




Actual Fish Disease Situation in Switzerland

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Surveillance in Switzerland




- Legislation stipulates regular surveillance of farms
- Up to 2015 no regular active surveillance performed
- However: fishfarmers, veterinarians and diagnostic laboratories have to report every suspect or diagnosed case of VHS, IHN, IPN, SVC, (ISA) and PKD to authorities
- Confirmed cases of VHS, IHN (and IPN) → stamping out of stocks and sanitation of farm

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Data set for presentation




- Data exclusively from routine diagnostic work of FIWI
- FIWI only laboratory acknowledged by authorities for diagnostics of notifiable diseases
- Nevertheless data not fully representative for health status in Swiss fish farms (lack of active controls)

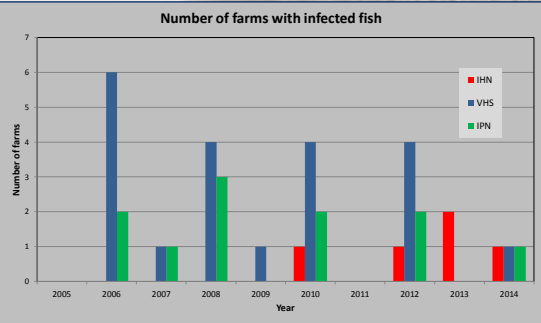
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Viral diseases Overview




Number of farms with infected fish




Year	IHN	VHS	IPN
2005	0	0	0
2006	0	6	2
2007	0	1	1
2008	0	4	3
2009	0	1	0
2010	1	4	2
2011	0	0	0
2012	1	4	2
2013	2	0	0
2014	1	0	1

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Viral diseases Cases in 2014




IHN

- Farm producing rainbow trout
- Two parts: upper commercial and lower experimental (evaluation of structural elements on fish health)
- Increasing mortality in 0+ fish associated with typical symptoms of haemorrhagic disease in lower part → diagnosis of IHN
- Control of fish from all tanks of upper part → no IHN but in fish from several tanks IPNV
- Removal of all stocks
- Sequencing of virus → no clear link to any known isolate
- Origin of IHN not clear (by river water not likely as no positive fish in upper part living in water from same river)

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Viral diseases Cases in 2014



VHS

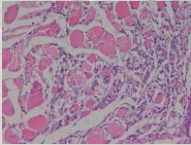
- Farm producing mainly brook trout and some rainbow trout
- Elevated mortality associated with typical symptoms of haemorrhagic disease in 1+ fish of last tank
- Diagnosis of VHS
- No mortality in brook trout
- Removal of rainbow trout
- Regular control of brook trout over following months → all negative
- Sequencing: closest relationship to German isolates from 2014 and 2012

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Viral diseases Cases in 2013 - 2014

SAV

- In a farm producing rainbow trout 3 weeks after stocking fish lying on side, only swimming, when disturbed
- Low mortality
- No viral growth on BF, EPC and CHSE-214 cells
- PCR revealed presence of salmon alpha virus
→ first detection in Switzerland
- Phylogenetic analyses: subtype 2 clustering with isolates from UK and continental Europe
- In 2014 re-occurrence of disease in same farm





Schmidt-Poethaus et al. 2014. First outbreak of sleeping disease in Switzerland – disease signs and virus characterization. DAO 111:165-171;

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Viral diseases Cases in 2013 - 2014

Sturgeon herpes virus

- In a farm producing Siberian sturgeon repeatedly herpesvirus detected
- Major problems in young fish with high losses
- Older fish less problems but potentially carriers
- In older fish not showing any disease symptoms demonstration of virus presence very difficult





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Viral diseases Cases in 2013 - 2014

Perch rhabdo virus

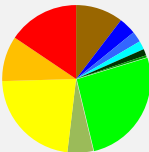
- First demonstration of perch rhabdovirus in Switzerland in 2013
- Further information on case by Thierry Morin



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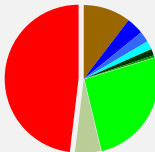
Bacterial diseases

Diagnosis of bacterial infections



- Not ident.
- Aeromonas-S.
- Fununculosis
- Vibriosis
- ERM
- Epitheliocystis
- Lactococcus
- Mixed infect.
- TBC
- BGD
- CWD
- RTFS

Diagnosis of bacterial infections




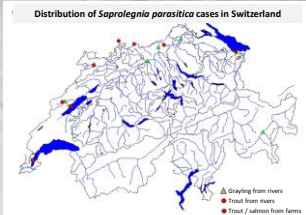
- Not ident.
- Aeromonas-S.
- Fununculosis
- Vibriosis
- ERM
- Epitheliocystis
- Lactococcus
- Mixed infect.
- TBC
- Flavobacteria

- Main problem: Flavobacteria – infections
→ infections of skin, gills and inner organs
- ERM in organic farms: regular re-occurrence

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Fungal diseases

- Since 2009 major fish kills in river in North-Western Switzerland
- Different fish species (salmonids, cyprinids, percids) affected
- Only pathogenic agent found: *Saprolegnia parasitica*
- Since 2013 also elevated mortalities in other rivers
- In 2015 up to 80% of whitefish caught in two lakes with fungal infections

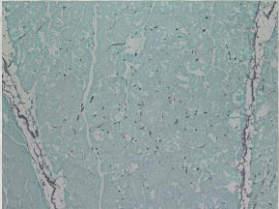
Distribution of *Saprolegnia parasitica* cases in Switzerland

- ▲ Sampling from rivers
- Trout from rivers
- Trout / salmon from farms

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Fungal diseases

- Specific findings: hyphae not only in epidermis and dermis but also growing deeply into muscle tissue
- Question on genetic background of isolates
- Some evidence for clonal strain
- Has to be confirmed
- Problem of major concern for fisheries authorities
- Project set up to investigate isolates




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Fungal diseases

***Aphanomyces invadans* in ornamental fish**

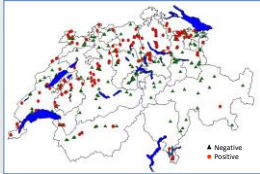
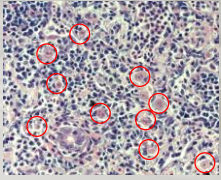
- Two separate submissions of Amazon leafyfish (*Monocirrhus polyacanthus*) from zoological garden
- In both cases small lesions in dorsal area, once with hyphae
- Specific primers for *Aphanomyces invadans* revealed positive PCR result → Epizootic Ulcerative Syndrome (EUS)



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Parasitic diseases

- Proliferative kidney disease main problem in wild brown trout populations (minor problem in farms)
- PKD possibly triggered by proven increase of water temperatures in Swiss rivers
- Wide distribution of infection in Switzerland (> 40% of sites found to harbour infected fish)

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Outlook

- From 2016 onwards risk based surveillance including health controls to be performed in Swiss fish farms
- Particular attention to new diseases
- Investigation on *Saprolegnia* – linked problems

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Thank you for your attention



Questions?

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