



## Specimens of *Thylacinus cynocephalus* in collections of the Czech Republic (Mammalia: Thylacinidae)

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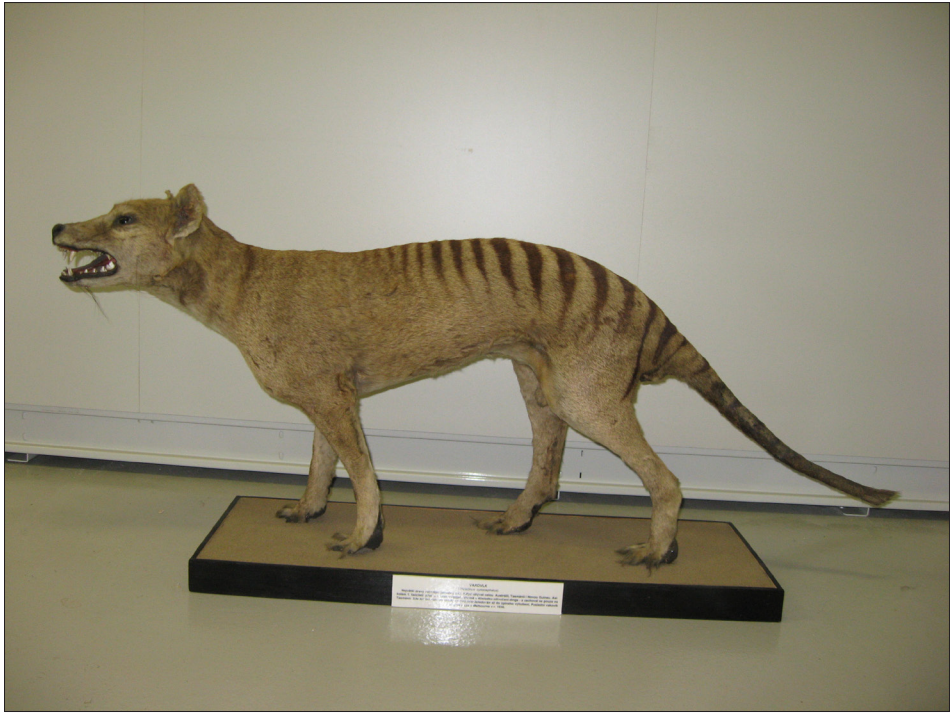
**Abstract.** A list of the thylacine specimens housed in collections of the Czech Republic is given and all available data on the specimens are provided, including the photographs. One mounted skin is in the National Museum Prague and one complete skull in the private Zoological Museum Protivín. Four pouch juveniles (liquid specimens) of the estimated age of two weeks are housed at the Department of Zoology, Charles University, Prague.

**Key words.** Collections, marsupials, thylacine, Tasmanian tiger.

### INTRODUCTION

The thylacine, marsupial wolf, or Tasmanian tiger, *Thylacinus cynocephalus* (Harris, 1808) was the largest marsupial carnivore to have existed into modern times. The last captive thylacine, a male (Sleightholme 2011), died at the Beaumaris Zoo on the Queens Domain in Hobart (Tasmania) on the night of the 7 September 1936. All known specimens predate the death of this last captive animal. The thylacine is listed as extinct under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and under the International Union for Conservation of Nature (IUCN) Red List 2012 (McKnight 2008). The extinction of the thylacine was a tragedy as we lost a morphologically and behaviourally unique species of isolated phylogenetic position (e.g. Moeller 1997, Miller et al. 2009).

The fourth revision of the *International Thylacine Specimen Database* (ITSD) lists 748 specimens in various collections all over the world (Sleightholme & Ayliffe 2011),



**Fig. 1. Mounted specimen of thylacine, National Museum, Prague (NMP P6V-010667). Photo by Jan Robovský.**

including 100 mounted specimens, 310 complete skulls and 12 pouch young (liquid specimens), two of which are noted as missing. With reference to the known thylacine specimens in the Czech Republic, only one mounted specimen is listed, that housed in the National Museum Prague.

Considering the fifth revision of the ITSD, we conducted a survey of thylacine specimens in the collections in the Czech Republic, based on published collection catalogues, our revisions of collections (for both points see Robovský et al. 2010), and interviews with curators of various museum and private collections. In total, we identified six thylacine specimens in three collections.

Museum acronyms: DZCU = Department of Zoology, Charles University, Prague; NMP = National Museum, Prague.

#### LIST OF SPECIMENS

##### **National Museum Prague**

SPECIMEN: mounted ♂ specimen (Figs. 1-2) with an open mouth with the dentition visible, NMP P6V-010667. Origin: purchased from Frank Company, London, in 1897. Local-



**Fig. 2. Mounted specimen of thylacine (detail of head), National Museum, Prague (NMP P6V-010667). Photo by Jan Robovský.**

ity: Van Diemen's Land (= the name formerly used for the island of Tasmania), locality unknown (Heráň 1966).

NOTES: The dentition indicates that the skull is not that of a thylacine (e.g. different number of cheek teeth *in situ* – six vs. seven; presence of carnassials in the dentition *in situ*), and probably originates from a small dog or a fox (see Fig. 2).

Condition of the specimen (skin): very good despite the wear to the lower part of the tip of tail, a perforation on the right flank behind the forelimb of the shoulder area, two round perforations in the sternal region, and two bald spots on the posterior part of the right flank at the hind limb at the level of femur (all of these imperfections are probably associated with the age and exposition of the specimen – it was for many years installed in public exhibition – and of the way of preparation work, and do not appear to be original skin wounds, contra McOrist et al. 1993), vibrissae are well preserved (cf. Pocock 1926, Boardman 1945).

Pelage colouration: the coat is short, coarse and dense, with 17 stripes commencing from just behind the shoulder blades and terminating at the base of the tail, upper half of the right auricle is much lighter than that of the left auricle, large irregular



**Fig 3. Skull of thylacine, Zoological Museum Protivín (unnumbered). Photo by Adéla Novotná.**

creamy whitish spot (blasé) is obvious over the anterior part of breast (this feature was documented in only six specimens of 60 examined; cf. Moeller 1997). Other notes: a pendulous scrotum is present, although anteriorly placed from its natural position. The pseudo pouch that protected it in life has not been preserved. A tuft like crest is obvious at the tip of the tail, tail appears darker and with shorter hairs than the body, it possesses several stripes along its length; the majority of stripes distal to the rump of the tail are artificially applied and not due to pigment. Thylacines stored fat in their tails and in periods of scarcity when the fat deposits were depleted, the tail vertebrae became evident, giving the illusion of stripes. The preparator (taxidermist) was undoubtedly working from an illustration and decided to mimic this feature in his work. Hairs on the autopodia are very long and exceed the length of the claws. Measurements of the mounted skin: total length (taken along the dorsal outline, in centimetres) 21 (head) + 22 (neck) + 61 (body) + 42.0 (tail) or 43.5 (tail with a tuft), head length (taken directly, as in all following dimensions) – 21, body length – 67, tail length – 42, shoulder height – 44.5, ear length (inner side) – 7.0 (left) / 7.5 (right), ear length (outer side) – 8.5 / 8.0, scrotum length – 4, forefoot length – 15.0 / 14.5, hind foot length (without claws) – 21 / 18, rhinarium breadth – 4.0, rhinarium height – 2.7. Evaluating the available morphological evidence shows (cf. Moeller 1997), this specimen is a male skin in summer coat. Small black-and-white photographs of this specimen in left lateral view were first published by Heráň (1966, 1968).

### **Zoological Museum Protivín<sup>1</sup>**

**SPECIMEN:** skull (Fig. 3), unnumbered. Origin: purchased in Belgium approximately thirty years ago, details unknown.

<sup>1</sup> A private institution associated with the Protivín Crocodile Zoo.

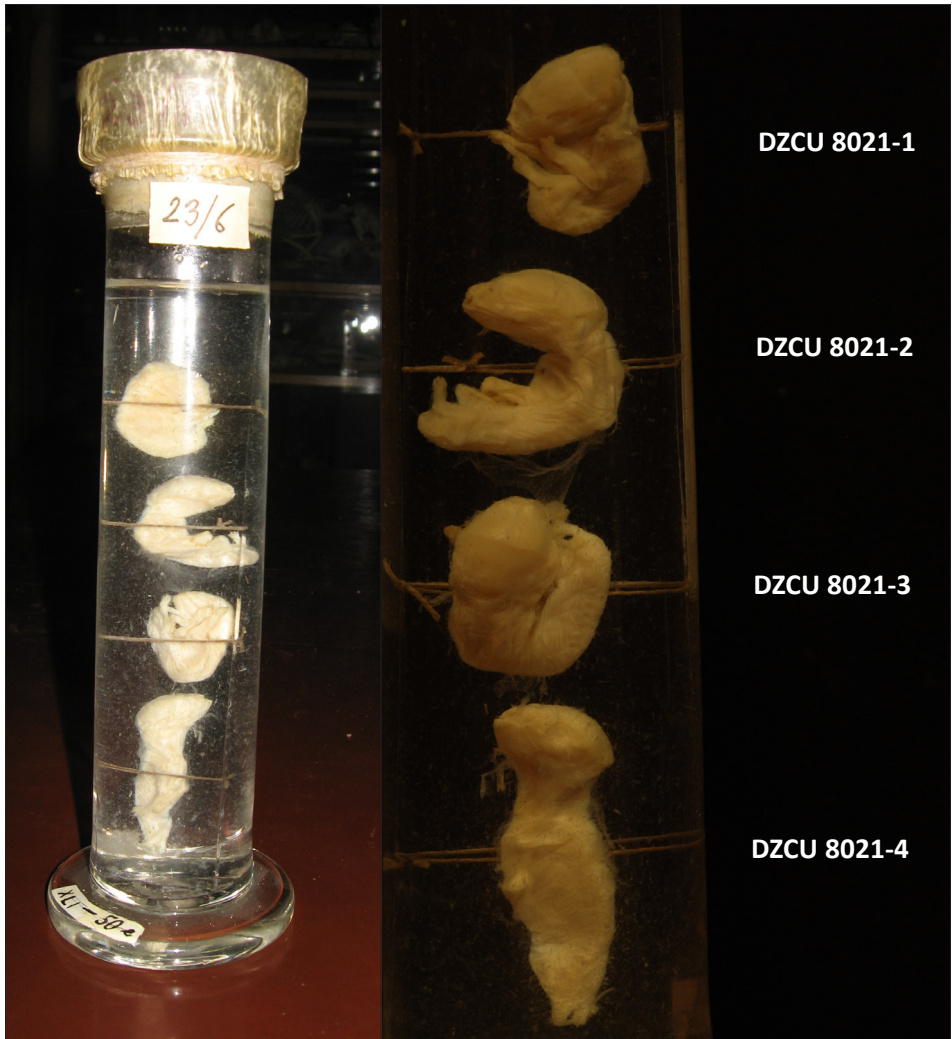
NOTES: mandible broken into two hemimandibles, orbital and supraorbital regions on the right side damaged (the inner wall of the orbit broken and supraorbital region cracked), palatum cracked along the midline and broken on its posterior part. Standard measurements (1–12 after Moeller 1968, 13–19 after Sleightholme & Campbell in review; in millimetres): basilar length (horizontal axis) = 177.67; length of upper molar-row vertical axis = 74.54 (left side) / 74.87 (right side); lingual length of  $M_2$  (horizontal axis) = 13.8 / 14.45; buccal length of  $M_2$  (vertical axis) = 12.28 / 12.03; lingual length of  $M_3$  (vertical axis) = 16.15 / 15.74 plus buccal length of  $M_3$  = 13.97 / 13.66; condylo-incisive length (horizontal axis) = 186.49 (most anterior point of incisors), condylo-basal length = 186.88 (from the most anterior point of praemaxilla); frontal breadth (ectorbitale-ectorbitale; horizontal axis) = 56.43; least breadth between the orbits / interorbital constriction (entorbitale-entorbitale; horizontal axis) = 35.84; jugal width (horizontal axis) = 101.54; medial length of the tooth portion (horizontal axis) = 99.26; palate width (horizontal axis) = 54.32; brain capsule length (horizontal axis) = 83.3 (left side); skull length (condylo-incisive length) = 186.88; height of the processus coronoideus = 52.92 / 51.74; longitudinal extension of the palatal region = approx. 94.57 (partly damaged); greatest lateral extension of the zygomatic arches = 101.25; the waist of the muzzle taken between  $P^2$  &  $P^3$  = 27.08; medial length of the nasal bones = approx. 66.3; horizontal crown length of the outer (= buccal) rim of the maxillary bone of the upper second molar = 12.28 / 12.03; the diagonal extension of the crown directed inwards to the tongue (= lingual) of the upper second molar = 13.8 / 14.45.

The observable morphology and obtained measurements allow us to determine the sex of this specimen as an adult female (Moeller 1968, Sleightholme & Campbell in review). Stage 1 lower incisor wear (Moeller 1968, 1997) enables to provide an estimate of age at death of around two years.

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SPECIMENS: four pouch young, perhaps two males and two females of the estimated age of  $\leq$  two weeks (Fig. 4).

NOTES: These remarkable specimens (only 10 pouch young specimens were previously known to exist; Sleightholme & Ayliffe 2011) were described in detail by Sleightholme et al. (2012). These pouch young are the only known alcohol preserved specimens of the thylacine outside of Australia, and the earliest in terms of their ontogeny known to exist (see also Sleightholme et al. 2012). The conditions of these individuals indicate postmortem postures, specifically based on the prominent ribs in all specimens, an unnatural curl of specimen 3, unnatural extension of specimen 4 and unnatural backward bend in the occipital region in specimen 2 and 4 due to the contraction of elastic filaments of ligamentum nuchae (Milan Klíma, in litt.). This form of preservation excludes some detailed anatomical and histological comparisons, with the possible exception of analysis of skeletal parts (Milan Klíma, in litt.).



**Fig. 3. Pouch juvenile specimens, Department of Zoology, Charles University (DZCU 8021-1 through 8021-4). Photos by Jan Robovský (left) and Tereza Holicová (right).**

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An additional thylacine specimen is mentioned in the inventory book of the Institute of Zoology of the former German Charles-Ferdinand University in Prague (now deposited in DZCU) under inventory number 8020 as a dry specimen that arrived in 1897. Unfortunately, this specimen (skull / skeleton?) was not located in the DZCU collection in spite of several attempts and detailed survey. However, the collection of the German Charles-Ferdinand University was transferred several times after closure of the University in 1945 and before its final storage in the present DZCU collection.

## CONCLUSIONS

The recent revision of collections in the Czech Republic increased the total known number of thylacine specimens from a single skin (as recorded in the fourth revision of the ITSD 2011), to seven specimens (including one tentative considered lost) in 2013 (for inclusion in the fifth revision of the ITSD). It is still possible that some thylacine specimens exist in the Czech natural history collections, which are scattered over the numerous museums, institutes and castles over the country. On the other hand, rare specimens of extinct species always attract attention and their evidence rarely passes unnoticed.

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