



**Pesticide  
Action  
Network**  
Europe

## Environmental Risk Assessment: major upgrades needed

Martin Dermine, PhD, Pesticide Action Network Europe  
EFSA stakeholder NGO meeting – 13 February 2019

# Collapse of biodiversity

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- Multifactorial (habitat loss, pollution, climate change...)
- European Commission objective to halt erosion of biodiversity by 2010...2020...2100???
- Hallman *et al.* (2017): more than 75% decline in insect biomass over 27 years
- Sánchez-Bayo and Wyckhuys (2019): insect decline: agricultural practices and pesticides



## Legal requirements - pesticides

PPPR (EC) 1107/2009:

Rec 8:

*“The purpose of this Regulation is to ensure **a high level of protection** of both human and animal health and the environment.... **The precautionary principle should be applied.**”*

Art 2(b,e): “Residues/products shall not have **any unacceptable effect on the environment.** ” (non-target species, biodiversity and ecosystems)

Annex II 3.8.: no unacceptable effects on bees

# Collapse of biodiversity



To be improved...

- Lack of sensitivity of the current methodologies
- Lack of independence in the design of test protocols
- Lack of post-authorisation monitoring

# Lack of sensitivity: Underestimation of harm?



## Fungicides

- Predicted Environmental Concentrations (PECs) *FOCUS scenarios*
- Measured Fungicide Concentration (MFC) sw/sed
- Are PECs worst case scenarios?

Seawater

Sediment

Step

**15%** PEC<sub>sw</sub> < MFC<sub>sw</sub>

**67%** PEC<sub>sed</sub> < MFC<sub>sed</sub>

3  
Step

**28%** PEC<sub>sw</sub> < MFC<sub>sw</sub>

**76%** PEC<sub>sed</sub> < MFC<sub>sed</sub>

4

**Herbicide permitted levels unsafe**

Knäbel A, Meyer K, Rapp J, Schulz R, (2014). Fungicide field concentrations exceed FOCUS surface water predictions: Urgent need of model improvement. Environ Sci Technol, **48**, 455-463.

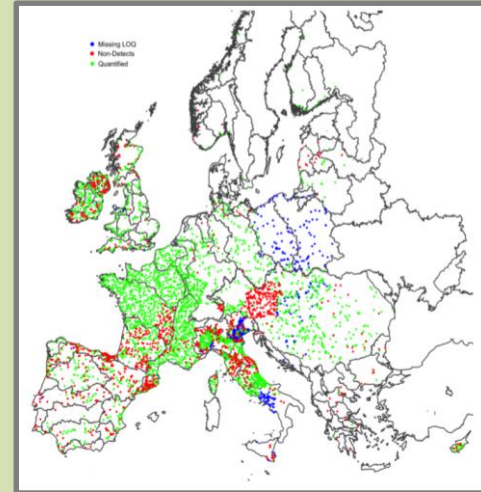
# EU freshwater ecosystems unprotected

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## Study - Outline

- 2006-2010 EEA data
- 4000 EU sites; 91 EU rivers
- 223 Organic pollutants
- Fish, invertebrates, algae



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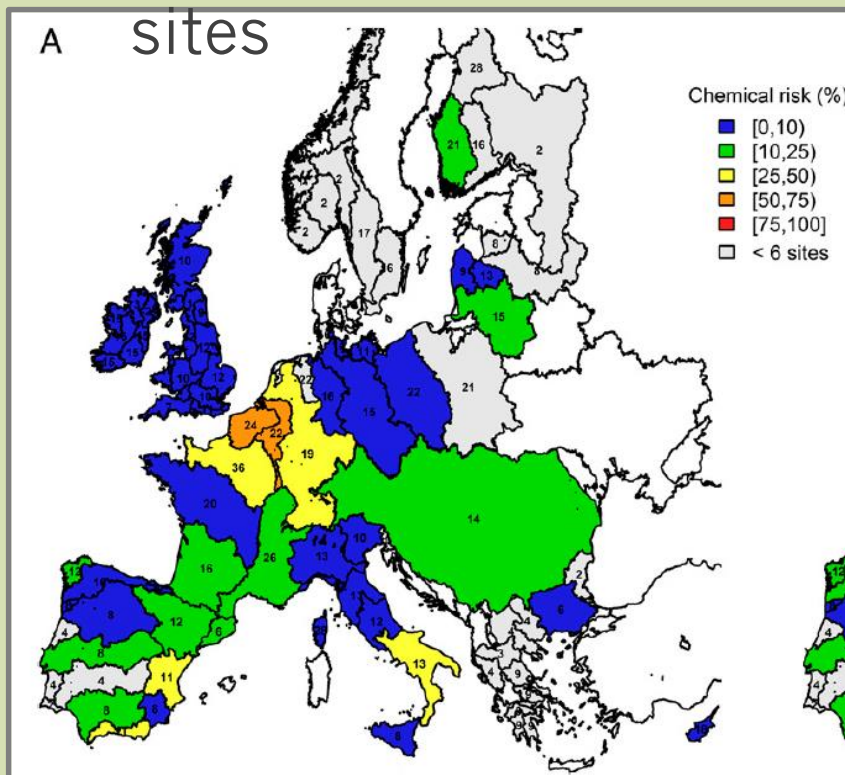
Malaj E, von der Ohe PC, Grote M, Kuhne R et al. (2014). Organic chemicals jeopardize the health of freshwater ecosystems on the continental scale. *PNAS* **111**: 9549-9554

# EU freshwater ecosystems unprotected



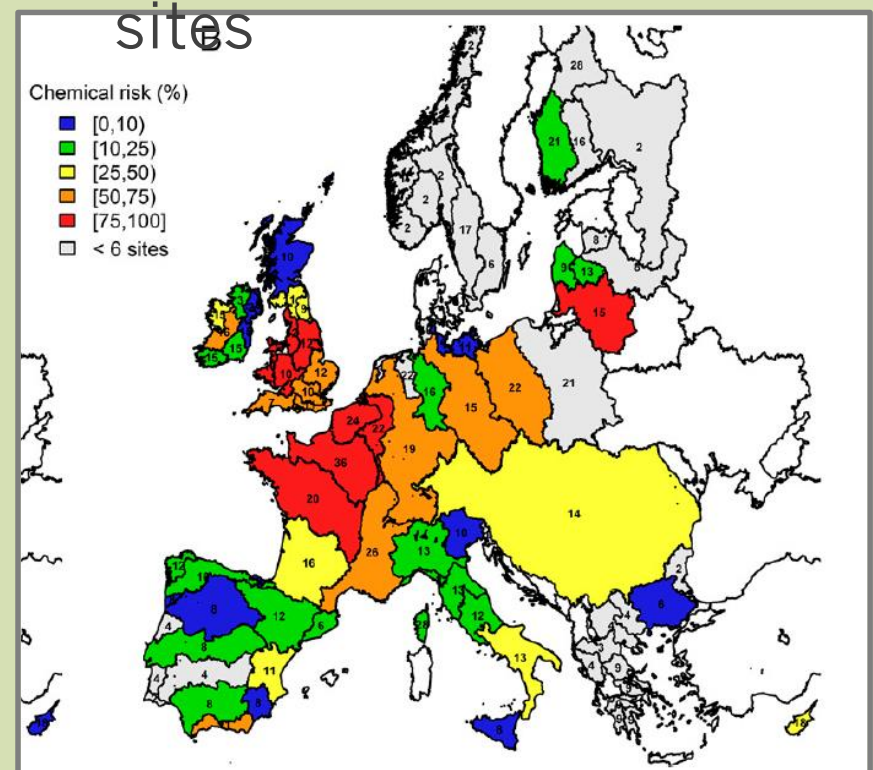
## Acute Toxicity

- Acute Risk at 14% sites



## Chronic Toxicity

- Chronic Risk 42% sites



Malaj E, von der Ohe PC, Grote M, Kuhne R et al. (2014). Organic chemicals jeopardize the health of freshwater ecosystems on the continental scale. *PNAS* **111**: 9549-9554

# Lack of independence of test protocols

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- Historically, industry took part in the design of test protocols
- Today, industry is still present through lobbying of Member States, through OECD



INDUSTRY WRITING  
ITS OWN RULES

générations  
FUTURES





# Lack of independence: recovery of non-target organisms guideline

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- Terrestrial and aquatic risk assessment for pesticides
- Hypothesis: organisms' populations will recover from important mortalities or will come from neighbouring areas
- 50% of non-target organisms can be killed
- > 50% with field tests



# Lack of independence: recovery of non-target organisms guideline

EU guideline on terrestrial risk assessment (2002)



ESCORT2: European Standard Characteristics of Non-Target Arthropod Regulatory Testing (EPPO/SETAC  $\neq$  EU)



Candolfi *et al.* (2002): Principles for regulatory testing and interpretation of semi-field and field studies with non-target arthropods.  
Candolfi *et al.* (2001); Guidance document on regulatory testing and risk assessment procedures for plant protection products with Non-target arthropods.

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Candolfi *et al.* (2002)

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- Novartis Crop Protection
- Bayer
- Zeneca
- Rhone-Poulenc

# Lack of independence: recovery of non-target organisms guideline

2012: Kattwinkel *et al.*: Ecological recovery of populations of vulnerable species driving the risk assessment of pesticides.



2016: Recovery in Environmental Risk Assessments at EFSA

- How many experts involved?
- Next steps?

# Lack of post-marketing monitoring



- Risk Assessment models are (over-) simplifying the complexity of nature
- No systematic post-marketing environmental monitoring
- No automatic feedback mechanism
- No automatic update of the stringency of the models of risk assessment

## Final remarks

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- Pressures are increasing steadily on the environment
- Biodiversity loss takes place at a dramatic pace
- Real-time monitoring is missing, no iterative process
- Scenarios fail to mimic real-life scenarios
- Urgent need to reduce pesticide environmental exposure
- Environmental Risk Assessment must have a truly precautionary, ecological-based approach
- Develop landscape risk assessment





*Thank you!*