CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

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Sixteenth meeting of the Conference of the Parties
Bangkok (Thailand), 3-14 March 2013

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Delist the extinct thylacine *Thylacinus cynocephalus* from Appendix I in accordance with the Resolution Conf. 9.24 (Rev. CoP15). The species does not meet the biological criteria (Annex 1) and trade criteria (Annex 5) for Appendix I.

The precautionary measures referred to in Annex 4 A1 and D are not considered to be required for this proposal. Paragraph 1A requires species listed on Appendix I to be first transferred to Appendix II so that the impact of any trade can be monitored. Australia considers that it is not necessary to first transfer the species to Appendix II as it is extinct, trade was not the cause of extinction and it is never likely to be in trade. Paragraph D states that species regarded as possibly extinct should not be deleted from Appendix I if they may be affected by trade in the event of their rediscovery. Retaining the species on Appendix I with the annotation of 'possibly extinct' is not warranted because in the unlikely event of its rediscovery will not be affected by trade.

B. Proponent

Australia[*], as requested by the Animals Committee, to delete the species from Appendix I (AC26 WG1 Doc. 2).

C. Supporting statement

1. Taxonomy

1.1 Class: Mammalia

1.2 Order: Dasyuroidea

1.3 Family: Thylacinidae

1.4 Species: *Thylacinus cynocephalus* (Harris, 1808)

1.5 Scientific synonyms: *Didelphis cynocephala* Harris, 1808
Thylacinus harrisii Temminck. 1824
Dasyurus leucocephalus Grant, 1831
Thylacinus striatus Warlow, 1833
Thylacinus communis Anon, 1859
Thylacinus breviceps Krefft, 1868
Thylacinus cynocephalus Mahony & Ride 1988

[*] *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat or the United Nations Environment Programme concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

1.6 Common names: English: thylacine, Tasmanian tiger, Tasmanian wolf, zebra opossum
French: loup marsupial
Spanish: lobo de Tasmania, lobo marsupial

1.7 Code numbers: A-102.002.015.001 (CITES identification manual)

2. Overview

As part of the periodic review of the Appendices, the Animals Committee recommended that the extinct thylacine (*Thylacinus cynocephalus*) be removed from Appendix I (AC 26 WG1 Doc. 2). The recommendation was made based on information provided by the Australian CITES Scientific Authority for consideration at the 26th meeting of the Animals Committee (Geneva, March 2012).

T. cynocephalus was one of many species nominated by Australia for inclusion in the Appendices when CITES first came into force on 1 July 1975. It was listed as a precautionary measure, as the species was not subject to trade at that time as it had long been considered extinct.

The thylacine was endemic to Australia. It was a large, doglike marsupial carnivore that formerly ranged widely over continental Australia (Mooney and Rounsevell, 2008). By 1789, the year of Australia's colonisation by the British, it had been extirpated from the mainland and survived only on the island of Tasmania. Evidence suggests it succumbed to competition and probably predation from the dingo (*Canis lupus dingo*) which was introduced to northern Australia by Aboriginal people 3500–8000 years ago (Savolainen *et al*., 2004; Letnic *et al*., 2012). Rising sea levels cut Tasmania off from the mainland *c*.8–12,000 years ago, preventing the further spread of the dingo and isolating the last surviving population of thylacines (Mooney and Rounsevell, 2008).

The thylacine was probably never abundant in Tasmania and the first specimen was not described until 1808, two years after the colony's settlement (Smith, 1982). By the 1830s large tracts of land had been cleared for farming and losses of sheep and other livestock were indiscriminately attributed to thylacines. From the mid- to late 19th century generous bounties were offered by the Van Diemen's Land Company, individual landowners and the government for thylacine scalps. Trapping and hunting for bounties continued until the early 20th century. By 1910 its population was probably in serious decline. The last live specimen was trapped in 1933 and died in Hobart Zoo in 1936 (Mooney and Rounsevell, 2008). The thylacine was granted official protection in 1936, after it was almost certainly extinct. Despite much speculation, numerous unverified sightings, official protection and intensive searches, no authenticated trace of the thylacine has ever been found since 1936.

By the early 20th century its extinction may have been hastened by disease, which affected other large Tasmanian dasyurids at the time (Mooney and Rounsevell, 2008). At this time, predation of unguarded pups by the Tasmanian devil (*Sarcophilus harrisii*) may possibly also have contributed to its extinction (Mooney and Rounsevell, 2008). Thylacine skins were tanned for domestic and export use, but this trade was not considered to have caused its decline as the skins were a by-product of the key cause of the thylacine's extinction – bounty hunting to protect livestock (Paddle, 2000). In addition, a small number of thylacines were transferred to zoos, but the numbers exported were considered too small to be a factor in extinction of the species (Grzimek, 1972). Consequently, trade was not considered to be a factor in the extinction of the species and is not considered to be a risk in the unlikely event that the species is rediscovered.

3. Species characteristics

3.1 Distribution

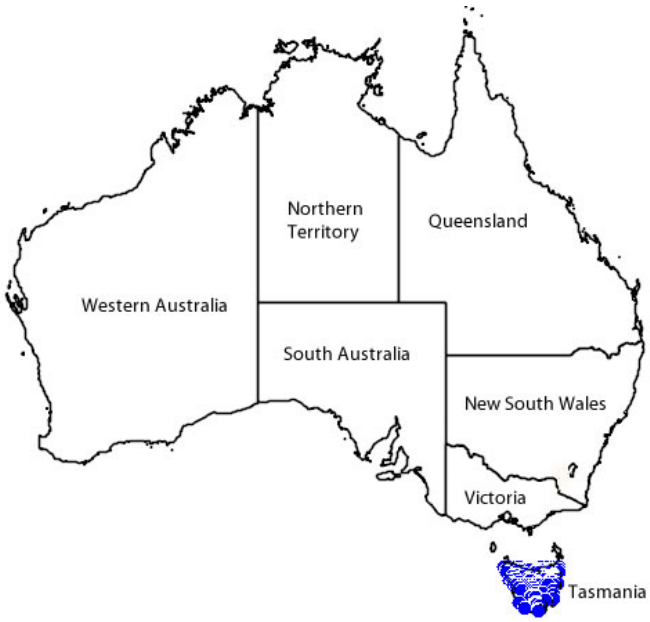

Figure 1 Map of occurrence records for the thylacine, *T. cynocephalus* (Atlas of Living Australia, 2012) since European settlement in Australia in 1879. Fossils of the thylacine have been found throughout mainland Australia.

Aboriginal rock paintings, and fossil and subfossil deposits indicate that the thylacine once lived throughout mainland Australia (Brandl, 1972; Wright, 1972; Smith, 1982; Taçon *et al*., 2011) and New Guinea (Van Deusen, 1963). The thylacine had become extinct on the mainland soon after the introduction of the dingo between 3500 and 8000 years ago (Archer, 1974; Savolainen *et al*., 2004). At the time of white settlement (1879) it survived only on the island of Tasmania, which was isolated from the mainland by rising sea levels *c*.8–12,000 years ago (Mooney and Rounsevell, 2008). Although Aboriginals were also present in Tasmania, their isolation pre-dated the arrival of the dingo on the mainland. The thylacine apparently ranged throughout Tasmania (apart from the south-west) before being extensively and intensively hunted by white settlers, although its precise distribution was never accurately determined (Smith, 1982). Bounty records show that most animals were caught in Tasmania's Central Highlands, followed by the Dee Bridge-Derwent Bridge districts and the Mt Barrow-Mt Arthur areas (Guiler, 1961a). Despite numerous unconfirmed sightings and several intensive surveys, no conclusive evidence of its persistence has been found since 1933.

3.2 Habitat

The thylacine's preferred habitat in Tasmania was never accurately documented (Smith, 1982). It was trapped and shot in all types of country, from the coast to the mountains, with the majority being caught in the driest parts of the state and the fewest in the wet south-west (Guiler, 1961a). It was said to prefer hilly areas, using scrub and wooded areas for shelter during the day, then hunting at forest edge and in thickets in the late afternoon and early evening (Smith, 1982). Capture records show a preference for savannah woodland or open forest with nearby rocky outcrops in which the thylacine hid during the day (Guiler, 1961a). It sheltered in caves, hollow logs or among dense vegetation (Mooney and Rounsevell, 2008). Fossil and subfossil discoveries indicate it probably occupied a variety of habitats across its former mainland range. Thylacine images appear in ancient rock art in disparate parts of Australia where dense forest does not occur (Brandl, 1972; Wright, 1972; Smith, 1982; Taçon *et al*., 2011). In Tasmania, at the extremity of its range, it possibly occupied suboptimal forest habitat. Bounty records indicate that very few thylacines were collected in the dense wet forests of Tasmania's west coast (Smith, 1982).

3.3 Biological characteristics

The thylacine was Australia's largest surviving marsupial predator at the time of white settlement (Wroe, 2006). Data about its biology and ecology are scant, and have mostly been reconstructed from anecdotal information and observations of captive animals (Smith, 1982). It was mainly nocturnal and said to be elusive, a trait common to many top predators. It probably ran down prey and killed with its massive jaws, but may also have been an ambush predator. The most common prey was said or assumed to be kangaroos and wallabies (Paddle, 2000; Mooney and Rounsevell, 2008) which are abundant in Tasmania, but there is no published description of macropods being hunted by thylacines (Smith, 1982). Few wild thylacine prey items were actually documented, but a short-beaked echidna (*Tachyglossus aculeatus*) was found in a dissected specimen (Paddle, 2000). Other prey was presumed to include Tasmanian native mammals such as bettongs, potoroos, pademelons, wombats and bandicoots (Paddle, 2000). It may also have survived by scavenging, but this was perhaps in extreme circumstances as the endemic Tasmanian devil, an efficient scavenger, was also common in Tasmania and possibly associated with thylacines (Smith, 1982). The thylacine was extensively hunted and trapped for taking poultry and livestock, particularly sheep. It was also reported to take rabbits, another introduced species (Paddle, 2000). Other domestic animals said to have been taken by thylacines included farm dogs, goats, cattle and horses, although most claims were unsubstantiated (Paddle, 2000). The thylacine hunted alone or in pairs, locating its prey by scent. It may have been more diurnal before it was extensively hunted for bounties, with various reports of animals basking, travelling and hunting by day (Mooney and Rounsevell, 2008). It was not a pack animal and the small groups occasionally reported were almost certainly females with weaned young.

The female reproductive system was comparable to that of dasyurids (Smith, 1982). There was a well developed, backward-facing pouch with four teats arranged in two rows, although only 2-3 pups were usually reared to weaning. Breeding probably started in autumn, with peak records of pups in May and July-August, and of 'half-grown' animals a month later (Guiler, 1961b). After leaving the pouch, pups remained in a den until weaning. There was possibly a second breeding season if conditions were favourable after the first litter was weaned. Offspring accompanied their mother until able to hunt independently (Mooney and Rounsevell, 2008).

Observations of captive animals suggested the thylacine had a keen sense of smell and acute hearing. Hunting thylacines apparently communicated by yapping calls, reminiscent of a small dog. Captive animals were said to be mute but occasionally emitted a cough-like bark (Smith, 1982).

3.4 Morphological characteristics

Figure 2 Thylacine. Photo by E.J. Keller in 1933. Smithsonian Institution Archives.

Figure 3 Taxidermied thylacines displayed at the South Australian Museum.

The thylacine was a quadrupedal marsupial carnivore. Adults had a head-body length of 1–1.3 metres, a tail length of 500–650 mm and weighed 15–35 kg (Mooney and Rounsevell, 2008). Phylogenetically the thylacine was related to extant dasyurids (marsupial carnivores) and extinct fossil thylacinids, with possible affiliations with the numbat (*Myrmecobius fasciatus*) (Wroe, 2006). Its limbs were in similar proportions to extant species of *Dasyurus* (Wroe, 2006). *T. cynocephalus* is often cited as a textbook case of evolutionary convergence because of its doglike appearance (Smith, 1982). Its large size, forequarters, head shape, elongated jaws and sectorial molars were superficially caniform, but it lacked the canids' enlarged lower premolars and had a small brain relative to members of the Family Canidae (Smith, 1982). Its appearance may have been commensurate with cursorial hunting (i.e., running in pursuit of prey), but anatomical comparisons with extant felids and canids did not completely support this hypothesis: it possibly coursed opportunistically but most likely also relied on ambushing prey (Smith, 1982; Figueirido and Janis, 2011). It reportedly could not run very fast and had a stiff-legged gait. Its hindquarters were more marsupial than doglike; its tail was stiff, rather inflexible and appeared to merge with its hindquarters. Adult males were larger than females and in both sexes the head widened with age, giving them a less doglike appearance. It had coarse, sandy-brown fur; 13–20 parallel dark-brown stripes ran across its back and rump, increasing in width closer to its tail. The tail was thinly haired, with a blackish tip and a slight crest above and below (Smith, 1982). Its dental formula was 4/3, 1/1, 3/3, 4/4 and it had 46 teeth. It had an extraordinary gape and could open its jaws 120 degrees.

3.5 Role of the species in its ecosystem

Little is known definitively about the thylacine's ecology. Analysis of its morphological and probable behavioural convergence with modern canids (e.g. wolf), hyenas and felids, such as clouded leopard, help to piece together its probable role in its ecosystem (Smith, 1982). It occupied the niche of peak terrestrial predator in Tasmania and presumably also on the Australian mainland before the introduction of the dingo. Its usual prey was probably medium-sized to large macropods and possibly wombats (Paddle, 2000). It was also known to take livestock, particularly sheep, which led to widespread persecution and government bounties that caused its eventual extinction (Smith, 1982). On the mainland it almost certainly succumbed to competition and probably predation from the dingo, which was introduced 3500–8000 years ago (Letnic *et al*., 2012) and was the only large terrestrial predator surviving at the time of white settlement. It is estimated that the thylacine became extinct on the mainland not less than 3500 years ago. In Tasmania its role as top predator was complemented by three smaller native dasyurids – the Tasmanian devil (*Sarcophilus harrisii*), eastern spotted quoll (*Dasyurus viverrinus*) and spotted-tailed quoll (*D. maculates*). All of these species are extant in Tasmania; only the spotted-tailed quoll survives on the mainland (Van Dyck and Strahan, 2008).

Thylacines are reported to have associated with Tasmanian devils, although devils were reported also to predate unguarded thylacine pups (Smith, 1982).

4. Status and trends

4.1 Habitat trends

Large swathes of natural thylacine habitat or potential habitat were cleared within a few years of Tasmania's settlement, particularly in the Midlands (Guiler, 1961a). However, the resulting mosaics of farmland and natural habitat may have suited the thylacine's hunting style before its extinction, because patches of forest provided cover from which it could ambush macropods and livestock in clearings. Substantial areas of Tasmania especially in the remote and mountainous south-west are still in a pristine or near-natural state and protected in national parks, nature reserves and World Heritage areas, although this area probably never supported thylacines in large numbers (Guiler, 1961a).

4.2 Population size

The best available estimates of the Tasmanian thylacine population size were made after its extinction, based on bounty records and eyewitness accounts (Guiler, 1961a). As the top mammalian predator, the thylacine may have been sparsely distributed even before widespread persecution began in the mid-19th century. It was generally scarce and was not recorded until two years after settlement (Harris, 1808). It possibly numbered no more than about 2000 adults at any one time (Mooney and Rounsevell, 2008). The total number known to have been killed for bounties was 2268 (Guiler, 1961a). As thylacine bounties were generous for the times, it is probable that a high percentage of adult thylacines killed were submitted for bounty payments. Government records indicate that bounties were paid on 2184 scalps; the Van Diemen's Land Company paid bounties on another 84 (Guiler, 1961a; Smith, 1982).

4.3 Population structure

There is no available information about the thylacine's population structure. The thylacine hunted alone or in pairs. Small groups were sometimes reported, but these were almost certainly females with weaned young.

4.4 Population trends

The detrimental effect that bounty-hunting was having on the thylacine population was noticed as early as 1863 (Smith, 1982). After a peak bounty kill of 172 animals in 1900 the population went into rapid decline; by 1914 only three scalps were obtained. In 1910 a distemper-like condition that affected dasyurids could have hastened the decline of the thylacine's shrinking population (Guiler, 1961a). The last thylacine specimen was captured in 1933 and died in Hobart Zoo in 1936. Since then no conclusive proof has ever been produced of its survival in the wild.

4.5 Geographic trends

Areas in the east of Tasmania have been cleared or partially cleared for farming and timber production. Clearing started soon after settlement in the early 19th century and initially radiated from major ports such as Hobart and Launceston. The Midlands has few intact areas of forest or other habitat suitable for thylacines. The south west, while being in a pristine or near natural state is unlikely to have supported large numbers of thylacines (Guiler, 1961a).

5. Threats

The thylacine was apparently hunted for food by Australian Aboriginals (Mooney and Rounsevell, 2008). The main threatening process that led to its extinction in Tasmania was widespread and unrelenting hunting and trapping for bounties after white settlement. Bounties were offered in retribution for real but often exaggerated predation of livestock (Guiler, 1961a; Mooney and Rounsevell, 2008). In 1910 a distemper-like epidemic that affected large dasyurids (i.e. *Dasyurus*, *Sarcophilus*) was reported in Tasmania. Dasyurid populations recovered, but this additional pressure may have been sufficient to destroy whatever thylacines remained at the time (Guiler, 1961a; Mooney and Rounsevell, 2008).

In the unlikely event of the thylacine's rediscovery, it would be the subject of much scientific, public and media interest. Undoubtedly, strictly controlled conservation measures would apply to the species that would effectively prohibit any hunting or trade in thylacine specimens, except for conservation purposes. However, the fatal devil facial tumour (DFT) disease has decimated the Tasmanian devil population over much of its range in recent years, and should be regarded as a potential threat to thylacines should they be rediscovered.

6. Utilization and trade

6.1 National utilization

There is currently no trade in the thylacine as the species is considered extinct. Historically the thylacine was exported for zoological collections, but not in sufficient numbers to be a factor in its extinction. Thylacine skins were tanned for domestic use and export, but this was considered to be a by-product of animals already killed for bounties and not a contributor to the thylacine's extinction.

6.2 Legal trade

There is currently no legal trade in thylacines as the species is considered to be extinct. Thylacines had considerable novelty value and live individuals were exported for zoological collections in Australia and overseas until the 1920s (Grzimek, 1972). Tanned thylacine skins were exported to London for manufacture into waistcoats, but these were considered to be a by-product of bounty-hunted animals and tanning did not contribute directly to the species' extinction.

6.3 Parts and derivatives in trade

Trade in wild thylacine skins occurred during the 19th and early 20th century (see above). Skins were traded and used as the basis for items of clothing, such as waistcoats (Smith, 1982). No further data on trade volumes is available.

6.4 Illegal trade

There was, and is currently, no indication of illegal trade. Illegal trade is not considered to have been a factor in the thylacine's extinction.

6.5 Actual or potential trade impacts

The thylacine was subject to trade for zoological collections before its extinction, but over-collecting is not considered to have been the cause of its extinction. Its skins were tanned, but most hides were from already dead animals and are considered to have been a by-product of the key cause of the thylacine's extinction – bounty hunting to reduce its populations to protect livestock. Should the thylacine be rediscovered, it is unlikely that it would be the subject of any trade activity. Any potential trade in this species would be strictly regulated under domestic laws (see 8.3.1).

7. Legal instruments

7.1 National

The thylacine is listed as extinct under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

7.2 International

Thylacinus cynocephalus is listed as Extinct under the International Union for Conservation of Nature (IUCN) Red List 2012 (McKnight, 2008). T. cynocephalus is listed in Appendix I under CITES. Permits are required for the import and export of CITES Appendix I–listed species.

8. Species management

8.1 Management measures

No management measures are currently in place as the species is considered to be extinct.

8.2 Population monitoring

The species is considered to be extinct. Since 1937 there have been many systematic searches for the thylacine in areas where it was last seen alive and in remote, seldom visited areas, where it may persist in suitable habitat (DPIPWE, 2012). No authentic evidence of its survival has ever been produced.

8.3 Control measures

8.3.1 International

The EPBC Act regulates trade in CITES–listed and Australian native wildlife and wildlife products. Export of live Australian native mammals is strictly prohibited for commercial purposes, but may be exported for specific non-commercial purposes (e.g. for research, education or exhibition). As an Australian native mammal an Australian export permit would be required for the export of *T. cynocephalus* even if it was delisted from CITES.

8.3.2 Domestic

Should the thylacine be rediscovered, any take from the wild would be strictly regulated by Australian domestic environmental legislation.

8.4 Captive breeding and artificial propagation

Captive breeding programs were not established before the extinction of *T. cynocephalus*.

8.5 Habitat conservation

Substantial areas of Tasmania especially in the remote and mountainous south-west are still in a pristine or near-natural state and protected in national parks, World Heritage areas or other reserves.

8.6 Safeguards

Should the thylacine be rediscovered, it would be afforded protection from international trade by provisions of Australian wildlife law (the EPBC Act).

9. Information on similar species

The thylacine was unique in modern times. It was the largest marsupial carnivore to survive Aboriginal occupation of Australia and persist until white settlement of Tasmania in 1802. It was superficially doglike but had many differences, including massive jaws, striped lower back and stiff tail.

10. Consultations

The species was endemic to Australia before its extinction and therefore no consultation with range States was required.

11. Additional remarks

The thylacine was apparently utilised by Australian Aboriginals for food (Mooney and Rounsevell, 2008). It undoubtedly figured in indigenous folklore on the mainland, as demonstrated by numerous rock art sites depicting thylacines (Brandl, 1972; Wright, 1972; Smith, 1982; Taçon *et al*., 2011).

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