

NEWSLETTER LIFE APEX



ISSUE NO. 4 | MARCH 2020

SAMPLE ARRIVAL FOR TIER 2 (TIME TREND ANALYSIS)



TOPIC 01

- Results: Wide-scope target screening
- Mercury analysis
- Legacy pollutants

TOPIC 02

- Access to Life APEX results
- Guidelines for the use of raptor species as biomonitoring sentinels

Telegram

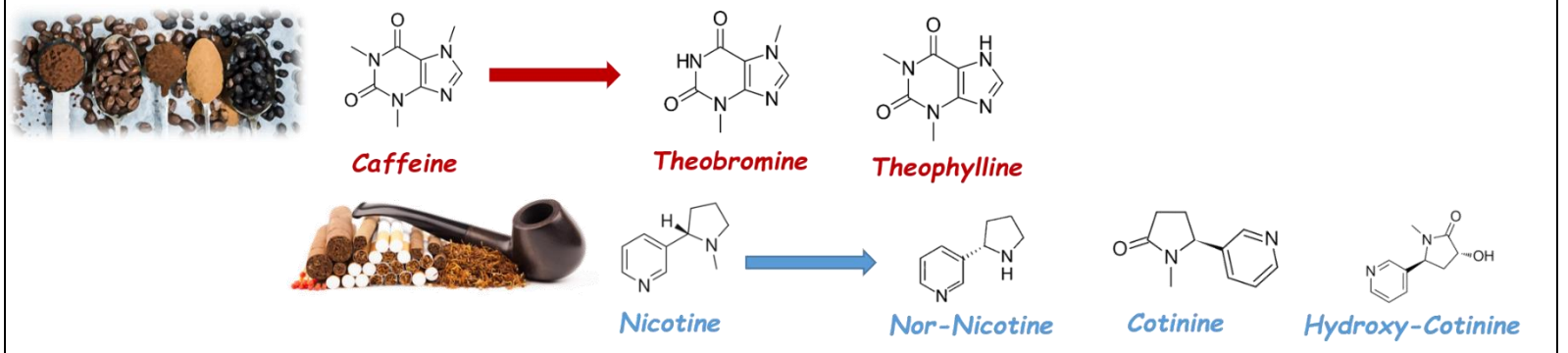
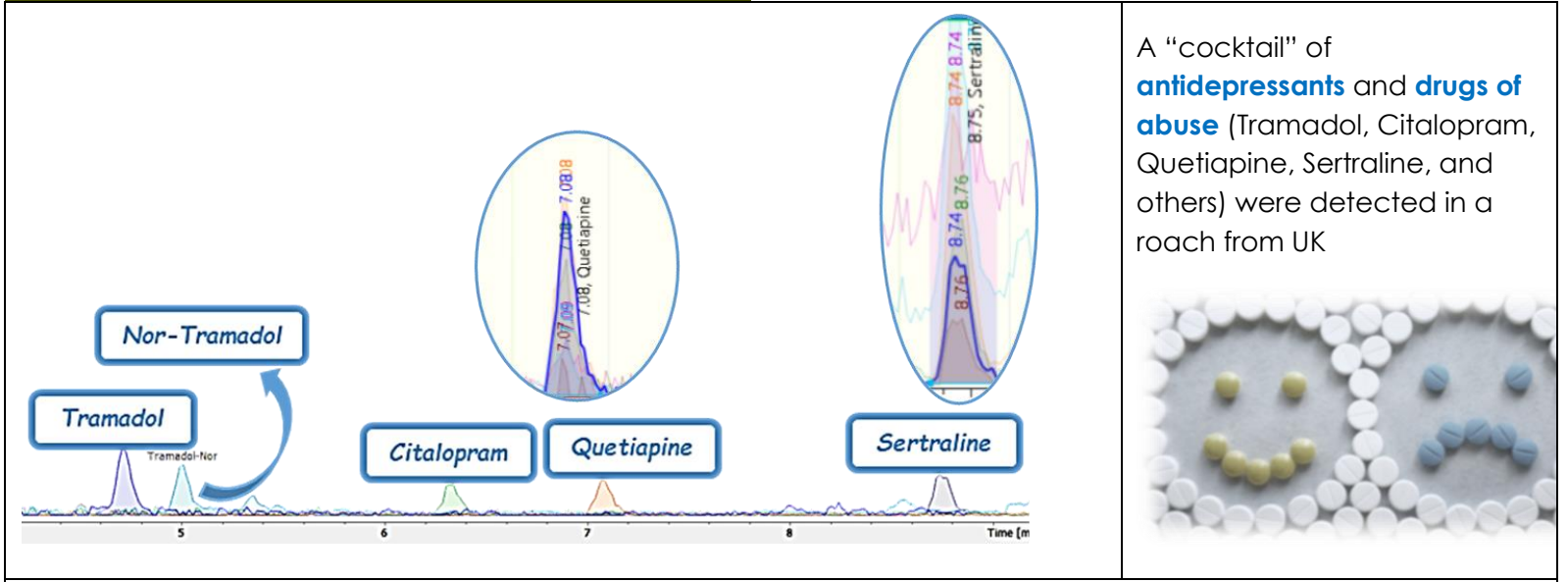
- Life APEX Tier 1 analysis and data evaluation have been completed.
- The wide-scope target screening results demonstrate the presence of environmental contaminants in high numbers.
- The identified chemicals include a wide range of pesticides, PFAS, antidepressants, drugs of abuse and stimulants.
- The spatial distribution of contaminant burdens has been visualised using online tools and will be accessible to replication and transfer partners.

- The analysis of total mercury content demonstrated that most fish samples are above the environmental quality standard (20 µg/kg ww)
- Levels in aquatic predators are one order of magnitude higher than prey fish, indicating biomagnification
- The target analysis of legacy pollutants such as PentaBDE showed higher values in predator than in prey as well
- Furthermore, we established guidelines for the use of raptor species as sentinels for environmental pollutants

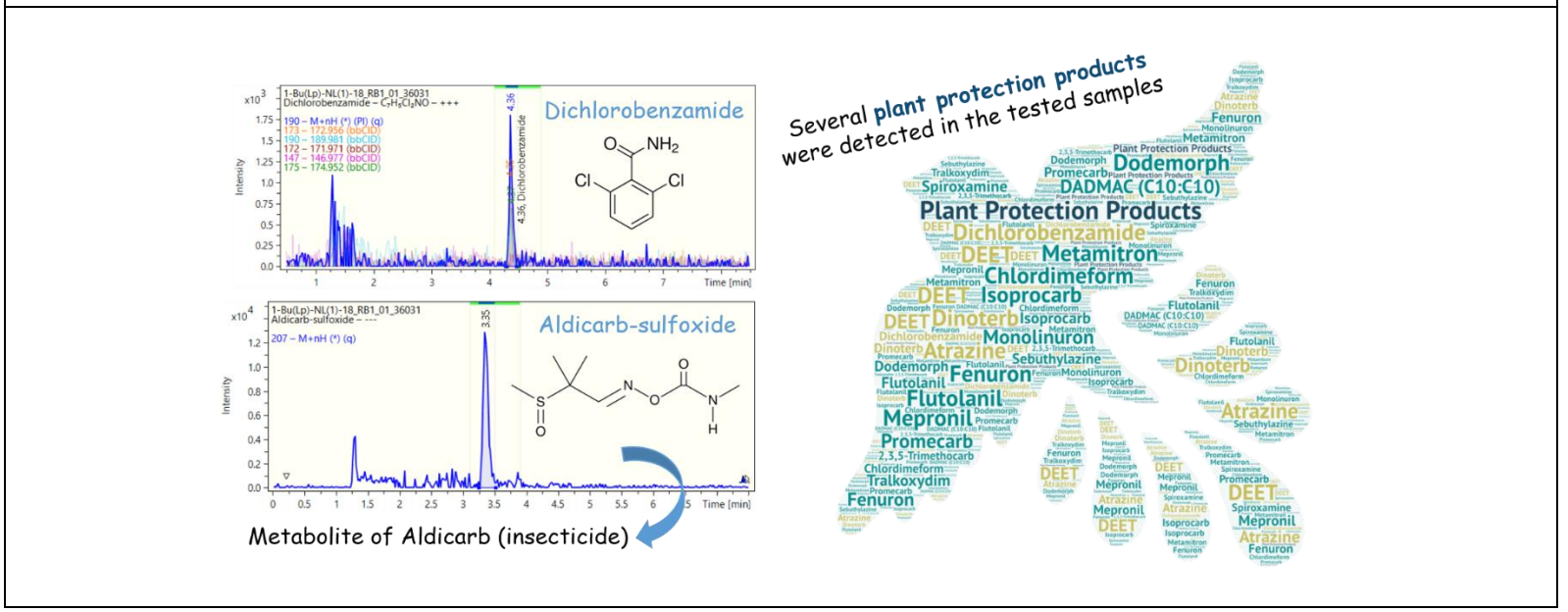
TOPIC 03

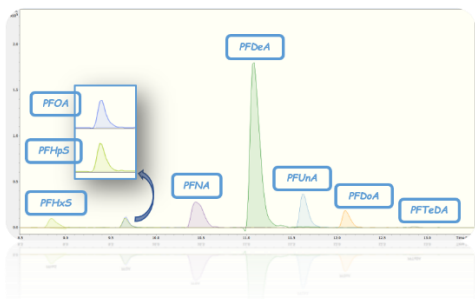
- Networking activities
- Regulatory advisory board meeting

01: WIDE-SCOPE TARGET SCREENING AT UNIVERSITY OF ATHENS



Stimulants like caffeine and nicotine and their metabolites were present in Tier 1 samples

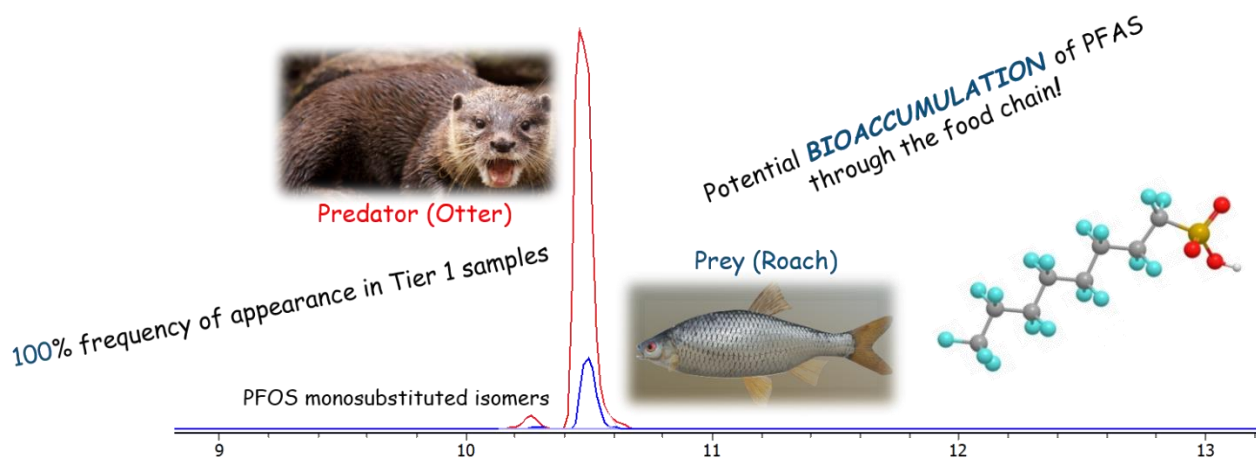




20 Per- and Polyfluoroalkyl Substances (PFAS) were detected through target analysis

Source: <https://www.wrd.org/content/pfas-information>

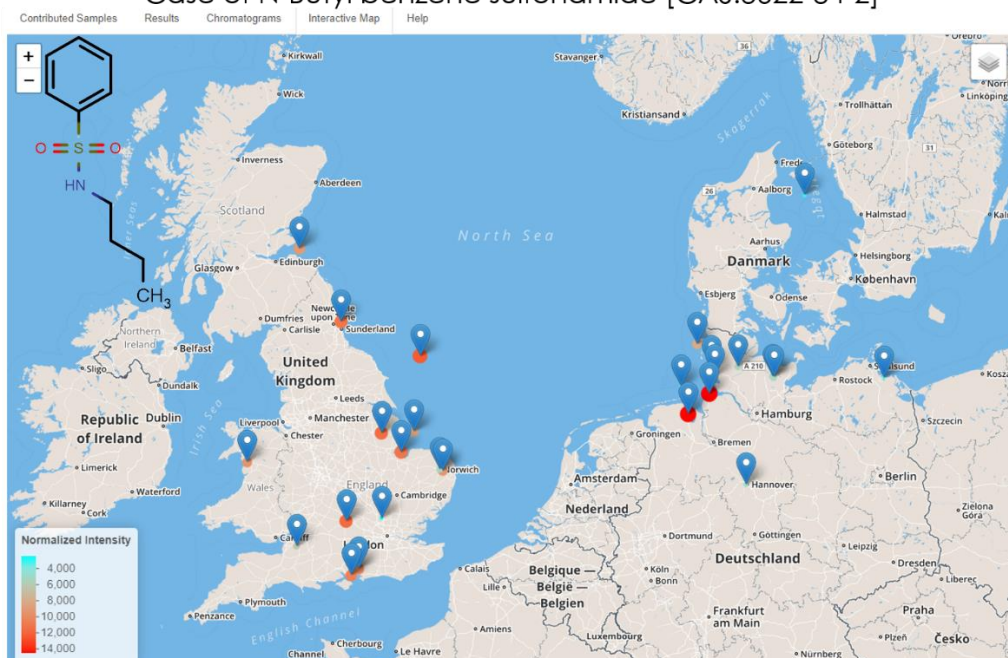
L-PFOS was detected in all Tier 1 samples and was the most abundant PFAS



L-PFOS concentrations in predators and especially otters, are orders of magnitude higher Versus their prey

Potential hazardous chemicals detected by wide-scope suspect screening

Case of N-Butyl benzene sulfonamide [CAS:3622-84-2]

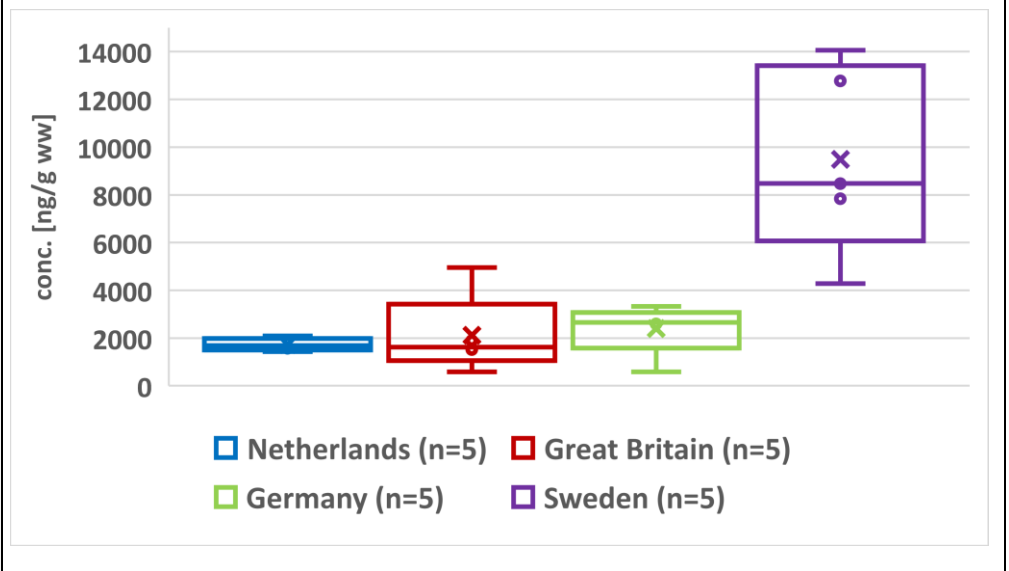


01: MERCURY ANALYSIS AT FRAUNHOFER IME

In Europe, under the Water Framework Directive an environmental quality standard (EQS) of 20 µg/kg (wet weight) for mercury and its compounds in fish was derived. Fish from inland and coastal waters have to comply with the EQS. By this means the secondary poisoning of top predators feeding on fish should be prevented. In the LIFE APEX project, prey and predator samples are analysed for total mercury as an indicator for legacy contaminants.

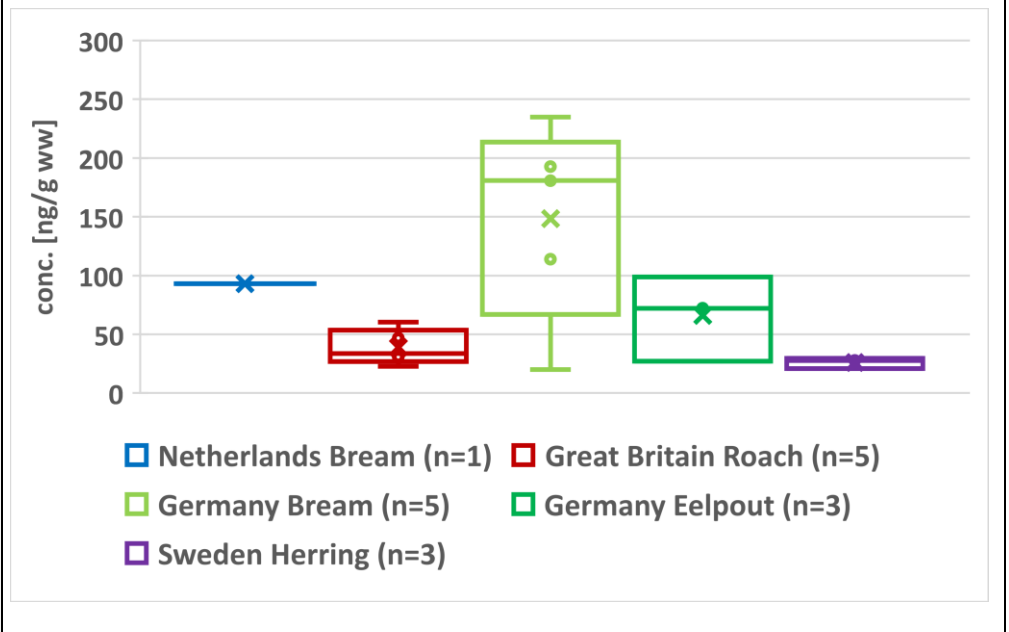
Otters:

- Total mercury (THg) values are within one order of magnitude for all samples **except for otters from Sweden**
- Lowest THg values (median) are observed for otters from **Great Britain** followed by samples from **The Netherlands** and **Germany**



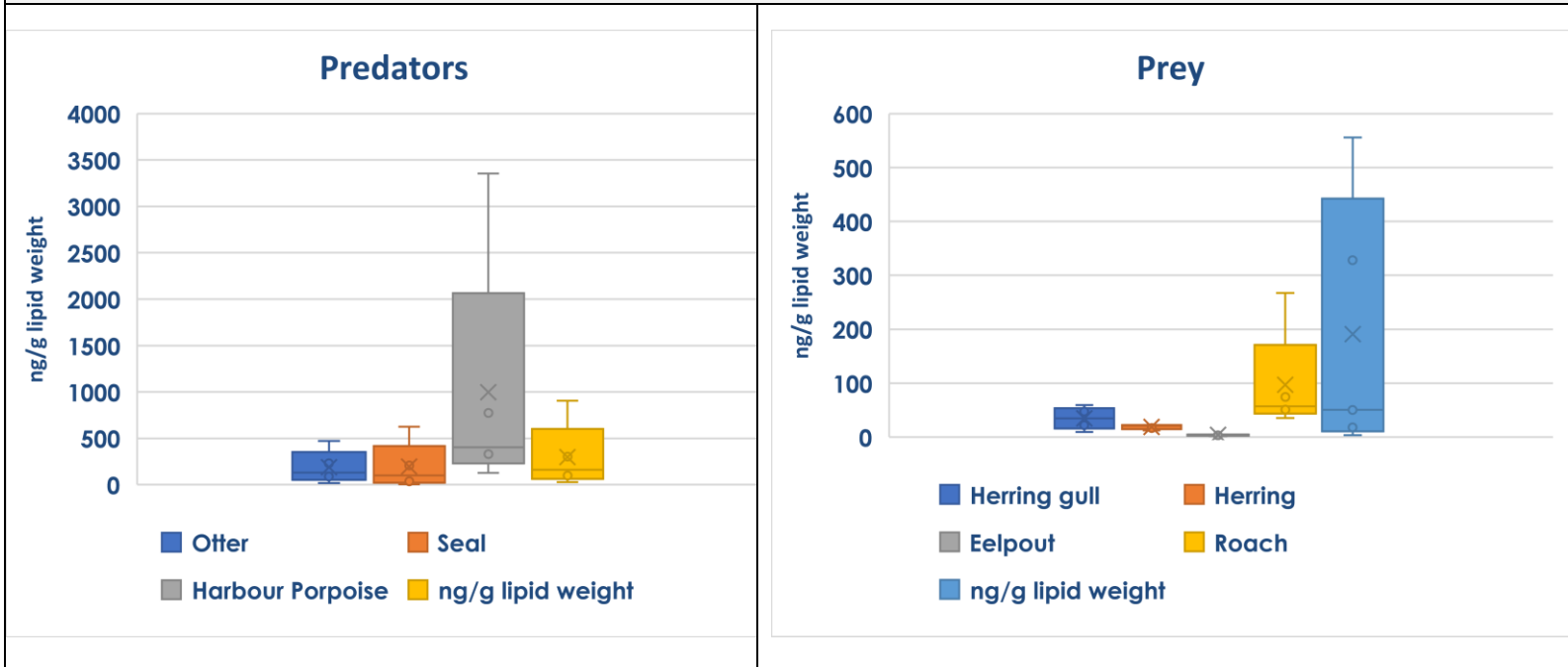
Fish:

- THg values in all fish samples are **above** the EQS except for fish from Lake Belau - a water body used as reference site for the German Environmental Specimen Bank
- Lowest THg values are observed for **marine fish from Sweden (herring)** followed by **limnic fish from Great Britain (roach)**
- The highest THg median was found for **limnic fish from Germany (bream)**



01: ANALYSIS OF LEGACY POLLUTANTS AT UNIFI

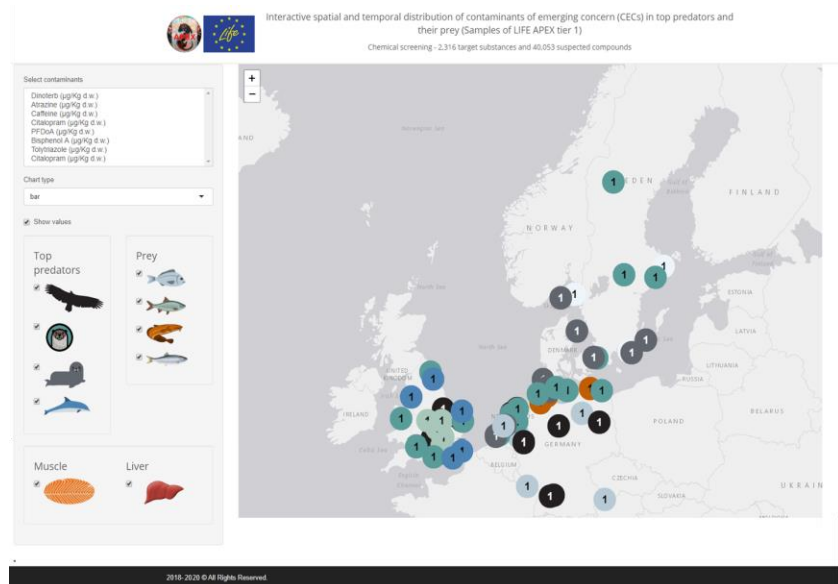
PentaBDE= Σ (BDE-28, -47, -99, -100, -153,-154)



- ➔ PentaBDE is a highly lipophilic and persistent environmental pollutant that has the potential to bioaccumulate in biota
- ➔ PentaBDE is regulated under the Stockholm Convention and is a priority substance under the Water Framework Directive due to PCB-like properties
- ➔ In general, as expected, PentaBDE concentrations showed higher values in predator than in prey
- ➔ The wide ranges reflect the local variability of the concentrations of each species

02: ACCESS TO WIDE-SCOPE TARGET SCREENING RESULTS

- Interactive map for selective contaminant concentrations
- Online access to Life APEX results
- Selection of Tier 1 predator and prey species
- Selection of respective matrix (liver/muscle)
- For further information please check previous Newsletter issues



02: PROJECT MEETING FLORENCE, OCTOBER 2019

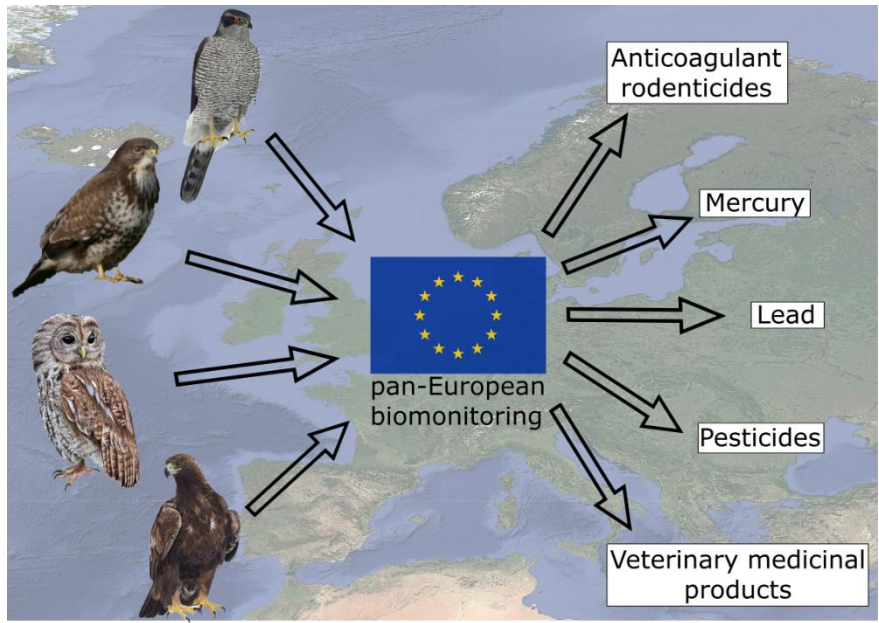
Content of the Meeting:

- Discussion of Tier1 results
- Presentation of progress reports of Life APEX members
- Organisation of sampling strategy for Life APEX Tier 2 (time trend analysis)
 - Seals (Germany)
 - Buzzards (United Kingdom)
 - Bream (Germany)
 - Otter (United Kingdom)
- Agreement on sample strategy for Tier 3 (wider-European sample origin)
- JANUS tool will be used for prioritisation of chemicals



02: GUIDELINES FOR USE OF RAPTOR SPECIES TO MONITOR CHANGES IN TERRESTRIAL POLLUTANTS

- Key pollutants were selected on the basis that they remain a current environmental risk across Europe, particularly to vertebrate wildlife
- We identified which raptor and owl species are the likely most appropriate sentinels to assess environmental risks from terrestrial pollutants and to evaluate the outcomes of chemicals management across the European Union
- Species selection was based on distribution criteria and key ecological traits that were associated to exposure to the respective pollutant



03: ONGOING AND PLANNED NETWORKING ACTIVITIES

- Check out the [LIFE APEX Twitter account](#) for regular project updates
- Life Apex presentations at **regulatory forums**:
 - ECHA Nerc Ad hoc group (4/2019),
 - ECHA Rime (5/2019)
 - PBT EG (5/2020)
- Life Apex presented at **scientific forums**:
 - NORMAN (ongoing)
 - SETAC EU (5/2020)
 - SETAC USA (5/2020)
- Two regulatory workshops for regulators are planned at UBA, Berlin (2021&2022)
- LIFE Platform meeting on Chemicals, Vilnius (11/2019)



03: REGULATORY ADVISORY BOARD (RAB) MEETING, JANUARY 2020

Content of the Meeting:

- Presentation of the Life APEX objectives, actions, expected outcomes & timeline
- Presentation of the JANUS tool for prioritisation of >40,000 chemicals
- Discussion on the regulatory background & networking with key regulators

RAB Members:

- RIVM will compare their models with JANUS
- Provided valuable input for individual compounds detected in the samples as well as substance lists for screening exercises
- Great interest in data bases and the fast visibility of data on the [Life APEX webpage](#) and the connection to other data bases such as IPCHEM

Future outline:




- The time schedule for the meetings is twice per year
Conference organised by UBA in 2021 for RAB Members and other regulators

Organisation of Life Apex

Project Partners

 <p>Environmental Institute</p>	 <p>German Environment Agency</p>	 <p>Naturalis Biodiversity Center</p>	 <p>National and Kapodistrian University of Athens</p>
 <p>Fraunhofer Institute for Molecular Biology and Applied Ecology IME</p>	 <p>UK Centre for Ecology & Hydrology</p>		 <p>Università degli Studi di Firenze</p>

IMPRINT

<p>Project Coordinator</p>  <p>Jaroslav Slobodnik is the director of Environmental Institute. Among his specialisations are environmental science-to-policy interactions, development of monitoring strategies and environmental analytical chemistry. He is frequently responsible for the design of environmental information and data management systems</p> <p>E-Mail: slobodnik@ei.sk</p>	<p>Project Manager</p>  <p>Natalia Glowacka is the project manager of LIFE APEX. She got her PhD degree in environmental management. She has more than five years of experience in the field of administration and management of national and international environmental projects in Environmental Institute.</p> <p>E-Mail: glowacka@ei.sk</p>	<p>Newsletter Editor</p>  <p>Alexander Badry is an early career researcher in the field of environmental toxicology. He is working as research assistant at the German Environment Agency and is doing his Doctorate at the Leibniz Institute for Zoo and Wildlife Research on contaminants in birds of prey.</p> <p>E-Mail: alexander.badry@uba.de</p>
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