Photodocumentation of protected Reptiles

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Foreword

Why Instructions for Photo documentation?

Government Director Gerhard Adams, Federal Environment Ministry

With the bill based on the results of the research efforts financed by the Federal Environment Ministry „Recognition of individual reptiles“ it has been shown that certain reptile species can be definitely individually identified on the basis of externally recognisable characteristics which cannot be altered. This opens up the possibility of allowing the use of photos of particular patterns, forms of shell or plate sutures as a means of recognising the individual animal.

Because this method of identification is used without invasive procedures, Federal Minister Trittin has decided to eventually alter the federal laws relating to the protection of species for the species Radiated Tortoises, Greek Tortoises and Hermann's Tortoises, Marginated Tortoises, North and South Malagasy Boas as well as the Madagascar Tree Boa, which at present should replace the stipulated recognition by transponder. These species - in particular the tortoises - form the majority of the specimens kept or traded in Germany. Photo documentation will need to be repeated at regular intervals, for juveniles every 2 years and adults every 5 years.

This change in the law will still take some time, since among other things the Bundesrat must agree to this change.

The DGHT has now produced a brochure which - as I intend - explains to keepers and breeders of reptiles, but also to wildlife protection authorities, how the photos on which the unalterable body markings of every individual are recorded should be taken. Also explained is which body parts of the various species have the unalterable markings and therefore should be clearly visible on the photos. Photo quality is the decisive factor in the acceptance and successful application of this recognition method in practice. This set of instructions is therefore an important as well as useful aide for the keeper of the above mentioned reptile species in the preparation of the photos which will be required in future.

The content of the suggested reptile passport suggested in this brochure goes far beyond the the anticipated demands of the Federal wildlife protection ordinance, which is restricted to a narrower formulation of documentation for certain reptile species. However, accurately describing the variations in markings in the reptile passport will make the procedure a lot easier.

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Introduction

For a large number of reptile species the Federal Wildlife Protection Ordinance provides for recognition by transponder, provided that certain weight limits are met. With the R&D project „Methods of recognising individual reptiles“ it was proven that for some reptile species identification was possible on the basis of the variation in external characteristics. With this a loophole in knowledge for some reptile species was closed. The Federal Environment Ministry intends to do away with the compulsory provision for recognition by transponder and to replace this with the duty of providing documentation.

Federal Wildlife Protection Ordinance in the applicable setting (§10, Paragraph 3) states that documentation must

“...contain a drawn or photographic exhibition of those parts of the body which make identification possible. This exhibition is to be supplemented with a description of the animal which must at least contain the size or length, weight, sex and age as well as a description of distinguishing features.“

By „distinguishing features“ is meant individual marks on an animal, such as scars or injuries, which are no longer capable of change.

Beyond the intended reorganisation of the Federal Wildlife Protection Ordinance a „reptile passport“ was developed, which can be used as a readily available model for reptile keepers and the appropriate authorities and therefore should also standardise and facilitate the exchange of animals and their documents between the federal states. It should be stressed that the reptile passport shown was worked out in collaboration with representatives of the appropriate authorities.

This brochure should serve as a practical set of instructions for the preparation of documentation for all interested parties.

Contents

Photography and Feature Variation

The subject of the tagging of reptiles has been the main focus of interest for reptile owners for some time. The bases for the tagging are the amended species protection laws at EC- and federal level. The EC implementation order (EG-VO939/97) prescribes individual tagging of Appendix-A reptile species for the monitoring of trade. As preferred method of recognition the uniquely numbered microchip transponder is established. Only by proving that this method cannot be used because of physiological or behaviourally-conditioned characteristics is it possible to use other suitable methods as a means of tagging. This regulation is amended and stated more precisely by the effective Federal Wildlife Protection Ordinance. In addition to the control of the trade the Federal Wildlife Protection Ordinance also stretches to cover the keeping of those species affected.
These regulations, as stated above, are to be amended.
The Federal Office for Wildlife Protection placed an R&D (Research and Development) project with the DGHT out of the funds from the Federal Environment Ministry's UFO Plan. Within the framework of this project with the title „Methods of recognising individual reptiles" (running from 15.11.1999 to 30.9.2000) most of the methods here described were worked out (see Bender& Henle 2001).

1 Tortoises

1.1 Which species must in general be photographed?

(Nomenclature after Iversen 1992)

Among land tortoises (Family Testudinidae) a fair number of species must be documented by photograph (Federal Wildlife Protection Ordinance §8 as well as enclosure 6, cross in column 7; no cross in column 6). Up to now among these species suitable characteristics for the identification of individuals with the use of photos have only been examined in the Pancake Tortoise (*Malacochersus tornieri*) and the Egyptian Tortoise (*Testudo kleinmanni*).
In order to determine suitable characteristics for the species named below, additional examinations have to be carried out. Some of the species cited here are rarely if ever kept in human captivity. Nevertheless they are named for the sake of completeness.
As long as further examinations are not carried out only general tips can be given for photography. This applies to *Homopus bergeri* and the (*Pyxis planicauda*).

Among pond turtles (Emydidae) the following species are affected:

- Bog Turtle, *Clemmys muhlenbergii*
- Indian Roof Turtle, *Kachuga tecta*
- Tricarinate Hill Turtle, *Melanochelys tricarinata*
- Burmese Eyed Turtle, *Morenia ocellata*
- Coahuilan Box Turtle, *Terrapene coahuila*

1.2 For which species is photodocumentation planned as a replacement for the transponder?

In general the transponder is stipulated for all other Appendix A land tortoises (above 500 g). However an amendment of the Federal Wildlife Protection Ordinance is planned for several species. In anticipation of this, photodocumentation is already now accepted in the majority of federal states for the following species. This affects the Radiated Tortoise (*Geochelone radiata*), Hermann's Tortoise (*Testudo hermanni*), the Greek Tortoise (all subspecies of *Testudo graeca*) and the Marginated Tortoise (*Testudo marginata*) (for juveniles see chapters 1.4 and 1.5).

1.3 Instructions for photography

These instructions were drawn up with the aid of an examination of adult animals of the following species:

- Radiated Tortoise (*Geochelone radiata*)
- Hermann's Tortoise (*Testudo hermanni*)
- Egyptian Tortoise (*Testudo kleinmanni*)
- Marginated Tortoise (*Testudo marginata*)
- Pancake Tortoise (*Malacochersus tornieri*)

These instructions also apply to the Greek Tortoise (*Testudo graeca*).

Two photographs should be taken per tortoise. On one photo the carapace must be photographed perpendicularly from above (fig. 1). The second photo must show the plastron (fig. 2). For this purpose the animal can be laid on its back on, eg, a low flowerpot or rubber gasket. In order to maintain a sense of scale of the size of the animal, either squared paper (example: see cover) or white paper with a rule laid next to it should be used as background. A coloured background is unhelpful since it often alters the colours (fig. 3). With larger animals a long ruler or folding rule should be laid next to the animal and included in the photograph. Before photographing the animals should be cleaned: they should however no longer be wet or damp, since this can cause flash reflection and make the photos unusable. The photography must be sharp and well lit, ie there should be no shadows since otherwise important features become unrecognisable (fig. 4).

Fig 1: Photograph of the carapace of a Hermann's Tortoise (*Testudo hermanni boettgeri*). The animal was photographed from vertically above, so that the front as well as the rear marginals can be seen clearly. The carapace must not be tilted.

Fig 2: Photograph of the plastron of a Hermann's tortoise (*Testudo hermanni boettgeri*). The plastron was photographed vertically from above, so that the centre suture can be seen clearly. The plastron must not be tilted.

The tortoises must be so photographed that they fill the picture. Photographs showing only a part of the tortoise are just as unsuitable as those on which the animal appears too small.
The size of the coloured pictures should be 9 x 13 cm and they should be glossy (not matt).
For adult animals of the species listed above it is planned that they should be photographed at an interval of every 5 years, to document possible alterations in the individual characteristics (for juveniles see chapters 1.4 and 1.5).

1.4 Tips for reptile keepers with many animals

If several animals of a species are kept and can now be photographed, there are a few small tricks to avoid losing track when photographing and assigning photographs to the appropriate animals!
Before photography, prepare notelets with, eg, the name of the animal or licence number or an abbreviation of one's own. With adult tortoises these notelets can be laid between neck and carapace (or neck and plastron) and photographed with them. In the case of young animals and snakes the notelet can be laid next to the animal. It is advisable to also place the name or number with the corresponding papers. This makes the job of quick and correct assignment of animals and their papers easier in the event of repeat photos or checking.

Fig. 3: The colour background on this photograph is unhelpful. Also there is no ruler or folding rule to show the size of the animal.

Fig. 4: The right side of the carapace is insufficiently illuminated and therefore shows shadows. The background is good, since through the centimetre-sized squares it is possible to show the size of the animal.

Many reptile keepers and breeders mark their tortoises with colour markings on the carapace (please do not fix markings on the sutures between scutes, as otherwise interference with the growth of the scutes results). As an alternative to colour marking with nail varnish, dots or numbers on the marginal plates on the front of the carapace can be painted on with waterproof felt-tip pen (figs. 5 and 6). This is particularly to be recommended for young tortoises.

1.5 What must be done with juveniles?

The Federal Wildlife Protection Ordinance stipulates that for tortoises on Appendix A all juveniles below a weight of 500 g must be documented. The instructions described above for the photographing of adult tortoises are valid *for the time being* for juveniles as well. The Federal Environment Ministry intends to request that a new photograph be made for young tortoises every two years. The photodocumentation must be placed with the corresponding documents at the disposal of the relevant authorities within the framework of registration *without being asked*. The reason for the repeated photos is that up to now it is not known which and how many individual characteristics can be found on juveniles and how often such features can change. Therefore owners of young tortoises are advised to compare their animals often with the photographs so that repeat photographs can be made in time. This method of procedure has the advantage that the tortoise keeper can produce watertight documentation with several photos and thereby present their appropriate authorities with secure proof of identity of their animals.
As grounds for finding individual features even in juveniles, the same features as in adult tortoises should be taken into account for the time being (see chap. 1.6).

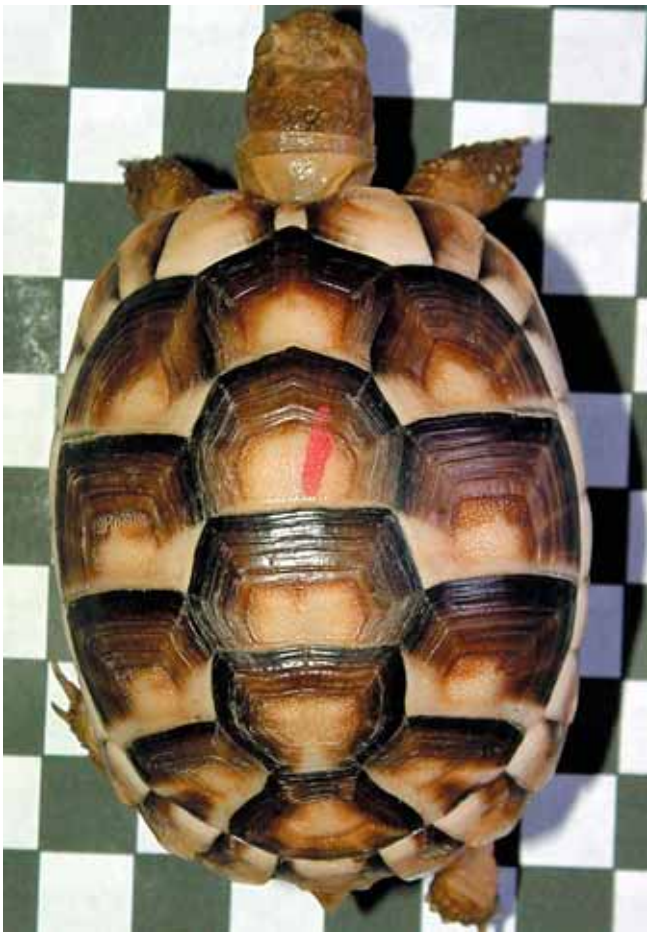


Fig. 5: Photo of a juvenile Marginated Tortoise (*Testudo marginata*) with a red line on the 2nd vertebral.

Fig. 6: Photo of a juvenile Egyptian Tortoise (*Testudo kleinmanni*) with a black dot on the 1st left-hand marginal. The rubber washer shown can be used as a support for plastron photos with larger animals.

1.6 By which features can individual tortoises be recognised?

Hermann's Tortoise,
Greek Tortoise,
Marginated Tortoise,
Egyptian Tortoise
and Pancake Tortoise

Since the markings on the carapace and plastron of land tortoises can change considerably in the course of their lives, coloration is not used in the recognition of individuals. This applies especially to Hermann's Tortoise (*Testudo hermanni*), the Greek Tortoise (*T. graeca*), Marginated Tortoise (*T. marginata*) and Egyptian Tortoise (*T. kleinmanni*), but also the Pancake Tortoise (*Malacochersus tornieri*). In these land tortoise species eleven variable features are used for identification. On the carapace these are the nuchal shield and the fifth vertebral plate (vertebral), as shown in fig. 7a. The features on the nuchal shield are the shapes of the lateral sutures to the marginalia and the suture to the first vetebral plate. The variations in the markings of the lateral sutures of the nuchal shield are listed in figure 8. On the fifth vetebral plate the contours of the sutures against both rib plates (costalia) and fourth vertebral plate are described as variable markings (fig. 7a). The variations in the suture between the nuchal and vetebral shields and the three vertebral shield sutures described can be seen in figure 9. The individual variations in the features are provided with different numbers, so that they can be entered into a record of characteristics. Instructions on the position of plate sutures such as „right" and „left" refer to the animal: the instructions „front" and „behind" describe the position of the suture concerned from the viewpoint of the carapace (see fig. 7a).

Description of carapace features:

- left suture of the nuchal shield (against left marginal) = N-li
- rear suture of the nuchal shield (against first vertebral plate) = N-hi
- right suture of the nuchal shield (against right marginal) = N-re
- left suture of the 5. vertebral plate (against the left rib plate) = W-li
- front suture of the 5. vertebral plate (against the fourth vertebral plate) = W-vo
- right suture of the 5. vertebral plate (again the right rib plate) = W-re

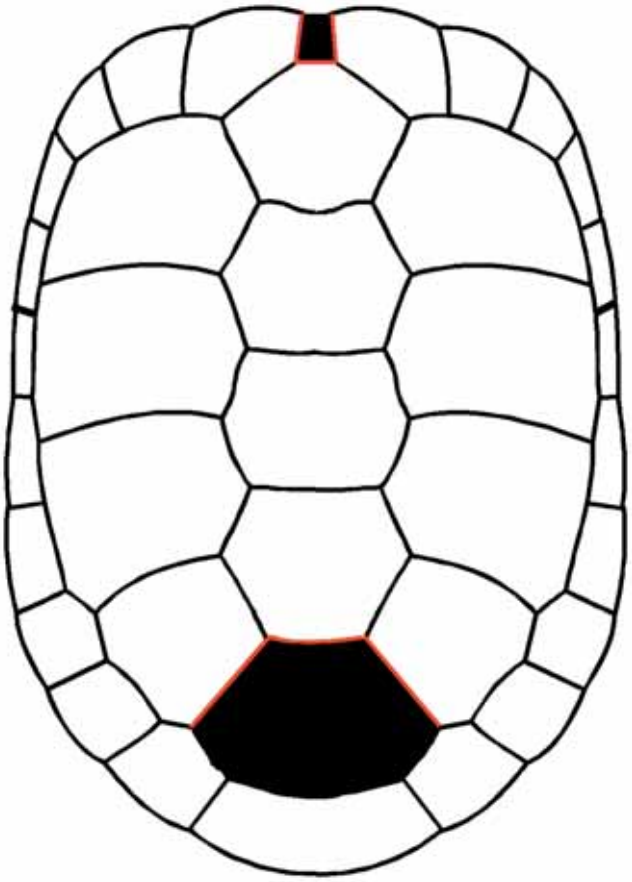
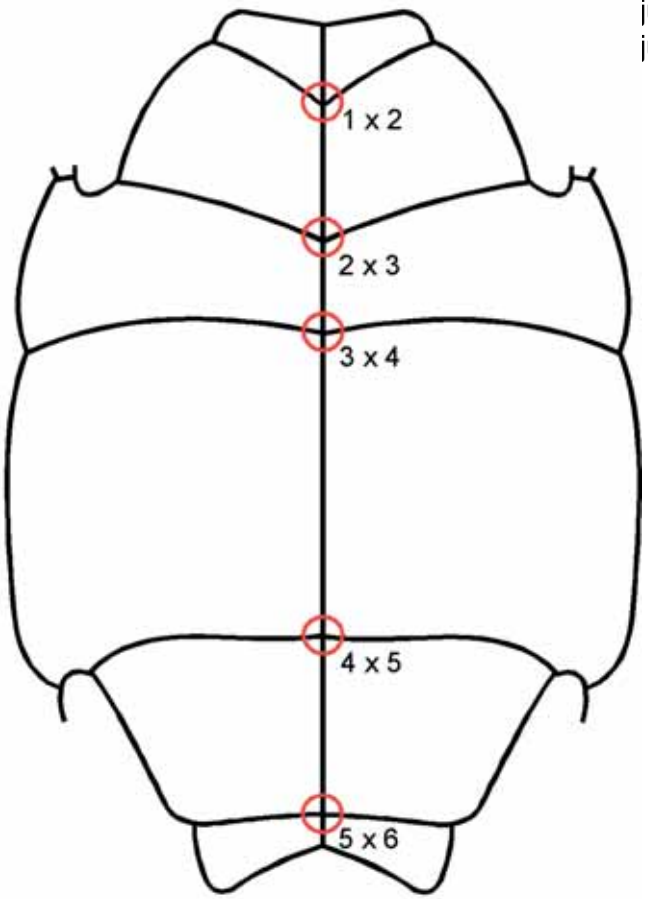


Fig. 7a: Diagram of the carapace with black marked nuchal shield and 5th vertebral. The various shapes of the red marked scute sutures are evaluated as variations in the features.

Five additional features can be found on the plastron. The plastron consists of six pairs of plates, which are arranged along the right and left sides of the centre suture (fig. 7b). These pairs are numbered consecutively, beginning with the gulars, so that the analia become number 6. The position where four particular plates join is abbreviated as „juncture“ with the corresponding number combination (fig. 7b). The first junction when looking at a plastron is the place where both gulars join with both humerals (Humeralia). This juncture is described as „1 x 2“.

Description of plastron characteristics

juncture of gulars and humerals	=1 x 2
juncture of humerals and pectorals	=2 x 3
juncture of pectorals and abdominals	=3 x 4
juncture of abdominals and femorals	=4 x 5
juncture of femorals and anals	=5 x 6



The features of the carapace and plastron were chosen because they can display many varied shapes or be quite pronounced. In an examination by Bender & Henle (2001) a total of nine pronounced variations could be found for the lateral sutures of the nuchal shield (fig. 8). In the case of the lower suture of the nuchal shield and the three sutures of the fifth vertebral shield 16 different suture shapes were determined (fig. 9). In the case of the junctures on the plastron ten different forms of juncture could be demonstrated (see fig. 10).

Fig. 7b: Diagram of the plastron with its paired horny scutes. The junctures circled in red are provided with numbers (eg 1 x 2) and describe the associated scutes (see text).

Nuchal shield (lateral sutures)

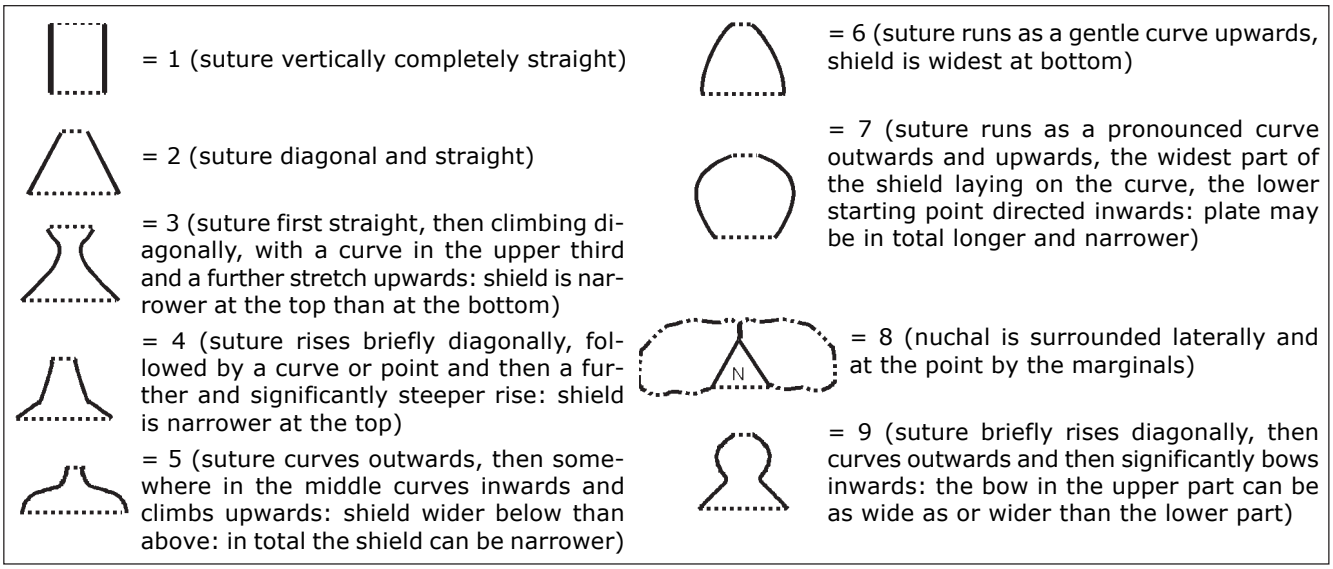


Fig. 8: Diagram of the proven variable features (1-9) of the lateral sutures of the nuchal shield. It should be noted that the contours of the lateral sutures may be different and must then be recorded in the reptile passport with different numbers.

Lower nuchal suture as well as the three selected sutures of the 5th vertebral scute

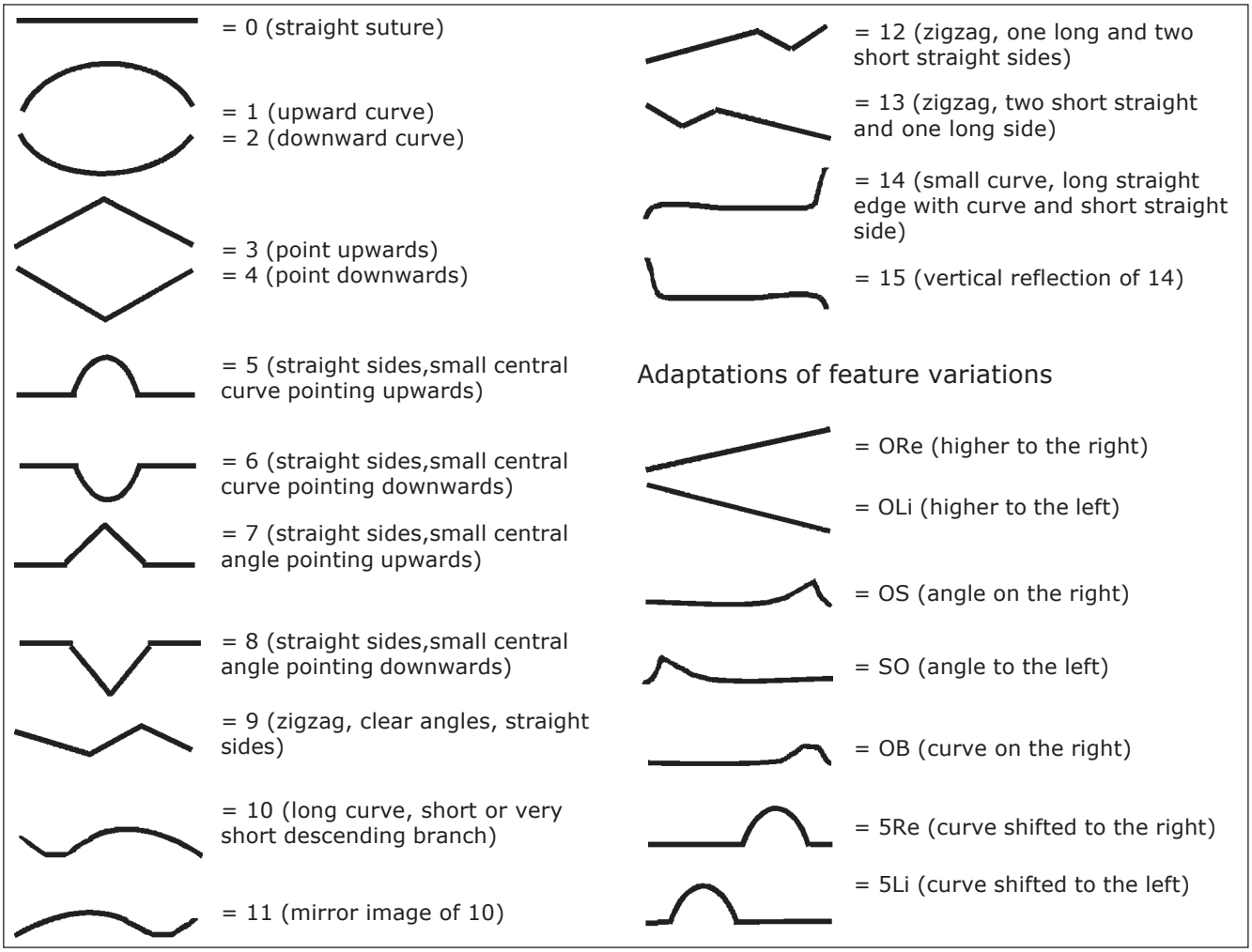


Fig 9: graphic display of the proven identifying characteristics in the lower nuchal suture as well as the three selected sutures of the 5th vertebral scute. The variations are designated numbers 0-15. Additional examples for different modifications and their description are given.

Junctures between the scutes of the plastron

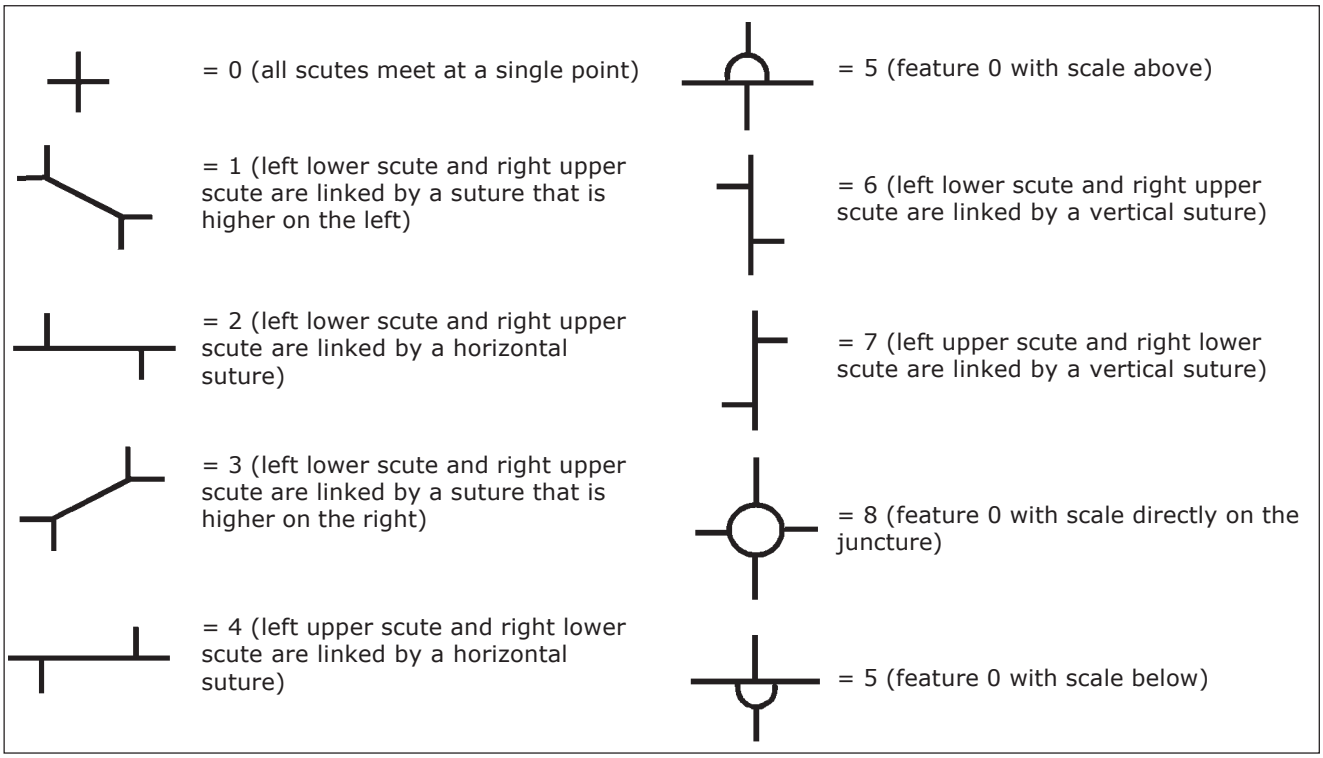


Fig 10: graphic display of the proven variations in junctures between scutes of the plastron. The numbers can be used in the reptile passport.

All proven feature pronouncements were drawn and provided with numbers for easier registration. This way it is possible to record the individual peculiarities of every animal in the form of a features record (see reptile passport in fig. 11). The individual variations in the characteristics can be entered into the passport: until now, however, this was not legally prescribed.

1.1 Characteristics of the Radiated Tortoise (*Geochelone radiata*)

The Radiated Tortoise possesses on its carapace a striking pattern of light stripes or rays on a dark background. Even the plastron is very contrasting with its very dark markings on a pale background.
For the identification of adult animals the bright ray pattern on the 3rd vertebral of the carapace is used. For photography and the determination of the markings the animals is positioned with head pointing upwards (see reptile passport, fig. 13). First the number of rays running unbroken from the centre of the scute to the sutures is determined. All short and/or broken rays are likewise counted (compare fig. 12a). Next the plastron is examined. Here the dark bands on the left and right abdominals are checked (compare fig. 12b). Here it is important only to count those bands which run unbroken to the central suture. These four numbers should be noted down since they are used for identification.
It is possible to draw up a very precise and therefore very secure record for Radiated Tortoises by noting down exactly the position of the light rays on the 3rd vertebral. These method can be performed in the following manner: the 3rd vertebral scute can be divided into minute intervals like a dial. In this instance the zero or 60-minute mark lays in the middle of the upper suture to the 2nd vertebral scute. The 15-minute mark lays on the point at which the right lateral suture

Reptile Passport No.: XYZ 200042

Scientific Name: Testudo hermanni boettgeri
Common Name: Hermann's Tortoise (eastern subspecies)
Sex: Female
Origin (wild-caught or captive-bred) Wild-caught
Breeder: not known

Date of photo: April 2001, adult
Length of carapace: 23.3 cm
Weight: 1800g
Distinctive features: None
Distinguishing features:
Carapace (suture contours): Nuchal N-li = 1, N-hi = 1, N-re = 1;
5th vertebral W-li = 2, W-vo = 0, W-re = 10(2).

Plastron (junctures):

1×2	2×3	3×4	4×5	5×6
0(3)	3	0	0(3)	0

Fig 11: example of a reptile passport with photos and a record of identifying features. If the identifying features observed fall between two defined variations (see figs. 8-10), then this can be recorded, while placing the relevant numbers in brackets.

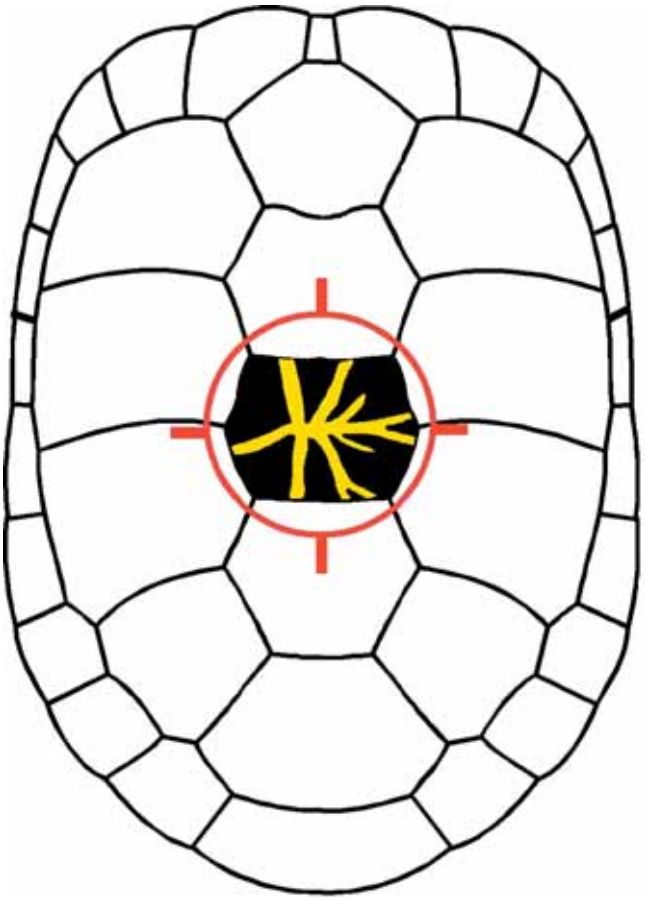


Fig 12a: sketch of the carapace of a radiated tortoise showing the light rays on the 3rd vertebral scute. Working from the middle of the scute the unbroken and short rays are counted separately. A dial face is shown in red for the precise determination of the minute intervals (see text).

meets the suture between the 2nd and 3rd costal. The 30-minute mark lays in the middle of the rear suture of the vertebral scute. The 45-minute mark again lays opposite the 15-minute mark at the point of contact of the left-hand suture of the vertebral scute with the suture between the 2nd and 3rd left-hand costals (see fig. 12a).

All the light rays which visibly run unbroken from the middle of the scute to the sutures are important. The contact point of each ray on the suture of the vertebral scute is noted down as a „minute position“. In this way a record can be gained which consists of as many minute positions as there are uninterrupted light rays to be found on the third vertebral scute of the animal in question. Short or broken rays are recorded as minute positions in the same way, but in contrast to the complete ones, in brackets (see record, fig. 13). By way of example this method was used for a Radiated Tortoise (see reptile passport in fig. 13). It is also the case here that this very exact description of morphological variations can be entered into the passport but is not yet prescribed by law.

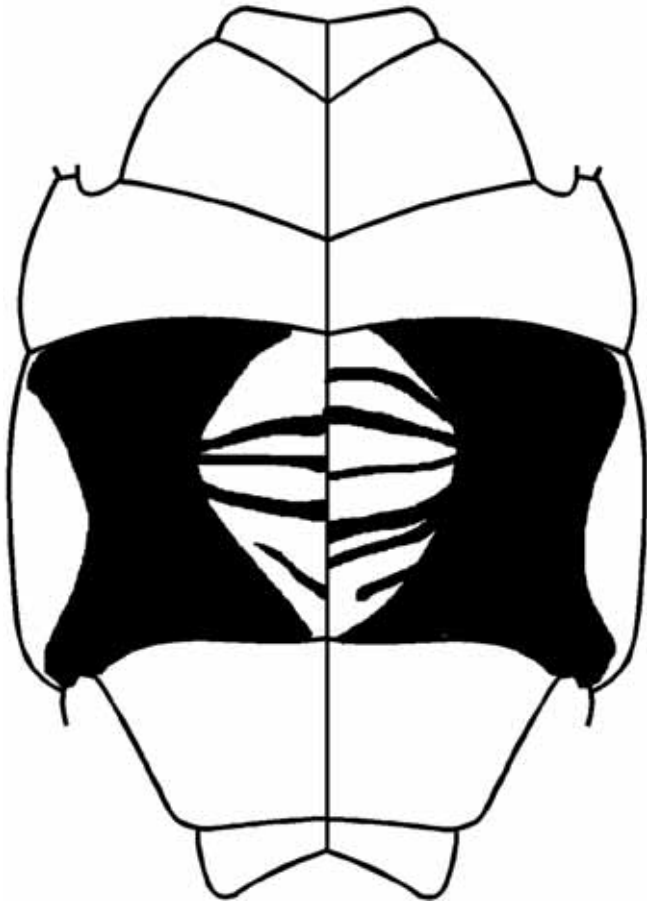


Fig 12b: sketch showing the plastron of a radiated tortoise. Dark stripes are marked on the ventral scutes (abdominalia). Only those bands which run from the black area in the middle of the scutes to the central line are important.

Reptile Passport No.: 20005

Scientific Name: Geochelone radiata
Common Name: Radiated Tortoise
Sex: Female (?)
Origin (wild-caught or captive-bred) Captive bred 19xx
Breeder: Mustermann

Date of photo: April 2001, adult
Length of carapace: 16.0 cm
Weight: 1300g
Distinctive features: None
Distinguishing features:
Carapace (3rd vertebral scute): 22 rays (+2 short rays);
(2)-3-4-6-8-10-14-17-19-21-23-26-28-34-37-38-(40)-42-45-47-50-51-55-57
Plastron (4th pair of vertebral scutes): right - 5 stripes, left - 4 stripes

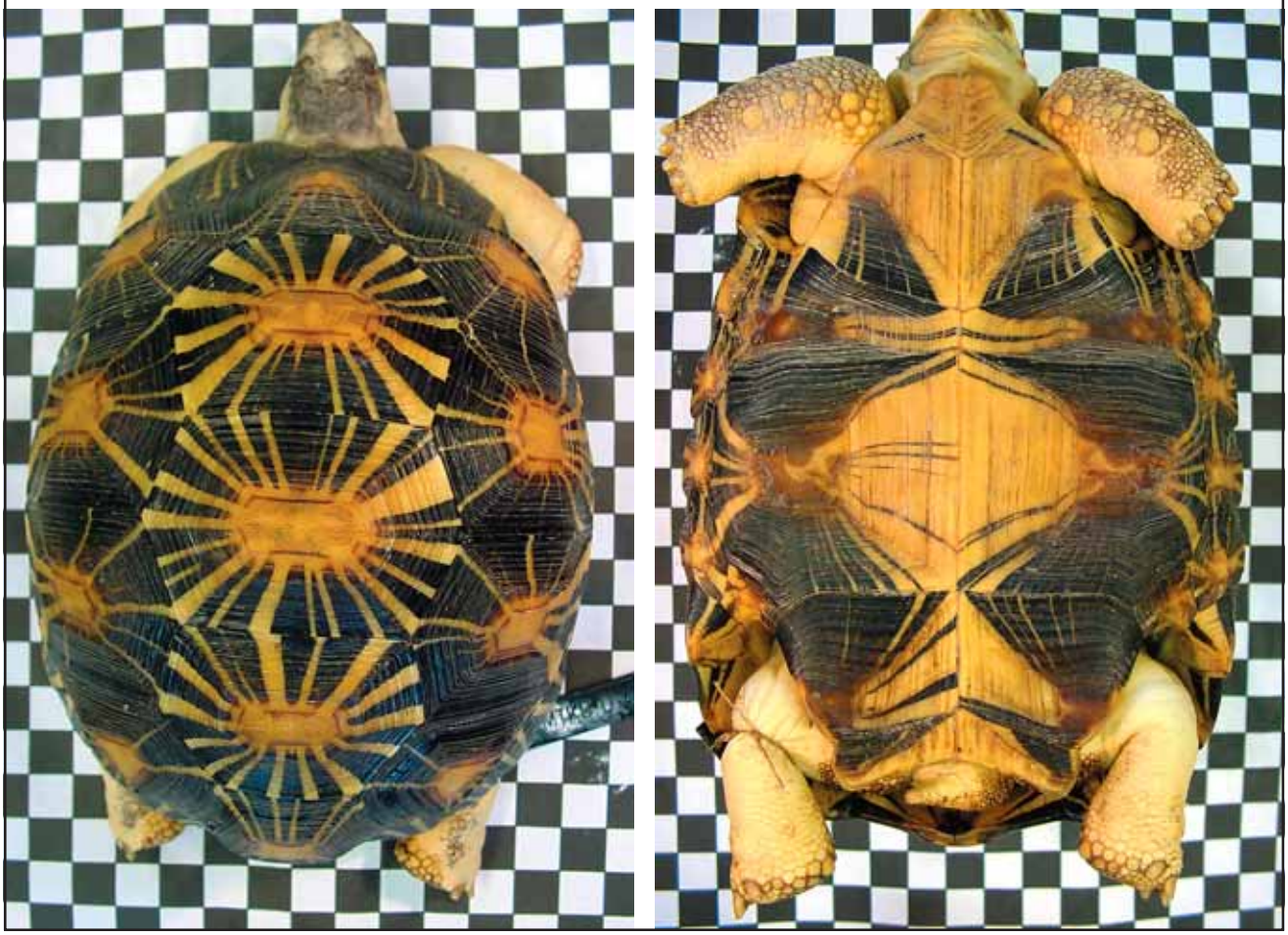


Abbildung 13: example of a reptile passport with photos and a record of identifying features.

2 Snakes

2.1 In general which snakes must be photographed?

Altogether six species of snake can be documented photographically. This includes species which are seldom kept or presumed extinct.

In the boa and python family (Boidae) this affects the Maritius Boa (*Bolyeria multicarinata*), the Round Island Boa (*Casarea dussumieri*), the Mona Island Boa (*Epicrates monensis*) and the Sand Boa (*Eryx jaculus*). In addition both viper (Viperidae) species the Latif Adder (*Vipera latifi*) and the Meadow Viper (*Vipera ursini*) are to be photographed. Within the framework of the Hungarian protection programme for Meadow Viper the colour pattern on the crown of the head of animals of every age was used as a recognition feature (Meadow Viper Working Group 1996).

Beyond this, all juveniles in the species listed in Appendix A up to a weight of 200g should be documented with the aid of photographs. Unfortunately in most snake species up to now no features have been known which could be used for individual identification (for exceptions see sections 2.3 and 4).

2.2 For which snakes is photodocumentation intended as a replacement for the transponder?

The only snake species for which an amendment to the Federal Wildlife Protection Ordinance is intended are the boid species Madagascar Tree Boa (*Sanzinia madagascariensis*), the Dumeril's Boa (*Acrantophis dumerili*) and the Madagascar Ground Boa (*Acrantophis madagascariensis*) (IGR 2000; Bender & Henle 2001). Beyond this the Federal Wildlife Protection Ordinance lays down which recognition method of individuals must be used for further species (see section 2.2).
Further information on individual features as well as the necessary photography is listed under section 2.3.

Fig. 14a: right side view of a Madagascar Tree Boa (*Sanzinia madagascariensis*). In a photo the first 5-8 side patches behind the head must be visible.

Fig. 14b: left side view of a Madagascar Tree Boa.

Fig. 14c: dorsal view of a Madagascar Tree Boa. In any photographs the animal must be photographed in as extended position as possible.

2.3 Which features are important in the Dumeril's Boa, the Madagascar Ground Boa and the Madagascar Tree Boa?

In the Dumeril's Boa (*Acrantophis dumerili*) the colour markings on the top of the head are sufficient (IGR 2000). Since no alterations to the colours appear in the young of this species, lifelong recognition is guaranteed. Consequently only one photograph, of the top of the head, needs taking (compare *Boa constrictor occidentalis* in fig. 20a).

Both sides of the head in the Madagascar Ground Boa (*Acrantophis madagascariensis*) show striking black spots on a lighter background in the region of the upper and lower lips (compare figs. 16a, b). Particularly easy to recognise are the individual differences in the black markings of the mainly white ventral area of the lower jaw (fig. 16c). For this

Fig. 15a: unsuitable photo, as the snake is not extended and the patterning is not recognisable.

Fig. 15b: unsuitable photo, as the snake is not extended and the animal is not clearly recognisable against the distracting background.

Fig. 15c: unsuitable photo, as the background is too dark. Otherwise the snake is nicely extended and the sequence of the pattern is recognisable.

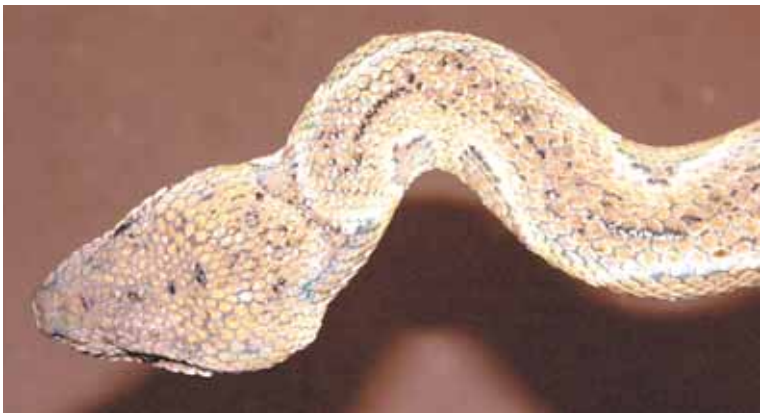


Fig. 15d: unsuitable photo, as the animal is too brightly lit. Moreover the detail from the picture is too small and the snake is not extended.

species, taking a total of three photos (both sides of the head and the underneath of the lower jaw) is recommended. Here also lighting, shadow, reflection and background must be taken into account (figs. 17a, b).
In the case of the Madagascar Tree Boa (*Sanzinia madagascariensis*) the overall colour of the body changes from juvenile to adult animal. According to information from breeders and keepers, however, the dark markings remain unaltered. This dark pattern, which is clearly visible on both sides of the head and the back, consists of variable spots (roundish or with troughs) or bands (running longitudinally) which sometimes form narrow links with one another. For the recongition of the individual the area with the first five to eight dark spots behind the head is sufficient (Bender & Henle 2001). Through the diversity of the spots and their arrangement on the body, identity can be established beyond doubt by a simple comparison of photograph and animal. Owners of this snake species should photograph their animals from both sides and above (figs. 14a-c). Con-

Fig. 16a: photo of the left head view of a Madagascar Ground Boa (Acrantophis madagascariensis). The photo is quite suitable, though small flash reflections can be seen.

Fig. 16b: photo of the right head view of a Madagascar Ground Boa. The photo is quite suitable as the background is also simple.

Fig. 16c: photo of the lower jaw of a Madagascar Ground Boa. The photo is quite suitable but as a whole could be lighter.

Fig. 17a: unsuitable photo of a Madagascar Ground Boa. The photo is not sharp and the background too distracting.

Fig. 17b: unsuitable photo of a Madagascar Ground Boa. The head is tipped to one side and the photo as a whole too dark.

sequently every animal must have three photos available; this appears to be necessary at this point in time, since there are not yet any detailed guidelines or indications from the authorities concerning the number of photos.

2.4 Instructions for photographing

All snake keepers know that colour in snakes is at its clearest after a shed. Therefore it should be self-evident that animals should not be photographed shortly before or during a shed. With the photography of snakes we recommend calling on the services of a helper who can take over either the handling of the snake or the photographing.
In general it is important in photographing that the photos are well lit and that no shadows or reflection show up (figs. 16a, 21a). The snake in question must be so photographed that the important markings for the species fill the picture. Photos on which only a portion can be seen are just as unsuitable as photos on which the animal appears too small (figs. 15d, 21b).
The size of the colour pictures should amount to 9 x 13 cm and should be gloss (not matt). According to the species a lot of colour pictures will need to be taken of each animal in different ways.
A patterned background is most unfavourable, since the colours are altered to a degree. Therefore it is better to choose a monotone background (figs. 15b, c, 17b, 21b). With all snakes the absolute length of the animal as well as the weight should be recorded in the reptile passport.
Photos of the snake's head must be taken in such a way that, eg, the top of the head can be seen directly from above and without a sidewards tilt of the head. The same applies for side shots of the head (fig. 17b). For photos of the body markings the snake should be extended and portrayed as straight as possible (figs. 14a-c, 15c).

Fig. 18: photo of the scalation pattern in the breast region of an Ibiza Wall Lizard (*Podarcis pityuensis*). For recognition of individuals the first 5 scale rows on the breast are decisive.

3 Lizards

3.1 Which species are known to have individual markings?

Among the family Lacertidae the species *Podarcis lilfordi* and *Podarcis pityusensis* have very good features for individual identification (Bender & Henle, 2001). Both these species are exclusively covered by photodocumentation, since they are exempt from transponder tagging on the grounds of their size (Federal Wildlife Protection Ordinance enclosure 6, no cross in column 6).

The markings in both lizard species are found on the animals' breast. The scalation of the first five scale rows below the collar shows individual characteristics for every animal (fig. 18). It is not necessary to prepare a detailed record since a visual comparison is quick and easy on the basis of the high amount of variation in the shape of the scales.

Since from this it can be taken that the features of the scales remained unaltered (apart from through injury) throughout life, they can serve as permanent identification. Consequently a single photo per animal is sufficient for lifelong identification.

3.2 Instructions for photography

Photographing the breast of these small lizard species requires a camera equipped with macro lens, photographic experience and possibly a helper to handle the animals.

Fig. 19a: unsuitable photo of an Ibiza Wall Lizard. The breast area is not sharp and there are also flash reflections which make recognition of the scale rows impossible.

Fig. 19b: unsuitable photo of an Ibiza Wall Lizard. The breast area is not sharp and the inadequate lighting on the left side of the breast makes recognition of the scale rows impossible.

The breast of every animal must be photographed, as shown in figure 18. The photos should display the same quality as described in section 1.3 for tortoises (well lit, without shadows, sharp and filling the picture) (see figs. 19a, b). As preparation for later classification the age and - if possible - the sex also should be noted.

4 Information on further Appendix A reptile species

For some reptile species on Appendix A not mentioned up to now information on suitable or potentially suitable markings for the recognition of individuals is available from reptile keepers and literature. Among these are also species which are seldom or never kept in human captivity.
The indications that follow make no claim to completeness. Hence the urgent request to all reptile owners to place additional useful information at the disposal of the DGHT!

Indications for individual markings:

- Leatherback Turtle (*Dermochelys coriacea*), pigment spots on the top of the head (McDonalds& Dutton1996);
- Nile Crocodile (*Crocodylus niloticus*), the pattern of the markings on both sides of the tail (Swanepoel1996);
- Common Chameleon (*Chamaeleo chamaeleon*), the lateral pattern of spots on the body (Chameleon Breeding Society);
- Desert Monitor (*Varanus griseus*), dark markings on the back (Tsellarius& Cherlin1991).

Both the following large snake species were also examined within the framework of the DGHT project „Recognition of individual reptiles“, but because of the small number of animals could not be evaluated in detail. The features found must be validated with the help of additional investigations on a greater number of animals. In the meantime however they may be used as potential features for the recognition of individuals. In these cases acceptance of photodocumentation is at the discretion of the appropriate authority.
In the Argentine or Southern Boa (*Boa constrictor occidentalis*) the top of the head has a light beige/white pattern on a grey-black background (fig. 20a). The pattern on both sides of the head also differs from animal to animal (figs. 20b, c). These features were individually different in all the animals covered up to this point. In young snakes the light pattern is unclear or not pronounced; it only becomes recognisable from about the age of 2 years. In animals of all ages the

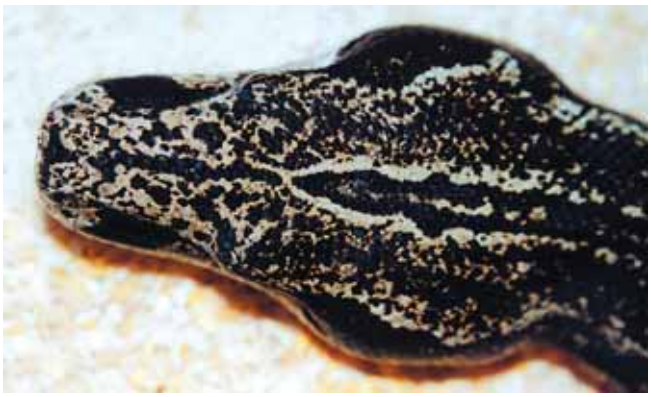


Fig. 20a: photo of the top of the head of an Argentine Boa (*Boa constrictor occidentalis*). The head is straight and taken on a light background without being tipped in either direction.

Fig. 20b: photo of the left side of the head of an Argentine Boa. The photo is sharp and the background is uniform and light.

Fig. 20c: good photo of the right side of the head of an Argentine Boa.

saddle markings on the body remain stable, according to statements from breeders. Given this state of knowledge it is recommended that at least three photographs be taken for each adult animal: one photograph of the top of the head and one of both sides of the head, and an additional one for juveniles showing the saddles on the back.

Fig. 21a: unsuitable photo of the side of the head of an Argentine Boa. Admittedly the head is straight, but there are shadows in the lower area of the head and the background is too dark.

Fig. 21b: unsuitable photo of the side of the head of an Argentine Boa. The photograph is altogether too dark and the head is depicted too small.

Fig. 22a: good photo of the side of the head of a Jamaican Boa (*Epicrates subflavus*). The head is straight, sharp and well lit, so that all the scales can be recognised.

Fig. 22b: photo of the top of the head of a Jamaican Boa. There is admittedly some flash reflection, but the scalation can be well seen.

Fig. 22c: suitable photo of the right side of the head of a Jamaica Boa. All the scales are easily recognisable.

As the Jamaican Boa (*Epicrates subflavus*) shows no striking markings, the scalation in the area of the head was taken into consideration for the recognition of individuals. For the project only a small number of animals was available (Bender & Henle 2001), for which reason no analyses could be performed. However it was established that the scale patterns on top and both sides of the head were individually pronounced in all animals. On the basis of these results it is possible to recommend the identification of this snake species with the aid of three photos of the head (top and both sides) (figs. 22a-c).

Photography Checklist

- suitable camera
- good lighting
- dry, clean animals (snakes not to be photographed directly before or during shedding)
- suitable background (eg squared paper, square length = 1 cm)
- ruler or folding rule
- paper for recording and animal numbers (suitable pens for marking tortoises)
- rubber washer or flowerdish for tortoise photos
- person to assist

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Reptile Passport No.:

Scientific Species Name: .....

German Common Name: .....

Sex: .....

Origin (wild-caught, captive-bred): .....

Breeder: .....

.....

.....

Date of photo (age of animal): .....

Length of carapace: .....

Weight: .....

Distinctive features: .....

Recognisable markings:

Carapace (suture contours): .....

Plastron (junctures):

1 x 2	2 x 3	3 x 4	4 x 5	5 x 6

Reptile Passport No.:

Scientific Species Name: Geochelone radiata

German Common Name: Radiated tortoise

Sex: .....

Origin (wild-caught, captive-bred): .....

Breeder: .....

.....

.....

Date of photo (age of animal): .....

Length of carapace: .....

Weight: .....

Distinctive features: .....

Recognisable markings:

Carapace (3rd vertebrale): .....

Minutes: .....

Plastron (4th pair of plates): .....

Reptile Passport No.:

Scientific Species Name: .....

German Common Name: .....

Sex: .....

Origin (wild-caught, captive-bred): .....

Breeder: .....

.....

.....

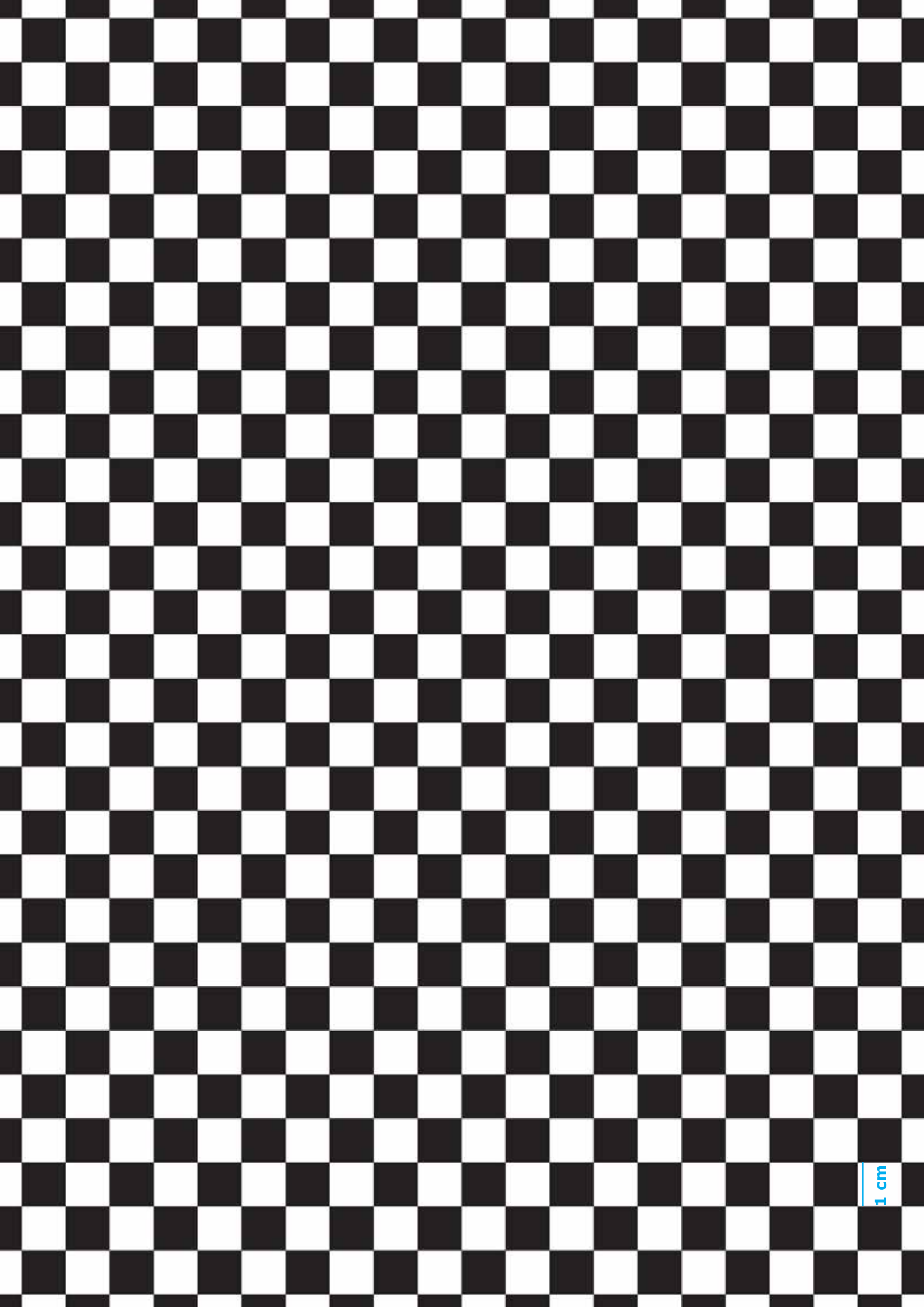
Date of photo (age of animal): .....

Length: .....

Weight: .....

Distinctive features: .....

Recognisable markings: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