



Barcelona, 12th – 14th of Feb. 2018

SETAC Workshop ERA Soil/NTA



**Feedback and
key learnings**

Gregor Ernst





Participants – 39 in total

// Industry

// G. Ernst, S. Loutseti, P. Neumann, E. Pilling, C. Mayer,
P. Thorbek, P. Campbell, P. Kabouw

// CRO

// J. Römbke, M. Coulson, O. Klein, F. Bakker, S. Campiche

// Academia

// P. v. d. Brink, J. Faber, C. Brühl, A. Focks, P. Craig, D. Karpouzas, F. d.
Jong, B. Scholz-Starke, C. Pelosi, A. Tiktak, [C. v. Gestel]

// Authority

// S. Pieper & K. Swarowski (UBA), C. Kula (BVL), R. Sharp & F. Streissl
(EFSA), P.-F. Chaton (ANSES), N. Harper (CRD), M. Zorn (ctgb)

// **Missing:**

// C. Topping, M. Arena, K. Nienstedt, P. Sousa



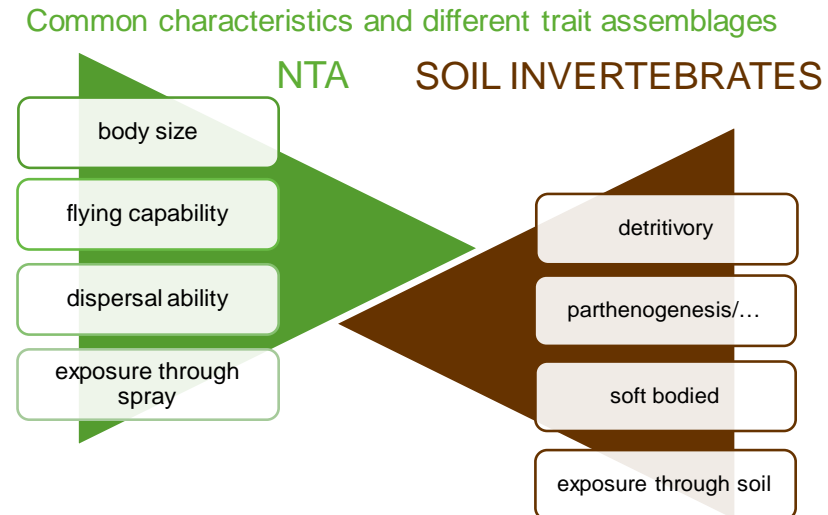
Context



Separate NTA and Soil RA ?

- // Division of both RA schemes questioned
 - // Larvae in soil – adults aboveground
 - // Holistic approach to better address indirect effects and recovery
- // But, valid arguments that separation makes sense
 - // Exposure to PPP via different exposure routes
 - // NTA and soil organisms differ in traits

- // Merging might create too complex higher tier approaches (testing and modeling)
- // Use integrated field tests for calibration
- // avoid “US-big mesocosm” syndrome





Research questions → Breakout groups

I. Indirect effects

// Which indirect effects are relevant

// Reduced predation/parasitization, Reduced (apparent) competition, Food loss, Source-sink phenomena, Changed behaviour due to changes in food, habitat, competition

// A list of indirect effect hypotheses should be derived by reviewing (semi-)field studies

// Are increases in abundance due to indirect effects of relevance to ERA?

// Definition F. Bakker:

“response of initially unaffected individuals caused by interaction with other individuals affected through exposure”

// Indirect effects from effects on the target are problematic

// NTA parasitoids / Herbicidal side effects in soil field studies



II. Linking effect and exposure

Spatial explicit RA

Modeling → Models should be transparent, reproducible, and validated

// Local scale

- // Develop individual based effect models for focal species to better link exposure and effects
- // E.g. *F. candida* model (V. Roeben); earthworm model (A. Johnston)
- // Measure concentrations in lab tests (temporal development) / derive internal concentrations / modify lab tests that they fit for modeling
- // Further development of soil effect models

// Landscape scale

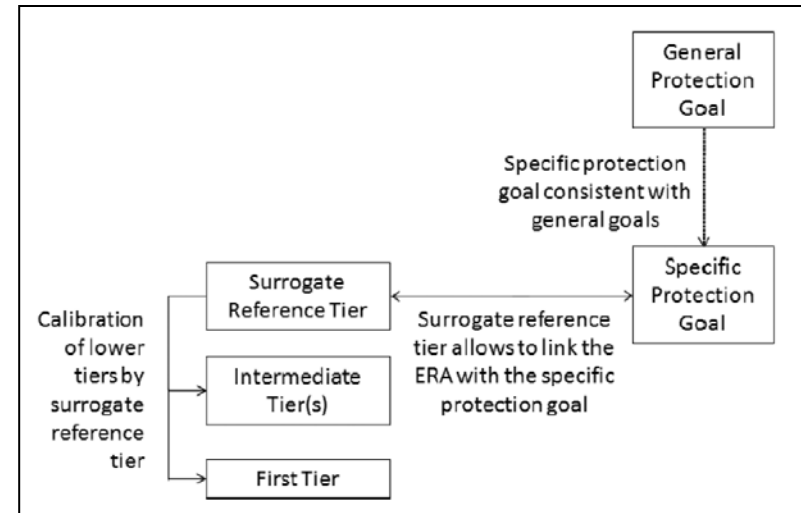
- // Address sink-source dynamics (→ NTA) in different landscapes
- // Evaluate effectiveness of risk mitigation measures
- // C. Topping didn't participate – ALMASS not discussed in detail



III. Calibration of lower RA tiers

Earthworms and NTA

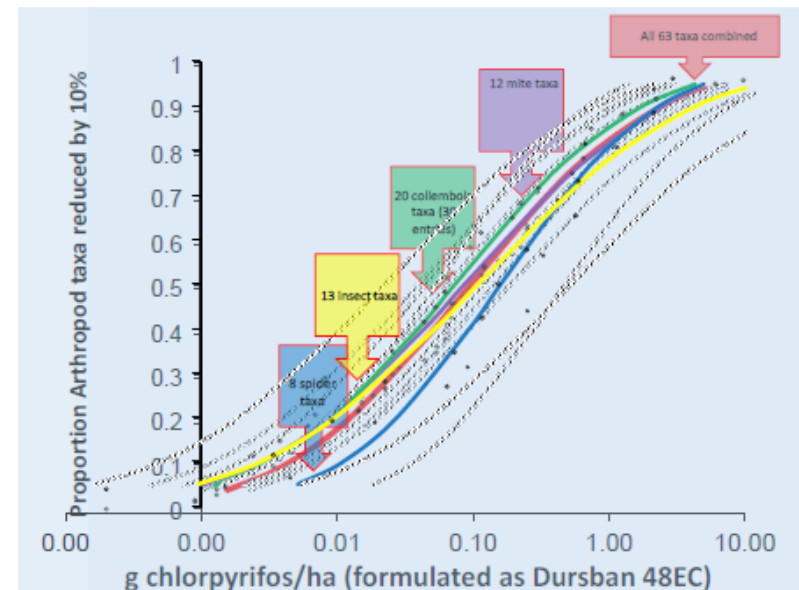
- // Earthworm (Christl et al. 2016) and NTA calibration from ECPA presented
- // “Calibrating lower tiers to field studies is a good start”
- // Criticism: low MDDs in field studies; representativeness
- // Field study as reference tier may not cover SPG and General PG
- // Not all organism groups considered
- // Indirect effects / “sink-source”
- // Reference tier to reflect landscape heterogeneity in structure and function
- // The reference tier should be supplemented with **modelling** to cover SPG and general PG
- // Bayesian network





Protection Goals

- // Protection Goal discussion taken out of the agenda, however...
- // SPG in relation to uncertainty
 - // Calibration of SPG needed → SPG to cover all organism groups and indirect effects... and General PG
 - // Discrepancy between SPG (effect magnitude) and MDD
 - // Wish for ECx and/or SSD approach in field studies / dose-response in soil higher tier studies
 - difficult to establish
- // Effect criteria (SPG definition) need expert judgement and link to ES
- // Baseline variability and impact of all agricultural practices to be considered
- // Accept impact in-field





Key learnings / actions

- // Further develop models for soil organisms and NTA
 - // Calibration → reference tier to match SPG
 - // Address remaining uncertainty in the RA
 - // Extrapolation to other regions/species/crops
 - // Landscape level / sink-source dynamics
 - ECPA workshop → ECPA funded project ?
- // Modify / extend lab tests that the results fit for modeling
 - // Analytics / internal concentrations / behavior ...
- // Further develop intermediate tiers
 - // Full fauna field studies covering indirect effects + modeling should be avoided where possible
- // Improve higher tier studies
 - // MDD, Analytics



Thank you!



Gregor Ernst

