

European Environmental Specimen Banks

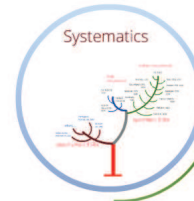
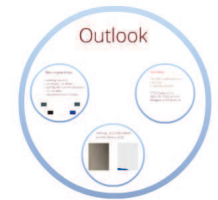
Journeys through time for Chemical Safety

Berlin, 5.11.2012 Monitoring Biocides Workshop

Jan Koschorreck, German Environment Agency



European Environmental Specimen Banks
journeys through time for Chemical Safety
Berlin, 5.11.2012 Monitoring Biocides Workshop
Jan Koschorreck, German Environment Agency



What are ESBs?

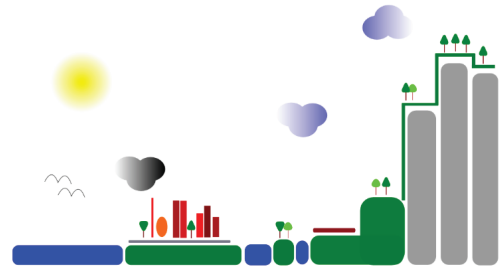


environmental & human samples



Focus on environmental specimens

ecosystem types



marine urban limnetic agrarian terrestrial samples

food web analysis
integrative exposure assessment
comparison between industrialised areas, semi-pristine
and pristine areas

cold chain



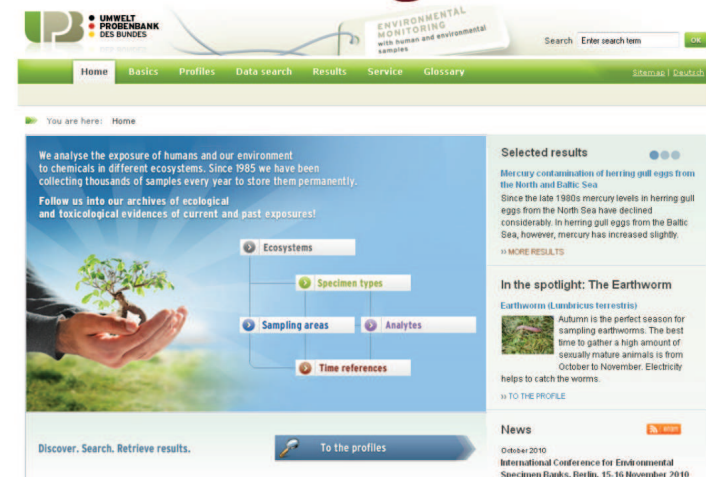
SOPs available for sampling, processing,
analysing and archiving samples

low T°C archive



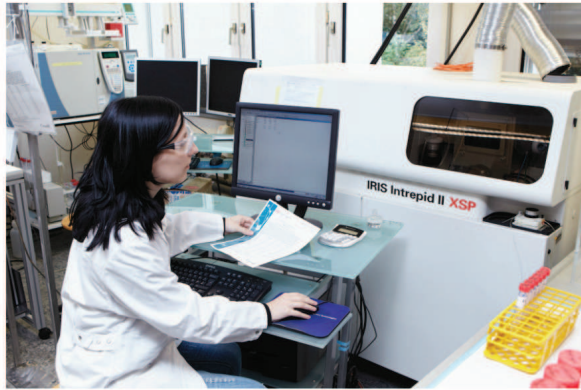
samples stored at -20°, -80°, < -150°C

data management



open data often missing but websites describe activities

chemical analysis

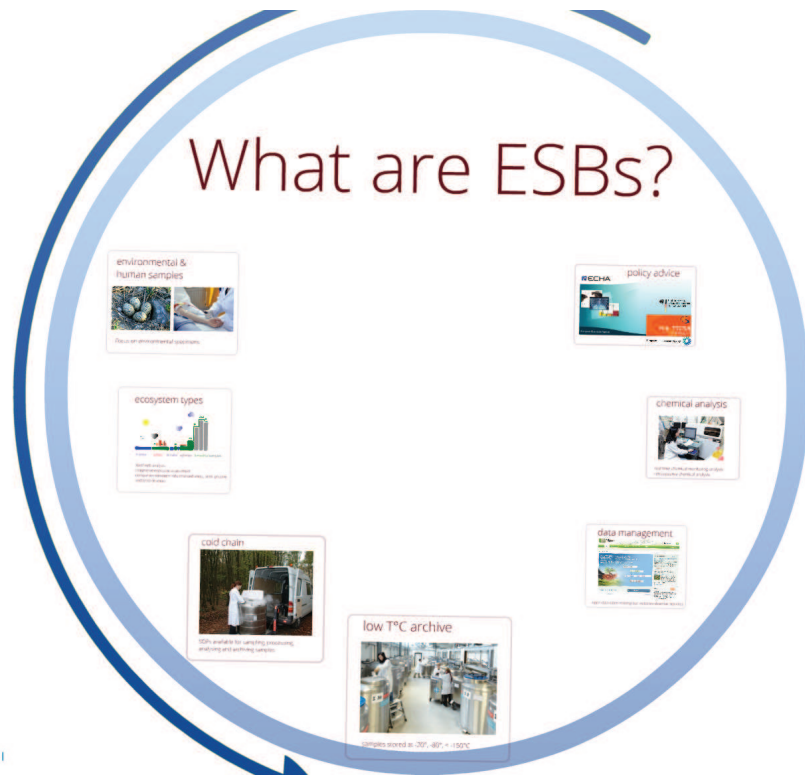


real time chemical monitoring analysis
retrospective chemical analysis

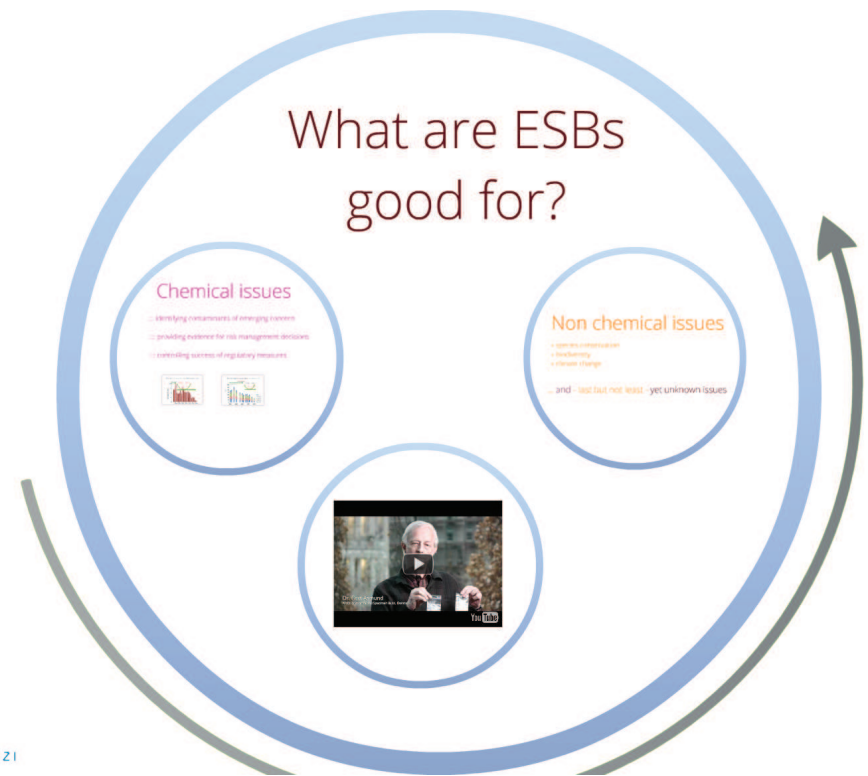
policy advice



What are ESBs?

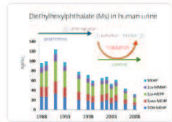


What are ESBs good for?

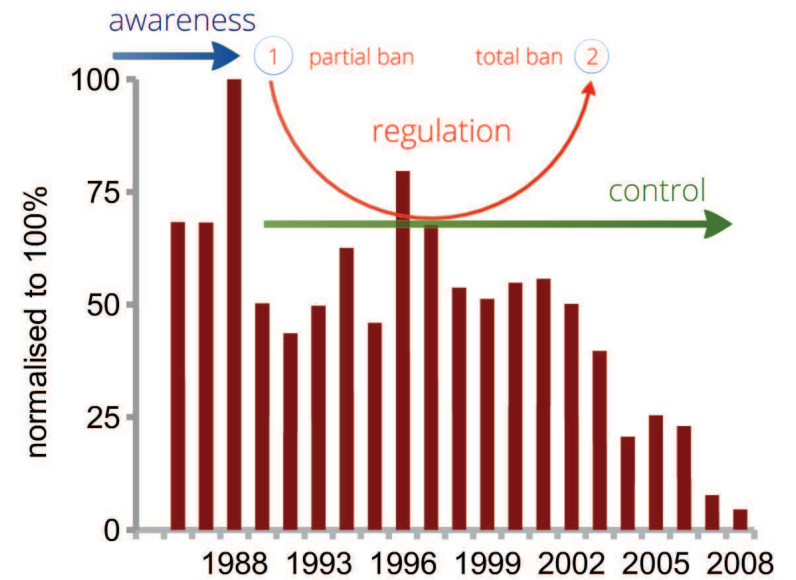


Chemical issues

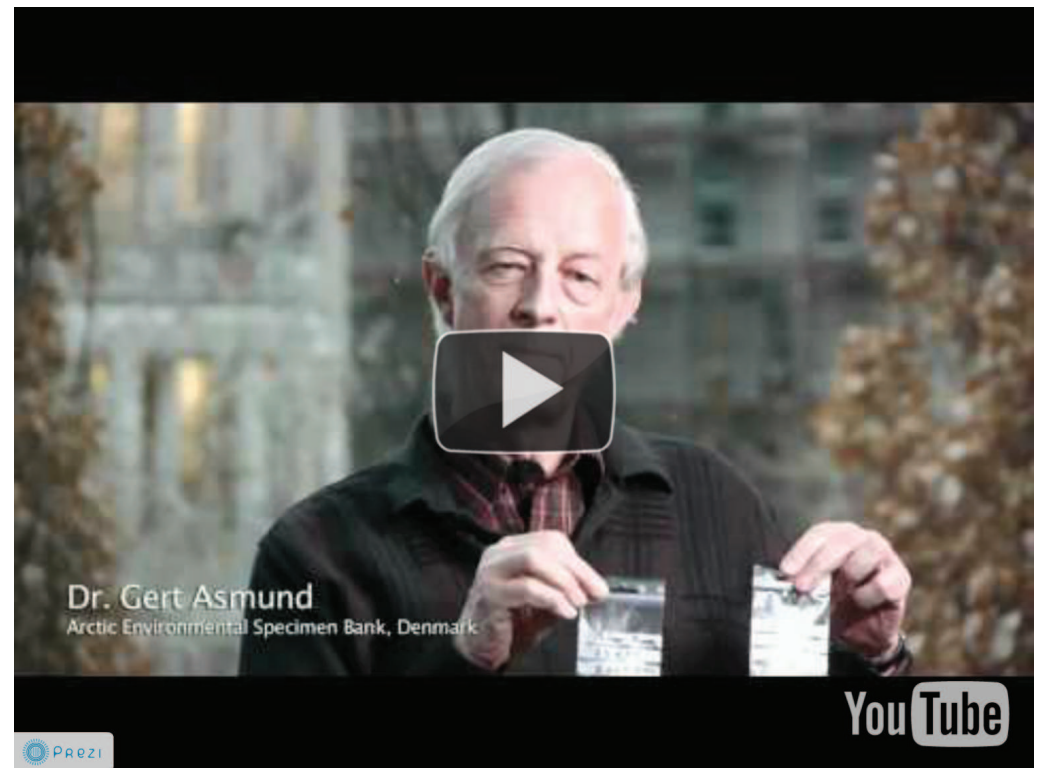
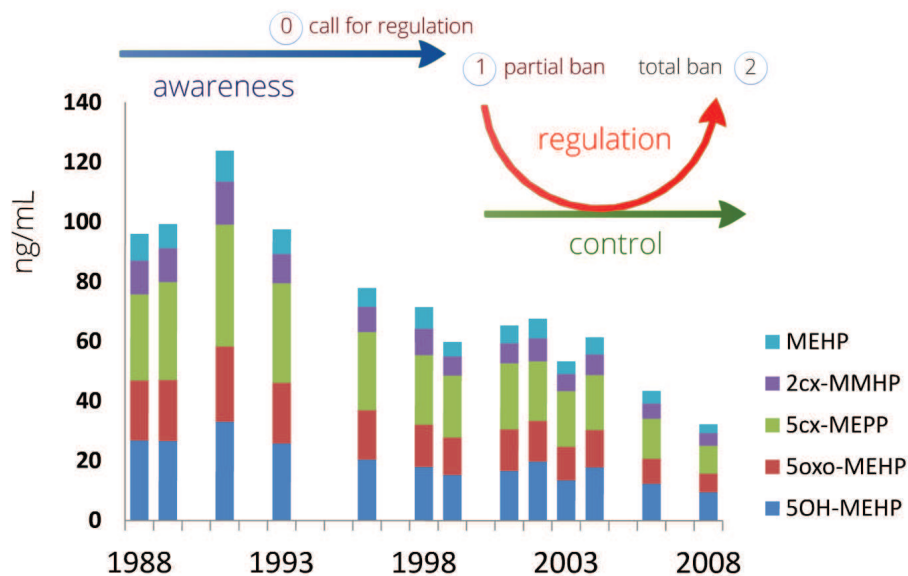
- ::: identifying contaminants of emerging concern
- ::: providing evidence for risk management decisions
- ::: controlling success of regulatory measures



Tributyltin in blue mussels from North Sea



Diethylhexylphthalate (DEHP) in human urine



Non chemical issues

- species conservation
- biodiversity
- climate change

... and - last but not least - yet unknown issues

What are ESBs good for?

Chemical issues

- identifying consequences of emerging concerns
- providing evidence for risk management decisions
- extending success of regulatory measures



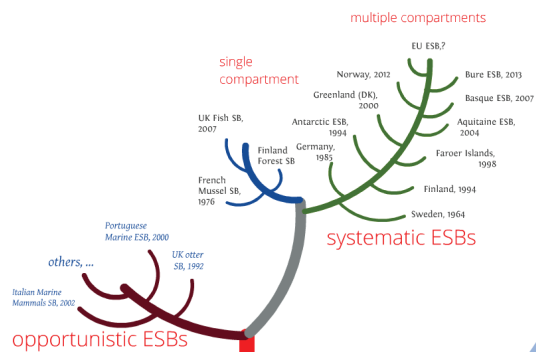
Non chemical issues

- species conservation
- biodiversity
- climate change

... and - last but not least - yet unknown issues



Systematics



2007



Portuguese Marine ESB, 2000

others, ...

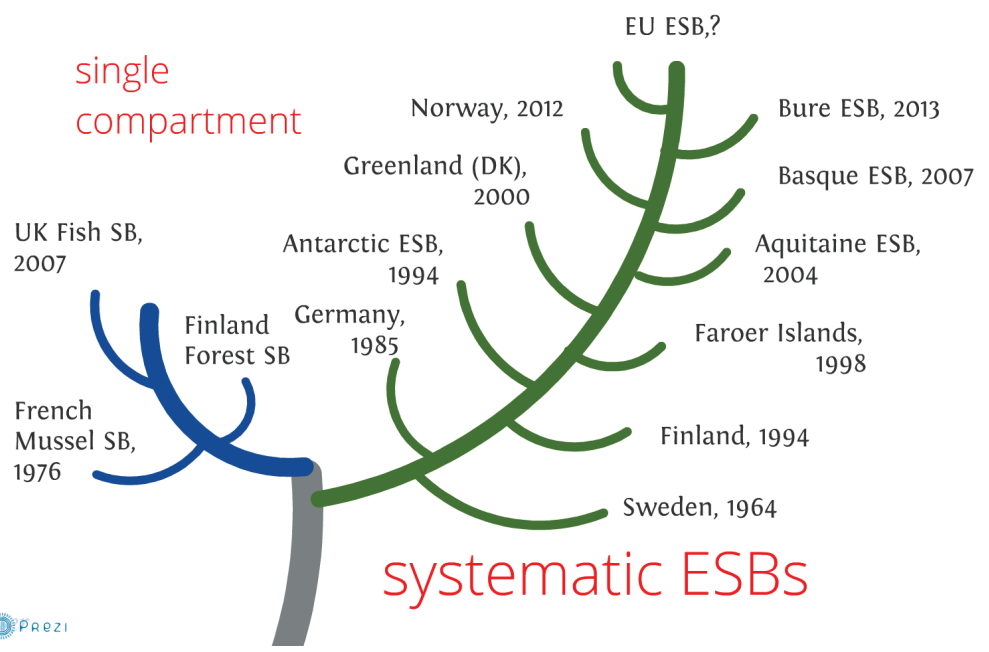
UK otter SB, 1992

Italian Marine Mammals SB, 2002

opportunistic ESBs

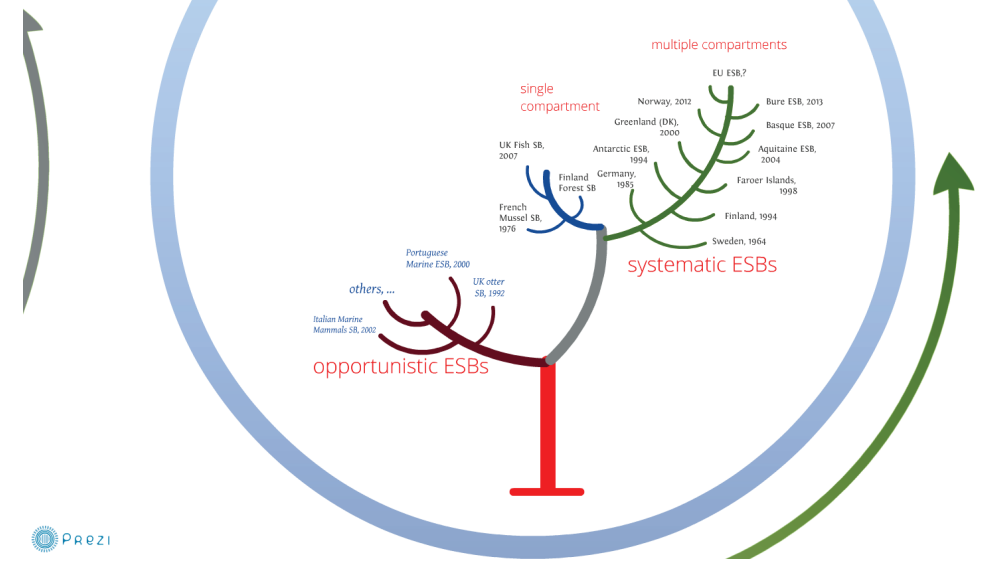
multiple compartments

single compartment

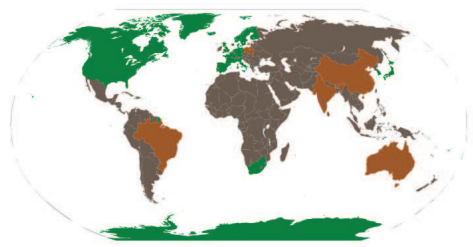


systematic ESBs

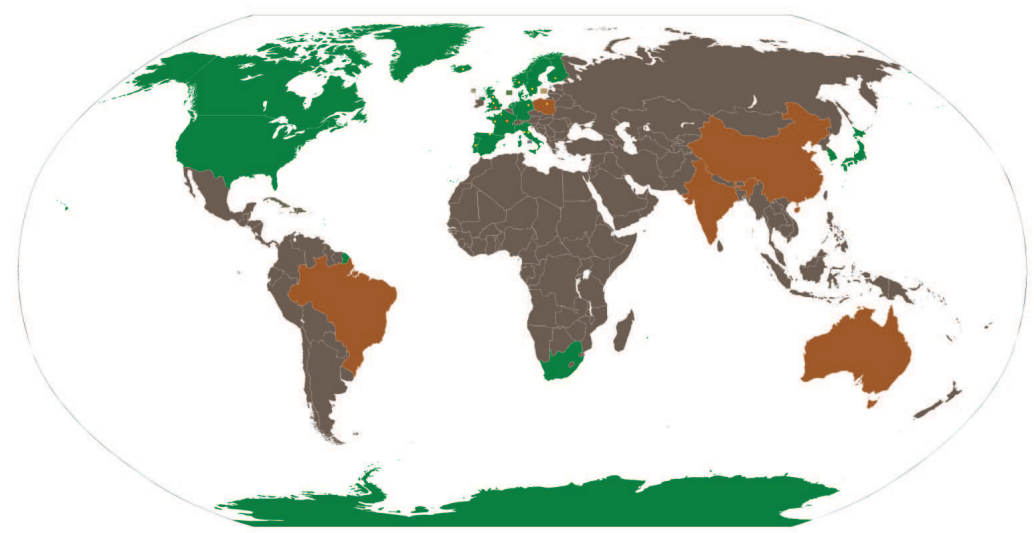
Systematics

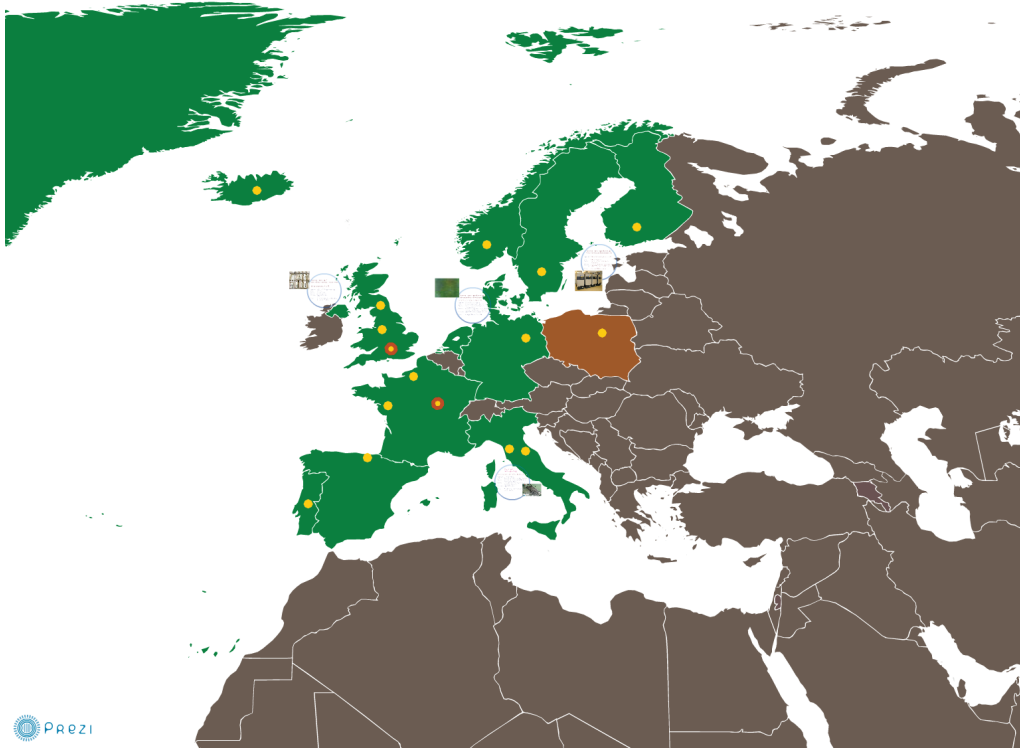


What ESBs are there?



Global Distribution





Opportunistic Sampling Strategy

Mediterranean Marine Mammal Tissue Bank (* 2002)

Organisation: University of Padua

Area: Mediterranean coast, including polluted areas
 Species: protected marine mammals, MMTB team is called to stranding sites

Samples: including blubber, intestines and muscular tissues and many others

Chemicals: legacy POPs, metals

Similar: Portuguese marine species biobank
 UK otter biobank



Systematic sampling of selected environmental compartments

UK fish tissue bank, * 2007

Organisation: UK Centre for Ecology and Hydrology

Area: UK rivers

Species: eel, roach, bleak

Samples: whole fish samples

Chemicals: legacy POPs, metals

Similar: Finnish Forest Bank, French Mussel Bank, Netherlandish Fish Bank



Systematic sampling and archiving of human and environmental samples

German Environmental Specimen Bank, * 1985

Organisation: German Environment Agency

Area: German ecosystems and urban environments
 Species: marine, limnetic, terrestrial specimens, human populations

Samples: pooled and homogenated environmental samples
 individual human blood and urine samples

Chemicals: legacy POPs, metals, emerging contaminants

Similar: Norwegian ESB, novel French ESB

Systematic sampling and archiving of environmental and human samples

Organisation: Swedish Natural History Museum, *1964

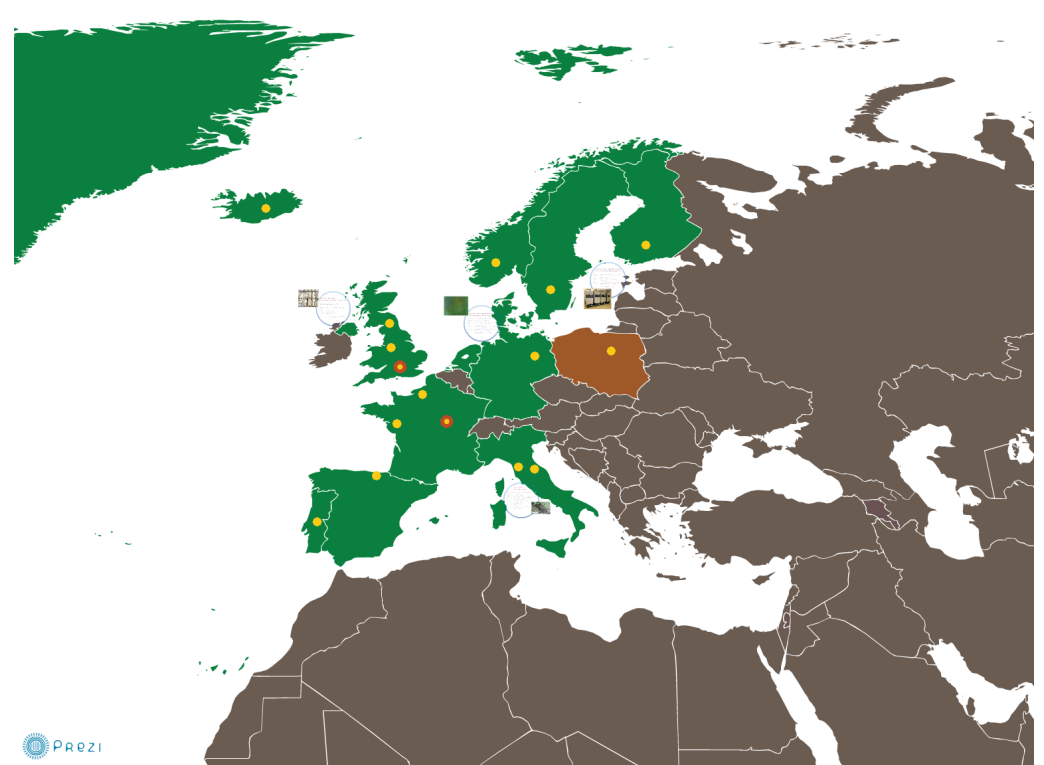
Area: Swedish ecosystems

Species: marine, limnetic, terrestrial species, top predators

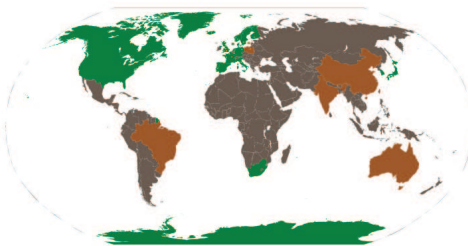
Samples: environmental samples, individually stored

Chemicals: legacy POPs, metals, emerging contaminants

Similar: Greenland ESB, Faroer Islands



What ESBs are there?



Outlook

New cryoarchive

- opening Nov 2012
- completely LN2 driven
- starting with 210 000 samples in 29 LN2 tanks
- capacities for next 40 years



Networking

- Two LiBA conferences 2011:
- EU ESBs
 - International ESBs

SETAC Session 2012
Bilbao EU ESB Conf 2013
Shanghai Int ESB Conf 213

coming up: public report on the German ESB



New cryoarchive

- opening Nov 2012
- completely LN2 driven
- starting with 210 000 samples in 29 LN2 tanks
- capacities for next 40 years





Outlook

New cryoarchive

- opening Nov 2012
- completely LN2 driven
- starting with 210 000 samples in 29 LN2 canis
- capacities for next 40 years



Networking

- Two UBA conferences 2011:
- EU ESBs
 - International ESBs
- SETAC Session 2012
 Bilbao EU ESB Conf 2013
 Shanghai Int ESB Conf 213

coming up: public report
on the German ESB



Networking

Two UBA conferences 2011:

- EU ESBs
- International ESBs

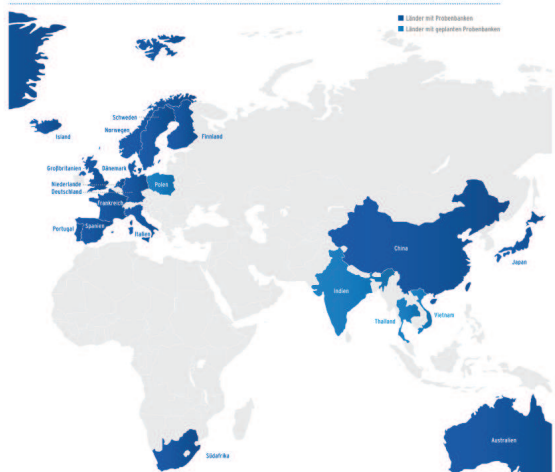
SETAC Session 2012
 Bilbao EU ESB Conf 2013
 Shanghai Int ESB Conf 213

coming up: public report on the German ESB



DIE ÄLTESTE UMWELTPROBENBANK STEHT IN EUROPA

Es gibt über zwanzig Umweltprobenbanken auf der Welt. Die ältesten Archive stammen aus den 1960er und 1970er Jahren. Erfreulicherweise ging in diesen Jahren gleich eine ganze Reihe von neuen Umweltprobenbanken an den Start. Die erste Umweltprobenbank wurde im Schwedischen Museum für Naturgeschichte in Stockholm gegründet. Sie gibt es seit den 1960er Jahren. Einige Zetteln sind über 50 Jahre alt. Jährliche Proben von Tieren, die auf dem Land, in Binnengewässern und in Meeren leben, werden als Ein-



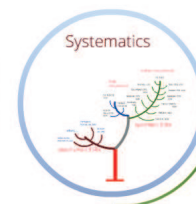
DIE ÄLTESTE UMWELTPROBENBANK STEHT IN EUROPA

Es gibt über zwanzig Umweltprobenbanken auf der Welt. Die ältesten Archive stammen aus den 1960er und 1970er Jahren. Erfreulicherweise ging in diesen Jahren gleich eine ganze Reihe von neuen Umweltprobenbanken an den Start. Die erste Umweltprobenbank wurde im Schwedischen Museum für Naturgeschichte in Stockholm gegründet. Sie gibt es seit den 1960er Jahren. Einige Zetteln sind über 50 Jahre alt. Jährliche Proben von Tieren, die auf dem Land, in Binnengewässern und in Meeren leben, werden als Ein-

zelproben eingelagert. Heute gibt es in Europa mehr als ein Dutzend Umweltprobenbanken, einschließlich der deutschen UPB. Norwegen und Frankreich rufen derzeit neue Umweltprobenbanken ins Leben. Einige Archive beherbergen Proben, die außerhalb des Europäischen Kontinents gesammelt wurden: In Dänemark arbeitet eine Probenbank mit Proben aus Grönland und italienische Fachleute reisen bis in die Antarktis, um Proben zu sammeln.



European Environmental Specimen Banks
Journey through time for Chemical Safety
Duisburg, 8. 11. 2012 Münsterberg, Science Workshop
@Prezi.com/EnvironmentalSpecimenBanks



The German ESB Team at UBA

André Conrad, Andrea Körner, Jan Koschorreck, Marike Kolossa-Gehring, Maria Rüter, Christa Schröter-Kermani, Volker Mohaupt

Partners

Biota Monitoring: [University of Trier](#)
Environmental Sample Archive, Inorganic Analysis and Monitoring of Soil Samples: [Fraunhofer Institute IME](#)
Monitoring of Suspended Particulate Matter: [Free University Berlin](#)
Routine Analysis of Organic Compounds in Environmental Samples: [Eurofins](#)

Monitoring of Human Populations, Human Sample Archive: [Fraunhofer Institut IBMT](#)
Inorganic/Organic Analysis of Human Samples: [IPASUM, University Nürnberg/Erlangen](#)

European Environmental Specimen Banks

Journeys through time for Chemical Safety

Berlin, 5.11.2012 Monitoring Biocides Workshop

Jan Koschorreck, German Environment Agency