Herpetofauna in an intensively managed monoculture in Spain

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The current situation

According to the new data requirements under the EU regulation 1107/2009 risk assessment also for reptiles and amphibians are requested for plant protection products registrations.
However ...

... there is neither guidance (beside the Amphibian metamorphosis assay - OECD test guideline no. 231) on how to address these organisms nor is there comprehensive data available to what extent they do occur (i.e. be exposed) in agricultural landscapes
... some facts

- Toads and snakes do have fewer ‘friends’ than tits and larks
- Their life histories and species ecology is not connected to agricultural fields (in the same extend as in e.g. several bird or small mammal species)
- Hence, data on species-specific distribution and agro-ecology is limited
- This is even true for natural habitats of amphibians and reptiles
Case study in sunflower

Intensively managed sunflower fields in southern Spain were surveyed in spring and summer 2008.

Survey methods

(i) observations by walking slowly (day and night - then with torches and head lights) alongside field paths and inside sunflower fields
(ii) particularly checking possible and typical hiding places (e.g. stones or pieces of dead wood)
(iii) scanning all water bodies close by
(iv) collecting of road kills close to the surveyed fields
(v) for anuran species additional acoustic recording
Case study in sunflower

Using published data and our experience, we classified the recorded species into diet guilds.

In addition, we compared our results to “habitat information” given for each reptile species in the IUCN Red List (IUCN 2011) and...

... we compared our results to species selected (i.e. possibly exposed to Plant Protection Products) in the EFSA report by Fryday & Thompson (2009).
Amphibians
(2 species)

*Pelophylax perezi*
(common in water bodies; insectivorous)

*Epidalea calamita*
(common in water bodies, found inside sunflower fields or dead on field paths; insectivorous)
Reptiles
(10 species)

*Tarentola mauretanica*
(common on big stones, walls or other shelter structures along or inside sunflower fields; insectivorous)

*Psammodromus occidentalis*
(common in field margins and sometimes inside sunflower fields; insectivorous)
Reptiles

(10 species)

*Timon lepidus*
(common in field margins, stone walls beside and sometimes inside sunflower fields; omnivorous)

*Blanus mariae*
(Beneath stones in field margins and also inside sunflower fields; insectivorous - this species feeds mostly on dead insects)
Results

Reptiles
(10 species)

*Hemorrhois hippocrepis*
(common in field margins, but sometimes inside the crop; carnivorous – feeds on other reptiles and mammals)

*Macroprotodon brevis*
(rare species; carnivorous – feeds on other reptiles, mostly worm lizards)
Results

Reptiles
(10 species)

*Malpolon monspessulanus*
(common species; carnivorous – feeds on reptiles and mammals)

*Natrix maura*
(common along water bodies; carnivorous – feeds on fishes and amphibians)
Reptiles
(10 species)

*Rhinechis scalaris*
(common species; carnivorous – feeds on small mammals)

*Mauremys leprosa*
(rare species; needs water bodies; omnivorous)
Comparison of our recorded reptile species with the species listed by **Fryday & Thompson 2009** and the habitat data listed by **IUCN 2011**

<table>
<thead>
<tr>
<th>Recorded turtle &amp; lizard species in sunflower fields</th>
<th>listed by Fryday &amp; Thompson 2009</th>
<th>„uses agricultural habitat“ mentioned by IUCN 2011</th>
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</thead>
<tbody>
<tr>
<td>Mauremys leprosa</td>
<td>-</td>
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<tr>
<td><em>Psammodromus occidentalis</em></td>
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<tr>
<td><em>Tarentola mauretanica</em></td>
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<tr>
<td><em>Timon lepidus</em></td>
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<tr>
<td><em>Blanus mariae</em></td>
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</tbody>
</table>
Comparison of our recorded reptile species with the species listed by Fryday & Thompson 2009 and the habitat data listed by IUCN 2011

<table>
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<tr>
<th>Recorded snake species in sunflower fields</th>
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Species number of amphibians and reptiles found in intensively managed sunflower fields and their surroundings in southern Spain was surprisingly high (12).

The IUCN Red list can be used as a general hint on habitat use of reptiles and amphibians regarding general agricultural habitats.

...but only a closer look can give more detailed data on the occurrence and utilisation of specific crops (e.g. sunflower) by amphibians and reptiles and their potential exposure routes.

Standardized field survey methods would be necessary to obtain detailed and comparable data on species composition and densities within crops.

Experienced field stuff, which is familiar with the species biology and agricultural practice in Europe is needed to collect such data and to increase the knowledge and to improve so far publically available data about amphibians and reptiles in-crop.

...Rifcon has preliminary results also for other crops beside sunflower.
Thank you for your attention

*Mauremys leprosa* within a pond close to a sunflower field