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A Myth about longevity of chameleons unleashed: Chameleons live long!

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ABSTRACT

An overview of the history of published and collected longevity records in chameleons is presented. Despite of the common belief, that chameleons live very short lives, counting in single-digit numbers in years, many Chamaeleon species, obviously exceed a decade or even more. The key for the longevity in captivity is the proper captive care based on the principles of the naturalistic approach and “Wild Re-Creation”.

Key words: Chameleons, wild, captive, chameleonoculture, longevity

INTRODUCTION

Chameleons are surrounded by so many myths that almost no other animal in the world can exceed them in this aspect. By expanding their presence in captivity, new myths appear very frequently.

One myth is that chameleons live extremely short lives. People tend to believe that chameleons die within maximum 2-3 years. (P. NECAS, PERS.OBS.)

EVIDENCE FROM THE WILD

Looking into published data, it is obvious, that in the wild, indeed some species are extremely short living and do not even reach one-year age. It was clearly demonstrated by KARSTEN & AL. (2008) for *Furcifer labordi* (GRANDIDIER, 1872) that in Ranobe, SW Madagascar, they spend most of their lives as an embryo in the egg, to hatch at the beginning of the rainy season, becoming sexually mature at 2-months of age, reproducing and then dying at age of 4-5 months due to the harsh climatic conditions of the dry season.

A very similar pattern was recorded for *Chamaeleo calypttratus* (DUMÉRIL & DUMÉRIL, 1851) by the first author (P. NECAS PERS OBS.): Yemen Chameleons hatch in April, get sexually mature in July, reproduce and die due to predation in the dry season not later than in December, at age of 9 months only. Their disappearing is also tied

with the onset of the dry season and wintertime, when low temperatures fall to the freezing point on some days and all the trees and bushes stay leafless. The real reason of their deaths is lack of hiding possibilities and predation (P. NECAS PERS.OBS.), though some specimens might survive hidden under leaves and debris, as indicated by the observation of M. BAILEY (PERS. OBS.) from wintertime in Florida. He observed *Chamaeleo calypttratus* descending to the ground and burying themselves at the base of tree trunks in dead leaves and soil.

EKHARDT & AL. (2017) relativized the fantastically presented data of KARSTEN & AL. (2008) clearly demonstrating that the extinction does not necessarily take place in other localities the same way. If exposed to less harsh conditions, the animals live in the wild substantially longer.

Same is true for the Yemen Chameleon. While even FRITZ & SCHÜTTE (1986) found an old specimen that was older than one year, the experience with longevity of *Chamaeleo calypttratus* from captivity shows they can live 14 years and possibly more.

Literature sources bring also longevity reports such as 12 years for *Trioceros melleri* (GRAY, 1865) (NECAS 1999; Tolley & Herrel 2016); for *Trioceros jacksonii* (BOULENGER, 1896) 8-10 years (DAVIDSON 2020) or 13 years (CHAMELEON FORUMS 2020A). TESSAAC & AL. (2017) used skeletochronology in museum specimens of

Calumma parsonii (CUVIER, 1824) and found the preserved animals were of maximum age of 8-10 years. It needs to be noted that the specimens were collected in the wild and euthanized and preserved for scientific purposes, so not necessarily dying, but in full strength. JENKINS & AL. (2011) estimates for the purpose of IUCN the longevity of *Calumma parsonii* in the wild to be 10-12 years, report about a captive specimen that died at age of 14 by incident (could live longer) and estimate the captive longevity maximum at 20 years. TOLLEY & HERREL (2016) handles the longevity field weakly with mentioning longevity of *Trioceros montium* 9yrs, and giving comments on dubious calculated longevity data in *Trioceros jacksonii* (6,6yrs for females and 2,2yrs for males) and *Trioceros hoehnelii* (4,5yrs) and skeletochronological investigation of *Furcifer pardalis* giving as longevity 1 year only.



Tab.1: Captive *Chamaeleo calyptratus*, 11 years old. Photo M. MAAS

CHAMAELEO CALYPTRATUS EXAMPLE

As an example of the most widespread species in captivity, *Chamaeleo calyptratus*, the sources give a very inconsistent picture. The Care-sheet deliver the following data: CHAMELEON FORUMS (2020b) 5-7 years, with the reasoning: this is how the chameleons live on average (ANONYMUS IN LITT.). MONGE (2020) gives 6-8yrs, THE REPTILIAN CO UK (ANONYMUS 2020) 4-8yrs; ZOOMED (ANONYMUS 2020) Males: 6-8 yrs, Females: 4-6 yrs. Only NECAS & STRAND (2018) and NECAS (2019) give much higher life expectancy: 14years. The inconsistency of this data is caused by the fact that a vast majority of chameleons die in captivity much sooner than they could, either because of accidents and diseases or (mainly) because of improper care. If cared for properly, they can exceed the highest given numbers: 16 was already reported (ANONYMUS from Germany, IN LITT.).

So, the Yemen Chameleons instead of living 3 to 5 years on average and if they reach seven we applaud, they can live up to 14 or even 16 years: PETR NECAS (PERS.

OBS.) reports on 8 specimens exceeding the age of 12yrs, KISHAN PATEL (IN LITT.) from England recently reported on a male, which died at 14yrs.

CALUMMA PARSONII EXAMPLE

The life expectancy of the giant Parson's Chameleon is up to 20years by IUCN (JENKINS ET AL. 2011); O. PRONK (IN MEMORIAM, IN LITT.) reported about a male of *Calumma p. parsonii* from Ranomafana, the age of which was estimated at 30years minimum.

CHUCK GOCHNOUR/HEROIC CHAMELEONS (IN LITT.) is keeping an adult female of *Calumma p. parsonii* obtained as a subadult in 2006. The clutch was captive bred or hatched, imported to the United States, and sold by a well-known commercial chameleon breeder.

KENT MANCHEN (PERS. OBS.) owns a male that was purchased from the same clutch as CHUCK GOCHNOUR (IN LITT.). This animal has been kept outside in a large, well-planted terrarium year-round in Southern California, except in the most extreme cold conditions. He experiences seasonal changes in temperature, daylight length, and humidity levels. During the winter he assumes very dark colors, rarely moves, and refuses most prey items until Spring. At approximately 15 years old he actively courts females with head-bobbing displays and assumes offensive, territorial posturing when he sees rival males. He is approximately 24 inches in length and 525 grams currently.



Tab.2: Captive *Calumma p. parsonii*, 15 years old. Photo K. MANCHEN

HERPETOCULTURE RECORDS

Besides of the mentioned two species examples (above), herpetoculture is the only realistic source of longevity data for chameleons, as the calculation and skeletochronological methods as demonstrated by TOLLEY

& HERREL (2016) lead to hardly usable data and the literature is quite scarce in reliable records. The IUCN allows the specialists to estimate the longevity, which is sometimes based on data, sometimes on the imagination of the authors. The data presented here were compiled from private sources and double-checked as far as possible. Even if the reliability of some could be questioned, in general, they show a clear pattern: the chameleons can reach in captivity under controlled environment age, that exceed the longevity records from the wild in general and exceed the average mentioned and believed lifespan data while multiplying it by 2, sometimes more. It is absolutely obvious, that chameleons are not to be labeled as short-living lizards, as they reach longevity that are normal in other groups of lizards.

Species/subspecies	Sex	Yrs	Autor	Note
<i>Bradypodion thamnobates</i>	m	9	GERD FRITZSCHE	IN LITT.
<i>Calumma globifer</i>	m	15	MARIO JUNGSMANN	IN LITT.
<i>Calumma parsonii parsonii</i>	m	15	JÜRGEN VAN OVERBEKE	IN LITT.
<i>Calumma parsonii parsonii</i>	m	30	OLAF PRONK	IN LITT.
<i>Calumma parsonii parsonii</i>	m	17	GRANT TAYLOR	IN LITT.
<i>Calumma parsonii parsonii</i>	m	10,5	CRAIG DURBIN	IN LITT.
<i>Calumma parsonii parsonii</i>	m	18	NICKY VIOLA	IN LITT.
<i>Calumma parsonii parsonii</i>	m	18	ARDI ABATE	IN VERB.
<i>Calumma parsonii parsonii</i>	m	15	KENT MANCHEN	PERS. OBS.
<i>Calumma parsonii parsonii</i>	f	15	RALF MOUTH	IN LITT.
<i>Chamaeleo calytratus</i>	m	12	PETR NECAS	PERS. OBS.
<i>Chamaeleo calytratus</i>	m	14	KISHAN PATEL	IN LITT.
<i>Chamaeleo calytratus</i>	m	14	SABRINA CASH	IN LITT.
<i>Chamaeleo calytratus</i>	m	8	TATII FELK	IN LITT.
<i>Chamaeleo calytratus</i>	m	9	JUSTIN CONNORS	IN LITT.
<i>Chamaeleo calytratus</i>	m	10	ALEX RO	IN LITT.
<i>Chamaeleo calytratus</i>	m	11	MONYA MAAS	IN LITT.
<i>Chamaeleo calytratus</i>	m	10	SUZANNE BLAD	IN LITT.
<i>Chamaeleo senegalensis</i>	m	8,5	NICOLAS PELEGRIN	IN LITT.
<i>Furcifer lateralis</i>	m	5	KATRIN PAWLİK	IN LITT.
<i>Furcifer lateralis</i>	m	6	JÜRGEN VAN OVERBEKE	IN LITT.
<i>Furcifer pardalis</i>	m	9,5	KATRIN PAWLİK	IN LITT.
<i>Furcifer pardalis</i>	m	12	PETER POWER	IN LITT.
<i>Furcifer pardalis</i>	m	8	LISA GIBBS	IN LITT.
<i>Furcifer pardalis</i>	m	8,5	KATHRIN RUDOLPH	IN LITT.
<i>Furcifer pardalis</i>	m	9	TJEU VAN LIN	IN LITT.
<i>Furcifer pardalis</i>	m	9	CRAIG DURBIN	IN LITT.
<i>Furcifer pardalis</i>	m	8,5	TYLENE DUNCAN	IN LITT.
<i>Furcifer pardalis</i>	m	8	KRISTINA GRACE RED	IN LITT.
<i>Furcifer viridis</i>	m	5,25	PHILIP-S. GEHRING	IN LITT.
<i>Furcifer willsii</i>	m	10	ARDI ABATE	IN VERB.
<i>Kinyongia multituberculata</i>	m	10	MARIO JUNGSMANN	IN LITT.
<i>Rhampholeon acuminatus</i>	m	5,5	KATRIN PAWLİK	IN LITT.
<i>Rieppeleon brevicaudatus</i>	m	6	PETER DVORAK	IN LITT.
<i>Rieppeleon brevicaudatus</i>	m	5	JERRY DAVIS	IN LITT.
<i>Trioceros deremensis</i>	m	10	JÜRGEN VAN OVERBEKE	IN LITT.
<i>Trioceros deremensis</i>	m	9	BILL STRAND	IN LITT.
<i>Trioceros deremensis</i>	m	10,5	TYLENE DUNCAN	IN LITT.
<i>Trioceros deremensis</i>	m	11	MARIO JUNGSMANN	IN LITT.
<i>Trioceros j. jacksonii</i>	m	7	CRAIG DURBIN	IN LITT.
<i>Trioceros j. xantholophus</i>	m	10	CRAIG DURBIN	IN LITT.
<i>Trioceros j. xantholophus</i>	m	15	SEBASTIAN HEINECKE	IN LITT.
<i>Trioceros j. xantholophus</i>	m	12	MARIO JUNGSMANN	IN LITT.
<i>Trioceros melleri</i>	f	10	JOAN GENTILE	IN LITT.
<i>Trioceros melleri</i>	m	9	JÜRGEN VAN OVERBEKE	IN LITT.
<i>Trioceros pfefferi</i>	m	6	JÜRGEN VAN OVERBEKE	IN LITT.
<i>Trioceros q. gracilior</i>	f	6	JANE ANNE JEANPIERRE	IN LITT.
<i>Trioceros q. quadricornis</i>	m	7	JÜRGEN VAN OVERBEKE	IN LITT.
<i>Trioceros q. quadricornis</i>	f	5	JÜRGEN VAN OVERBEKE	IN LITT.
<i>Trioceros q. quadricornis</i>	m	8	TYLENE DUNCAN	IN LITT.
<i>Trioceros werneri</i>	m	9	PETR NECAS	PERS. OBS.

Tab.3: Overview of captive longevity records and sources

REASONS FOR SHORTER LIFESPAN IN THE WILD

In the nature, the chameleons might live quite short lives, because they die due to their interactions with the

following factors:

- weather, climate (esp. harsh conditions of the winter-time and/or dry season),
- predation (mainly by birds, big lizards, snakes, carnivores, monkeys, big insects such as mantis in juvenile age),
- diseases and parasite infestations (especially in combination with some discomfort),
- habitat loss and environmental pollution as result of human activities (urbanization, deforestation, agricultural use of land, climate change).

Nothing like that is necessary in captivity, where we can control most of these factors.

REASONS FOR SHORTER LIFESPAN IN CAPTIVITY

The short life of chameleons in captivity is not due to their normal life expectancy but because of improper care practice, very often executed based on recommendations by many of the above mentioned free internet sources:

- too high temperatures
- food containing too much phosphorus (e.g. locusts and *Zophobas morio* larvae)
- food containing too much of uric acid (high-protein-diet-fed roaches)
- lack of proper supplementation - refusal of feeding pollen as a natural part of the diet
- reverting the humidity cycles from the natural cold and moist nights and dry and warm days into hot and moist days and dry and warm nights,
- absence of natural fogging/inadequate hydration
- use of poisonous and dangerous fake plants instead of living ones.

All of these are the main reasons for tremendous shortening of the lives of chameleons in captivity.



Tab.4: Captive *Kinyongia multituberculata*, 10 years old in care of MARIO JUNGSMANN. Photo P. NECAS



Tab.5: Captive *Calumma p. parsonii*, 15 years old. Photo K. MANCHEN (upper male) and C. GOCHNOUR (lower female)

LONG LIFE IN CAPTIVITY

There are two basic approaches on how to keep chameleons alive for long lifespans:

1. **Outdoor caging:** chameleons can be very successfully kept in climates similar to their home country if kept fully or partly outside. The slight differences of the climates are to be compensated. Often, as such territories, regions like Florida, California,
2. **Indoor caging:** if kept indoors, principles of the naturalistic approach defined by JOHN COURTENEY-SMITH (2018) "Wild Re-Creation" are to be applied.

If the husbandry is done respecting the real needs of the animals, only in *Furcifer pardalis* and *Chamaeleo*

calypttratus were observed long-term (one to two years prior to death) aging effects, like immobility, inability to feed, lowered skin elasticity, loose eyelids, warty scales on the cranial crests, loss of weight. In all others, the animals die in principle due to injury or disease or the process of aging is evident for about a month before the actual death only. The phenomenon of "sudden death", often mentioned by breeders, is usually either due to long-term unrecognized disease, malnutrition, wrong supplementation, lack of UV insolation, wrong caging and parasitic infestation, applicable mainly in wild-caught specimens (J. CONNORS, IN LITT.; M. JUNGMAHN IN LITT.; P. NECAS PERS. OBS.).

What we really hope, is that, when buying a chameleon, people begin to realize that this is not a novelty, but a long-term commitment.

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Tab.6: Captive *Calumma p. parsonii*, male, 15 years old. Photo K. MANCHEN

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