

Pangolins in Captivity

A Historical Summary of
Breeding and Survival in Zoos

Frank Kohn
United States Fish & Wildlife Service
CITES Management Authority



Population Overview Report

1954-Present

Population Data and Data Quality Indicators

Total Individuals Records	297
Living Individuals	
Contributing Founders	(>=) 4.6.0 = 10 Total
Living Individuals	21.23.1 = 45 Total
Living Descendants (from Founders)	(>=)2.1.0 = 3 Total
Living Breeders	3.8.0 = 11 Total
Living Captive Born	4.3.0 = 7 Total
Living Wild Born	16.19.1 = 36 Total

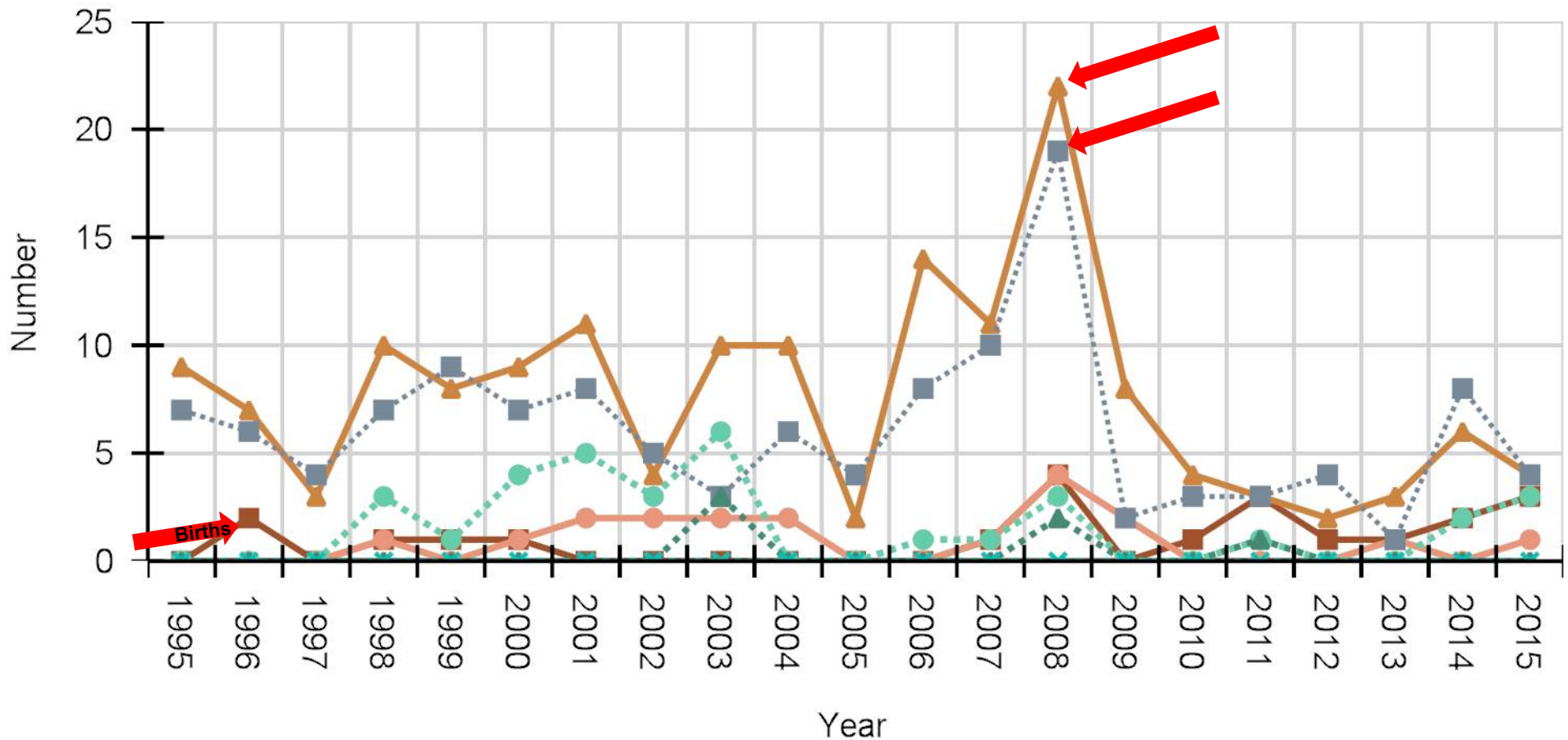


Population Overview Report

for *Manis I* Pangolin From: 02 Jun 1995 - 02 Jun 2015
 Population Subset: All ISIS Members (909)



Acquisitions (A) and Dispositions (D) by Year



Disclaimer: These tables and figures are based on institutional data submitted to ISIS, not studbook data.

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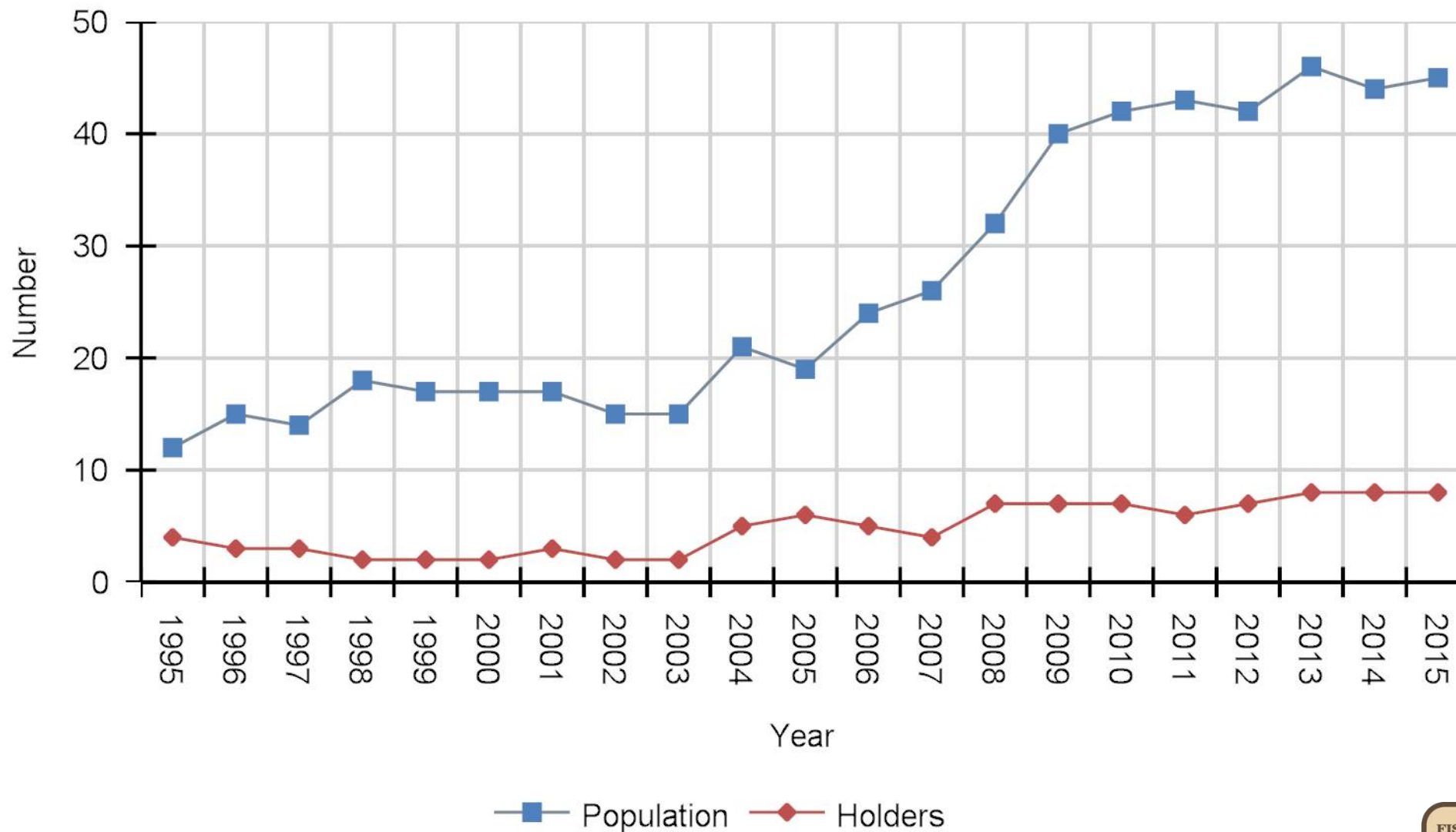


Population Overview Report

for *Manis / Pangolin* From: 02 Jun 1995 - 02 Jun 2015
Population Subset: All ISIS Members (909)



Population and Holders by Year



Disclaimer: These tables and figures are based on institutional data submitted to ISIS, not studbook data.

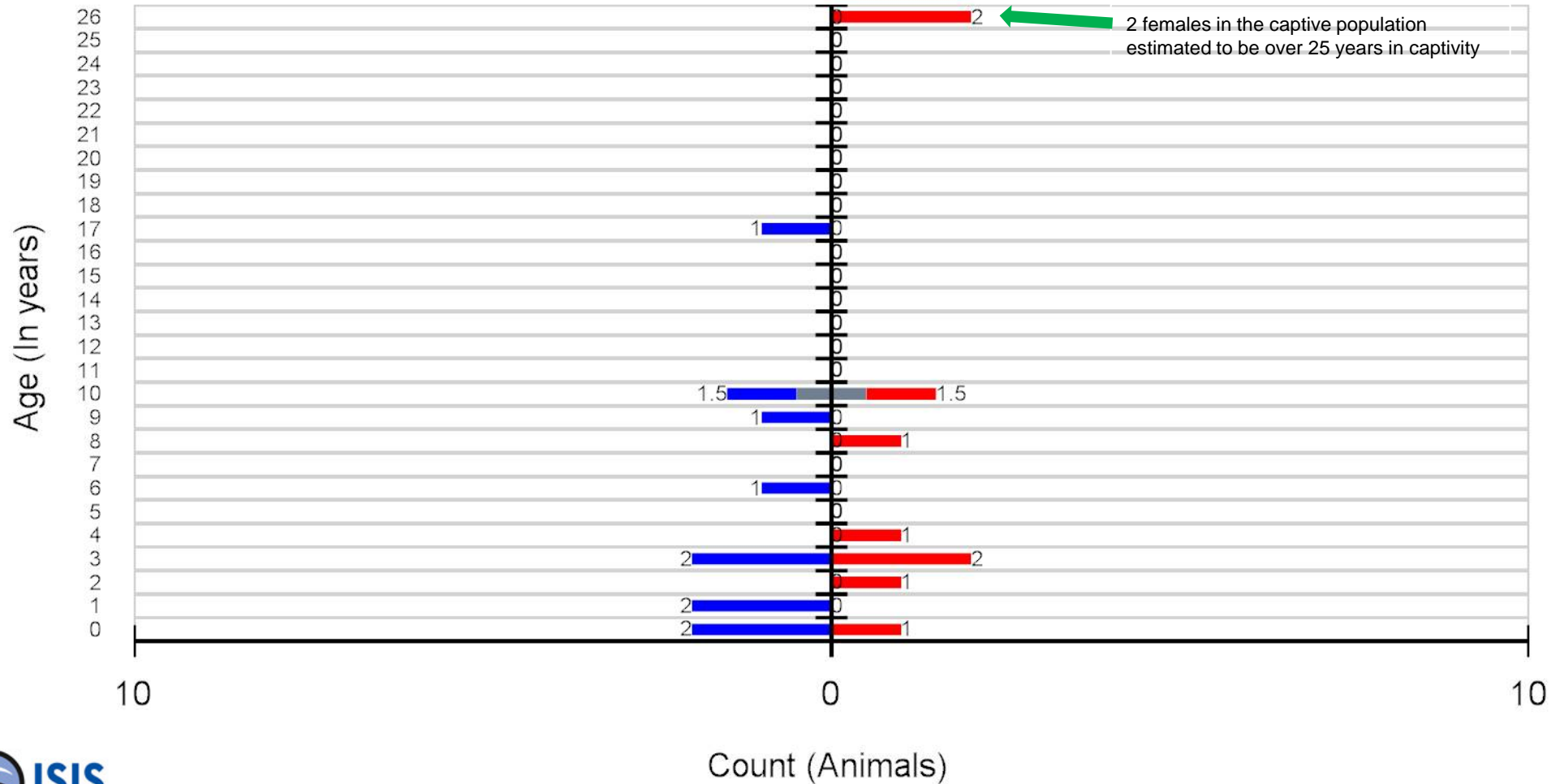
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Population Overview Report

for *Manis / Pangolin* From: 02 Jun 1995 - 02 Jun 2015
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Animal Age Graph / Live Animals



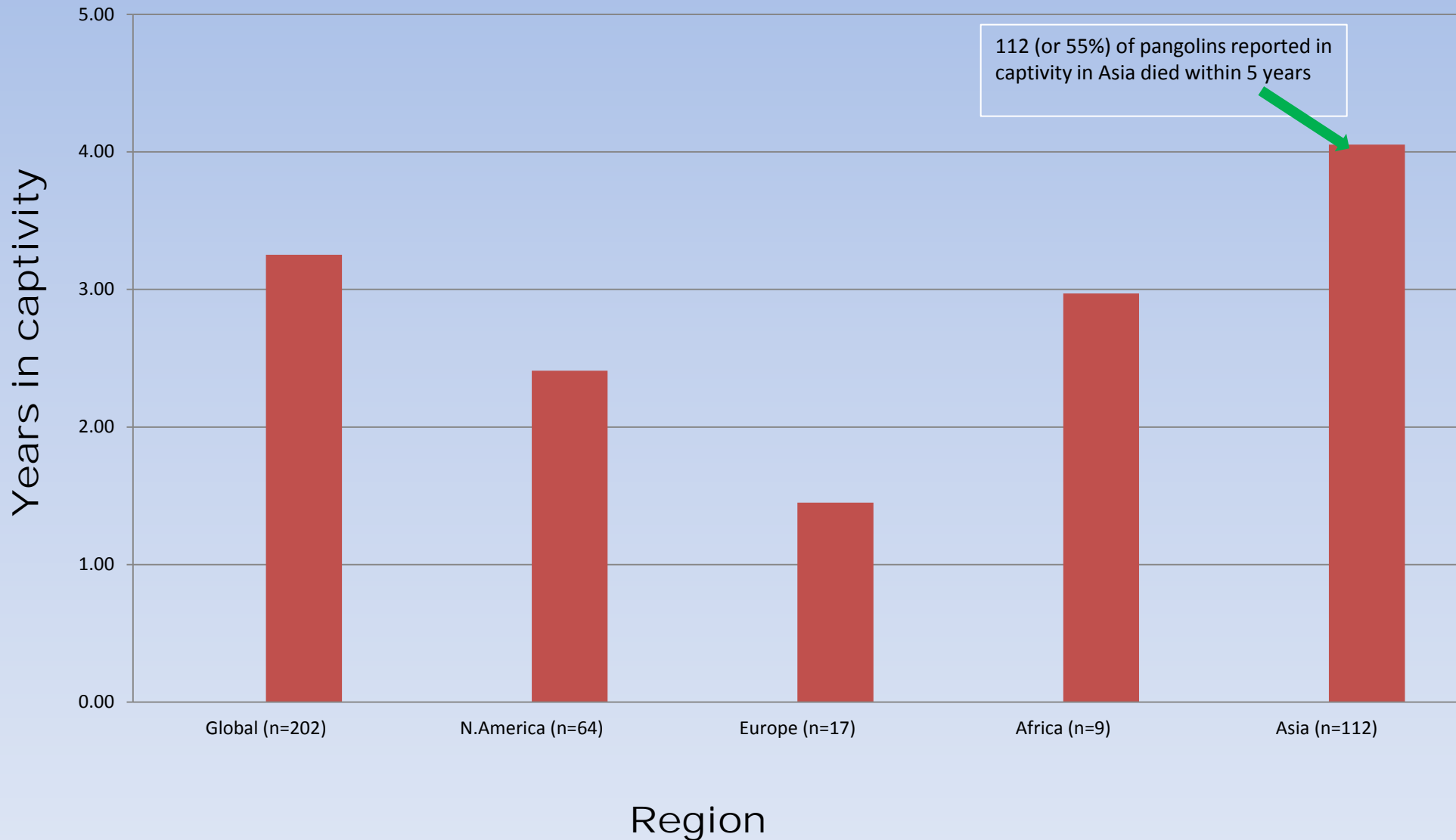
■ Unknown/Other ■ Male ■ Unknown/Other ■ Female

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Mean Years in Captivity at Death - Pangolins



Zoos with surviving captive born

Singapore Zoo

1.1

One captive born but wild bred

One captive bred (F1)

Taipei Zoo

2.2.1

Two were captive bred (F1)

Three were at least second generation captive bred (F2)

~10% of 297 pangolins are captive born over a 61 year period



Captive Research

ZooKeys 507: 99–114 (2015)
doi: 10.1186/s12977-015-0076-970
http://dx.doi.org/10.1186/s12977-015-0076-970

REVIEW ARTICLE

A peer-reviewed open-access journal
ZooKeys
Launched to accelerate biodiversity research

Zoo Biology 26:223–230 (2007)



Technical Review

History and Dietary Husbandry of Pangolins in Captivity

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Zoo Biology 31 : 206–218 (2012)

BRIEF REPORT

Time-Budgets and Activity Patterns of Captive Sunda Pangolins (*Manis javanica*)

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This is the first assessment of *Manis javanica* behavior in captivity. The aim of the investigation was to assess behavior in order to suggest ways of improving captive care and management of the species. This was undertaken by constructing time-budgets and activity patterns and identifying any abnormal repetitive behavior (ARB) exhibited. Scan and focal animal sampling were implemented in observations of seven subjects. Analyses detailed idiosyncrasies in how subjects partitioned their active time. Peak activity occurred between 18:00 and 21:00 hr. Two ARBs, clawing and pacing, were identified and the cessation of clawing in one subject was possible by modifying its enclosure. Stress-related behavior, understood to be related to several factors, means maintaining this species in captivity remains problematic. Recommendations are made pertaining to husbandry, captive management, and future research. Zoo Biol 31:206–218

Captive breeding of pangolins: current status, problems and future prospects

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Folia Zool. – 63 (2): 73–80 (2014)

Husbandry, behaviour and conservation breeding of Indian pangolin

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Abstract. Little is known about the biology of Indian pangolins (*Manis crassicaudata*) both in captivity and wild. Nandankanan Zoological Park, India (NKZP) is maintaining Indian pangolin in captivity since last 50 years (1962–2013). The housing, husbandry and behavioural observations that have contributed to successful upkeep and breeding of Indian pangolins at NKZP are described in the present paper. The successful maintenance and breeding of this elusive nocturnal species indicate that it can survive in captivity with application of established care techniques. The species can be maintained more successfully in captivity with provisions for their unique biological and behavioural needs.

Key words: *Manis crassicaudata*, diet, veterinary care, captive breeding, Nandankanan Zoological Park

Introduction

Indian pangolin (*Manis crassicaudata* Gray, 1827) is one of the eight living species of pangolins of the world belonging to the family Manidae of order Pholidota (Wilson & Reeder 2005). They are toothless mammals with 11–13 rows of large overlapping horny scales, long protrusible tongue and prehensile tail with a terminal scale on its ventral side (Pocock 1924, Heath 1995). They are distributed throughout peninsular India, Sri Lanka, Bangladesh and Pakistan (Prater 2005, Mishra & Panda 2012). Their populations are increasingly under threat throughout their range due to domestic and international demand for live pangolins, their skin, scales and meat. The biology of Indian pangolins particularly, low reproductive rate and a wide distribution make them vulnerable to over-exploitation (Mishra & Panda 2012). Considering the vulnerability, Indian pangolins are included in the Schedule I of the Wildlife (Protection)

zoos can contribute to conservation of the pangolin through an increased understanding of its behaviour, nutrition, reproduction and health care. Nandankanan Zoological Park (NKZP) is one of the premier large zoos in India. The zoo is located near the Bhubaneswar city of Odisha in eastern India between 20°23'8" to 20°24'10" north latitude and 85°48'9" to 85°48'13" east longitude. This zoo comes under the geographical distribution range of Indian pangolins. Indian pangolins are being maintained since 1962 in NKZP. In 2008, a Pangolin Conservation Breeding Centre (PCBC) was established in an off exhibit area of NKZP with financial assistance from Central Zoo Authority (CZA), New Delhi with the objectives of developing proper methodology for housing, up-keeping, husbandry and captive breeding of Indian pangolins. The present paper reports husbandry, behavioural biology, veterinary care and conservation breeding of Indian pangolins at NKZP.

Factors affecting survival in captivity

- Diet
- Stress
- Housing
- Transport



Scientific Support

- The IUCN SSC Pangolin Specialist Group's conservation plan rates the development of protocols for conservation breeding of pangolins as a priority 4, the lowest rating level.
- The AZA Pangolin, Armadillo and Xenarthran (PAX) Taxon Advisory Group (TAG) does not endorse the acquisition of pangolins to North America at this time.





Conclusions

- Births of pangolins in zoos or rescue centers are rare and in most cases, incidental, and survival success is very limited.
- Although records reflect some long-lived animals in captivity, these individuals are the exceptions and mean survival in captivity, based on the data, is below 5 years.