1. Background information: In Austria a few reproductive populations of the native, endangered European pond turtle Emys orbicularis exist (3), stressed by until now non-reproductive populations of the alien sliders (2), mainly nearctic species as Trachemys scripta, Pseudemys concinna, P. Notoni, and Graptemys sp. (all Emydidae) (7, 8). Almost all the free-living American individuals were primordially hatched in US-breeding farms, and they all were abandoned within the lifespan of a pet turtle. These populations of allochthonous turtles may serve as host reservoirs of native parasites of pond turtles (6, 10) on one hand and of invasive reptilian parasites on the other with an unknown effectiveness. Thus, one might expect a tesselated and inchoate parasite spectrum in the Austrian native pond turtle as well as in the alien slider populations, as different kinds of reservoir situations are conceivable (4):

i. The local European pond turtles harbour the habitual, native parasites without an observable interaction with any alien parasite. Alien turtle parasites may not have invaded Austria until now because of the biased parasite fauna of pet animals.

ii. The local European pond turtles harbour the habitual, native parasites which colonise rapidly the immunological naive allochthonous sliders and which may damage their fitness subsequently. In that case the native parasite fauna broadens its host spectrum and benefits from the pet turtle drifting. Such an epidemiological situation was uncovered in southeastern Spain recently (5).

iii. The allochthonous sliders have lost some non-invasive, persistent parasite species which do not substitute the local parasite fauna. Until now indications supporting this thesis were not found.

iv. The allochthonous sliders disseminate alien parasites which harm the native pond turtles. Such a case was not detected until now, but some parasites may have the potential to act as that. Especially the establishment of some alien vectors or the adaption of native vectors to alien parasites may change the epidemiological situation. Thus, before claiming deleterious impacts of the alien sliders on the native turtle populations (1), the efficiency of parasite spreading and hosting of the allochthonous sliders have to be determined and the infectious organisms actually realising a biohazard risk to the local slider fauna have to be designated.

2. Issue: Around Velden/Carinthia a few free-living populations of the respective sliders are conceivable (4):

i. The allochthonous sliders disseminate alien parasites which harm the native pond turtles. Such a case was not detected until now, but some parasites may have the potential to act as that. Especially the establishment of some alien vectors or the adaption of native vectors to alien parasites may change the epidemiological situation. Thus, before claiming deleterious impacts of the alien sliders on the native turtle populations (1), the efficiency of parasite spreading and hosting of the allochthonous sliders have to be determined and the infectious organisms actually realising a biohazard risk to the local slider fauna have to be designated.

3. Results:

<table>
<thead>
<tr>
<th>faecal samples</th>
<th>sliders</th>
<th>parasite detected</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>21</td>
<td>35</td>
</tr>
<tr>
<td>48</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>33</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Oxyura egg, larva</td>
</tr>
</tbody>
</table>

5. Selected References:


(2) Bäckerteich/Velden; area: 2 ha, depth: 6 m (11)


(5) Katalog des Landesmuseums Niederösterreich 485: 105-112.

(6) Haemoproteus degiustii

(7) Trachemys scripta scripta

(8) Trachemys scripta elegans

(9) Pseudemydidae

(10) Trachemys scripta scripta

(11) Trachemys scripta elegans

(12) Trachemys scripta scripta

(13) Trachemys scripta elegans

4. Insights:

a. Model of parasite distribution:

i. The modelled allochthonous pet slider individuals have a very low and species-poor parasite burden due to the preceding long-time pet keeping in Austria and the hatching in farms abroad.

ii. Most of the possibly introduced alien parasites cannot establish a domestic life-cycle due to the absence of suitable vectors and/or essential hosts in their life-cycle. An exceptional case detected seems to be the Plasmodium parasite Haemoproteus degiustii, transmitted by the tabanid fly Chrysops calidus in North America. This blood parasite, able to infect hatchlings and to be shipped inside young sliders (at least 9 month of parasitemia (12)), may have found a new vector in Europe, Chrysops releutus or C. pictus (9), as life-long persisting infections are unknown (12).

iii. As all the turtle populations are axially small in Austria, any establishment of a stable life-cycle of an obligatory heteroxenous parasite seems to be a delicate matter, especially in cases of Emydidaphagy.

b. Slider populations as parasite reservoirs:

i. The allochthonous sliders harboured at least one invasive, even allochthonous (?) blood-parasite, which seems to integrate into the local parasite fauna.

ii. The allochthonous sliders have lost almost all of their ancestral, xenogenous parasites due to the off-side disposal in an outbound life-stage. This fact may lead to an explicit increase in the fitness of the Austrian Trachemys populations, giving an ecological advantage over the native pond turtle populations to them.

iii. The local European pond turtles are parasitized by a monoxenous intestinal protozoan, which has obviously colonised the immunological naive allochthonous sliders. The impact of the cross-infection with the Eimeria parasite seems to be a delicate matter, especially in cases of Emydidaphagy.

5. Selected References:

(1) Arvy C., Servan J. (1998): Imminent competition between Trachemys scripta elegans and Emydidae

(2) Bäckerteich/Velden; area: 2 ha, depth: 6 m