

## Parasites of forsaken allochthonous sliders in Carinthia

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

**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 derelict pet sliders (2), mainly nearctic species as *Trachemys scripta*, *Pseudemys concinna*, *P. nelsoni*, 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 tessellated 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):

- 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.
  - 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 ditching. Such an epidemiological situation was uncovered in Southeastern Spain recently (5).
  - The allochthonous sliders harbour some non-invasive, persistent parasite species which do not substitute the local parasite fauna. Until now indications supporting this thesis were not found.
  - 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 adaptation of native vectors to alien parasites may change the epidemiological situation.
- Thus, before claiming deleterious impacts of the alien sliders on the welfare of the native pond turtles (1), the efficiency of parasite spreading and hosting of the allochthonous sliders have to be determined and the infectious organisms actually realizing a biohazard risk to the local slider fauna have to be designated.

**2. Issue:** Around Velden/Carinthia a few free-living populations of derelict pet sliders of the predominant species *Trachemys scripta*, subsp. *T. s. scripta* and *T. s. elegans*, exist in three locations, one is the Bäckerteich. As an obviously invasive species it is not protected by animal protection legislation or local handling restrictions. In the course of a slider monitoring, blood and faecal samples of allochthonous sliders (44 sliders; Ø weight ♂ 711g; ♀ 1529g) were collected as far as feasible. By parasitological standard detection methods like Giemsa-staining of blood smears, examination of an aqueous faeces suspension under a microscope, and Kinyoun-staining of faecal smears appropriate parasite stages were diagnosed.



*Chrysops relictus*, possibly a native vector of the nearctic blood-parasite of sliders, *Haemoproteus degiustii*

**4. Insights:****a. Models of parasite distribution:**

- The derelict 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.
- 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 Plasmodiid parasite *Haemoproteus degiustii*, transmitted by the tabanid fly *Chrysops callidus* 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 relictus* or *C. pictus* (9), as life-long persisting infections are unknown (12).
- As all the turtle populations are awfully 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:**

- The allochthonous sliders harbour at least one invasive, even allochthonous (?) blood-parasite, which seems to integrate itself into the local parasite fauna.
- The allochthonous sliders have lost almost all of their ancestral, stenoxenous parasites due to the off-side disposal in an outlandish habitat. 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.
- The local European pond turtles are parasitized by a monoxenous intestinal protozoon, which has obviously colonised the immunological naive and more or less parasite-free allochthonous sliders. The impact of the cross-infection with the *Eimeria* to the terrapin populations of both taxa is unclear until now.

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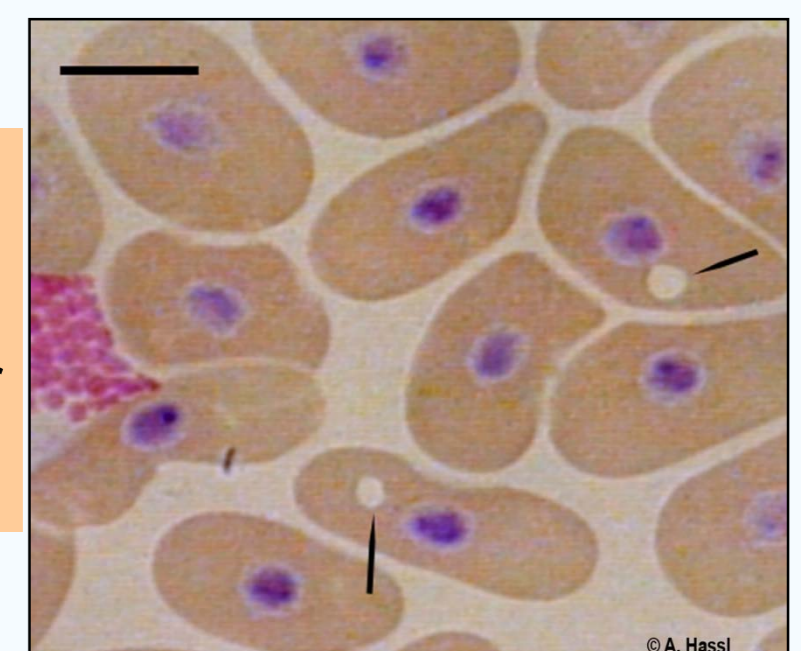
**3. Results:**

			faecal samples n =	sliders n =	parasite detected
			44	30	
blood smears n =	sliders n =	parasite detected	35	21	none
48	14		1	1	Trematode egg
33	7	none	1	1	Rhabdias sp. egg
			2	2	Oxyura egg, larva

*Haemoproteus degiustii* detected in 13 of 24 blood smears of 6 sliders (3/6 ♂ ; 3/8 ♀) composite illustration



*Aegyptianella* sp., a rickettsia, detected in two of 4 blood smears of one slider



Oocyst of *Eimeria gallaeciaensis* detected in 4 of 44 faeces samples



Egg of *Trichosoma bombinatoris* (= *Capillaria b.*), a parasite of fire-bellied toads, detected in one of 44 faeces samples

