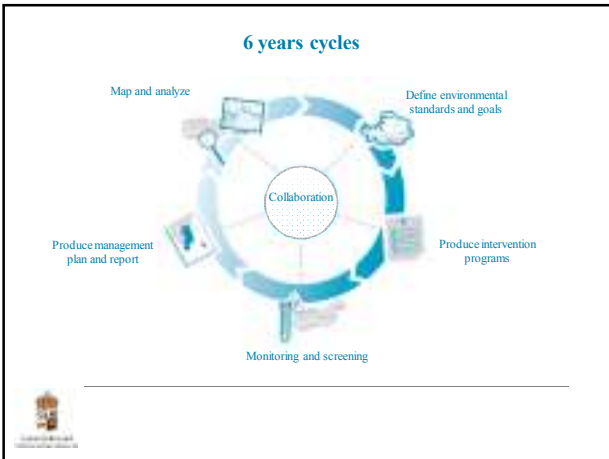
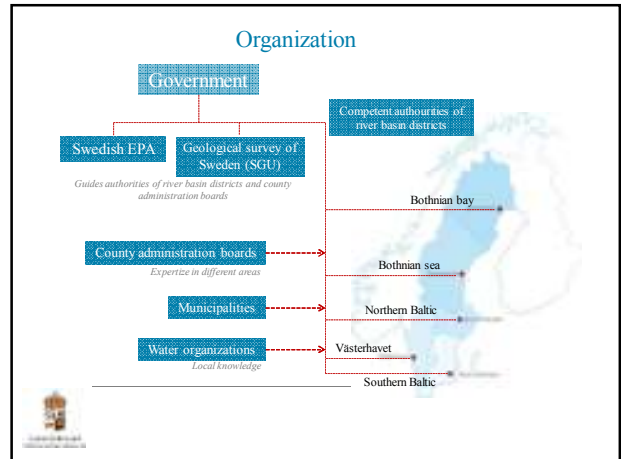




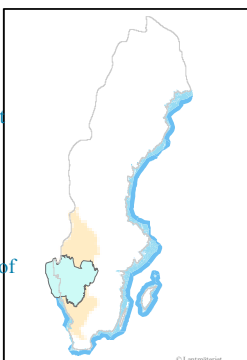
## CALUX-monitoring for biota and sediment in Sweden

Fredrik Gunnarsson  
Ecotoxicologist  
County administrative board of Västra Götaland





The competent authority of river basin district of Skagerak/Kategatt

The county administration board of Västra Götaland



© Larsenstet




## The County Administrative Board of Västra Götaland works sector comprehensive

- The County Administrative Board of Västra Götaland has a variety of competences and can give balanced and comprehensive opinions on complex issues
- The activities cover many different fields, such as integration, cultural heritage, spatial planning, environmental protection, equal opportunities, animal welfare, nature and water conservation




## County Administrative Board of Västra Götaland

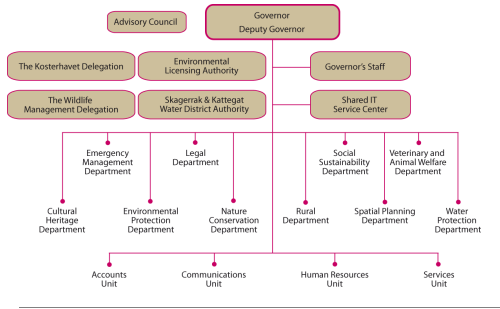


- 49 municipalities
- 1,5 million inhabitants
- 17 % of Sweden's population
- 66 inhabitants / square kilometre
- 24,000 square kilometre land territory
- 6 percent of Sweden's area

The County Administrative Board of Västra Götaland has offices in eight locations



## Organization for the County administration boards



## Status in Sweden

### Chemical status

	Total number	Does not comply
Lakes	7232	63
Rivers	15563	73
Coast	602	69
Transitional waters	21	4
<b>Water bodies</b>	<b>23 418</b>	<b>209</b>



## National monitoring programs of priority compounds

Red: At risk without monitoring

Green: At risk with monitoring

Light green: Monitored water bodies

73 % of the water bodies at risk, are not monitored in the national program!



## Need in cost-efficient screening methods

- Vast amount of toxicants
  - Reveal the actual problem
  - Deselect those that are not likely to cause an effect
  - Mixture effects
- Monitoring usually very costly
- Most relevant compartment?



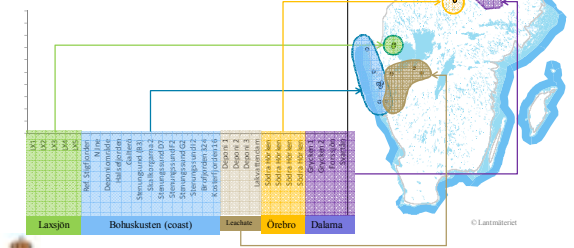
## Guidance document

- Produce and verify the document
- County administration board of Blekinge
- How to perform operational monitoring
  - Choosing sampling point
  - Which substances to monitor
  - Which compartment
  - How often
  - Reporting and analyzing the data



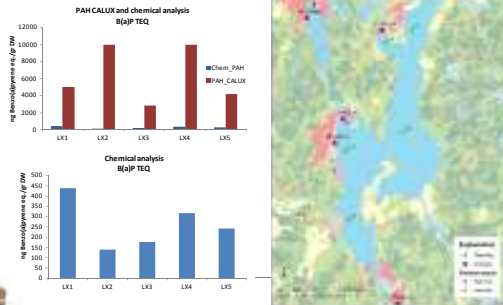
Contact Fredrik Andersson, County administration board of Blekinge for more info: [fredrik.andersson@lansstyrelsen.se](mailto:fredrik.andersson@lansstyrelsen.se)

## Monitored stations

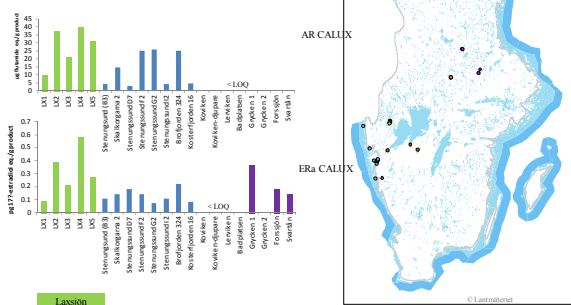




## Comparing chemical results with PAH CALUX results Laxsjön, sediment

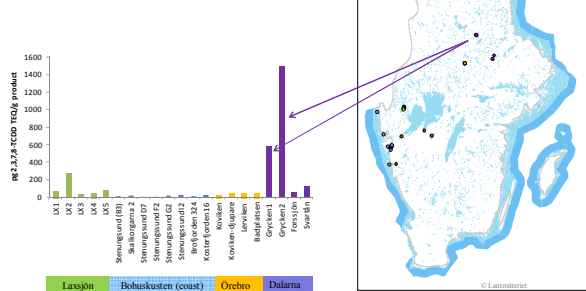


## Results, AR and Era CALUX

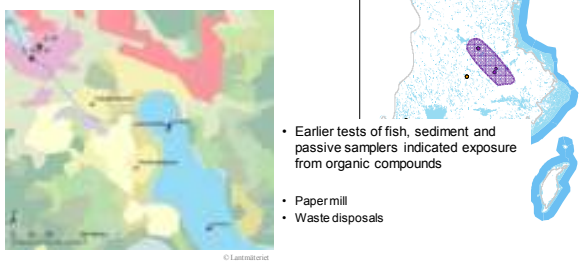


Tolerable levels?

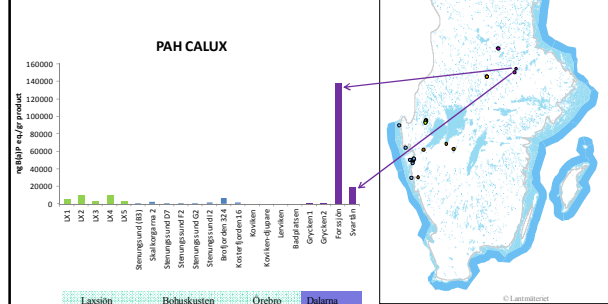
## DR CALUX, highest response in Grycken

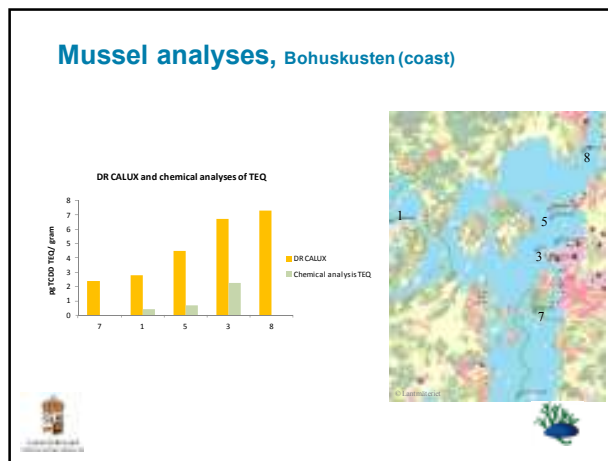
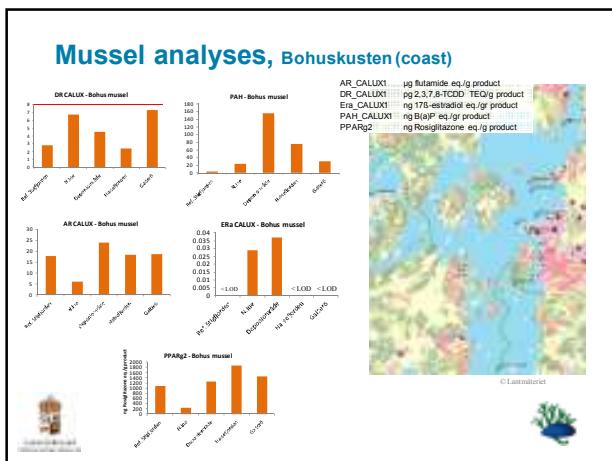
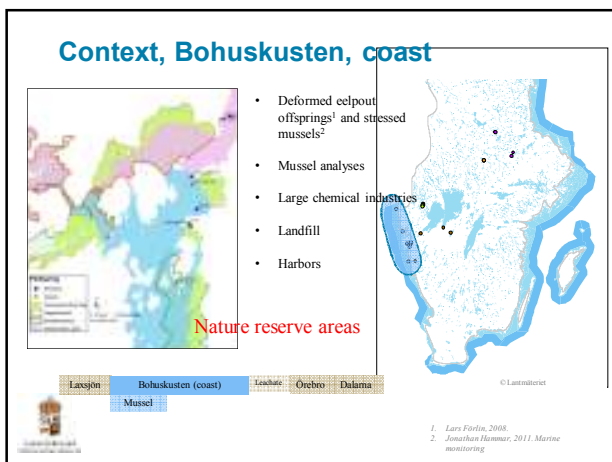
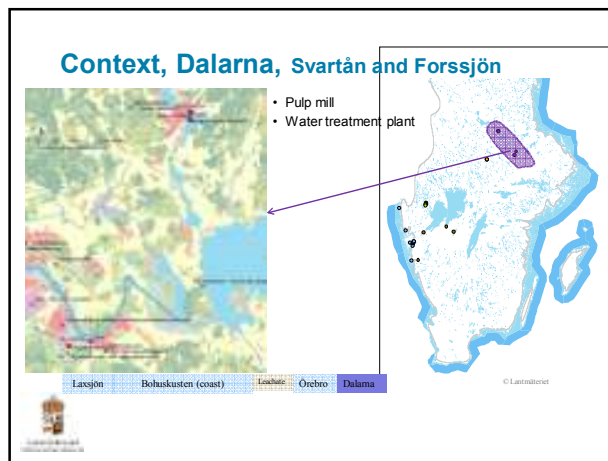
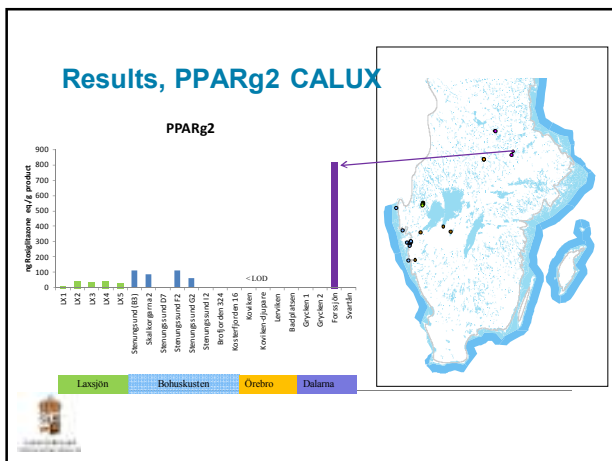


## Context, Dalarna, Grycken

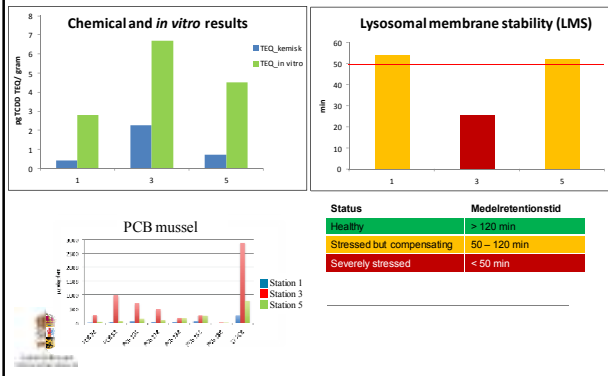


## Results, PAH CALUX





## Mussel analyses, Bohuskusten (coast)



## Conclusions

- High correlation between dioxin chemical analyses and DR CALUX assays.
- Cost-efficient screening
  - Good way to reduce gap between required and current monitoring
  - Include other parameters that are missed in chemical analyses
- Hypothesis generating
- Need in standards or treshold values

Thanks for the attention

[fredrik.g.gunnarsson@lansstyrelsen.se](mailto:fredrik.g.gunnarsson@lansstyrelsen.se)

+46 31-605563

[www.lansstyrelsen.se/vastragotaland](http://www.lansstyrelsen.se/vastragotaland)