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1. The BHS Bulletin publishes a range of features concerned with herpetology. Emphasis is placed on captive breeding and husbandry, conservation and field notes, general natural history, veterinary and behavioural aspects. These features include major articles and scientific papers (sometimes illustrated), short notes, letters and book reviews.

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    The Bulletin was edited and produced by John Pickett and Simon Townson. Contributions and correspondence arising from the Bulletin should be sent to Peter Stafford, Botany Department, Natural History Museum, Cromwell Road, London SW7 5BD.

FRONT COVER
A hypomelanistic female *Lacerta agilis*. See "Hypomelanism in the Sand Lizard" by Lumir Gvoždik, p.7.

ONTOGENETIC INCREASE OF BLACK DORSAL PATTERN IN *RANA TEMPORARIA*

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The widely distributed Common Frog, *Rana temporaria*, shows an important variation in colour and pattern both between and within populations (Arnold and Burton 1978). One conspicuous pattern element are the large dorsal black spots which are mainly found in specimens from montane populations, e.g. in the Alps (Nöllert and Nöllert 1993) and in the Pyrenees (pers. obs.). A similar trend of black pattern increasing with altitude has also been mentioned in the North-American species *Rana cascadae* (Behler and King 1979). Several melanic or black coloured amphibian species and morphs are known from high altitudes (e.g. Vences et al. 1998). Explanations of this ecological correlate may be found in thermoregulatory aspects and/or in enhanced protection against ultraviolet radiation, but little is known of the evolutionary and ontogenetic mechanisms leading to increased black colouration at high altitudes. On the other hand, the recently recognized trends of global amphibian declines (e.g. Wake 1991; Blaustein and Wake 1995) seem to affect especially montane amphibians. This may be partly due to increasing ultraviolet radiation, which has been demonstrated to be responsible for the death of eggs and embryos of several species (e.g. Blaustein et al. 1994; Pedraza and Lizana 1997). Considering this possible danger for montane amphibians, it is important to study their natural adaptations to high mountain habitats. The aim of the present note is to provide a contribution to the knowledge of ontogenetic pattern variation in a montane Common Frog population.

In July 1998 we studied a large number of *Rana temporaria* specimens at the Circo de Piedrafita in the central western Pyrenees, Aragon region, Spain, at an altitude of ca. 2200 m in their summer habitat. Captured specimens were measured, and their colouration recorded; finally, they were marked by toe-clipping and released. We classified specimens in 6 classes based on the amount of black dorsal patterning (Fig. 1): (1) back without black spots or markings; (2) back with small black spots, but without large black markings; (3) back with few black markings, covering ca. 10-15% of the dorsal surface; (4) back with a moderate number of black markings, covering ca. 15-25% of the dorsal surface; (5) back with many large black markings, covering ca. 25-45% of the dorsal surface; (6) back largely covered by black, at least 45% of dorsal surface. Our data refer to a total of 915 specimens (583 males, 84 females, 248 juveniles/subadults). Generally, specimens with more than 50 mm SVL were considered as adults, but a few smaller specimens could also be reliably sexed and were thus not included in the juvenile/subadult category. To understand the correlation of the proportion of black patterning with sex or body size, we analysed the data with the software package SPSS for Windows, version 7.5.

Table 1 shows the occurrence of black patterning separately for males, females, and juveniles/subadults. 38.7% of the males and 17.9% of the females, but none of the juveniles/subadults, had a moderate to large amount of black pattern (classes 4-6). In males, the mean snout-vent length (SVL) of specimens without black pattern (class 1) was smaller, and the mean SVL of specimens with a large amount of black pattern (class 5 and 6) was larger than the overall mean value of 66.5 mm. Clearly, in males, SVL is positively correlated with the amount of black patterning (linear regression analysis; $P<0.001$). SVL values differed significantly between pattern classes (Kruskal Wallis ANOVA; $p<0.001$). In females, this correlation was less distinct. Our sample included only a relatively small number of females, and these were rather small (mean SVL 64.9 mm). In *Rana temporaria,* females are generally larger than males (e.g. Galán 1989; Sperling et al. 1996; Kneitz 1998), and it can therefore be assumed that our sample is not representative for the female population of the Circo de Piedrafita. A slightly significant correlation of black patterning with SVL was found (linear regression analysis; $p<0.05$), but SVL values did not differ significantly between pattern classes. According to data in Tab. 1, females appeared to have less black patterning than males (Tab 1.); this was confirmed by ANCOVA analysis with SVL as covariate (influence of sex on amount of black pattern with highly significant, $p<0.001$). However, final conclusions regarding sexual differences of black patterning can only be drawn after a larger and more representative sample of the female population is studied.

Table 1. Percentages (total number in brackets) of male, female and juvenile/subadult *R. temporaria* specimens showing the different degrees of black patterning, and the snout-vent lengths (SVL; mean±standard deviation, range in brackets) of the different pattern classes.

Pattern	Males		Females		Juveniles/Subadults	
	% (N)	SVL (mm)	% (N)	SVL (mm)	% (N)	SVL (mm)
1	20,9(%) (122)	63,99±5.3 (50-80)	40,5% (34)	62,65±9.8 (44-85)	96,8% (240)	22,16±6.3 (15-49)
2	8,7% (51)	66,94±5.8 (52-83)	8,3% (7)	61,57±8.4 (49-72)	1,2% (3)	42,67±6.0 (37-49)
3	31,6% (184)	66,26±5.6 (45-82)	33,3% (28)	667,25±7.4 (55-83)	2,0% (5)	46.00±4.2 (40-50)
4	23,3% (136)	66,48±5.0 (55-81)	14,3% (12)	69,42±5.4 (62-68)	0% (0)	–
5	12,3% (72)	69,40±5.4 (59-84)	1,2% (1)	64,0	0% (0)	–
6	3,1% (18)	71,33±5.5 (62-80)	2,4% (2)	62,50±10.6 (55-70)	0% (0)	–

Summarizing, in male and probably also female, *R. temporaria* from Circo de Piedrafita, black dorsal pattern increases with size. SVL in *R. temporaria* is generally correlated with age (e.g. Pintar 1982; Gibbons and McCarthy 1983; Ryser 1986), although this correlation is not a diagnostic one – some adult frogs reaching already in their second year (in lowland habitats) sizes typical for three-year old and older specimens (e.g. Kneitz 1998). We assume that the presence and extension of black pattern is even more correlated with age than with size, as it becomes apparent by the total lack of such spots in one-year old juveniles.

Two mechanisms are a *priori* conceivable as causes of this phenomenon: the extension of black pattern in individual frogs may increase with age; or a differential survival due to selective pressures may account for a higher proportion of black patterned individuals among the larger (older) frogs. The fact that we nearly did not find black markings in the juveniles examined in detail (nor in ca. 2000 additional juveniles examined superficially) clearly supports the first explanation.

In humans, the suntanning effect is well known; melanin production in the deep epidermal layer increases when the skin is exposed to sunlight, and sometimes the

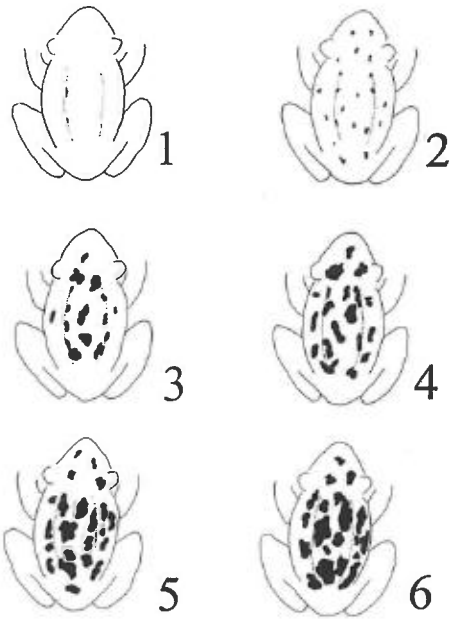

Figure 1.
Schematic drawing of the different classes of black pattern as used in this paper.

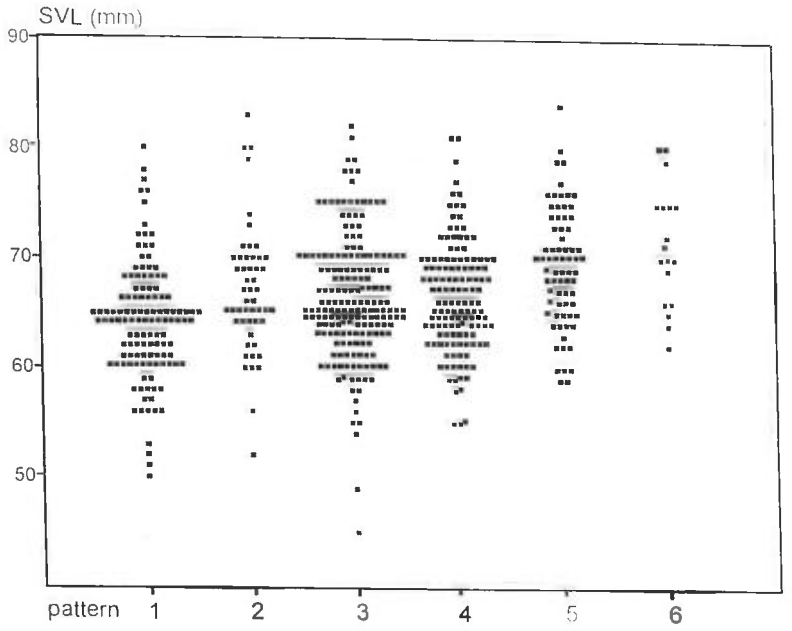

Figure 2.
Plot of Snout-vent lengths (SVL) in male *Rana temporaria* from Circo de Piedrafita grouped in one of the six pattern classes.

Plate 1.
Pyrenean specimen of *R. temporaria* without black spots (class 1) from Aguas Tuertas, Aragon, Spain, photographed in 1997 by M. Vences.

Plate 2.
Pyrenean specimen of *R. temporaria* with small dispersed black spots (classs 2) from Aguas Tuertas, Aragon, Spain, photographed in 1997 by M. Vences.

Plate 3.
Pyrenean specimen of *R. temporaria* with many large black markings (class 5) from Circo de Piedrafita, Aragon, Spain, photographed in 1998 by M. Vences. Several mutilated specimens (this one lacking the left foreleg) were found in this large population.

melanin is accumulated in irregular patches which externally give rise to freckles. A similar suntanning effect is also known in sharks (Lowe and Goodman-Lowe 1996). Melanin production in humans is stimulated by the MSH hormone (inhibited by MIH) which acts on the skin pigment cells (see e.g. Randall et al. 1997). Currently there are no data to decide whether in *Rana temporaria,* the black pattern is genetically determined (and the corresponding alleles have selective advantages in high mountain habitats), or if the appearance of black pattern is an ontogenetic "suntanning" response to increased ultraviolet radiation or other ecological determinants.

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THE CONTINUING STORY OF LIZARD HILL

CONN BARRETT

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Reptiles are target species in Dutch nature conservation. Monitoring populations serves as a tool for the evaluation of nature conservation. The Dutch reptile monitoring program started in 1993 with 170 plots where reptiles are counted at least seven times a year by volunteers (Zuiderwijk et al in press). The monitoring network has been steadily growing since then. During 1999 240 plots have been searched. Plots are located in all major reptile areas over the country. About 80 monitoring trajects are situated in the dunes. Most of these habitats are inhabited by Sand Lizards. In the following text one of the volunteers describes his observations from a dune patch during 1999. Apart from just counting the lizards, he makes photographs, which enables him to recognise the lizards individually.

LIZARD HILL

The year 1999 started quite early for Sand Lizard *(Lacerta agilis)* monitoring on a cool clear sunny 27 March; on this day I began for the seventh season in a row my monitoring traject. No lizards were seen on Lizard Hill but the first brave animals were awake and enjoying the spring outside of my research area. Nineteen visits followed and ended on a warm if a little windy 18 September when nine newborn and one adult animal were seen on this, the last monitoring visit of the year, 1999.

In this last year of the century twenty six individual lizards were photographed on Lizard Hill, one of the seven patches that are part of my monitoring traject. Lizard Hill has been over the years the most interesting and I photographed more lizards there than any other of my patches. The following results come from this hill that has every thing a lizard needs to lead a comfortable life.

TWELVE OLD FRIENDS AND FOURTEEN NEW LIZARDS

During 1999 twelve Sand Lizards from previous years and fourteen new animals were observed and photographed; the first of the newborn lizards were observed on Lizard Hill on the 13 August.

Four of the fourteen new lizards that were photographed were newborn and all have a clear and different pattern so with a little bit of luck maybe I can follow one of these newborn animals throughout their lives.

I do not give the lizards names only an individual number and from 1993 until 1999 I have photographed 86 different lizards. Animals number 1 to number 9 were photographed during my first year (1993); only one of them, number 9, was still present in the 1999 season. She is nine years old now, the oldest lizard of the group.

Plate 1: Photograph of Lizard Hill and the author.

Plate 2: Female lizard number 40 has no spots or stripes but an equal brownish colour.

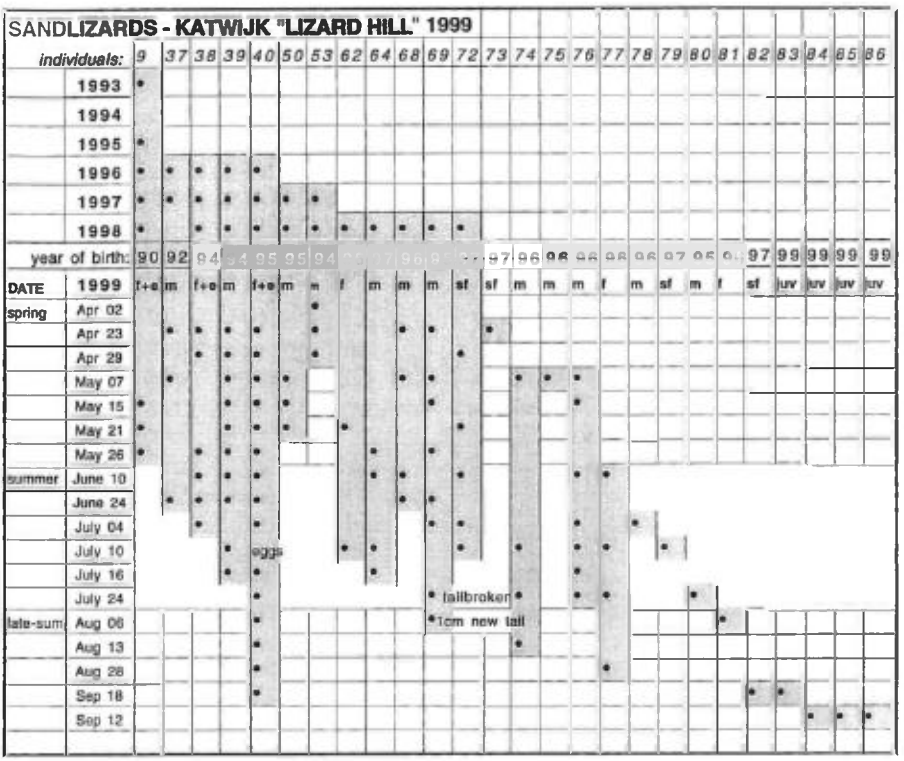

Table 1: Individual numbers of the 26 lizards which have been photographed in 1999 on Lizard Hill. Twelve lizards were photographed in previous years. The year of birth is estimated. Abbreviations: m = male, f = female, f±e = female with eggs, sf = subadult female, juv = newborn lizard.

In the table the 26 lizards of 1999 are listed with their individual number, their estimated year of birth and their presence in previous years.

PATTERN DEVIATION

One would expect that newborn animals should inherit the colour pattern of their parents to a certain degree. But this is not always visible. Juvenile 84 for example has the same characteristic pattern as female 40 (see photograph) but is not one of her offspring. So this gene that produced lizards without spots, stripes etc. is not only confined to female 40.

As can be seen in the table, male lizard 37 was seen again after a season of absence during 1998. This male appears relatively rarely on the hill, only three times in 1999, just as it did in 1996 and 1997: he is a visiting male only turning up for the mating season. He comes just to look for the pretty women on Lizard Hill, I presume.

Female lizard 38 was again present for the fourth season in a row as was male 39 which is the most dominant male and the least shy animal on the hill. Female 40 was photographed 15 times this year and only missing from her home spot when egg laying during a week in July. Numbers 62, 64, 68, 69 and 72 were animals that made their first appearances in 1998.

SOME SAD GOODBYES

Sadly female lizards 20 and 32 were not seen in year 1999, not returning from hibernation. I first photographed female 20 way back in August 1994 and female 32 in July 1995. Since then they were regularly observed and will be missed. Male lizards 50 and 53 seem to have said farewell to Lizard Hill, since they were absent from late spring on, but maybe one of these two males will return next spring. The disappearance of female 9 since early June is the saddest lost, possibly not returning from the perils of an egg laying trip. She was first photographed in August 1993 as a young adult making her 9 years old or more. Female 9 was observed 3 times in 1999 including together with male 39 soon after mating had taken place; her last appearance on the hill was on the 26th of May: she will be sadly missed. To conclude 1999 will be remembered most for the sad losses of the three female lizards 9, 20 and 32. I am however looking forward to the year 2000 and monitoring of THE LIZARDS OF LIZARD HILL.

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CANNIBALISM AMONG REPTILES

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Cannibalism in human beings is generally regarded with abhorrence and, even among animals, is often looked upon as an expression of the lower depths of utilitarian turpitude. When I first wrote about cannibalism, over 40 years ago, I concluded that in general the practice is often ecologically important and probably related to protein shortage. Furthermore, although human cannibalism has, in the past, also been prompted by hunger, more frequently it has had a superstitious significance or formed a part of ceremonial rites (Cloudsley-Thompson, 1959). A few years later, these ideas were developed and expanded (Cloudsley-Thompson, 1965). Only recently, however, has the subject of cannibalism in animals been investigated in any depth (Elgar & Crespi, 1992).

In the last few years, too, human sacrifice in the Aztec empire has been regarded by some authors as an excuse for cannibalism on a large scale, but this is disputed and others believe that human flesh was eaten only for religious reasons. This subject and the evidence regarding the possible existence of cannibalism among early hunter gatherers has been reviewed by Megarry (1995).

Huntingford & Turner (1987) were among the first authors to consider the subject of cannibalism among animals at all seriously. They presented a table indicating the significance of intra-specific infanticide and cannibalism which they categorized as follows: (a) Sexual selection – to gain reproduction advantage, (b) Exploitation, using conspecifics as food, (c) Resource competition and the removal of competitors, (d) Parental manifestation of fecundity by the killing of offspring.

Cannibalism is widespread in amphibians, and the production of cannibal morphs an insurance of survival in seasons of low rainfall (Cloudsley Thompson, 1999; Crump, 1992). Among reptiles, on the other hand, cannibalism has seldom been mentioned in the literature. Although it undoubtedly occurs in a number of instances, the young are usually avoided, either because the parents do not feed in the neighbourhood of their nest, or because they can recognise their own young. Adult conspecifics are shunned as much as any other dangerous enemies. It is among social species and those that aggregate that a certain amount of cannibalism might be expected under exceptional conditions of food shortage.

The three orders of reptiles living today are only distantly related: they evolved as separate lineages some 300 million years ago. It is not surprising, therefore, that their behaviour should be so varied. Tortoises and turtles (*Chelonia* or *Testudinata*) have not evinced any form of social behaviour, but it is probably present in all the crocodilians and is found in some of the Squamata but not in others. Carnivorous marine turtles must occasionally eat their own young and those of conspecifics, but this can only be accidental and is in no way related to the categories of cannibalism listed by Huntingford & Turner (1978) – other than that of (b), exploitation as food. Probably all species of crocodilians inadvertently prey upon their own young as well as those of conspecifics, as do some predatory snakes and lizards also. Lizards will even eat their own tails after these have been automized (Cloudsley Thompson, 1994).

In a survey of the incidence of cannibalism among amphibians and reptiles, Polis & Myers (1985) cited 45 papers dealing with cannibalism and/or oophagg in 49 species from 16 families in five orders of Reptiles. Most of the reports were extracted from studies that analysed diet rather than focusing on the significance of cannibalism.

Conspecifies formed a contants, albeit low, proportions of the diet of many species. The authors concluded that cannibalism in reptiles is purely opportunistic predation and, for this reason smaller individuals of the same species are usually the ones to be eaten. Cannibalism is probably more frequent in the class Reptiles than has previously been believed to be the case.

Nevertheless it appears that cannibalism has little ecological significance among reptiles. Not even Hans Gadow (1909) or Angus Bellairs (1969), who understood reptiles as well or better than most herpetologists before or since, even mentioned the subject in their work. Nevertheless, when predatory reptiles are kept together in captivity, it is sensible to separate larger individuals that might eat their companions, and smaller ones that could inadvertently become their prey.

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A PRELIMINARY SURVEY OF AMPHIBIAN BREEDING HABITATS (PONDS) IN NORTHAMPTON, CENTRAL ENGLAND

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ABSTRACT

As part of a local conservation initiative (the Northampton Pond Project) a preliminary ecological survey of amphibian breeding habitats across Northampton has been undertaken. The survey aims to establish the number and location of publicly accessible ponds and to collect a variety of ecological information, including amphibian distribution. A total of 79 ponds were identified and a sample set of 39 ponds included in a preliminary survey. Amphibian records for Northampton from a variety of sources, including the survey, are presented.

INTRODUCTION

Northampton's ponds and their wildlife, in concert with many other urban areas, continue to face development pressures and suffer, in many cases, from long term management neglect. Ponds are amongst our most diverse habitats often supporting very large numbers of species of both plants and animals. Amongst these may be endangered species such as the Great Crested Newt *(Triturus cristatus)* which is now afforded legal protection, as well as some of our most familiar wild animals (e.g. toads, frogs and dragonflies). Ponds also offer considerable value as educational and recreational resources, particularly in urban areas where they lie in close proximity to many people. In addition to local development pressures facing urban ponds, it has been recognised for a long time that more widespread pervasive environmental factors are contributing to declines in amphibian populations (Halliday 1993). Such factors include pollution from a variety of sources with chronic long-term effects on amphibians (Barnes 1998). As a consequence of these factors and others, there is now an urgent need for detailed ecological survey of all our urban ponds including those still present in Northampton. This, in turn, would allow an evaluation of the status of urban amphibian breeding habitats to be undertaken, to help provide the basis for coherent conservation management. Recognising this situation, the Northampton Pond Project has been established, with the following main objectives:

1. To undertake wildlife surveys of Northampton's ponds and wetlands.

2. To identify ways in which pond habitats and their surroundings can be enhanced to benefit wildlife and people.

3. To initiate and deliver practical work, training and research related to pond ecology and conservation.

4. To involve local people in these activities.

The project aims to demonstrate that a small, local, coherent conservation initiative can help produce valuable conservation benefits. It seeks to achieve this by working in partnership with relevant organisations including Northampton Borough Council, University College Northampton and the Wildlife Trust for Northamptonshire. As part of objective 1, a preliminary survey of ponds was undertaken during 1998 and 1999.

Large data sets for urban ponds are rare, although there are some notable exceptions including a long history of surveys undertaken in Milton Keynes (Barnes and Halliday 1997). It is increasingly recognised that effective conservation measures for amphibian populations and other pond wildlife, needs to be based on the coherent management of pond groups rather than isolated habitats (Barnes and Halliday 1998; Vos and Chardon 1998). Towards this aim, an important initial requirement is the identification of the number, location and status of ponds and other breeding habitats. In due course it is hoped that this will allow a more strategic approach to be adopted in Northampton, in order that the limited resources available for pond wildlife conservation may be effectively targeted.

METHODS

Mapping ponds and collection of extant information

An initial mapping exercise was undertaken to locate ponds and other relevant habitats. This involved careful and systematic examination of appropriate scale maps of the Borough of Northampton (e.g. Ordnance Survey Pathfinder series, 1:25 000). This information was supplemented with local knowledge from a number of sources, including members of the Northampton Wildlife Group, present and previous County Amphibian Recorders, members of the Northamptonshire Natural History Society and the Northamptonshire Wildlife Trust 'Prime Sites' database. Relevant documentary material was also consulted including publications produced by the Northamptonshire Natural History Society (Biley 1984; NNHS 1986) and other relevant organisations, e.g. Northampton Wildlife Strategy (1984). The aim was to ensure that the locations of as many publicly accessible ponds as possible, were identified. These sources were also consulted to collect extant ecological information about the ponds, including amphibian records.

Survey work

A total of 79 publicly accessible ponds, within the Borough, were identified and a sample set of 39 ponds (49.4%) were visited during 1998 and 1999. As many sites as possible were visited during the amphibian breeding season. To help ensure consistency of survey work between sites, a widely used pro-format recording sheet was used (Pond Action 1989) which was originally developed for the National Pond Survey. Use of this pro-format also meant that information collected may be comparable with other surveys across the country, thereby potentially helping to contribute to wider studies. Information concerning the physical character of each pond, its wildlife and the nature of surrounding areas was collected.

RESULTS AND DISCUSSION

Table 1 shows the number of ponds in Northampton with known records for different amphibian species. The number of ponds known to support different species assemblages is shown in Table 2. The results show that four amphibian species are present in the Town, including *Triturus cristatus*. This species and *Bufo bufo* are identified as occurring in less than 10% of ponds. Information available for the other two species

suggests these both occur in less than 25% of ponds. Only one site is identified as supporting all 4 species. On the one hand, the results may under represent the real status of amphibians in Northampton because colonies may have been missed, or overlooked during surveys. On the other hand, the results may over represent the current situation because areas of habitat, including ponds, have been lost over recent years.

The work undertaken confirms that the town still contains a high number of publicly accessible ponds and similar habitats, despite intensive development pressures over recent years. Some of these ponds support one or more amphibian species and further breeding habitat is offered by other ponds located in gardens and other private sites. Unfortunately, many of these sites are effectively isolated from one another, making amphibian (re)colonisation difficult. Moreover, although some individual sites may be considered formally within the planning process (i.e. locally important wildlife sites) there is no local planning policy or strategic management consideration aimed specifically at conserving ponds or the wildlife (including amphibians) which they support (Northampton Borough Council 1997).

Table 1. Number of ponds in Northampton with known records for different amphibian species

Species	Number of ponds	% of total pond set
Bufo bufo	5	6.3
Rana temporaria	18	22.8
Triturus cristatus	4	5.1
Triturus vulgaris	11	13.9

Total number of ponds identified = 79

Table 2. Number of ponds in Northampton supporting different species assemblages

Species assemblage	Number of ponds
Rt only	8
Tc only	2
Tv only	2
Bb and Tv	1
Rt and Bb	3
Rt and Tv	6
Tc and Tv	1
All 4 species	1

CONCLUSIONS AND FUTURE WORK

This research aims to provide a preliminary 'snapshot' of Northampton's pond habitat resources and the amphibian populations which they support. The recent survey sample includes approximately half of the known sites within the Town and information from this survey has been combined with data drawn from a variety of other sources. Although the information is, as yet, incomplete it is hoped that the results will help provide a contribution towards the development of a comprehensive ecological database for Northampton's ponds and that this will, in due course, help underpin effective conservation management for amphibians and other pond wildlife in the Town.

Pressure from new housing and other urban development looks set to continue in Northampton with potentially significant negative impacts on the Town's amphibian populations. Additionally, in the long term, lack of management at many sites may also exert further pressure on amphibian habitats. As a first step to address these damaging trends, a full amphibian survey of all the Northampton's ponds (and other breeding habitats) should, ideally, be undertaken to establish as full a picture as possible of the status of frogs, toads and newts in the Town. Resources for such work are limited but the Northampton Pond Project is working towards this goal for the benefit of amphibians, other pond wildlife and all local people who appreciate these important wildlife assets.

ACKNOWLEDGEMENTS

The author is grateful to Ken Blackwell and George Twisleton, both County Amphibian Recorders in recent years, for supplying anecdotal information and amphibian records. The Wildlife Trust for Northamptonshire and the Northamptonshire Natural History Society kindly supplied information about the ecological status of many of the Town's ponds, including a number of 'Prime Sites'. Financial support for the project has been derived from the National Lottery 'Award for All' scheme and from two conservation charities, which is gratefully acknowledged. The Project continues to be supported by the voluntary input of many local people, notably Sarah Kirkpatrick, Mark Fellows and Peter Nalder.

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SURVEY ON THE EFFECTIVENESS OF MICROCHIP TRANSPONDERS IN CHELONIANS

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Following the introduction of Commission Regulation (EC) No. 939/97 Marking Requirements for Tortoises, some concern has been expressed regarding the introduction and use of microchip transponders as a means of identification.

With apparently very little scientific evidence to refute or substantiate these concerns, the aim of this survey has been to ascertain the success v failure rate of implanting microchip transponders into the three Mediterranean species: *Testudo graeca, Testudo hermanni* and *Testudo marginata.*

Data submitted on others chelonian species has also been incorporated into the overall findings.

Findings of survey

- Number of recipients: 21
  (See Appendix 1)
- Number of responses: 18
- Number of abstentions: 2
- Number of no replies: 1

- Approve the use of microchip transponders: 11

- Disapprove the use of microchip transponders: 5
  (of whom 3 stated preference for non-invasive techniques, i.e. finger-printing 2; notching 1)

- No stated view: 2

Result of Implantation

Species	No of specimens	Success	Failure	Duration of implant
Testudo graeca	18	17	1	days - 4 yrs
Testudo hermanni	14	14		months - 4 yrs
Testudo marginata	1	1		months
Testudo horsefieldi	106	12 (definite) 94 (assumed)		5 yrs
Testudo kleinmanni	1		1	----
Geochelone denticulata	4	4		8 months
Total:	**144**	**142**	**2**	**days - 5 yrs**
Total % success:	98.6			
Total % failure:	1.4			

Preferred implantation sites:	Brachial region – effective, but difficult to read in large specimens if they migrate into the body; anterior to knee of rear leg found to be more reliable Left inguinal region
Agreed minimum carapace straight length:	100 mm
Recommended procedures:	Implantation by veterinarians experienced in chelonians.
Associated medical problems: (number of repeat comments in brackets)	Migration within body (5) Bleeding on implantation (2) Infection of introduction site (1) Blood vessel damage (1) Ejection of chip from the body (1) Gangrene (1)
Practicality issues:	Lack of compatibility between different makes of microchip transponders and scanners. Locating implanted transponders can be difficult. Reading scanned data can be difficult. Malfunction of chip. Some can be re-programmed remotely.

CONCLUSION

With a small circulation of twenty-one recipients, the findings of this survey were never going to be all-encompassing, but the content of many of the responses was sparser than hoped for. In this respect, the survey has highlighted the need for further research, as much of the evidence submitted, both for and against the procedure, remains anecdotal.

Whilst there is support for this procedure where implantation is conducted under set guidelines, by those persons qualified, or knowledgeable, in the physiology of chelonians, the apparent lack of written scientific evidence, relating to the use of microchip transponders in chelonians, will do little to alleviate the health, safety and practicality concerns shared by many of those keeping chelonians who are affected by this regulation. It also raises the question on what scientific basis Commission Regulation (EC) No 939/97 Marking Requirements for Tortoises, was approved.

Survey on the Effectiveness of Microchip Transponders in Chelonians

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HYPOMELANISM IN THE SAND LIZARD, *LACERTA AGILIS* (SQUAMATA: LACERTIDAE)

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Many species of reptiles show a great variability in their pattern and coloration. Besides "normal" colour variability, anomalies in colour and pattern may sometimes occur. *Lacerta agilis* is a European lizard species which has been well studied for a long time and therefore several colour and pattern anomalies have been described (see Baranov et al. 1976; Bischoff 1984 for review). Most papers dealing with colour anomalies in this species refer to the occurrence of melanism (e.g. Grüll 1989; Petzold 1972; Trofimov and Tzvelykh 1979) but as far as I know, there are no reports of colour anomalies caused by complete or partial absence of melanin, i.e. albinism, hypomelanism and leucism. Therefore, in this paper, I present a record of a hypomelanistic specimen in *L. agilis* from the Czech Republic.

On 29th June 1996 I collected a gravid female of *L. agilis* (Fig. 1) on a submontane meadow of the Beskydy Mts. (Czech Republic: Frýdek-Mistek Distr.: Ostravice, alt. 550m, Fig.2). At first look the captured specimen has apparently lighter dorsal blotches and ocelli on the flanks in comparison with conspecific (Fig. 3). Dark rings of ocelli were Clay Colour (colour 123B after Smithe 1975) and blotches were somewhat darker, Clay Colour to Cinnamon (colour 123A). The ground colour of the back and flanks was Beige (colour 219D) separated by two Lavender (colour 77) dorsolateral bands. The throat and belly were Sulphur Yellow (colour 157). Black pigmentation was confined only to the eyes and several dots on the posterior part of the belly.

After capture, the female was kept in a terrarium for two weeks, where it laid 9 eggs. Eight juveniles hatched and all were normally pigmented. It was not possible to carry out hybridization experiments, leaving three possible explanations of how to interpret these findings: (1) the colour anomaly was not determined genetically, (2) the offspring were F1 crosses between recessive homozygote (hypomelanistic female) and dominant homozygote ("normally" coloured male) which could be consistent with results obtained by breeding a hypomelanistic male of *Elaphe obsoleta* with a normally pigmented female (Bechtel HB and Bechtel E 1981), and (3) there is some other pattern of inheritance.

Recently, an aberrant female was deposited at the Silesian Museum, Opava (SMO720).

It is relatively difficult to decide how to name such colour abberations without using the dopa reaction (the histochemical test which demonstrates the presence of tyrosinase). Normally pigmented eyes and black dots, though in minimal numbers, on the body suggested the presence of melanin at least in some melanophores. Therefore I used the term hypomelanistic in the case described here in the sense of a definition by Hechtel (1995) but it could also be possible, as the same author stated, that the hypomelanistic specimens were actually true albinos even though they contained some melanin.

Fig. 1. A hypomelanistic female *Lacerta agilis*

Fig. 2. Collection locality in the Beskydy Mts. for the specimen in Fig. 1.

Fig. 3. A typically colored female of *L. agilis* from the same locality.

Generally, the reports of albinism seem to be much lower in lizards than in snakes (Bechtel HB 1995). For example Dyrkacz (1981) reviewed 85 instances of albinism in snakes but only 5 in lizards. Bechtel HB (1995) offered several explanations why the occurrences of albinos in lizards could be so rare: (1) higher vulnerability to predation because of diurnal activity and low position in food chain in comparison with snakes, (2) higher susceptibility to excessive UV radiation, (3) lower attention of herpetologists for aberrant lizards than for snakes. I have no data about the first two reasons, however the third reason seems to be an important factor in this case. Hypomelanistic specimens of *L. agilis* are not more colourful than wild types as is typical in albinos of other species. Thus, when such hypomelanistic specimens are found, their coloration could be considered as part of normal colour variation as was suggested by Rahmel (personal communication) who found similar, weakly coloured, specimens of *L. agilis* in eastern Austria and Lower Saxony (NW Germany). Does anybody have similar information from other countries? Any such information will be much appreciated.

I wish to thank H.B. Bechtel (Valdosta) for critical comments on the MS, L. Koťál (Muchovice) and his family for housing and food during field work at Ostravice and U. Rhamel (Delmenhorst) for valuable comments and information.

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WORKSHOP ON CROCODILES HELD IN UGANDA

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From 14-15 September 1999 a Workshop on the Management of Crocodiles was held in Uganda, East Africa. The aim of the Workshop was to promote the health, welfare, and conservation of the Order Crocodilia, especially the Nile Crocodile (*Crocodylus niloticus*). This was achieved by providing lectures and practical sessions at which field biologists, veterinarians and others could benefit from one another's experiences of working with these reptiles. The Workshop was organised and co-ordinated by Dr Gladys Kalema MRCVS (Uganda Wildlife Authority), Mrs Margaret Cooper LLB (Wildlife Health Services, UK) and Professor John E Cooper FRCVS (Wildlife Health Services and Durrell Wildlife Conservation Trust).

Lectures on Day 1 covered a range of subjects. The biology of the Nile crocodile was discussed with the aid of a young live specimen and an excellent papier maché model produced (and demonstrated) by Nicholas Nandala David, a young Ugandan art student. This was followed by a presentation on the management of captive crocodiles (Gladys Kalema) and an interactive session on legal issues (Margaret Cooper). The afternoon was devoted to lectures relating to maintenance of health, treatment of disease and an analysis (presented by Dr John Bosco Nizeyi, Uganda) of problems that had hampered productivity at Uganda's only crocodile farm at Buwama. An array of relevant literature was on display and all registrants received a set of course notes.

On Day 2 a bus from Makerere University took participants on the one-hour journey to Buwama, on the edge of Lake Victoria, where Uganda Crocs Ltd, a company licensed to hatch and rear animals taken from Murchison Falls National Park, have a ranching enterprise (farm) for Nile Crocodiles. The farm's Manager, Mr Duncan Majane, first led

Plate 1. Prof. John Cooper demonstrates the clinical examination of a juvenile Crocodile

Plate 2. Mrs. Margaret Cooper teaching on legal aspects of crocodile farming

a tour of the premises. Participants took notes, asked questions and offered advice on a range of subjects relating to the health and welfare of captive crocodiles and the conservation implications of captive breeding and ranching.

The remainder of the day was spent on practical work. Sick crocodiles were examined clinically, blood and urine samples were taken for investigation (some of it in the field) and anaesthesia and euthanasia were demonstrated. Post-mortem examination on two crocodiles provided an opportunity for participants to gain experience in the identification of internal organs, the recognition of pathological lesions and the selection and processing of samples for diagnostic purposes. Finally, all present gathered together in a shaded area near the lake – an idyllic wooded spot through which large papilionid butterflies glided and over which African fish eagles called – and discussed the lessons learned over the previous two days. A group of three was charged with drawing up reports and recommendations. It was agreed that Uganda, which in the past has contributed much to our knowledge of the Nile Crocodile, could serve as an important source of information on this species and that this needs collaboration between those who work with crocodiles in the wild and those who keep or study them in captivity. The farming and ranching of crocodiles for their skin and meat are not universally acceptable but the evidence is that since 1971, when the IUCN/SSC Crocodile Specialist Group was formed, the status of 16 of the world's 23 species has been improved by ensuring that these have value to those who live in proximity to them.

This workshop, the first of its kind in Uganda, was an unqualified success. It brought together staff of the Uganda Wildlife Authority (UWA), the Department of Wildlife and Animal Resources Management (WARM) of the Faculty of Veterinary Medicine, Makerere University, research workers and crocodile farmers. It provided a forum for debate and encouraged views about ranching and captive breeding of crocodiles to be aired. Above all, it offered an opportunity, in the country which boasts the 'source of the Nile', for *Crocodylus niloticus*, studied by scientists for many hundreds of years, to be discussed. This Workshop would not have been possible without the support of the Uganda Wildlife Authority, the British Herpetological Society (BHS), the British Veterinary Association (BVA), Mrs Helena Cotton and a number of private individuals – especially in Great Britain – who provided financial help or donated equipment.

Further information about this Workshop – or future similar ventures planned in Uganda – is available from either Dr Gladys Kalema (Uganda Wildlife Authority, P O Box 3530, Kampala, Uganda, gkalem@starcom.co.ug) or Professor John E Cooper (Wildlife Health Services, P O Box 153, Wellingborough NN8 2ZA, UK, NGAGI@compuserve.com).

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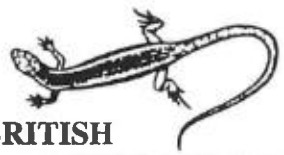

BRITISH HERPETOLOGICAL SOCIETY

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EDITORIAL

Erratum and apology

Hypomelanism in the Sand lizard, *Lacerta agilis*, by Lumír Gvoždik, Bulletin Number 70, 20-22.

The captions to Figs. 1 and 3 in this article (page 21) were unfortunately transposed. Fig. 1 shows a typically coloured female *L. agilis*, and Fig 3. a hypomelanistic one. The cover photograph also shows a normal coloured specimen and not a hypomelanistic one as indicated. We apologize for this and also a number of typographical errors that appeared in the article. It has not usually been possible in the past to provide authors with an opportunity to check their typeset manuscripts, and so mistakes of this nature have perhaps inevitably 'slipped through' undetected from time to time. The situation is clearly far from ideal, however, and I hope shortly to find a means of providing authors with page proofs.