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CHELONIA SCIENCE

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The GEA Chelonia Foundation remains active!

A report on my visit in 2025

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Introduction

Since 2024, the GEA Chelonia Foundation in Bulgaria has been officially continued by Iva Lalovska. Since its founding and official opening by Ivo Ivanchev in 2010 and with the continued support of numerous sponsors (https://geachelonia.org/en/about-us/) and the Swiss government (see Bidmon, 2011; 2014) as part of its cooperation with the European Union, the center has expanded significantly and established itself nationally and internationally, making a name for itself. Always with the goal of preserving native amphibian and reptile fauna, with a particular focus on turtles. Before Bulgaria joined the EU on January 1, 2007, tortoises

Fig. 1a-b: An eviscerated carapace (a) and plastron (b) found in the habitat of this extremely large *Testudo graeca ibera*, which was previously exhibited in the center and is now on display in the museum in Sofia.

were both exported and used by the local population for consumption and offered as a delicacy in restaurants. This practice has led to the current complete disappearance of the wild populations of the giant-Moorish tortoises (*Testudo graeca ibera*) described by Beshkov (1997) and Buskirk et al. (2001), which consisted of very large individuals (Fig. 1). This use of tortoises was then discontinued during a transition phase due to the EU's accession to the CITES agreement. However, there are still signs of turtle consumption in remote regions and among traveling peoples. The latter also led to the establishment of a rescue center and rehabilitation station for confiscated or injured turtles. This led to the turtle center, which was the result of a private initiative being transferred to the newly founded GEA Chelonia Foundation under the leadership of Ivo Ivanchev and Iva Lalovska, which has since been performing this task within Bulgaria. After the untimely loss of Ivo, there were initial administrative and legal difficulties that prevented that the GEA Chelonia Foundation could be continued in its current form by Iva Lalovska, but these have been resolved for more than a year now. During this time, further work has been carried out to expand the center thanks to sponsors and project approvals. In addition to the enclosures for housing and caring for native and confiscated tortoise species, the station also houses a number of exotic tortoise species from private ownership, which increase the center's appeal to vacationers and visitors to this Black Sea coastal region, and since admission is free, this also contributes to funding through donations.

Here I would like to provide a brief personal description of my visit this year, with the aim of updating the options for interested visitors and friends and to refute some frequently heard concerns about the continuation of the objectives.

Fig. 2: Residential building and overview of the turtle center. Compared to the photos from 2010, tall shade-providing trees and shrubs now obscure the view of the enclosures.

Fig. 3a-c: Here are the new buildings are shown, that have been added between 2019 and now. A new building with a covered terrace behind the incubator room (a) and the incubator room with additional winter enclosures for the smaller species (b), as well as the long extension with the winter quarters for the large species, which can come and go independently.

Compared to previous reports, the residential building appears almost unchanged, but it is immediately apparent that the vegetation has grown to cover large parts of it. This circumstance has a desirable shading effect (Fig. 2). However, once you pass the first enclosure in front of the residential building, you immediately notice the extensions and new buildings for organizational purposes and, in particular, for the accommodation of exotic animals. This includes a covered porch that can be opened on the sides, which is mainly used for public events with guests, such as the biannual meetings for sponsors and friends, as well as for supporting the children during the summer camps (Fig. 3a). This is directly connected to a room with large windows for housing smaller exotic tortoise species during the winter months, and it also houses the incubator for the turtle eggs and the initial care of the hatchlings (Fig. 3b). This is followed by a long, very well-insulated building complex with several heatable rooms for housing the larger exotic tortoise species that spend both the winter here and cooler or too hot summer days, as can be seen in the picture with the open doors, there is always access to the respective outdoor enclosures for the respective species (Fig. 3c). This access to the outdoor enclosure is also used on sunny winter days, especially by the African spurred tortoises (*Centrochelys sulcata*) and the Madagascan radiated tortoises (*Astrochelys radiata*) for vitamin D-providing sunbathing, whereby the occasional fresh greenery also supplements their diet in a natural way.

Fig. 4a-b: Guided tours for the numerous visitors take place almost daily from spring to fall, as in June 2025. The groups are supervised and guided by Iva Lalovska.

Already in early spring, before the start of the actual tourist season, visitors and visitor groups are guided through the center and given an introductory explanation of the respective species (Fig. 4). This also includes the actual main activity in relation to the care, feeding, and rehabilitation of the native species *Testudo hermanni boettgeri* (Greek tortoise) and *Testudo graeca ibera* (Moorish tortoise). Both species are not only cared for and bred here, but also essentially prepared for release into the wild. In addition, there are also outdoor enclosures for species that are not native to Bulgaria, *Testudo marginata* (broad-margined tortoise) and *Testudo horsfieldii* (four-toed tortoise), which have been confiscated or brought to the center as found animals. The broad-margined tortoise, which is native to neighboring Greece, in particular, was and is often kept in private gardens, and since they can reproduce well here under the climatic conditions, young escaped specimens sometimes appear in the wild.


ПРОЛЕТНО БЛАГОТВОРИТЕЛНО ПАРТИ В ЦЕНТЪРА ЗА КОСТЕНУРКИ

25 май, неделя, 11.00 – 15.00 часа, с. Баня, община Несебър

На 23 май отбелязваме международния ден на костенурките. По този повод, ние от Спасителния център за костенурки, ви каним на нашето пролетно благотворително костенурково парти.

КЪДЕ? В центъра за костенурки, с. Баня, община Несебър, ул. Шипка № 10

КОГА? 25 май, неделя, 11:00 – 15:00 ч.

КАКВО ДА ОЧАКВАТЕ?

11:00 – 12:30 часа

Ще ви запознаем с малки и големи костенурки от цял свят, които се лекуват или живеят постоянно в центъра

12:30 – 13:30 часа

Децата от Българското цирково училище в град Бяла ще ви зарадват с циркова програма и много забавни игри

13:30 – 14:00 часа

Близка среща с три екзотични вида влечуги - възможност да се докоснете и снимате с гигантска костенурка, бебе - боа и аржентинско тегу.

13:30 – 15:00 часа

За по-големите деца (над 7 г.) и техните родители сме подготвили работилница за изработване на глинени костенурки.

ВХОДНА ТАКСА: 5 ЛВ.

5a


5b


5c


5d


5e

Fig. 5a-e: Organized summer camps for schoolchildren with activity plans also take place during the school holidays (a). Tent construction (b) and explanations of the individual outdoor enclosures for the turtles (c). Both in the training room (d) and in the enclosures (e), it is possible to work with the children.

At the beginning of the school holidays in Bulgaria, summer camps for groups of children from various parts of the country take place according to old tradition. The children and caregivers are usually accommodated in tents on the grounds. They are familiarized with the turtles in the enclosures and, after receiving appropriate instruction, participate in the care work. Yes, and a special additional task, for example, with the native species, is to search for individuals that are infested with ticks and bring them in for treatment. Likewise, you can also help care for injured turtles in the rehabilitation enclosure. Depending on their age, training lessons as well as painting and craft activities take place in the training room previously presented (Bidmon 2011). In addition, there are also corresponding daily activity plans (Fig. 5). Of course, there are also trips to the beach, hikes, and excursions in the surrounding area. And a special highlight is the reintroduction of surrendered or recovered native turtles and their offspring, which may also involve further trips to the corresponding reintroduction regions.

Fig. 6a-b: Shows a few of the already quite large spurred tortoises *Centrochelys sulcata* digging their own caves in the outdoor enclosure (a) and also interacting well with each other (b).

What is there to see?

Among the exotic species, the large, imposing African spurred tortoises naturally catch the eye of visitors. In summer, they roam their spacious outdoor enclosure, where they have dug their own underground burrows (Fig. 6). Somewhat smaller and more hidden are the African hinged tortoises (*Kinixys belliana*; Fig. 7a) and the pancake tortoises (*Malacochersus tornieri*) living in the outdoor enclosures (7b). Yes, and the much larger leopard tortoises (*Stigmochelys pardalis*) sometimes have to be searched for (Fig. 7c). Next to this is the outdoor enclosure for adult Madagascan radiated tortoises, with a female on the left and a male on the right in Figure 8a. Figure 8b shows two approximately one- to two-year-old young animals of the same species in the offspring enclosure. When comparing them with their parents, it is striking how much the impressive light-colored young turtles differ from their parents in terms of their markings. In addition to other species, there are also the Burmese star tortoises (*Geochelone platynota*, Fig. 9a) native to Myanmar and the Aldabra giant tortoises (*Aldabrachelys gigantea*, Fig. 9b), which like to hide when the weather is sunny. In addition, you can also find offspring of the South American red-footed tortoises (*Chelonoidis carbonarius*; Fig. 9c), which are native to South America.

Fig. 7a-c: A new addition from the pet trade, *Kinixys belliana* (a), a male Pane cake turtle, Malacocchersus tornieri with very light markings (b), and an adult female panther turtle in the outdoor enclosure (c).

Fig. 8a-b: A pair of adult radiated tortoises (a, female on the left) and their offspring (b). This clearly shows which parents tend to produce light-colored hatchlings and how the markings change with age, as these parent animals were also once lightly colored offspring.

Fig. 9a-c: Show a subadult *Geochelone platynota* (a), a young *Aldabrachelys gigantea* (b) peeking out of its shady shelter and a young *Chelonoidis carbonarius yawning* in order to wake up in the early morning hours (c).

Fig. 10a-d: Incubator with a view through the open door (a, a') and hatching spurred tortoises (b), as well as the newly hatched hatchlings standing on the bottom shelf, where they remain freshly bathed until the yolk sac is completely absorbed and the navel is closed, as shown here *Geochelone elegans* (c) and *Centrochelys sulcata* (d).

Fig. 11a-d: During my visit in June this year, many females attempted to lay their second or third clutch of eggs. But the ground was already very dry and hard at that time. One female had just found a nesting site suitable for digging (a) and a second female had tried unsuccessfully for three days in a row to dig a nesting pit (b-b') but did not succeed. The eggs were then transferred to the incubator. Another female had started nesting there where eggs had already been laid, destroying the top egg from the clutch. Often one can observe them eating the yolk and egg white afterwards.

A special highlight can also be experienced in the breeding room, because when the incubator (Fig. 10a) is opened, you can also witness the hatching of the offspring up close (Fig. 10b-d). However, it is not only the eggs of exotic species that are incubated here, as many boxes also contain eggs of native species, because in late spring the soil can dry out so much on the surface that females want to lay a second or third clutch of eggs but lose them on the surface because they can no longer dig deep enough. Such eggs laid on the surface would then be collected, as they would otherwise overheat if they did not first fall prey to predators. This spring, I was able to observe such laying attempts several times and document them photographically (see Fig. 11a-c for examples).

It is also interesting to observe the hatching of the newborns from the eggs laid and incubated naturally in the field in late August and September after the first heavy thunderstorms. The latter is, of course, also a special event for children who have a slightly later summer camp date, as they can help collect the hatchlings, which are then housed in the headstart enclosures and released into the wild the following summer. As I have observed on previous visits, even natural hatching is often associated with unpredictable dangers, as it can happen that the hatchlings from the top eggs of the nest pit manage to open the nest or even leave it after the first downpour. However, another heavy downpour can cause the now open nest to fill with water and mud, cutting off the oxygen supply to the eggs still below and, in the event of subsequent dry spell, the eggs dry out in the mud to such an extent that the hatchlings still inside are draped and die. Such hatching scenarios are documented in Figure 12, although here, as shown in Fig. 12d, the eggs have been exposed.

Fig. 12a-c: Later in the year, from mid-August onwards, you can observe how the first hatchlings from the first clutches open their nesting pits, which is often difficult in dry conditions (a, b). After a heavy thunderstorm, everything becomes a little easier, although it also happens that such nests become so flooded that the remaining eggs become backed out in the mud (c).

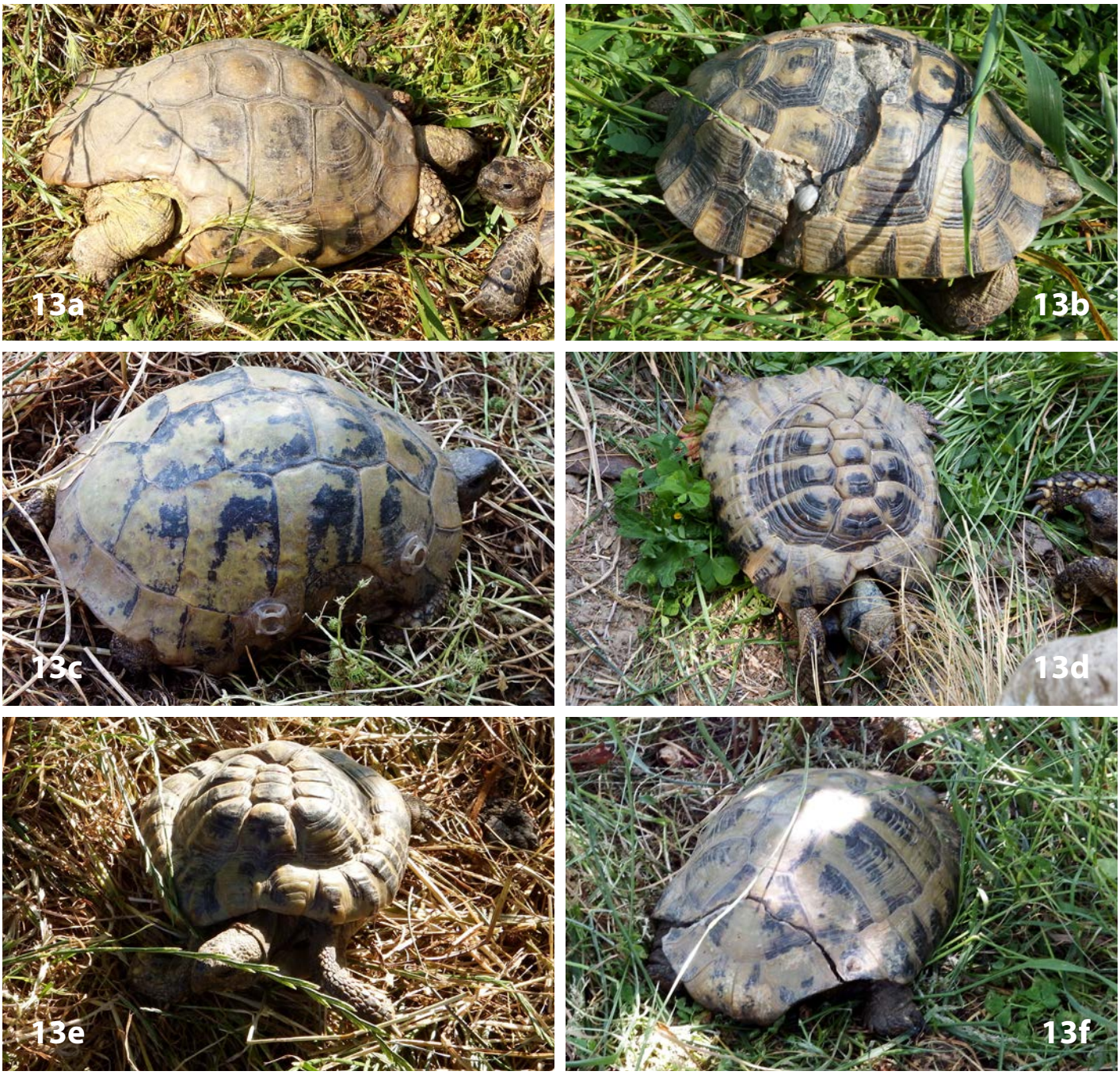


Fig. 13a-f: In the center, until recovery or forever remaining care individuals such as these, some of which are *Testudo hermanni boettgeri* with amputated carapaces and legs (a) or with severe, albeit healed, carapace fractures (b). One of the tasks of the students at the camp is to search for specimens with ticks, as shown here in (b), and bring them in for tick removal. A female with a well healed carapace fracture; the clamps used to secure the lacing to close the wound are still in place (c). Two individuals from a whole group of confiscated turtles that had apparently been kept on the floor in an apartment without extra lighting for several years (d, e) and an adult male that was brought in with an unhealed carapace fracture (f).

Figure 13 provides us with a brief overview of this year's tortoises that originate from surrenders, confiscations, or are currently still in the rehabilitation enclosure. Of particular note here is the long-term indoor keeping of an entire group of turtles on a normal apartment floor, which resulted in small stature with very flat and widened carapace growth, which probably began when they were first kept in captivity, as shown here for two of the individuals (Fig. 13d-e). The latter actually gives a clear indication of how a lack of light and the absence of optimal thermoregulation also affect shell growth biophysically. Such growth changes cannot be explained solely by insufficient or incorrect feeding, but rather as an attempt of adaptation, since flat, wide surfaces can be heated more quickly in an environment that is too cool without the possibility of seeking out sunny spots. The extent to which a lack of UV radiation and vitamin D also plays a role remains unclear.

Fig. 14a-e: A freshly delivered, apparently healthy *Testudo hermanni boettgeri* for observation in the quarantine enclosure (a). The tortoise was found on a construction site and will be released into the wild at the earliest opportunity. A specimen with severe skull injuries, freshly delivered and infested with ticks (b). It was still in good condition and was then taken to the veterinary clinic in Burgas. A young tortose that had been hit by a car with a broken carapace for treatment on site (c-e).

The fact that the center is located here in the middle of the habitat of the native turtle species is evident from the fact that 2-3 calls are received every day asking whether and how found or injured turtles can be sent to the center or picked up someone related to it. In addition, there are the animals that are simply brought in from the immediate vicinity of about 100 km. These are often healthy individuals that were found, for example, at construction sites when construction began or they have been picked up on roads in order to save them from heavy traffic (Fig. 14a). Seriously injured specimens or individuals that have just been hit by cars are also often brought in (Fig. 14c-e). This raises the question of whether the injury can be treated on site or whether individuals, as shown in Fig. 14b, need to be taken to Burgas to one of two veterinarians working with the center for further treatment after the ticks have been removed, which, although at a reduced rate, incurs additional costs. (During my visit, there were 13 turtles receiving temporary veterinary care).

Observations and excursions

Of course, both at the center itself and outside during walks, other reptiles and amphibians can be observed (e.g., Figs. 15, 17-18). However, I would also like to refer to earlier, more detailed reports (Bidmon 2011; 2013; 2014). I would not like to leave unmentioned, however, that from 2010 to today, the frequency of individuals of many species seems to have decreased overall, as the transition from pure grazing to large-scale agriculture (e.g., Fig. 16b) with the corresponding use of herbicides and pesticides has left its mark on the fauna and flora that cannot be compared to those caused by pure grazing livestock by the shepherds of the past (Popgeorgiev et al., 2014). Such sheep and goat herders still exist, but they are becoming fewer and fewer. It should also be mentioned that the former Irakli Delta and Irakli Beach have now been renamed Vaja Beach. I am not familiar with Bulgarian law, but Irakli was protected and belonged to the Natura 2000 region implemented by the EU, so the name

Fig. 15a-e: Lizards can be observed almost everywhere, such as here a pregnant *Lacerta trilineata* female (a) and a young animal (b). Yes, and with a little luck, the rhinoceros beetle, *Orycetes nasicornis* (c) can be found. In late summer, moon horn beetles *Copris lunaris* (d female left, male right) and *Mantis religiosa* (e) can be observed more frequently.

change may well have served to further expand tourist use (see https://www.holidaycheck.de/hi/vaya-beach-resort/88337629-04b7-4ab2-bbe0-c5b801bd7ec4).

However, during excursions between Vaja Beach and Banja, you can still observe several tortoises, which are rarely seen running free, but you can hear them rustling in the dry grass or leaves at the side of the path. Or you can find them if you follow some of the less used branching paths to the shore of the Irakli (Fig. 17). On one of my excursions, I was even able to locate an adult *Emys orbicularis* female in the upper reaches of the Irakli (Fig. 18). This is something I was unable to observe in previous years when I was there with Ivo, because *Emys* could usually only be observed in the lower reaches or directly in the delta close to the sea (18j). This adult female had a Carapax pattern (Fig. 18g) which looked very similar to that of *E. o. eiselti* whereas the plastron (Fig. 18h) looked like the one of *E. o. galloitalica* (for comparison see Rhodin et al., 2025, pp. 207-208). In addition to the photos shown, the *Emys* female sighted in the upper reaches also provided interesting observations for orientation, but these can be better illustrated and explained with the accompanying film. I mention this only to emphasize that such observations can certainly satisfy one's interest in neuroscience. Yes, and the latter also includes the many observations of whirligig beetles from the Gyrinidae family (Fig. 18l), which are often found in larger groups in the upper reaches of the Irakli. Since these beetle groups are very sensitive to vibrations or movements in the water, they repeatedly display their impressive swarm coordination by dispersing in a fast whirling manner and forming again a closed swarm after a while.

This year, too, a visit to the Veleka was a must. However, this time the usual rental canoes had been replaced by newer, sportier-looking boats in which one could lie down rather than sit upright, which did not exactly make photography any easier. Nevertheless, individuals and larger groups of *Emys orbicularis* and *Mauremys rivulata* could be observed (Fig. 19). It was noticeable, however, that the majority were male individuals, which may have been due to the time of year when the females were probably increasingly looking for nesting sites. What could also be observed again were large adult *Trachemys scripta*. Although attempts had been made to decimate them by shooting, this approach had not been entirely successful. Yes, and this proves once again that Andrae Stojanov was right when he listed *Trachemys scripta* among the native turtle species in his book (Stojanov et al., 2011; Tzankov et al., 2015). This is something that we are increasingly observing here in Bulgaria, as well as in neighboring Romania and probably worldwide (see Bidmon, 2024; 2025).

Fig. 16a-e: A hike along the Irakli river where one can clearly see what ecologists mean by homogenization of fauna and flora (see Simberloff, 2013) with the natural diverse flora on the left (a) and the homogeneous huge wheat field on the right (b). Insights into the blossoms still to be admired in June (c, d) and a well located in the area near the village that is completely overgrown.

Fig. 17a-h: Along the way, you can see sometimes wild boars and shy cats (a), but if you listen to the landscape, a soft rustling in the dry leaves often announces a tortoise like this young well-grown *Testudo hermanni boettgeri* (b-e) as well as this pair of tortoises about 100m further away, which apparently still felt like spring mating in June (d, e). Even a recently released individual could be found, which still had a plaster remnant on its carapace (g). This adult specimen, which quickly fled, was found in the dense deciduous forest not far from a pigeon carcass (h).

17g

17h


18a


18b


18c


18d


18e


18f

Fig. 18a-k: Compared to my hike in the Irakli Valley in 2015, this one was now very overgrown with tall shrubs, but it had comparatively more water in the accessible areas (a), where, among other things, many dragonflies (*Orthetrum brunneum*) could be observed (b). At a partially sunlit ford, there were still some toad tadpoles (c). However, where the more open areas were located, a dense carpet of algae had spread (d) and something was moving (e-h), which, after a few hand movements in the algae, turned out to be an adult *Emys orbicularis* female, which I placed in the still clear, shaded water (i). In the lower reaches of the now renamed Irakli-Delta, *Emys orbicularis* are also reproducing again, as can be seen from this young animal sunbathing on a piece of Styrofoam (j). But you can also observe *Natrix tesselata*, as here, devouring their prey (k), and many swarm formations of shadow-casting, whirligig beetles, *Orectochilus villosus* (l, white arrows) populate the shallower, clear water areas.

Discussion and outlook

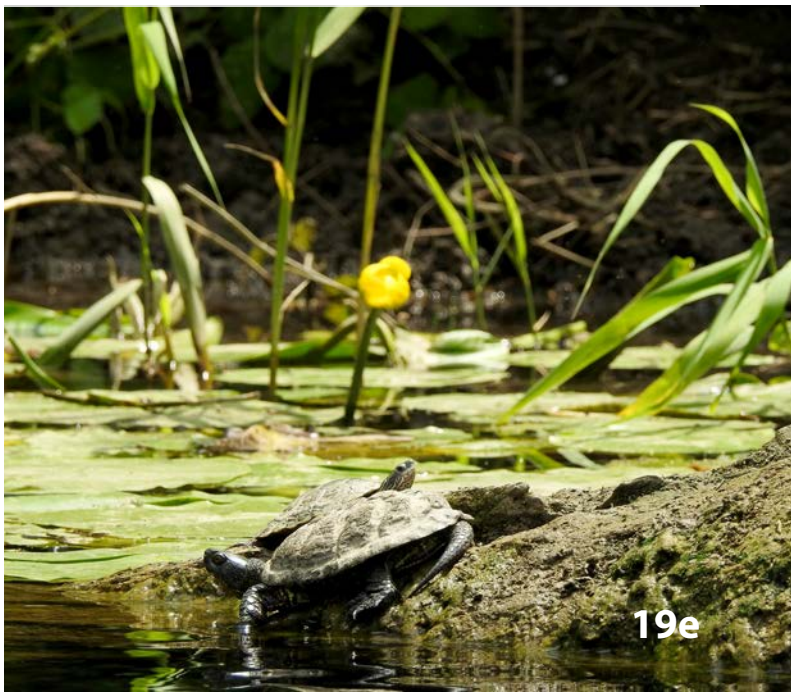
As the above descriptions show, the GEA Chelonian Foundation continues to work successfully and also offers visitors and interested guests a good insight into its work and nature. This last aspect is also clearly illustrated by the promotion and training of young people. Yes, and this work continues to depend in part on donations and support. I don't want to repeat myself, but in Bidmon (2010) it is already noted that even at the time of its founding, support was not to be expected from the large, well-known international turtle conservation organizations. European tortoises were not rare enough to attract their attention, so that small NGOs and private initiatives were needed and still are today. Then as now, I am still of the opinion that one must also be active where there is still something to preserve and where the population has not yet collapsed to the last relict individuals endangered by inbreeding. The fact that it is still appropriate today to keep an eye on changes is, as already indicated in some of the points above, becoming increasingly important. For most of us, such changes happen slowly and are often overlooked. This is because landscape changes that conflict with nature conservation are even perceived by many as "beautiful" and natural. Blooming poppy, rapeseed, and sunflower fields are indeed a feast for the eyes, but in combination with corn they also cause the wild boar population to skyrocket due to the abundance of food, and wild boars are known worldwide for destroying small vertebrates, amphibians, reptiles, and their eggs (McDonough et al., 2022; Geller & Parker, 2022). Similarly, the extermination or decimation of wolves and bears contributes to the increased spread of smaller predators such as foxes, jackals, etc., resulting in increased predator pressure on smaller ground-bound or ground-nesting prey species (e.g., Purger et al., 2023). The increasing urban sprawl of the landscape and the associated waste management also have an impact on the increase in scavengers, which, however, are usually not limited to waste and carrion (e.g., Segura et al., 2020). As already indicated above, such changes can also be seen here in comparison to 2010 and will continue as economic and political interests both within the EU (Navarro & López-Bao, 2024; Nicholson et al., 2024; Epstein et al., 2021) and internationally (e.g., Pereira et al., 2024; Halpern et al., 2025, Zou et al., 2025) may still contribute to that continuation. Just recently, a study on the collapse of the monarch butterfly population in the US provided a very instructive example of the role that entire pesticide cocktails (15 pesticides & their metabolites) can play in this (Cibotti et al., 2025). The decline of invertebrates as part of the food chain also leads to the disappearance of vertebrates. Yes, we are even seeing how changes in political power, not only in the US but also here in Germany and the EU, can significantly shift priorities for climate and nature conservation. In comparison, such not insignificant conservation efforts as those presented by Mozer et al. (2025), for example, appear to be more of a token gesture within the EU.

Acknowledgements

My special thanks go to Iva Lalovska and the children for the excellent accommodation, the detailed explanations, and the expert guidance, especially during the excursions.

19a

Fig. 19a-g: During this year's paddling tour on the Veleka, one of the well-known *Trachemys scripta elegans* (a, b) was once again spotted, as well as individual and entire groups of *Emys orbicularis* and *Mauremys rivulata* (c-g) sunbathing.



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