

# Reptile pets: sourcing, stress and sociobiology

**Canada 2018**

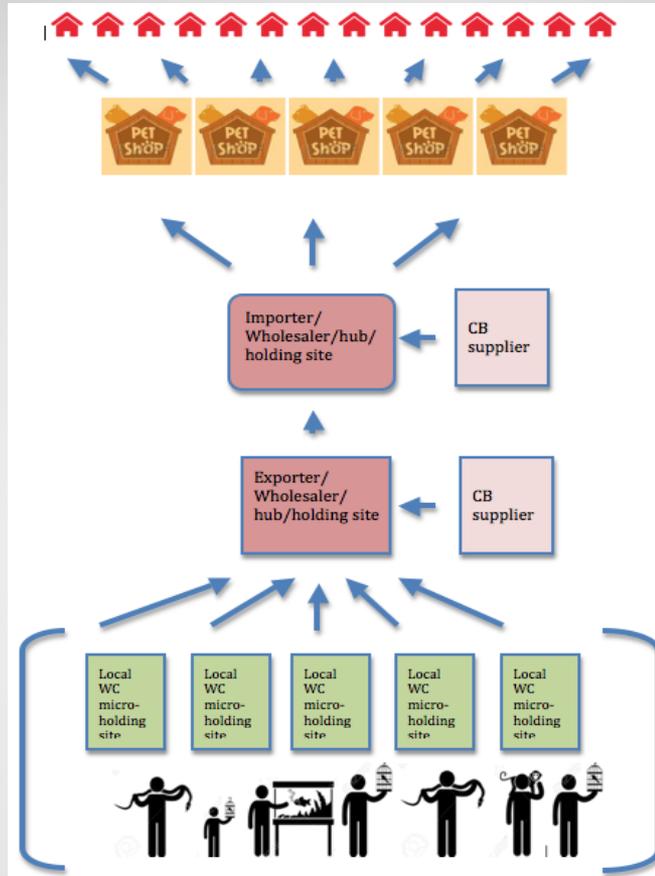
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## **Animal sourcing and distribution**

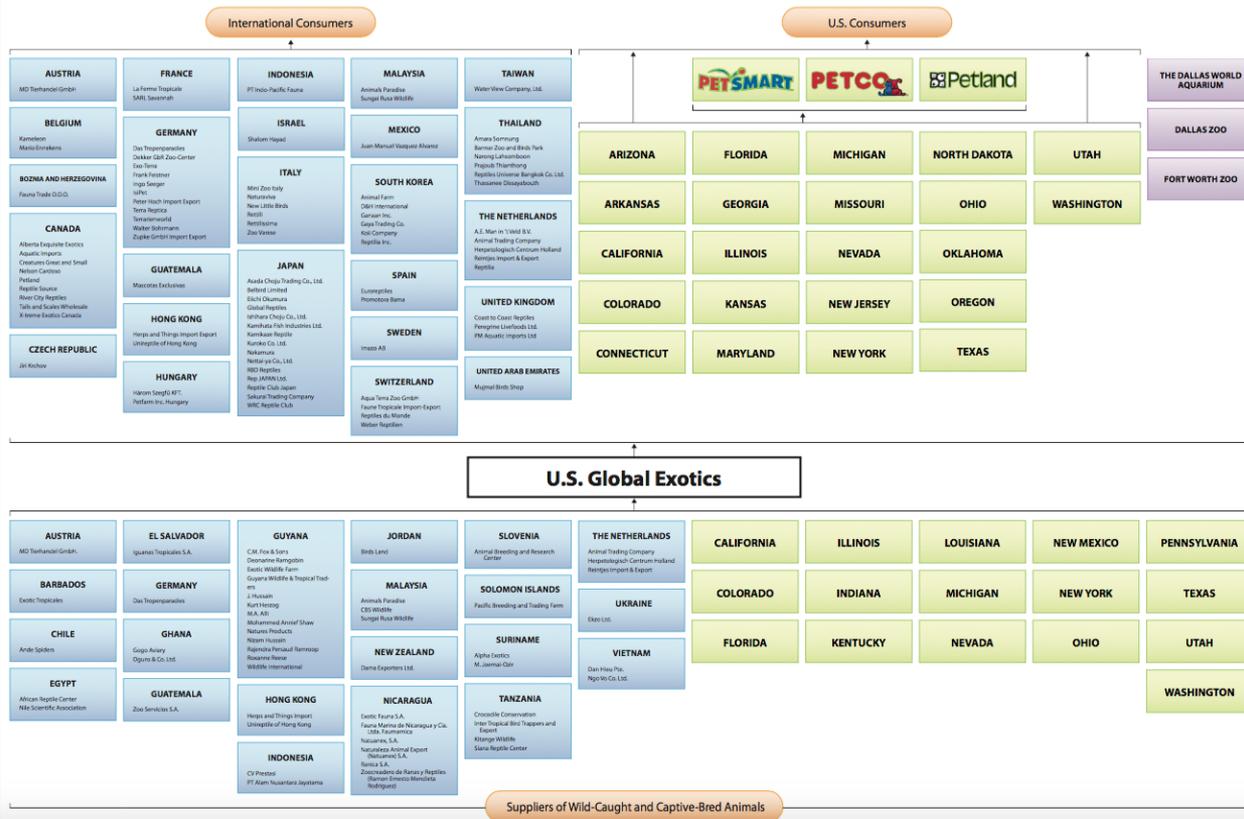
**Photos: Alex kokourek; iStock; LSUAgCenter**



**A bigger supply and distribution picture!**

icons: Icons123rf, Freepik.com, Iconshut.com

## U.S. Global Exotics: Suppliers and Customers



# Supply and distribution chain for a single wholesaler

- From
  - 22 countries
  - 16 States
  
- To
  - 25 Countries
  - 22 States

**USGE Consignments received and shipped**

## **Animal welfare: stressed and sick animals spread disease**

- 26,400 animals on site
- 80% were sick, injured, or dead
- around 3,500 dead and dying animals (12% of stock), mostly reptiles, being discarded on a weekly basis (=1.7% per day).



ne















- 75% of reptiles do not survive 1 year in the Home (Toland et al, 2012)

**Dying to be pets**



## Folklore husbandry

- 'Reptiles wouldn't feed, grow or breed if they were stressed by captivity'
- 'Snakes are insecure in large spaces'
- 'Snakes are agoraphobic'
- 'Snakes don't use and don't need space'
- 'Snakes don't need to stretch out'

**Folklore husbandry**



**'Reptiles wouldn't feed, grow or breed if they were stressed by captivity'**  
**False!**

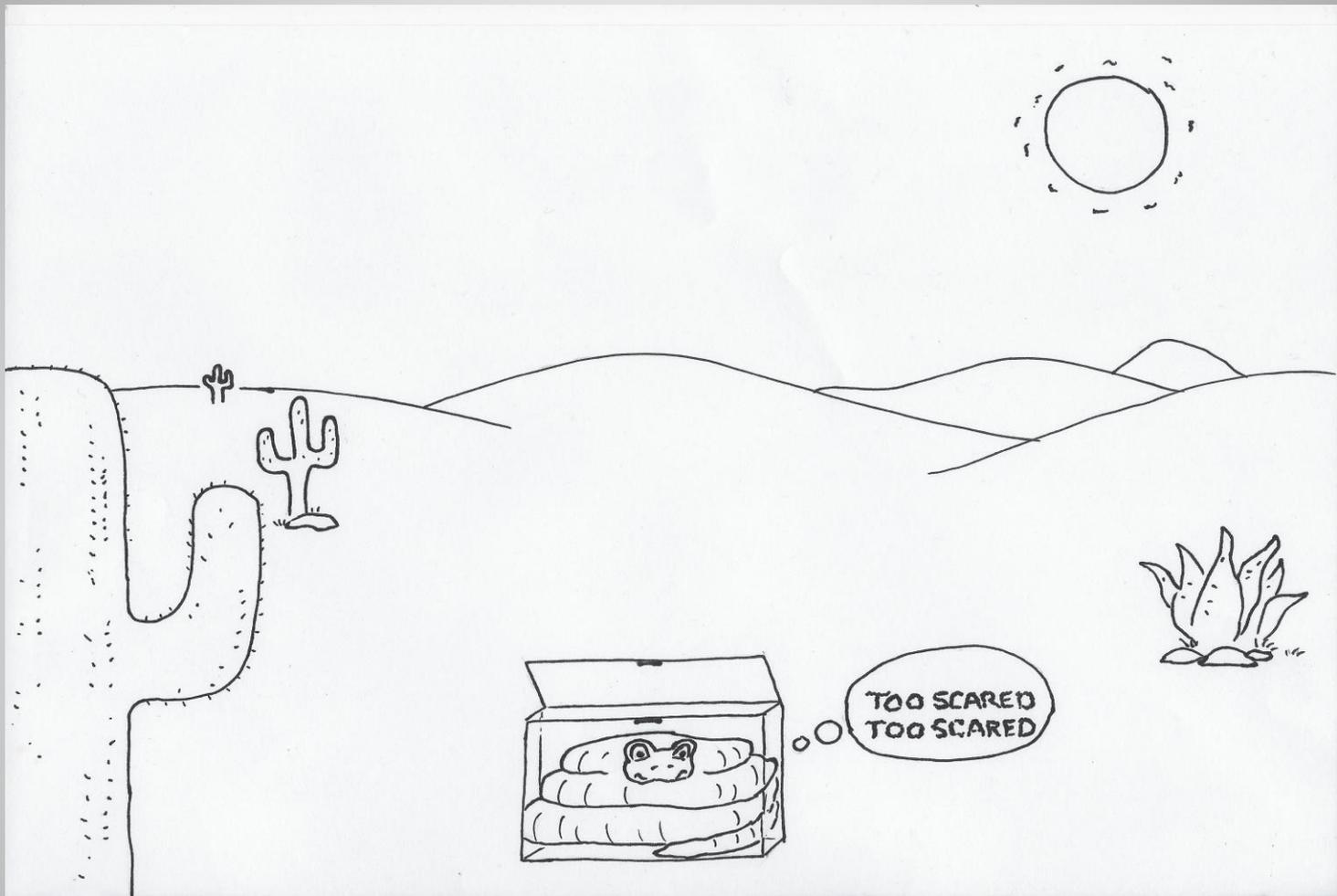
Photo credit: Compassion Over Killing/Wikipedia



**'Snakes are insecure in large spaces'**

**False!**

Photo credit: Brocken Inaglory Wikipedia



**'Snakes are agoraphobic'**  
**False!**



**'Snakes are insecure in large spaces'**  
**False!**

- **Example home ranges for snakes**

- 59.9ha, averaging 7.9ha, individual snakes travelled average 273m per move. Baxley & Qualis (2009)
- 92 - 396ha, single movement events of 338m. Hamilton (2009)
- 21.1ha - 39ha. Miller et al. (2012)
- 33ha and 1,528ha Hyslop et al. (2013)
- 44ha - 76ha, and 156ha - 202ha for males and females respectively. Breininger et al. (2011)
- 22.5km<sup>2</sup>. Hart et al. (2015)

**'Snakes don't use and so don't need space'**  
**Then open the cage doors and find out!**



**'Snakes don't need to stretch out'**  
**False! Straight line body posture**



**'Snakes don't need to stretch out'**  
**False! Straight line body posture**



**'Snakes don't need to stretch out'**  
**False! Attempted straight line body posture**



**'Snakes don't need to stretch out'**  
**False! Attempted straight line body posture**



**Snake racks**  
Photo credit PETA

- In our recent study of snake behaviour in captivity, more than one-third of snakes were found to adopt a straight line posture within just 1 hour of observation.
- Our survey of clinicians identified 22 behavioural and medical conditions directly associated with housing snakes in small enclosures.

**The smaller the cage, the greater the problems!**



**Inside a snake rack**  
Photo credit PETA

- *"Once I couldn't even spell 'Erpatologist' and now I are one!"* (Tom Huff)
- Most 'herpetologists' are no more a herpetologist than a cat owner is a 'mammologist'

**Real herpetologists and 'erpers!**





**Petsmart**



**Petsmart**



**Petsmart**



Petsmart



Photo credit: Jan Kronsell

**Swamp**

## Would not accept

### **Strongly contraindicated**

A. Cumulative/  
intensified  
hygiene  
problems

B. Negative animal  
welfare  
compounding  
issue



## Should not accept

### **Bad becomes normal**

A. Greater pathogen diversity/prevalence

B. Greater compounding animal welfare issues



# Cognitive, emotional and social capabilities of reptiles and amphibians

- Problem solving
- Use buttons
- Play
- Memory year on year
- Eye contact

Photo Pere Soler





## Psychological (cognitive, mental)

- Innateness & hard-wiring
- Stimulation/arousal/alertness (environment, searches, social interaction)
- Understimulation ('boredom') lack of above

## **Ethological (behavioural, psychosocial, social)**

- Spatial needs & overly restrictive environments
- Environmental needs & provisions
- Conspecific interaction (positive & negative)

**Table 1: Behavioural signs of captivity-stress**

Behaviour	Sign	Possible cause
Interaction with transparent boundaries (ITB)	Persistent (up to 100 per cent activity period) attempts to push against, crawl up, dig under or round the transparent barriers of enclosure	Related to exploratory and escape activity. Self-compounding and destructive. Inherent psychological organisation and adaptational constraints result in failure to recognise abstract invisible barriers
Hyperactivity	Abnormal high-level physical activity, surplus or redundant activity	Often associated with ITB. Overcrowding. Self-compounding and destructive. Overly restrictive, deficient and inappropriate environments
Hypoactivity	Hypothermia, disease, injury, pain, co-occupant harassment	Too low temperature, infection/organic dysfunction, falling, dropping, co-occupant attack, transport trauma, occupant harassment
Anorexia	Hypothermia, disease, injury, pain, co-occupant harassment	Too low temperature, infection/organic dysfunction, falling, dropping, co-occupant attack, transport trauma, occupant harassment
Hyperalertness	Abnormal high level of alertness 'nervousness' to environmental stimuli	Often related to fear, defence and escape behaviour. Common in overly restrictive, and exposed, deficient and inappropriate environments
Rapid body movement	Abnormal 'jerky' locomotor or jumping actions	Often related to fear, defence and escape behaviour. Common in overly restrictive, and exposed, deficient and inappropriate environments
Flattened body posture	Flattening of body against a surface often combined with hyperalertness	Often related to fear, defence and escape behaviour. Common in overly restrictive, and exposed, deficient and inappropriate environments
Head-hiding	Deliberate seclusion of head including under objects or substrate	Often related to fear or ambient light/photo stress behaviour. Common in overly restrictive, and exposed (including excessive ambient light for nocturnal species), deficient and inappropriate environments
Inflation of the body	Deliberate (often repeated) inflation and deflation of the body. May or may not be associated with 'hissing' sound	Often related to fear, defence and escape behaviour. Common in overly restrictive, and exposed (including light for nocturnal species), deficient and inappropriate environments
Hissing	Hissing sound, accompanied with deliberate repeated inflation and deflation of the body	Often related to fear, defence and escape behaviour. Common in overly restrictive, and exposed (including excessive ambient light for nocturnal species), deficient and inappropriate environments
Co-occupant aggression	Aggressive or defensive displays, biting, chasing cage mates	Often related to courtship routines, inability to avoid cage-mates when required, overly restrictive, and exposed deficient and inappropriate environments. Hunger
Human-directed aggression	Mock/real strikes using jaws or tail	Often related to fear, defence and escape behaviour. Common in overly restrictive, and exposed (including excessive ambient light for nocturnal species), deficient and inappropriate environments.

(Table 1 continued)

Clutching	Snake or lizard tightly grasps human or object	Often related to fear or ambient light/photo stress behaviour. Common in overly restrictive, and exposed (including light for nocturnal species), deficient and inappropriate environments
Death-feigning	Animal (commonly snake) appears limp, upside-down, unconscious	Often related to fear
Loop pushing	Snake uses 'arch' of body to resist/deflect physical contact from cage-mate or human	Often related to fear or ambient light/photo stress behaviour. Common in overly restrictive, and exposed (including light for nocturnal species), deficient and inappropriate environments
Freezing	Eye contact with or general presence of observer results in freezing posture/tense immobility	Often related to fear or ambient light/photo stress behaviour. Common in overly restrictive, deficient and inappropriate environments
Grating of jaw	Turtles and tortoises tightly rasp together ramphotheca causing an abrasive grating sound	Often related to fear or light stress behaviour. Common in overly restrictive, and exposed (including ambient light/photo for nocturnal species), deficient and inappropriate environments. Pain
Hesitant mobility	Animal uncharacteristically moves in 'fits and starts'	Often related to fear. Common in overly restrictive, inappropriate environments
Wincing	Hypersensitivity to minor stimuli causing retraction of head, limbs or tail	Often related to fear. Common in overly restrictive, inappropriate environments. Pain, disease
Prolonged retraction of head, limbs or tail	Tortoises and turtles retracting head, limbs or tail for minutes or longer	Often related to fear, pain, disease
Open mouth breathing	Sporadic, usually slow, open-mouth respiration or gasping	Hyperthermia, infection/organic dysfunction/disease, major head/neck injury, falling, drooping, co-occupant attack, transport trauma
Panting	Rapid open-mouth breathing, sometimes accompanied by extension of dewlap (skin flap under lower jaw in lizards). Also, cloacal evacuations may occur	Hyperthermia
Cloacal evacuations when handled	Urination, defecation, excretion of malodorous substance from cloaca	Often related to fear
Projection of penis or hemi-pene	Projection of penis or hemi-pene associated with human presence or contact	Often related to fear
Voluntary regurgitation of food	Regurgitation of food associated with human presence or contact	Often related to fear
Tail autotomy	Voluntary autotomy of tail (some lizards) associated with human presence or contact	Often related to fear
Pseudovocalisation	Crocodylians, some lizards and turtles producing squeaks or whines (aside from sexual context)	Often related to fear, physical irritations, pain, injury, disease
Venom spitting	Venomous snakes ejecting venom associated with human presence or contact	Often related to fear
Squirting blood from eye	Some lizards eject blood from eye associated with human presence or contact	Often related to fear
Pigmentation change	Typically some lizards (especially chameleons) change colour – may be rapid or slow	Often related to fear, pain, hyperthermia, hypothermia, overly restrictive, deficient and inappropriate environments, injury, disease
Atypical locations	Reptile occupies an atypical location for an unusual amount of time or other unusual context (eg, an arboreal chameleon on cage floor)	Often related to disease, injury, discomfort, co-occupant aggression, hyperthermia, hypothermia

**Table 2: Behavioural signs of quiescence and 'comfort'**

Behaviour	Sign	History
Normal/relaxed alertness	Relaxed interest/awareness in proximate or novel objects, relaxed visual explorations	Normal environmental investigation
Calmly smelling or tasting objects or air	Calm chemical sample of surrounding	Normal environmental investigation, food searches
Subtle changes in body posture and orientation	'Stretching out' of limbs while basking, relaxed adoption of body angles using furnishings, etc	Normal thermoregulatory behaviour and rest
Unhurried body movements and locomotion	Relaxed environmental exploration	Normal environmental investigation, food searches
Moderate to relaxed grasp on handler or object	Snake or lizard maintains relaxed (but possibly firm) grasp on human or object	Normal relaxed behaviour and rest
Relaxed drinking	Unhurried drinking	Normal maintenance behaviour
Relaxed feeding	Unremarkable feeding habits	Normal maintenance behaviour
Relaxed breathing	Unremarkable breathing habits	Normal relaxed behaviour
Physical quiescence	Unremarkable relaxed activity, eg, free from apprehension and fear activities	Normal relaxed behaviour

Exploratory/  
search behaviour



**Hyperactivity**



**Common captivity-stress behaviour**  
**Interaction with transparent boundaries**



**Common captivity-stress behaviour**  
**Interaction with transparent boundaries**

Sedentary behaviour/  
Biological shut-down



**Hypoactivity**

Social dependence



Social/antisocial  
tendencies



**Social needs**

<http://www.brackenbird.com/lovebirds>

## Play in fishes, frogs and reptiles

Gordon M. Burghardt

### *What animals engage in play?*

Not too many years ago play was considered by most scholars and scientists as something we see in rather intelligent warm-blooded animals, such as monkeys and apes, dogs, cats, elephants, otters, bears, and some birds, such as crows and parrots. Of course, horses play, especially young ones: the origins of the phrase 'horsing around' are not hard to fathom. In fact, many other mammals play, including marsupials such as wombats and kangaroos. Indeed, the play behavior of no animal has been studied as much as that of the laboratory rat: Serge and Vivien Pellis wrote a book largely devoted to reviewing some of the

should: (1) be incompletely functional in the context in which it appears; (2) be spontaneous, pleasurable, rewarding, or voluntary; (3) be different from other more serious behaviors in form (for example, be exaggerated) or timing (for example, occur early in life, before the more serious version is needed); (4) be repeated, but not in abnormal and unvarying stereotypic form (for example, rocking or pacing); and (5) be initiated in the absence of severe stress. In a single sentence: *play is repeated, seemingly non-functional behavior differing from more adaptive versions structurally, contextually, or developmentally, and initiated when the animal is in a relaxed, unstimulating, or low stress setting* (Burghardt, 2014).

Applying these criteria allows us to determine if a possible example of animal behavior satisfies all the criteria or just some of them, pointing to others that we need to investigate and apply. But even when the five

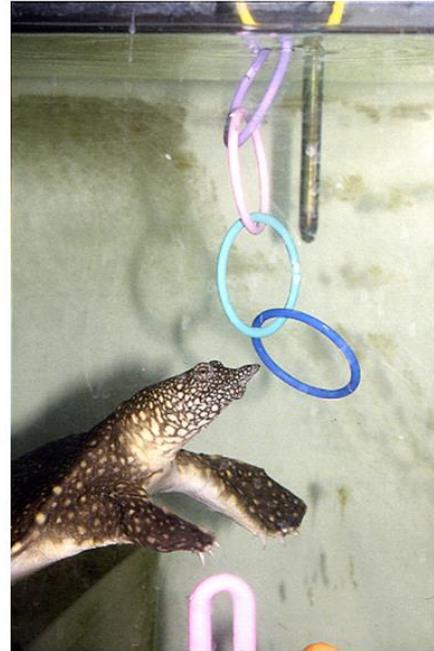


Figure 1. A young Nile soft-shelled turtle interacting with colored rings. (Photo: Gordon M. Burghardt.)

**Game changer!**

### *Problems*

- Trade sourcing and practices out of control
- Captive breeding no panacea
- Demand created by disinformation
- Folklore husbandry pervasive
- Reptiles typically unsuitable as pets

### *Solutions*

- Bans
- Positive lists of approved only species
- Pet labelling
- Only scientific, objective information permitted

## **Summary of the issues & Solutions**