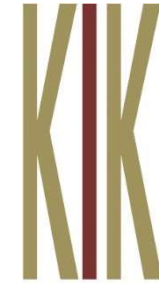




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Veevõõrlike leviku ennetamine ja praktiline tõrje

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Veterinærinstituttet
Norwegian Veterinary Institute



Ajakava

10.00 – 11.30 Võõrvähiliikide eristamise tunnused, levik ja selle ennetamine, ohud ning tõrjemeetodid, eDNA metoodika põhimõtted võõrvähkide tuvastamisel

11.30 – 12.30 Lõuna

12.30 – 14.00 Väikese vesikatku eristamise tunnused, levik ja selle ennetamine, ohud ning tõrjemeetodid

II osa: praktiline koolitus (4 ak t) toimub 2022 a. augusti teises pooles, täpsem aeg ja koht lepitakse kokku jooksvalt.

- 22.10.2014 võeti vastu EL määrus nr 1143/2014 looduslikku tasakaalu ohustavate võõrliikide sissetoomise ja levimise ennetamise ning ohjamise kohta
- Nimekirjas 5 Põhja-Ameerika päritolu vähiliiki

Signaalvähk

Pacifastacus leniusculus



Marmorvähk

Procambarus virginalis



Ogasõrgvähk

Orconctes virilis



Punane soovähk

Procambarus clarkii



Ogapõskne vähk

Faxonius limosus



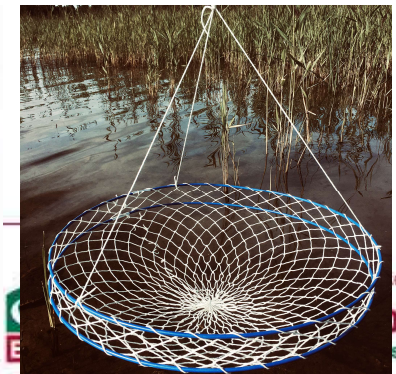
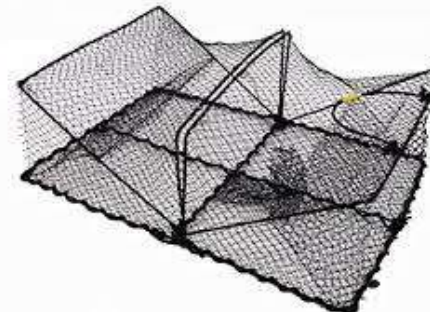
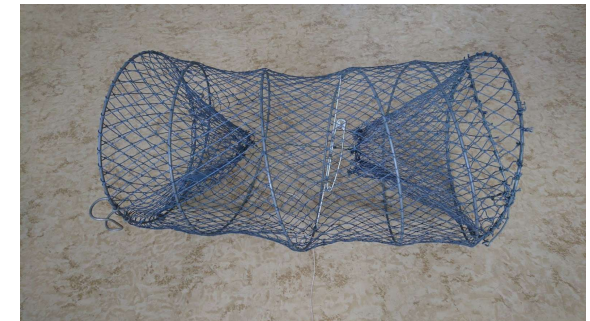


Invasiivsete vähi võõrliikide tõrjemeetodid

- Mehaanilised
- Bioloogilised
- Füüsikalised
- Keemilised

Mehaanilised tõrjemeetodid

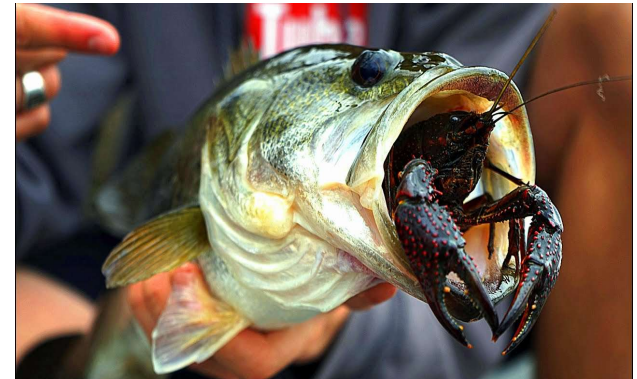
- Väljapüük mõrdadega
- Elektripüük



Bioloogilised tõrjemeetodid

- Biokontroll

- Kalad – angerjas, haug, ahven, koha, forell
- Linnud
- Haigusi tekitavad organismid



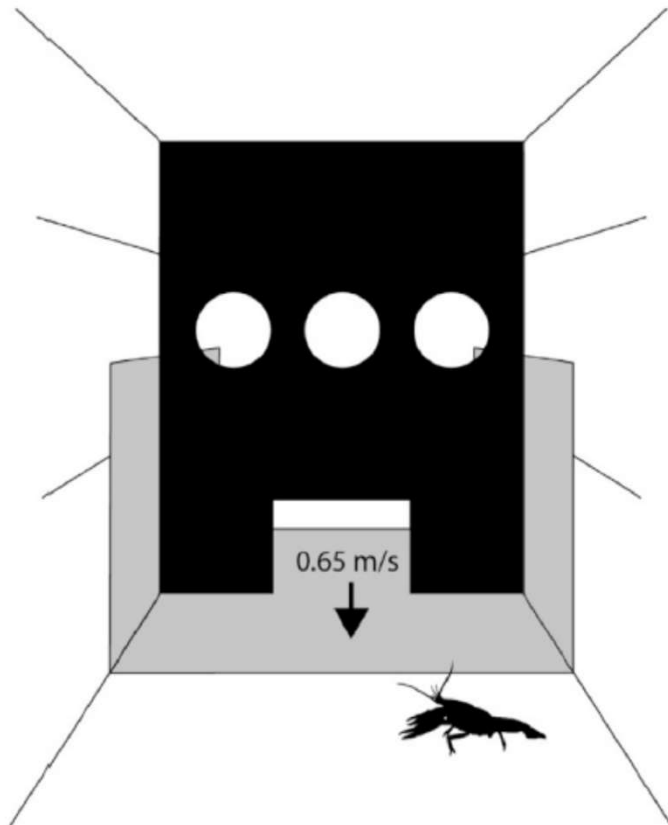
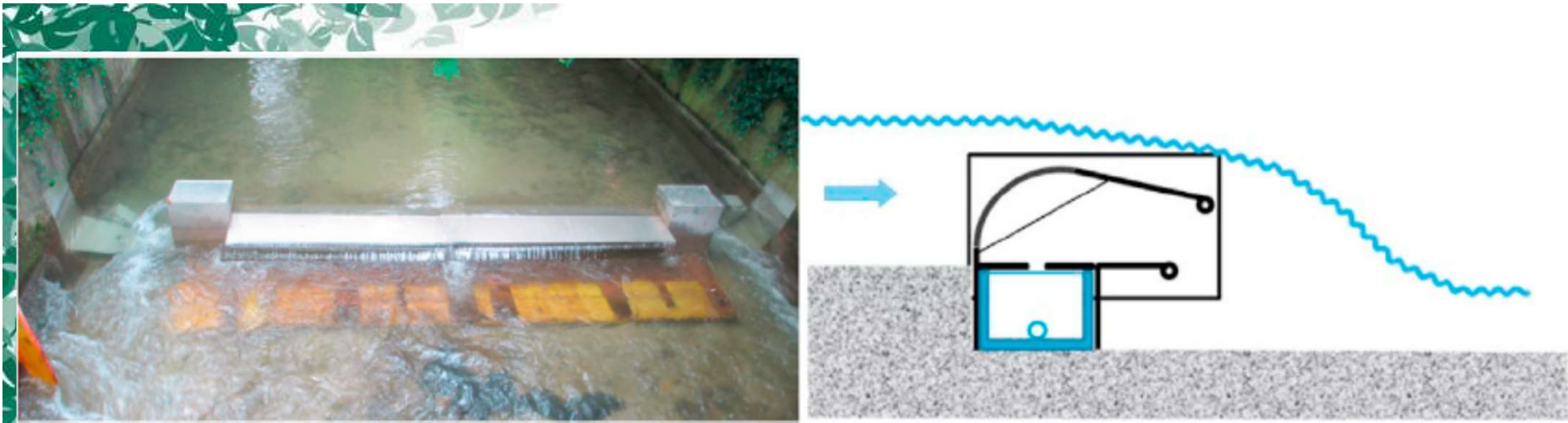
- Autotsiidne bioloogiline tõrje

- Isaste steriliseerimine ja tagasi asustamine (SMRT - Sterile Male Release Technique)
- Suguferomoonide kasutamine

Füüsikalised tõrjemeetodid

- Veekogu kuivendamine
- Jõgede ümbersuunamine
- Tõkete rajamine
- Elektriipiirded
- Vibreerivad seadmed







Keemilised tõrjemeetodid

- Biotsiidid

- Täiendus mehaanilisele ja füüsikalisele tõrjele
- Kulukas
- Ei ole olemas liigispetsiifilist biotsiidi
- Bioakumulatsioon ja sattumine toiduahelasse
- Võimalik väikestes veekogudes
- Kasutatud seni vähestes riikides



Table 3. A summary of biocide treatments against signal crayfish at sites in the U.K., Sweden and Norway.

Location (Figures 1 and 2)	Site Type (Area, Depth)	pH	Substrate	°C	veg. ¹ S/E	Target Dosage Active Ingredient ² µg/L	Hydr ³
1 Gravel pit,	Enclosed pond (1.0 ha, 1–2.4 m deep)	7.0	Gravel	9	2/0	py 150	no
2 Mains ponds	Three online ponds (0.02, 0.15, 0.3 ha, 0.2–2.0 m deep)	6.8	Sandy clay	15	1/2	py 200	yes
3 Castle pond	One offline pond (0.54 ha, 1.0–2.5 m deep) and 100 m drainage ditch	7.0	Sandy clay	4	1/1	py 200	yes
4 Farm reservoir Pocklington,	Enclosed pond (0.56 ha, 3.4 m deep)	7.8–8.5	Marl clay	14	1/1	py 200	no
5 Ballintuim ponds and stream	One offline garden pond (0.08 ha 0.5–1.8 m deep), one online lower pond (0.18 ha, 0.5–1.8 m deep), 680 m small watercourse	7.0	Sandy clay, sand	9–14	2/2	py 1000 (ponds), py 2000 (stream)	yes
6 Ballachulish quarry	Enclosed pond (2.3 ha, 0.5–13 m deep)	c. 7	Slate	8–22	0/0	py 500	no
Smöjen	Limestone quarry with two ponds (1 and 0.4 ha, 3.1–3.8 m deep) with connection	8.4	Limestone rock, gravel	19, 6	1/2	delt 0.5	yes
Stenkyrka,	Irrigation pond (2.3 ha)	8.3	Sandy clay	19	2/1	delt 0.5	yes
Hangvar	Marble quarry (0.35 ha, 0.5–5.0 m deep)	n/a	Rock, gravel	19.6	1/1	delt 0.5	yes
Dammane ponds	Five online ponds (0.037–0.32 ha, 0.8–2.27 m deep)	n/a	Sandy clay, gravel	14–16.5	1/1	cyp 20	no
Ostøya golf course ponds	Six offline ponds (0.037–0.24 ha, 1.8–3.0 m deep) with piped connections	n/a	Sandy clay	3.4–6.5	1/1, 2/2	cyp 20	no

¹ vegetation: submerged (S)/emergent (E), 1 = sparse, 2 = moderate; ² active ingredient py = natural pyrethrum, delt = deltamethrin, cyp = cypermethrin; ³ Hydr. = hydraulic control used (damming and pumping to control inflows or outflows). n/a = data not available.

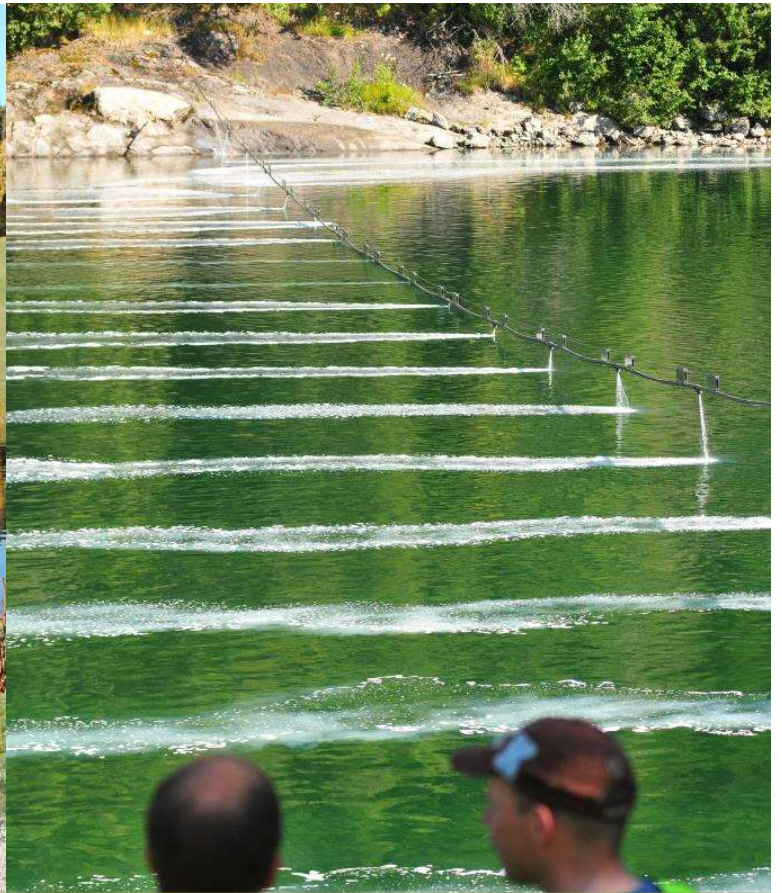


Biotsiidiga tõrje etapid

1. Esialgne kiire hindamine
2. Üksikasjalik teostatavushinnang
3. Ettevalmistused kohapeal
4. Kemikaaliga töötlemine
5. Töötlemisele järgnevad tegevused
6. Tulemuste hindamine järgnevatel aastatel

Location (See Figures 1 and 2)	Mortality of Caged Crayfish During Treatment (Number of Cages × Number of Crayfish/Cage)	Days Until Not Toxic (Bioassay ¹)	Veg. Increase ²)	Signal Crayfish Caught in Post-Treatment Monitoring (5 + Years)
1 Gravel pit	31% in 48 h, 100% < 5 days (20 × 10)	<24 (site obs.)	+	None
2 Mains ponds	80% in 48 h, 100% < 5 days (13 × 25)	21–24	++	Year 2
3 Castle pond	35% dead in 48 h, 100% < 5 days (20 × 10)	21	+	Year 2
4 Farm reservoir Pocklington	97% in 48 h, 100% < 4 days (16 × 20, 2 × 25)	115–134	+	None
5 Ballintuim ponds and stream	garden pond 83% in 48 h (22 × 15), lower pond 91% in 48 h (5 × 10); stream section 100%, 56%* (*section was re-dosed after this result), 74%, 85%, 71% in 24 h (per section 5 × 10, plus eight burrows × 4)	Pond (garden) 23, stream and lower pond 7–11 (flushed)	++ (garden pond) 0 (lower pond)	Year 3 (garden pond)
6 Ballachulish quarry	65% in 24 h, 100% in 48 h (13 × 10)	34–60	+	None
Smöjen	100% < 24 h (5 × 3/pond)	27 (not toxic to crayfish)	na	None and no crayfish plague
Stenkyrka,	100% < 24 h (5 × 3/pond)	16 (not toxic to crayfish)	na	None and no crayfish plague
Hangvar	100% < 24 h (4 × 3/pond)	<60 (not toxic to crayfish)	na	None and no crayfish plague
Dammane ponds	100% < 24 h (4 × 3/pond)	No data (pond drained)	na	None and no crayfish plague.
Ostøya golf course ponds	100% < 24 h (4 × 3/pond)	No data (pond drained)	na	None and no crayfish plague.

¹ U.K. sites bioassay using *Gammarus pulex*, except site (3), where *Asellus aquaticus* (Linnaeus, 1758) was used. ² Increase in cover of submerged aquatic vegetation in years 1 and 2 after treatment: ++ = increase to abundant (>50% cover), + = increase, na = not available.





Kasutatud allikad

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