

Research

Research summarised in this issue

Future of keeping pet reptiles and amphibians: towards integrating animal welfare, human health and environmental sustainability, p 450

Analysis of the arguments for and against the trade in, and keeping of, reptiles and amphibians

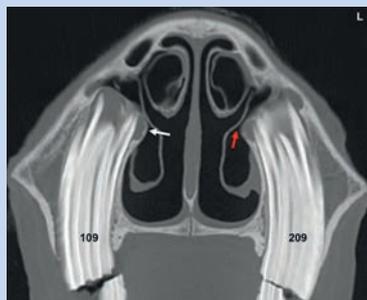
Prevalence of and risk factors for FIV and FeLV infection in two shelters in the United Kingdom (2011–2012), p 451

Overall prevalence of both diseases was found to be low at both shelters studied



Computed tomographic assessment of equine maxillary cheek teeth anatomical relationships and paranasal sinus volumes, p 452

Findings are of clinical value for investigating and treating sinus and dental disorders in horses



Full versions of these articles are available at veterinaryrecord.bvapublications

EDITORIAL

Keeping reptiles and amphibians as pets: challenges and rewards

G. M. Burghardt

REPTILES and amphibians are, for many of us, the most fascinating animals on earth, with morphological, physiological, reproductive, behavioural and life style diversity far beyond anything found in mammals and birds, the typical focus of veterinary research and practice. When I started my career in reptile behaviour there was comparatively little interest in reptiles and amphibians in ethology, comparative psychology or veterinary medicine. This has changed dramatically in the last few decades due to several factors.

Why the interest in exotic species?

Herptiles have become increasingly popular in the pet trade. While hatchling turtles and green anoles were an ever present dime store item, at least in the 1940s and 1950s when I came of age, they were cheap, disposable and the suggested housing and diet horrendous. Most died. I still remember when green anoles (chameleons) were sold at state fairs and other events harnessed to pins to be worn as living jewelry! Green

G. M. Burghardt, SB, PhD, Departments of Psychology and Ecology and Evolutionary Biology University of Tennessee, Knoxville, TN 37996-0900, USA
e-mail: gburghar@utk.edu

iguanas were the first breakout pet species in the 1970s and since then there has been no looking back as they were overtaken in popularity by bearded dragons, ball pythons, boa constrictors, designer snakes of all types, tortoises and exotic salamanders and frogs.

A second factor was the increased captive breeding of herptiles of major groups for the pet trade, as well as the meat and skin markets. They were often promoted as cash crops to wean people off exploiting locally threatened populations, including breeding farms for green iguanas in Central America. Such agribusiness raises health, reproduction and genetic concerns as overcrowding, nutritional deficiencies and domestication take place. Slaughter (for meat and skins), shipping and trafficking of both wild-caught and captive-reared animals often involve suffering due both to greed and ignorance of the psychological traits of animals to which crude anthropomorphism cannot be easily applied. Ignorance towards animals' behaviour is thus a major factor in how reptiles and amphibians are treated, and most people around the world have little empathy for these animals as sentient beings.

This then leads to another major factor. Reptiles and amphibians are now seen by behaviourists and ecologists as providing models and evolutionary important links in

Research in Veterinary Record

Veterinary Editor in Chief
Professor the Lord Trees

Clinical Research Editor
Tom McNeilly

Editorial Board

Stephen Baines, Julie Fitzpatrick, Daniëlle Gunn-Moore, John Innes, Wayne McIlwraith, Richard Martin, Chris Oura, Chris Proudman, Stuart Reid, Susan Rhind, Randolph Richards, Kenneth Simpson, Polly Taylor, James Wood

Associate Editors

Alex Corbishley, Kate Cobb, Richard Drummond, Felipe Galvao, Darren Green, Tim Greet, Amy Jennings, Kara Lee, Amy Miele, Tim Parkin

Peer-reviewed research papers and short communications in *Veterinary Record* are published continuously online. The full version of these articles appears on *Veterinary Record's* website while the print version of the journal contains detailed summaries provided by the author(s).



Photograph: Pixabay

Green iguanas were one of the first reptile species to become popular pets in the 1970s

understanding many aspects of behaviour, including social behaviour and ecology. Beyond the growth of purely academic interests in them, invasive species also present major economic and conservation issues. A partial list would include cane toads in Australia, brown tree snakes in Guam, North American red-eared turtles in Europe and Asia, frogs in Hawaii, and Burmese pythons, monitor lizards, and South American tegus in Florida. Many less dramatic and seemingly more benign invasions involve small lizards worldwide. Fungal diseases are now spreading and endangering amphibians and snakes worldwide. All these problems mandate urgent attention.

However, before all the above were

taking root, reptiles were especially prominent in zoos and aquaria exhibitions since the 19th century. Many housing methods were developed in zoos devoted to showing animals in somewhat naturalistic exhibits, although based on very limited information in many cases. Murphy¹ has authoritatively recounted some of this history. Many of those who became prominent zoo directors and curators had herpetological backgrounds including Roger Conant, Heini Hediger, Oscar Heinroth, Marlin Perkins, George Rabb, Carl Kauffeld, among others. While zoos often featured large and potentially dangerous species as well as venomous ones, these fascinated the public and encouraged many of us to want to study them and understand their

lives in both the field and captivity. Books by writers such as Raymond Ditmars had effects decades later as budding scientists emerged.

Vets and exotic pets

In all these areas: pets, farming, exhibition and research, issues of health, best practices for keeping captive animals, and preventing disease transmission to people, veterinarians play a crucial role. Pioneering modern veterinarians that focused on herptiles include, in the USA, Fredric Frye² and Eliot Jacobson.³ In the last decade of the 20th century the scientific study of welfare and captive management of reptiles became codified areas of study in zoos and research laboratories.^{4,5} Access to information on good welfare management also became more readily available. The *Herpetological Review* contains management, care and disease information in almost every issue. Reptile magazine and its website offer important, usually sound, information on keeping reptiles (www.reptilemagazine.com).

The role of keeping reptiles by young people as a foundation for scientific careers is a most important consequence of keeping reptiles as companion animals. This is true for me⁶ and many other, now prominent, students of herptiles, as shown in an autobiographical compendium of three dozen herpetologists.⁸ Nevertheless, there have been calls to restrict the public from keeping reptiles and amphibians in captivity due to the claim that diseases, such as salmonellosis, pose great dangers to children and the immunocompromised, that poor care and ignorance of their needs is all too common, collecting and trade practices are often troubling, and conservation issues are prevalent (although not so much in the regular pet store trade as compared to trophy hunting private collectors), and so forth. All these concerns need addressing.

Exploring the controversies

It is in this context of expanding public interest in keeping amphibians and reptiles that the article by Pasmans and others,⁸ summarised on p 450 of this week's issue of *Veterinary Record*, is so important and timely. The authors concisely, but thoroughly, explore controversies about keeping them as pets and address the issues of welfare, human health and conservation. What is equally important is that the paper is a product of multiple authors from diverse backgrounds from four European countries. Northern Europe was in the vanguard of developing improved ways of keeping captive reptiles and amphibians and developed popular magazines and organisations decades before they proliferated in the USA. However, in Europe also came some prohibitions on feeding live vertebrate prey to reptiles, even if that is what the animals had evolved to eat



Photograph: Pixabay

Invasive species, such as the North American red-eared turtles into Europe (pictured), present major economic and conservation issues

What you need to know:

- Reptiles and amphibians often have very specific nutritional, habitat structure, lighting, heating, humidity and other requirements as compared to many other vertebrates.
- Reptiles and amphibians can be more social than often appreciated, while others are intolerant of conspecifics in close quarters. This is especially true of territorial species and during mating seasons. The uniqueness of species must be recognised. Lizards and snakes are particularly different socially, with little territoriality in the latter.
- Reptiles and amphibians lack the facial expressions accompanying emotion and distress seen in mammals and birds, but this does not mean they lack emotions or do not suffer. Vocalisations are useful cues in many frogs, crocodillians and geckonid lizards.
- Personality differences within species can be pronounced, just as in birds and mammals.¹⁰

and, arguably, contributed positively to their psychological and behavioural welfare.

The authors provide a balanced treatment of controversial issues. Health issues, such as salmonellosis, are put in context. I would emphasise that allergies to reptiles and amphibians are miniscule compared to those presented by mammals and birds. Herptiles are largely quiet, do not smell, and otherwise are compatible with modern lifestyles. Similarly, bites and even deaths are rare, as the authors point out, as compared to incidents with dogs and exotic mammals such as non-human primates, large cats and even pet

deer. Keeping venomous snakes, crocodiles, and large constricting snakes do, of course, present problems, but this is not what most people really want to keep and such taxa should not be used as a cudgel to discredit all herpetological pets. The authors point out that even toxic frogs are rarely dangerous. Washing hands after handling any herptile or cleaning cages is common sense advice to be followed with all animals.

The difficulty of keeping herptiles in appropriate housing and climatic conditions with nutritious diets is a common critique from the animal welfare and humane movements. Points well taken, and I would add that reptiles and amphibians may have more social lives than we have generally appreciated⁹ and this should be emphasised in educational materials and perhaps housing options (which the authors mention). Pasmans and others⁸ do make clear that, in context, these problems are not worse than with other pet animals. Of course, this does not excuse mistreatment nor the need for education and enforcement of sensible animal welfare regulations across all animals (perhaps even including invertebrates). As they conclude 'We do not, however, believe, that keeping reptiles and amphibians presents a disproportionate burden on public health or animal welfare compared to that posed by the keeping of other companion animals.' And they also point out that responsible captive breeding efforts of both herpetologists and non-scientists provide many animals for research studies, as well as for the pet trade. Many decades ago the US government sponsored breeding programmes for amphibians to be used in research, but failed due to the costs

involved and limited demand at that time.

Where do we go from here?

The paper ends with a look at the current situation in various European countries. It is now time for comparable treatments of the health, welfare, ethical, educational and conservation aspects of these fascinating animals in other areas of the world. I hope that fruitful conversations will ensue following this most needed sober and useful review.

References

- 1 MURPHY JB. Herpetological history of the zoo and aquarium world. Krieger Publishing; 2007.
- 2 FRYE FL. Biomedical and surgical aspects of captive reptile husbandry. Krieger Publishing; 1991.
- 3 JACOBSON ER. Infectious diseases and pathology of reptiles: Color atlas and text. CRC Press; 2007.
- 4 MURPHY JB, ADLER K, COLLINS JT (Eds). Captive management and conservation of amphibians and reptiles. Society for the Study of Amphibians and Reptiles; 1994.
- 5 WARWICK C, FRYE FL, MURPHY, JB (Eds). Health and welfare of captive reptiles. Chapman & Hall; 1995.
- 6 BURGHARDT GM. The insidious snake. In REASER JK (Ed). Courting the wild: Love affairs with reptiles and amphibians. Hiraeth Press; 2009, pp 33-38.
- 7 REASER JK. Courting the wild: Love affairs with reptiles and amphibians. Hiraeth Press; 2009.
- 8 PASMANS F, BOGAERTS S, CUNNINGHAM AA, *et al.* The future of keeping pet reptiles and amphibians: towards integrating animal welfare, human health and environmental sustainability. *Veterinary Record* 2017; doi: 10.1136/vr.104296
- 9 DOODY SJ, BURGHARDT GM, DINETS V. Breaking the social-nonsocial dichotomy: a role for reptiles in vertebrate social behavior research. *Ethology* 2013;119:95-113.
- 10 WATERS RM, BOWERS BB, BURGHARDT, GM. Personality and individuality in reptile behavior. In VONK J, WEISS A, KUCZAJ SA (Eds). Personality in nonhuman animals. Springer; 2017 pp 153-84.

doi: 10.1136/vr.j4912

Keeping reptiles and amphibians as pets: challenges and rewards

G. M. Burghardt

Veterinary Record 2017 181: 447-449
doi: 10.1136/vr.j4912

Updated information and services can be found at:
<http://veterinaryrecord.bmj.com/content/181/17/447>

References

These include:

This article cites 1 articles, 0 of which you can access for free at:
<http://veterinaryrecord.bmj.com/content/181/17/447#BIBL>

Email alerting service

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
<http://group.bmj.com/group/rights-licensing/permissions>

To order reprints go to:
<http://journals.bmj.com/cgi/reprintform>

To subscribe to BMJ go to:
<http://group.bmj.com/subscribe/>