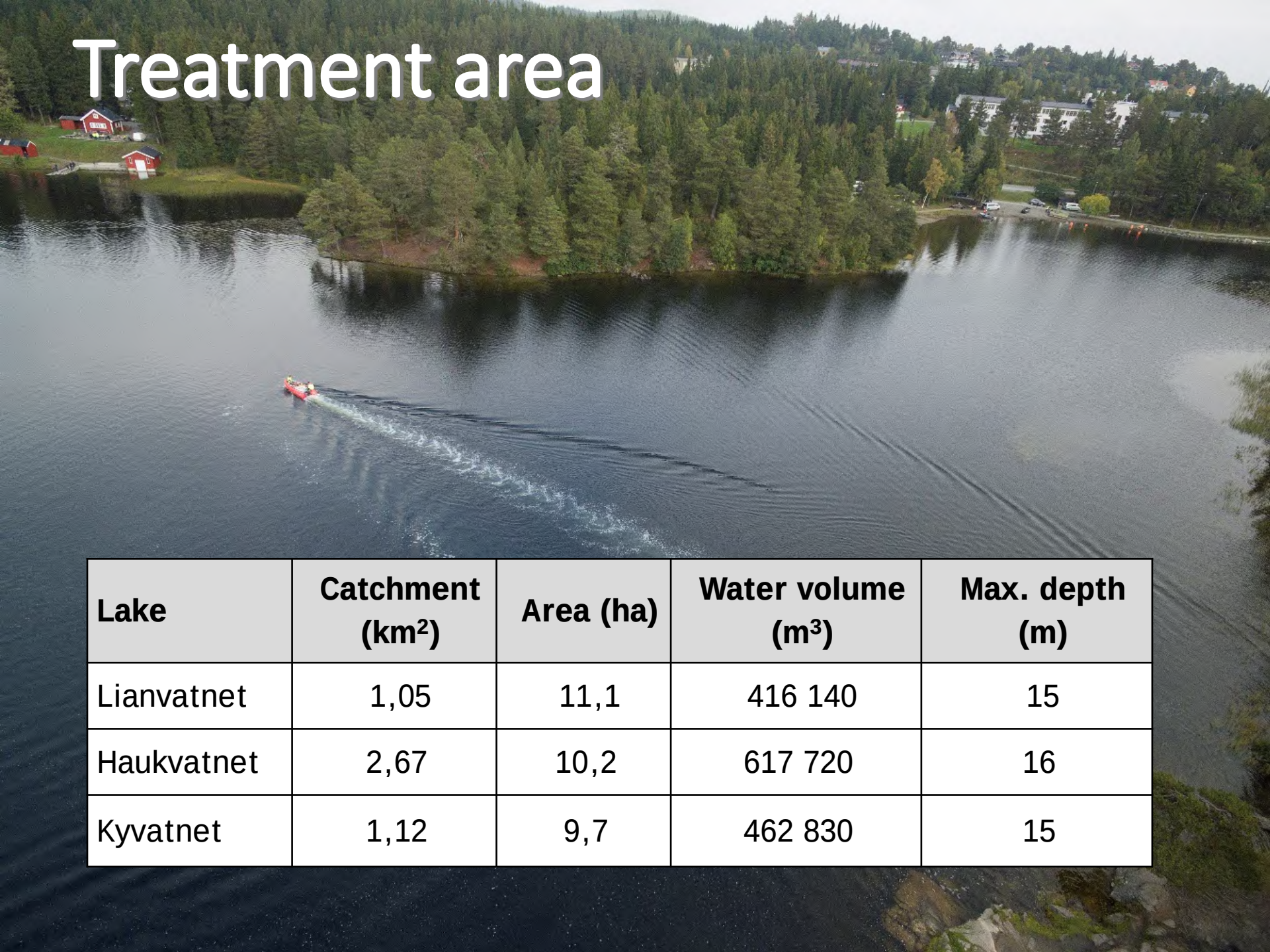
- Controversial, but mostly supported
- Environmental surveys
- Short and long-term
- Most introductions are permanent
- Alien species is the problem. Rotenone is the solution

Veterinærinstituttet
Norwegian Veterinary Institute

# Treatment area



# Treatment area



| Lake | Catchment ($km^2$) | Area (ha) | Water volume ($m^3$) | Max. depth (m) |
|---|---|---|---|---|
| Lianvatnet | 1,05 | 11,1 | 416 140 | 15 |
| Haukvatnet | 2,67 | 10,2 | 617 720 | 16 |
| Kyvatnet | 1,12 | 9,7 | 462 830 | 15 |

# Water chemistry

| | August 2017 | | | | | | |
|---|---|---|---|---|---|---|---|
| **Lake** | **Phosphorus** | **Nitrogen** | **Calsium** | **Colour** | **pH** | **Turbidity** | **Transparency** |
| | **µg P/l** | **µg N/l** | **mg Ca/l** | **mg Pt/l** | **pH** | **FTU** | **m** |
| Lianvatnet | 6,6 | 230 | 21,9 | 27 | 7,8 | 0,7 | 4,7 |
| Haukvatnet | 5,0 | 190 | 22,2 | 25 | 7,8 | 0,7 | 4,5 |
| Kyvatnet | 8,1 | 300 | 27,0 | 35 | 7,8 | 1,1 | 3,3 |

# Rotenone application

| Lake | Dosage | CFT-Legumine (L) |
|---|---|---|
| **Lianvatnet** | Below surface (6 m) | 80 |
| | Surface | 400 |
| | Lake banks | 80 |
| | Tributaries | 3,5 |
| | **SUM** | **563,5** |
| **Haukvatnet** | Below surface (6 m) | 240 |
| | Surface | 600 |
| | Lake banks | 40 |
| | Tributaries | 3 |
| | **SUM** | **883** |
| **Kyvatnet** | Below surface (6 m) | 140 |
| | Surface | 482 |
| | Lake banks | 30 |
| | Tributaries | 6 |
| | **SUM** | **658** |

# Boat mounted pumps - surface

Veterinærinstituttet
Norwegian Veterinary Institute

# Boat mounted pumps – banks

Veterinærinstituttet
Norwegian Veterinary Institute

# Boat mounted pumps
# - long application hose

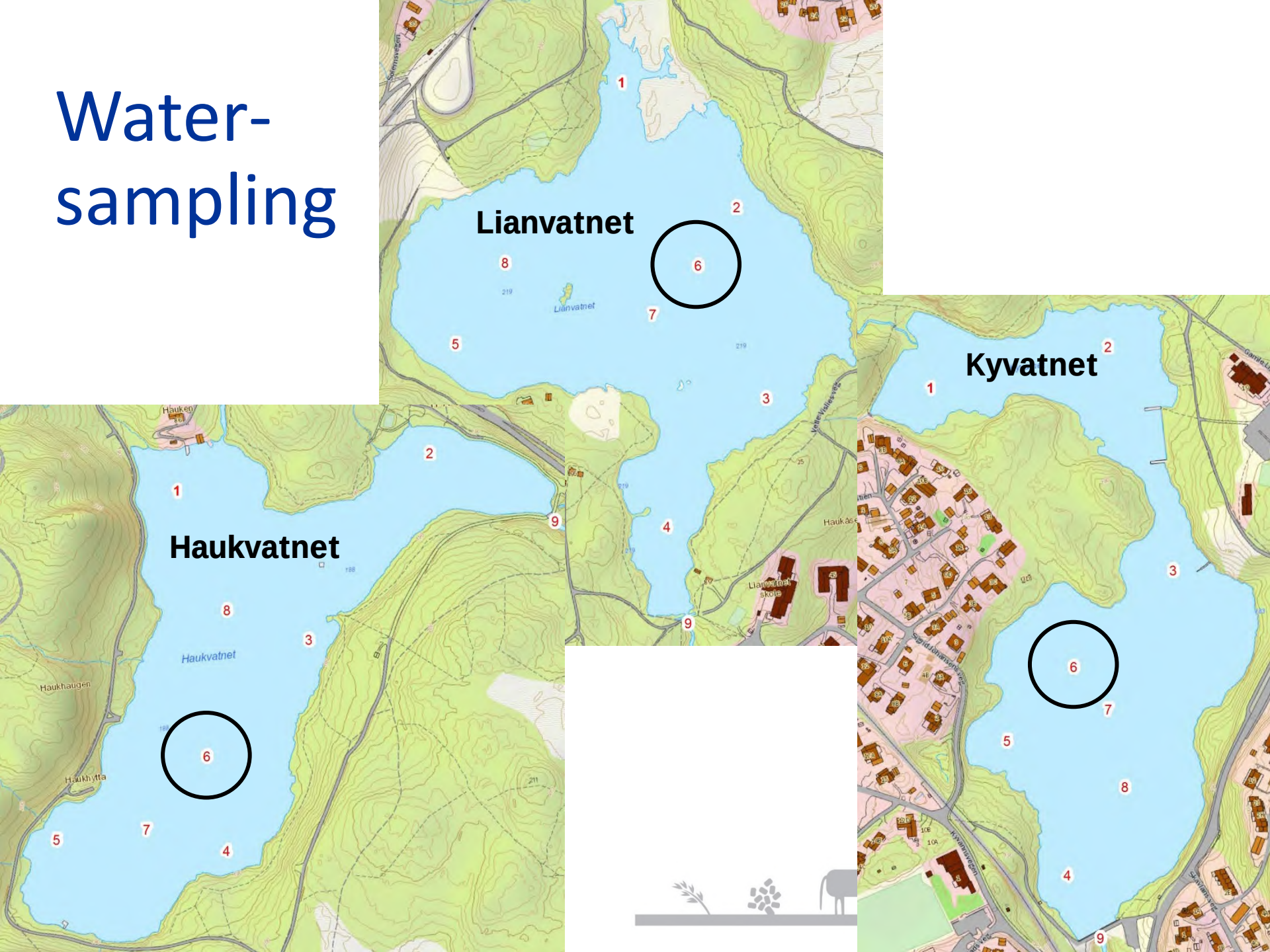
# Boat mounted pumps - in the deep

Veterinærinstituttet
Norwegian Veterinary Institute

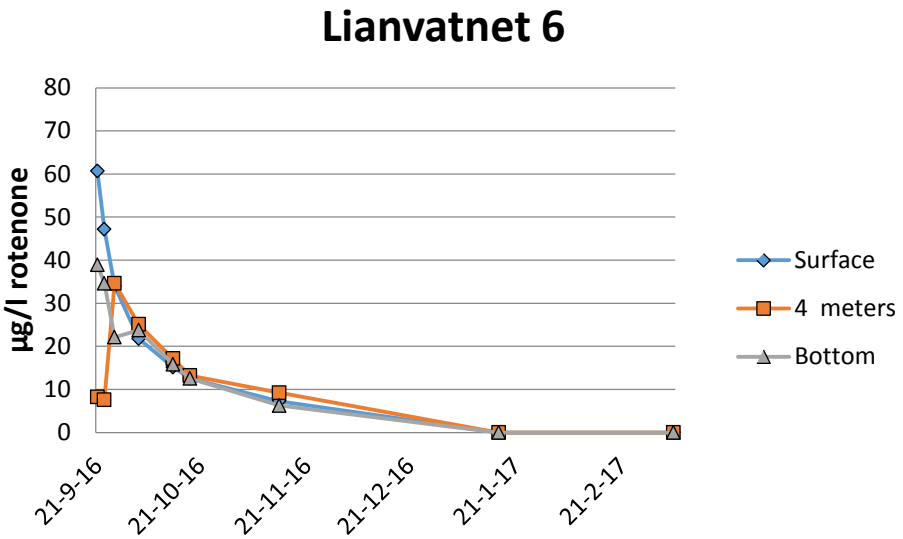
# Drip stations and watering cans

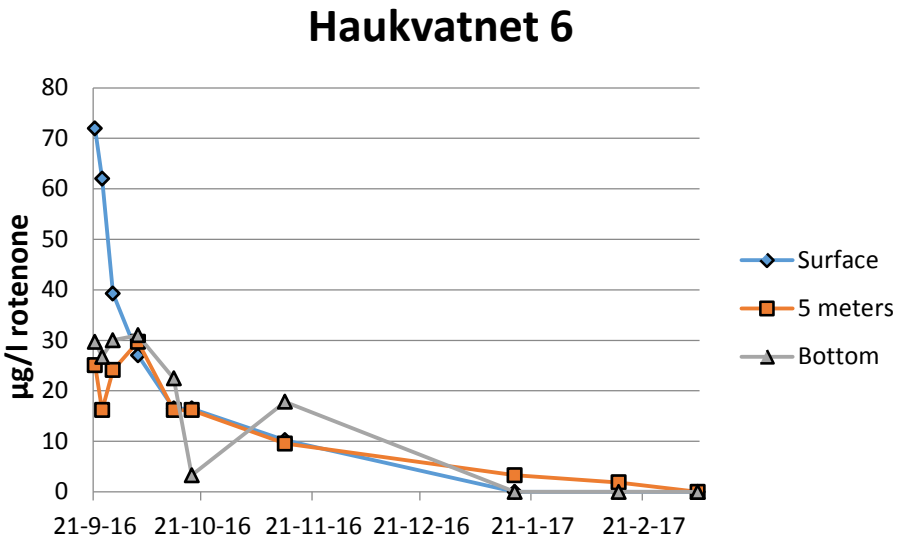
Foto: Dag Karlsen

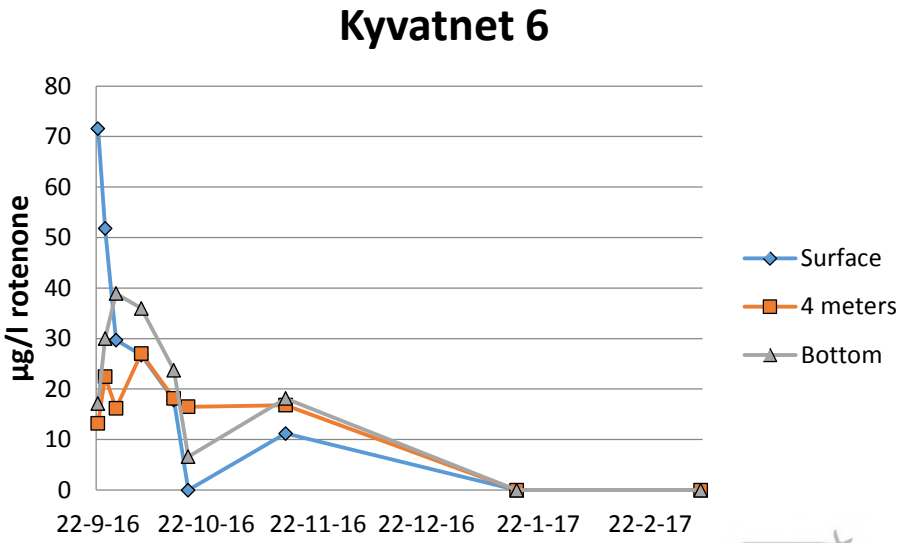
# Water-sampling



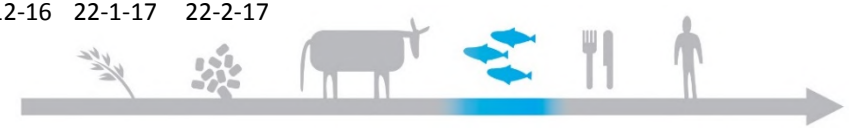
# Results




Veterinærinstituttet
Norwegian Veterinary Institute



# Discussion

- Dilution and degradation
- Bioavailability of rotenone is reduced as a result of strong adsorption to sediments, plants, and particulate matter in treated waters.
- Light and temperature
- Turnover

Thank you for your attention!