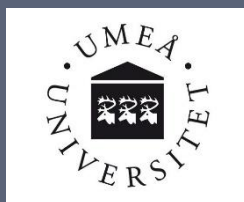




Efficient Data Flows with QGIS and PostGIS

From the Field to Web and Reports



NOFA - Nordic Freshwater Atlas

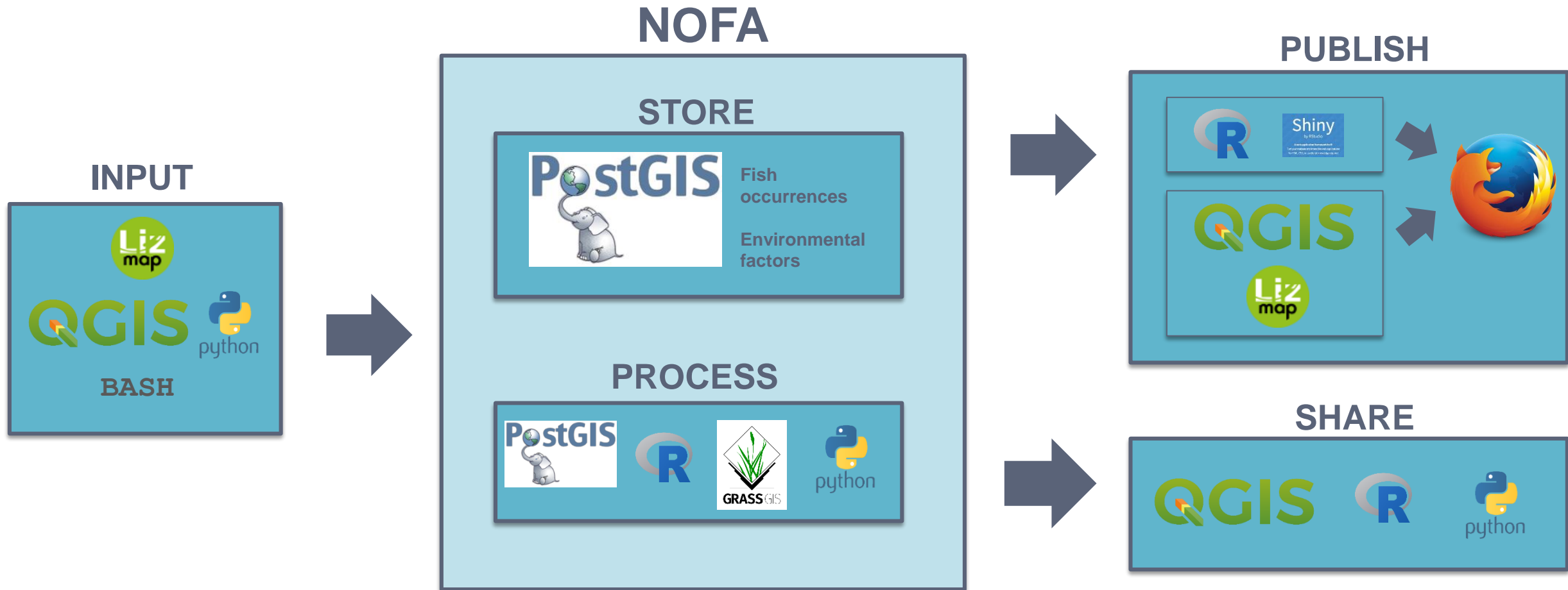
- ▶ Data infrastructure for freshwater species
 - ▶ Collection
 - ▶ Analysis
 - ▶ Preservation
 - ▶ Presentation
 - ▶ Publication
- ▶ Long term
- ▶ Workflow efficiency
- ▶ Used in research projects (INVAFISH, ...)



"[Arctic char](#)" by [Anders Gravbrøt Finstad](#)
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<https://www.flickr.com/photos/142379173@N08/28273400370/>

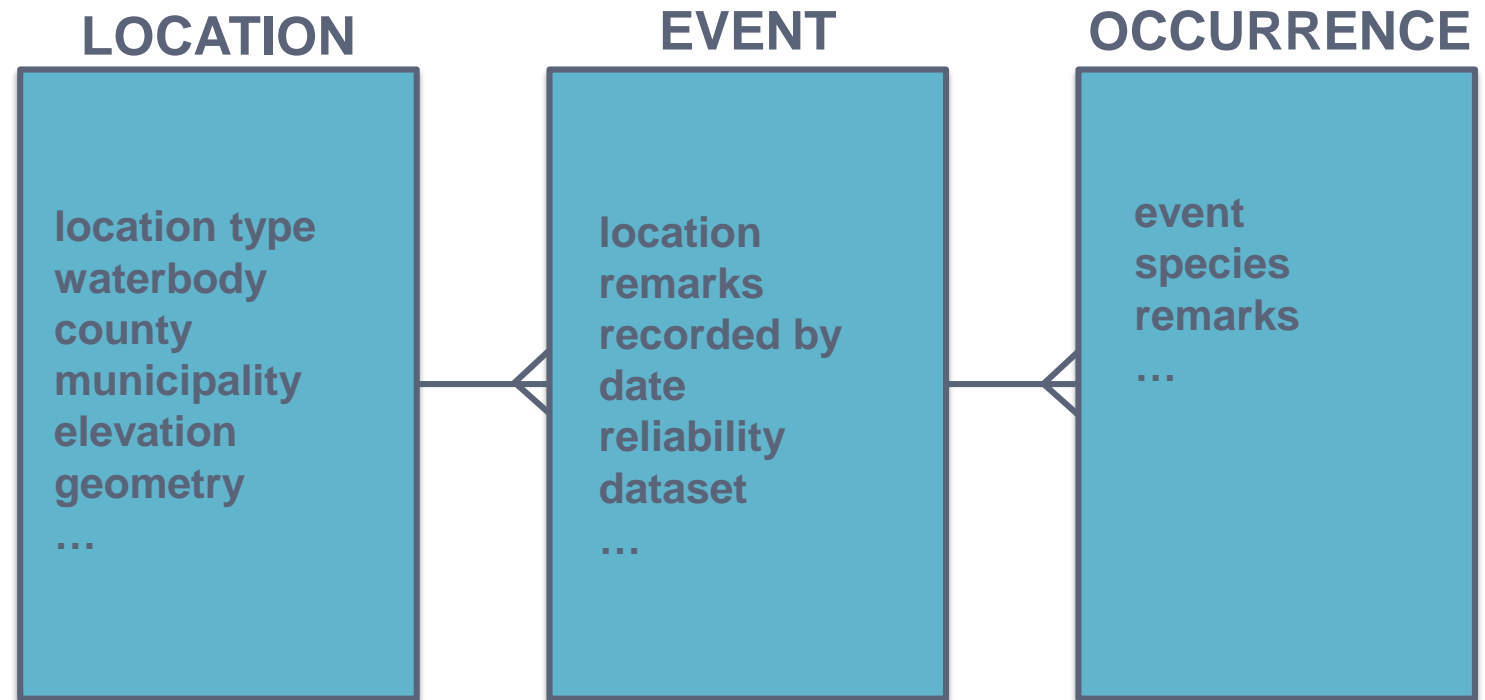
NOFA – technical architecture



Data Storage

Darwin core

- ▶ International standard for species occurrence data
- ▶ Data structure
- ▶ Defined terms
- ▶ Controlled vocabulary
- ▶ Metadata



Additional Data

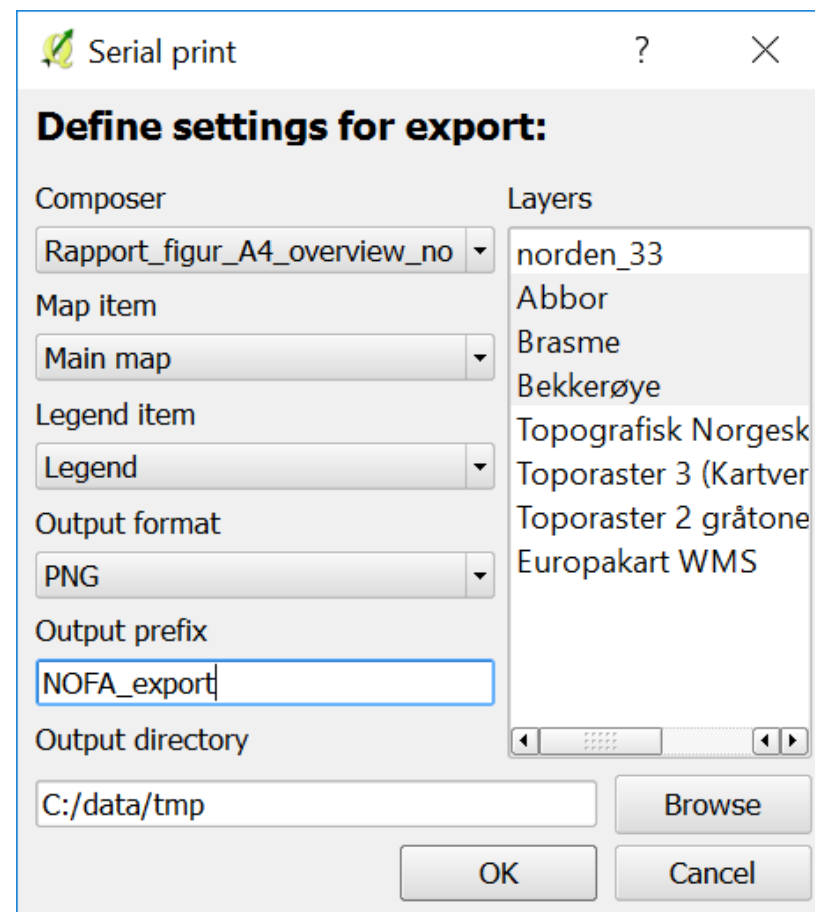
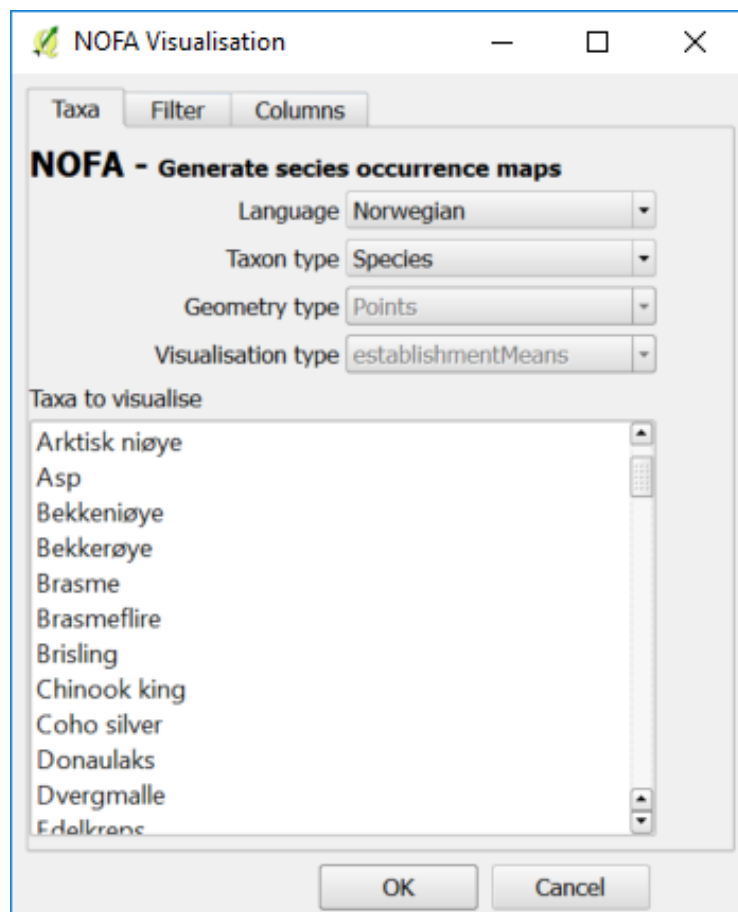
- ▶ Lakes
 - ▶ ~ 1.5 mio
- ▶ Catchments
 - ▶ ~ 270 000 largest lakes
- ▶ Rivers
- ▶ Streets
- ▶ Land cover
- ▶ Climate
- ▶ Terrain model
- ▶ Administrative units, ...



map data: © [OpenStreetMap](#) contributors, [SRTM](#) | map style: © [OpenTopoMap](#) (CC-BY-SA)

Display Data

QGIS Visualisation and print plugins



Publish Map - Lizmap

NOFA

Internet



R Shiny

shiny.vm.ntnu.no/users/andersfi/invafish/

Freshwater fish introductions

Display intruded populations of freshwater fish. Select species and optionally filter on dated introductions or extinctions

Select species:

Rainbow trout

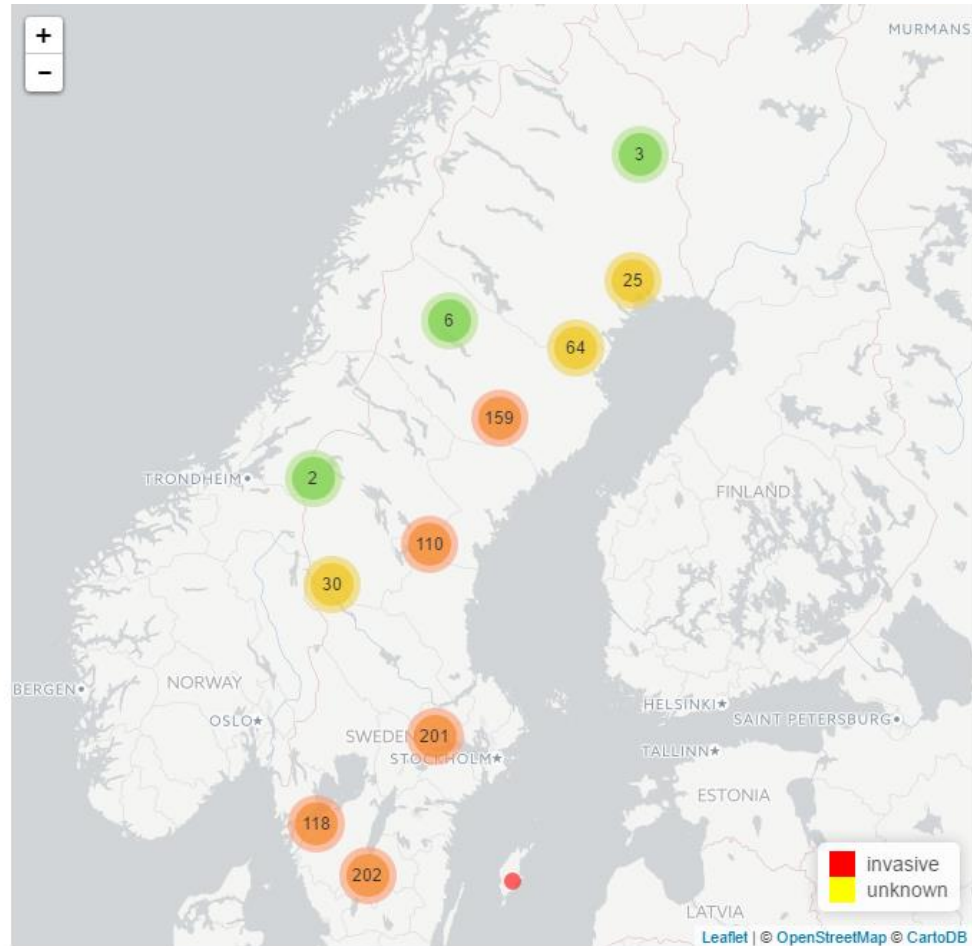
Chose what map markers represent

establishmentMean

Filter display on dated introduction/extinction events?

introduction

Delivered by the INVAFISH project. Contact: anders.finstad@ntnu.no



Insert and Edit Data

Field Data Collection

- ▶ QField (Android)
- ▶ QGIS (Windows Tablet)
- ▶ IntraMaps Roam (Windows Tablet)
- ▶ Lizmap (web browser)
- ▶ OpenDataKit
- ▶ GeoShape
- ▶ ...



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<https://www.flickr.com/photos/142379173@N08/33790797954/>

Desktop: QGIS Plugin

- ▶ Motivation
 - ▶ QGIS – PostGIS layers
 - ▶ Scripts
- ▶ Standard installation
- ▶ Map canvas interaction
- ▶ Not released yet

NOFAInsert - nofa_sandbox_plugin_2017-08-08

Main History

Location

Search Edit Manual

method coordinates

CRS UTM32

option new

X 967433.902593

Y 6437803.40792

Coordinates from Canvas

verbatimLocality

method	locationID
1 locationID	3a0c2059-2427-4022-b7cc-0fbb5b908179
2 locationID	f482bfea-0b9c-483b-b7e4-62bcd22928d
3 coordinates	UTM32
4 Norwegian VatLn	

taxon	ecotype	organismQuantityType	organismQuantity	occurrenceStatus	populationT
1 Barbatula barbatula		individuals	7	present	
2 Sprattus sprattus				common	re-introducti
3 Lampetra fluviatilis	European river lamprey	percentageCoverage	4	rare	

taxonomicCoverage

- ☐ All
- ☐ Acipenseridae
- ☒ Anguillidae
 - ☒ Anguilla
 - ☒ Anguilla anguilla
 - ☒ Anguillidae
- ☐ Astacidae
- ☒ Asteraceae
- ☐ Balitoridae
- ☐ Centrarchidae
- ☐ Clupeidae
 - ☐ Alosa
 - ☐ Alosa alosa
 - ☒ Alosa fallax
 - ☐ Clupea
 - ☒ Clupea harengus
 - ☒ Clupeidae
- ☐ Sprattus
- ☐ Sprattus sprattus
- ☐ Cobitidae
- ☐ Cottidae
- ☐ Cyprinidae
- ☐ Esocidae

Occurrence

taxon Lampetra fluviat ecotype European river l.

organismQuantityType percentageCove organismQuantity 4

occurrenceStatus rare populationTrend

recordNumber

occurrenceRemarks

establishmentMeans Attempted introduced

establishmentRemarks

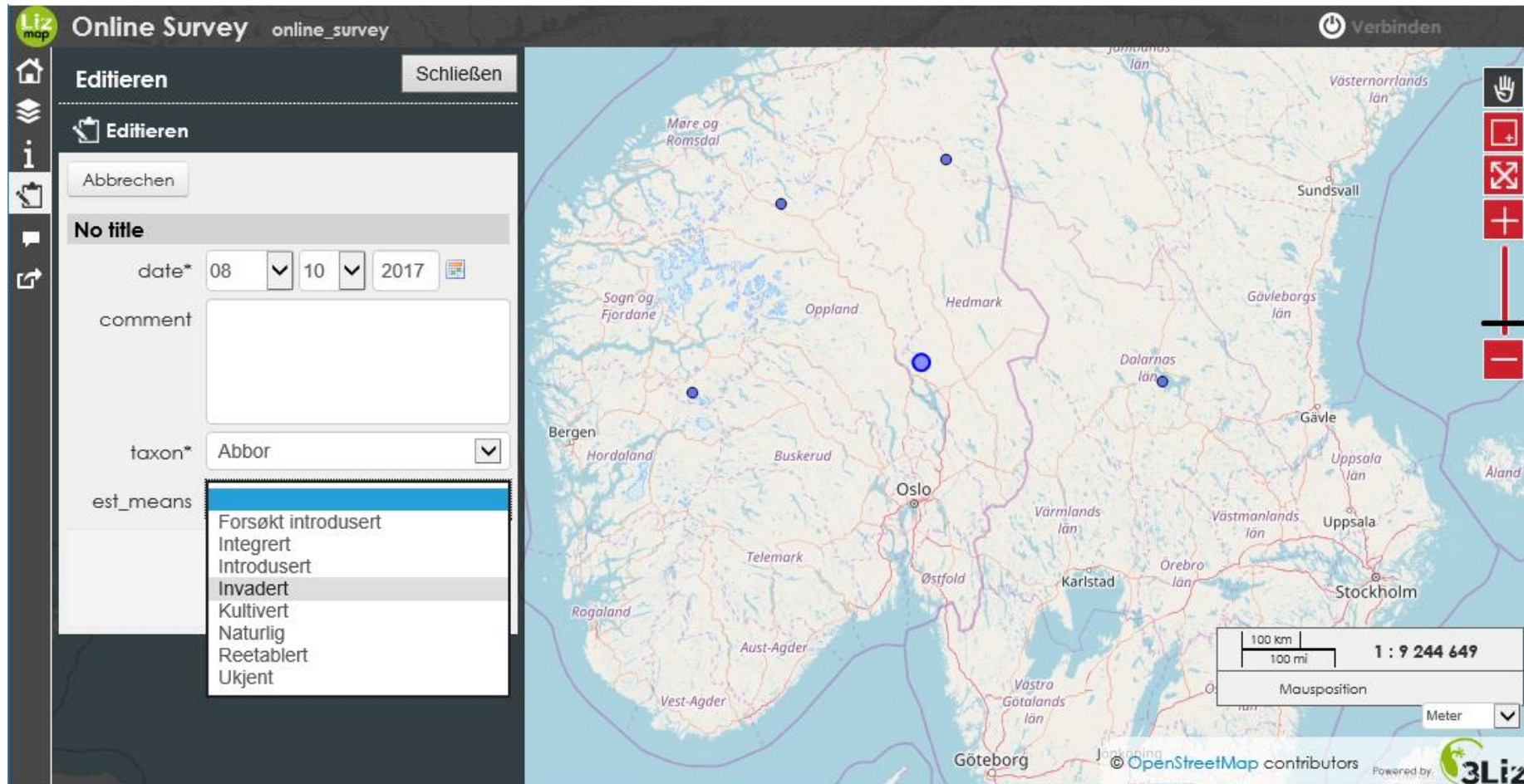
spawningCondition medium spawningLocation outlet

verifiedBy verifiedDate

Reset Insert to NOFA

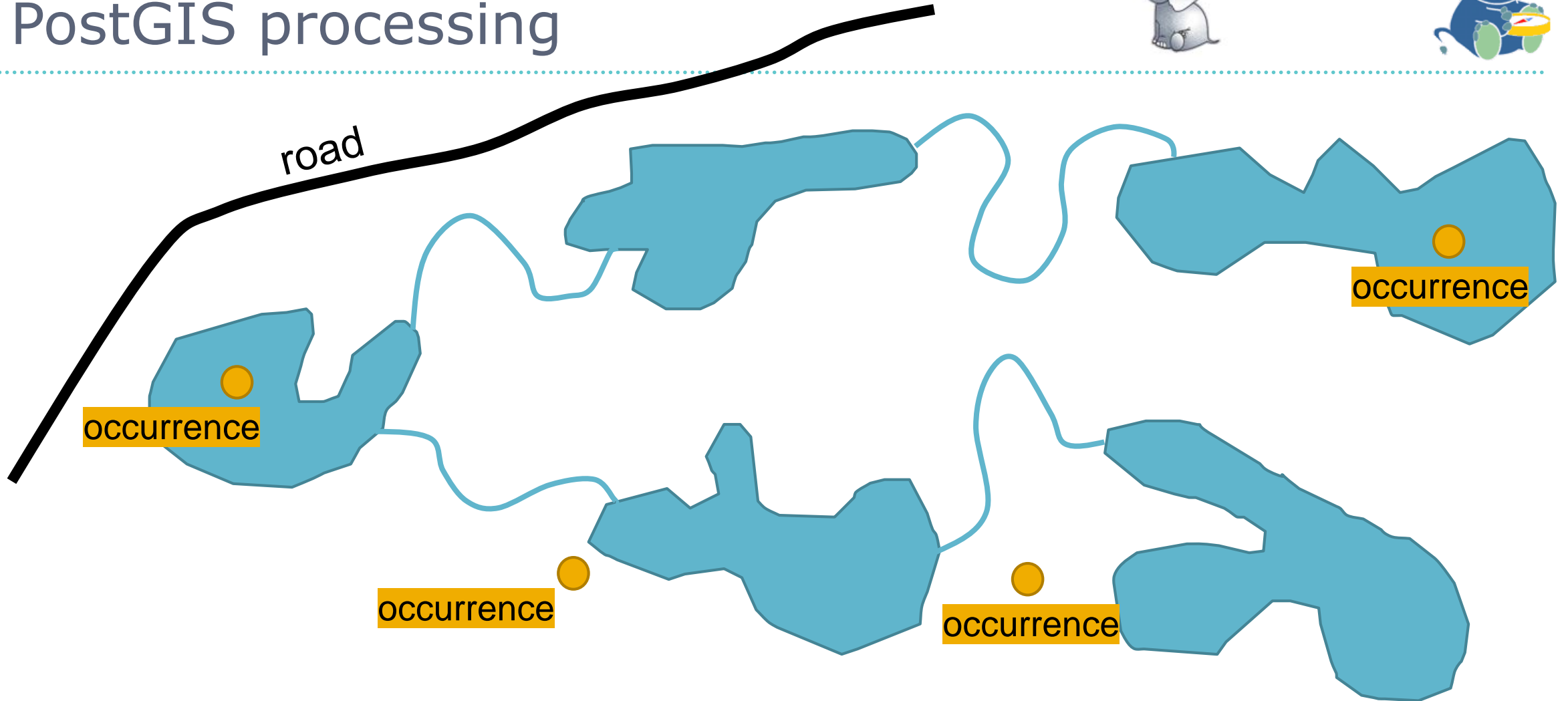
Web: Lizmap

tinyurl.com/Insertfish



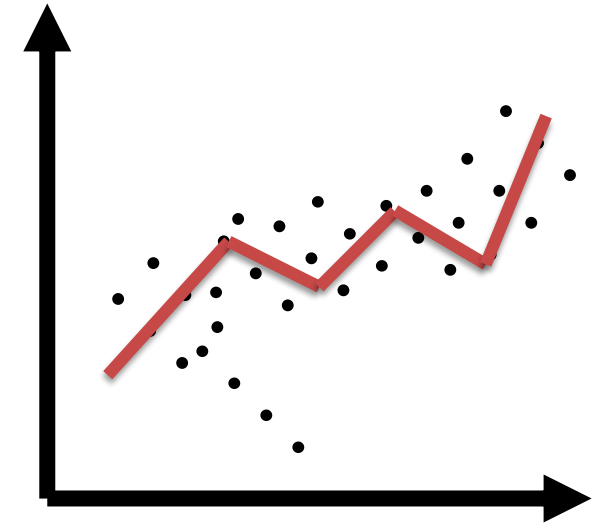
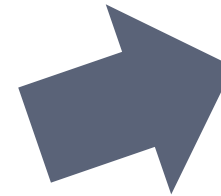
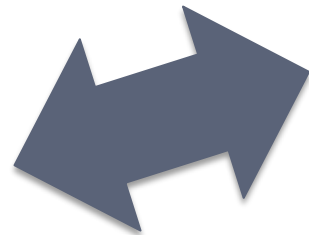
Analyze Data

PostGIS processing



R – Programming Language

- ▶ Predefined functions
 - ▶ Process on the Server
- ▶ Download Data “views”
 - ▶ By species
 - ▶ By event
 - ▶ ...



Summary

