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Abstract

Reviews the literature to provide an overview of the historical significance of the elephant in Sri Lankan society, an association which dates back more than 4,000 years. The present status of this relationship assessed on the basis of the findings of a recent study undertaken on the total economic value of elephants in Sri Lanka. This paper, first briefly outlines the history, evolution, nature and their distribution of the Asian elephant while providing some insights on the status of the elephant (*Elephas maxima maxima*) in Sri Lanka. Next, it reviews the literature in order to assess the historical affiliation that the elephant has maintained with the Sri Lankan society, its culture, history, mythology and religion. The empirical evidence on the economic value of conservation of the remaining elephant population in Sri Lanka is reviewed and the Sri Lankan people's attitudes towards conserving this species of wildlife. Literature reviewed and analysis undertaken indicates that the elephant in Sri Lanka, still, as in the past has a special place in Sri Lankan society, particularly, in its culture, religion and value system. Thus, there is a strong case for ensuring the survival of wild elephant population in Sri Lanka. Furthermore, it also suggests that the community as a whole will experience a net benefit from ensuring the survival of wild elephants in Sri Lanka.

The History and Value of the Elephant in Sri Lankan Society

1. Introduction

Sri Lanka is an island with a landmass of just over 65,000 square kilometres and is located at the southern point of the Indian sub-continent. The population consists of multi ethnic groups: Sinhalese 74%; Tamil 18%; Moor (Muslims) 7%; others (Burghers, Eurasians, Malay, Veddha) 1%. Approximately 70 per cent of the population is Buddhist, 20 per cent Hindu and the rest are Muslim and Christian. Sri Lanka's historical and cultural heritage covers spans than 2,000 years. The spiritual and cultural traditions of the island represent a fascinating and often complex blend of ancient and contemporary rituals (Cannon and Davis, 1995). The first major legendary reference to Sri Lanka, known as Lanka – the "resplendent land" – in the ancient Indian epic Ramayana, thought to have been written around 500 B.C. The island has numerous other references that testify to the island's natural beauty and wealth. Islamic folklore maintains that Adam and Eve were offered refuge on the island as solace for their expulsion from the Garden of Eden. Asian poets, noting the geographical location of the island and lauding its beauty, called it the "pearl upon the brow of India." Nonetheless, The Ramayana tells of the conquest of Lanka in 3000 B.C. by Rama, an incarnation of the Hindu god Vishnu. Rama's quest to save his abducted wife, Sita, from Ravana, the demon god of Lanka, is, according to some scholars, a poetic account of the early southward expansion of Brahmanic civilization (Marshall, 1969).

The most valuable source of knowledge for the legends and historical heritage of Sri Lanka is the *Mahavamsa* (Great Genealogy or Dynasty), a chronicle compiled in Pali, in the sixth century. Vijaya is the central legendary figure in the *Mahavamsa*. He was the grandson of an Indian princess Suppadevi from Vanga in northern India who had been abducted by an amorous lion, Simha, and son of their incestuous and half-leonine offspring, Sinhabahu and Sinhasivali. Along with 700 of his followers, perhaps from Kalinga (Orissa), Vijaya arrived in Lanka, and established himself as ruler with the help of Kuveni, a local demon-worshiping princess. Although Kuveni had given birth to two of Vijaya's children, she was banished by the ruler, who then arranged a marriage with a princess from Madurai in

southeastern India. Kuveni's offspring are the folkloric ancestors of the present day Veddahs, Sri Lankan aborigines (Woolf, 1997).

The Sinhalese claim to have been the earliest colonizers of Sri Lanka, first settling in the dry north-central regions as early as 500 B.C. Between the third century B.C. and the twelfth century A.D., they developed a great civilization centered around the cities of Anuradhapura and later Polonnaruwa, which was noted for its genius in hydraulic engineering--the construction of water tanks (reservoirs) and irrigation canals, for example--and its guardianship of Buddhism. State patronage gave Buddhism a heightened political importance that enabled the religion to escape the fate it had experienced in India, where it was eventually absorbed by Hinduism (Knox, 1981).

The institutions of Buddhist-Sinhalese civilization in Sri Lanka came under attack during the colonial eras of the Portuguese, the Dutch and the British (Woolf, 1997). During these centuries of colonialization, the State encouraged and supported Christianity – first Roman Catholicism, then Protestantism. Most Sinhalese regard the entire period of European dominance as an unfortunate era, but most historians - Sri Lankan or otherwise – concede that British rule was relatively benign and progressive compared to that of the Dutch and Portuguese. However, the colonial influences have failed to destroy completely the spiritual and cultural traditions of the people in Sri Lanka. The vestiges of their ancient civilization are abundantly extant today, particularly the association with the wild animals such as the elephant.

Elephants have always been integral to the island (Cannon and Davis, 1995). To this day, they are prominent in religious and civil ceremonies (Thsdell and Bandara, 2005). Deraniyagala (1955) believes that the Asian elephant (*Elephas maximus)* has a long history of association with humans which goes back to at least 4000 years. They carry sacred relics in colourful processions, their image adorns numerous temples and they are said to bring good fortune to those who cross their path. Exactly how elephants came to the island is a matter of some debate. Some claim that the creatures evolved on the island. Others state that the elephants came across from India. Whatever the case, over the

millennia, the Sri Lankan elephants developed into a unique sub-species of the Asian elephant, and are known as *Elephas maximus maximus*. Throughout history the Sri Lankan elephants have been particularly prized for their strength and intelligence. For over 2,000 years they have been captured, tamed and employed for sport and for battle (Cannon and Davis, 1995).

The aim of this paper is to review the literature and capture the essence of the elephant particularly within the rich culture of Sri Lanka to provide a better insight into their history and our experiences with them in the formation of Sri Lankan society. This paper, first briefly outlines the history, evolution, nature and their distribution of the Asian elephant while providing some details on the status of *Elephas maxima* in Sri Lanka. Next, it reviews the literature in order to assess nature of the historical affiliation that the elephant has maintained with the Sri Lankan society; its culture, history, mythology and religion. Section four provides an empirical account on the economic value of conservation of the remaining elephant population in Sri Lanka while analysing the people's attitudes towards conserving this species of wildlife. In this discussion, a total economic valuation framework is adopted which involves assessing the use and non-use values of the wild elephant population in Sri Lanka. The paper ends with some general conclusions.

2. The Asian Elephant in Sri Lanka: Its History, Evolution, Nature, and Geographical Distribution

Jayewardene (1994) provides a detailed account on the evaluation and history of the elephant population in general. According to him the origins of the elephant can be traced back to Africa, to the Eocene period, some 55 million years ago. Furthermore, the present day elephant's closest living relatives are the small, rabbit-like hyraxes or conies (Order Hyracoidea) found in the arid rocky hillsides in Africa and the Middle East, and the marine sea cows and manatees (Order Sirenia), the only marine mammals that are completely herbivorous. Elephants, Hyraxes and Sirenians despite their superficial dissimilarity to one another in fact share some anatomical features indicating that they are related and originating from a common ancestor.

Deraniyagala (1951) presents the historical facts about the origin of the Asian elephant in Sri Lanka. According to him, first records consist of fossils found in the gem pits (mines) of Sri Lanka. These fossil forms were contemporaries of the hippopotamus that was part of the Lankan macro-fauna many million years ago. Many fossils of the Asian elephant have been found in Sri Lanka.

Sukumar (1989) recognizes the elephant as the largest living land animal in the world. There are two broad species of elephants: the Asian elephant and the African elephant *Loxodonta africana*. A summary of the physiological features of the Asian elephant in Sri Lanka is presented in Table 1.

Table 1: The physiological features of the Asian elephant in Sri Lanka

Attribute	Remark
Weight	3000-5000 kilograms
Height at shoulder	2-3.5 metres
Skin	Dark/smooth
Highest point	Top of head
Size of ears	Smaller than *L. africana*
Number of ribs	Up to 20
Shape of back	Convex
Shape of head	Dorsal bulges
Tusks	Males only
Trunk	Fewer rings and more rigid than *L. africana*
Tip of trunk	One finger
Hair	More body hair than *L. africana*
Heaviest recorded tusk	39.0 kilograms

Source: Bandara, (2005)

The Asian elephant is divided into three subspecies. The Sri Lankan subspecies (*E.m maximus)* has the darkest skin, the Asian mainland subspecies *(E.m indicus*) has medium darkness of skin, and the Sumatran subspecies (*E.m sumatranus*) has the lightest skin colour and least depigmentation (patches on the skin). The Asian elephant lives in a variety of habitats, mainly forest, but also grasslands, marshes, lakeshores and transitional zones between forest and open habitats. Most of an adult's activities involve searching for and eating food. They eat in the morning, evening and at night, but rest during the hottest part of the day. On average, this species of wildlife consumes about 300 kilograms of

vegetation (WWF, 2002) and drinks about 200 litres of water a day but only about 44 percent of what is consumed is actually digested. Moreover, they rarely forage in one area for more than a few days in a row and inhabit home ranges of more than 200 square kilometres (US Fish and Wildlife Service, 2002).

The Asian elephant is slightly smaller in size than the African elephant. It can grow to 2-3.5 metres in height and 4-6 metres in length. It is tallest at the arch of the back. It weighs between 3,000-5,000 kilograms. Only the males have tusks and these are smaller than those of the African elephant, and are not present in all males. The ears are small and do not cover the shoulders. The forehead has two humps and the trunk has a single lobe at its tip. The front feet have five toes, while the back feet have four. The Asian elephants can reach speeds of 40 kilometres per hour while running and 6.4 kilometres per hour while walking. They are an oddity among mammals because they grow until they die, which is usually around the age of sixty. Furthermore, they live in herds based on breeding groups of 3 to 40 females and young (WWF, 2002).

At present, about 16,000 elephants are found in captivity, mostly in Myanmar, Thailand and India (AERCC, 2003) and are mostly used in the timber industry (Kemf and Santiapillai, 2000). However, domesticated elephants are also used as tourist attraction in India, Thailand and Sri Lanka. Despite this long-standing association with human race, the Asian elephant is now facing extinction in the wild. It is thought that more than 100, 000 elephants may have existed at the start of the 20th century. During the last half of the 20th century, the wild Asian elephant population declined significantly (Kemf and Santiapillai, 2000). At present, only some 35,000 to 50,000 elephants remain in the wild (WWF 2002) and are distributed in thirteen Asian countries. As a result, since 1973, this species of wildlife has been listed as endangered in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora /CITES (IUCN, 2000).

The largest population of Asian elephants, totalling between 25,000- 27,500, are found in India (Sukumar, 1998). Myanmar comes next with an estimated population of between 4300-4800 wild elephants (Aung, 1997), followed by Sri Lanka with between 3500-4500

elephants (De Silva, 1998). Sumatra (Indonesia) too has sizeable numbers, estimated at over 3800, but these are widely scattered in fragmented habitats and are also being captured in large numbers (Kemf and Santiapillai, 2000). The estimated population of about 1000 elephants in Peninsular Malaysia is stable, but the situation is not the same in Thailand, where the populations is believed to be on the decline (Srikrachang and Jaisomkom, 1998). The island of Borneo is believed to have around 1000 elephants in the states of Sabah (Malaysia) and Kalimantan (Indonesia), but much of the range, especially in Sabah, is being designated for other forms of land-use. Laos and Cambodia are believed to have under 1000 and 500 elephants, respectively, while neighbouring Vietnam may hold less than 150 elephants (AERCC, 2003). Similarly, the minor range states have few elephants, about 250 in the Yunnan province of China, similar numbers in Bangladesh and Bhutan, and fewer than 100 elephants in Nepal (Sukumar, 1998).

Despite some conflicting earlier evidence (Norris, 1959; McKay, 1973; Schultz, 1984), the elephant population in Sri Lanka has been decreasing since the early 1800s. Desai (1998) establishes three phases of the decrease in the elephant population of Sri Lanka by reviewing the literature on the economic history of Sri Lanka under the British. The first phase was the domestication of the elephant for export in the early to third quarter of the 1800s. The second phase of the decrease in Sri Lanka's elephant population occurred with the expansion of the plantation industry in Sri Lanka between the 1870s and 1940s. The third phase covers the current post-independence period. During this period, the largely undeveloped Dry Zone area in the east of Sri Lanka was targeted for development. Jayewardene (1994) has given a concise and clear picture of the development of the Dry Zone area (including the North West region), its impact on elephants and the actions adopted for controlling elephants.

3. The Elephant in Sri Lankan Society: Revisiting Historical Affiliation
The elephant has been associated with the inhabitants of Sri Lanka from pre-historic times (Jayewardene, 1994). Deraniyagala (1955) found a few fossil bone fragments of elephants in the caves occupied by the Stone Age man, and also described some rock paintings of elephants by prehistoric man in Sri Lanka. These rock paintings were

found in widely separated locations in the south-east, north-west and central parts of the island. This indicates that man and elephant were widespread in Sri Lanka during pre-historic times.

Deraniyagala (1955) gives the following references to the Sri Lankan elephant during historic times: (a) Onesicritus, an officer of Alexander the Great (3rd century BC) recorded that the Sri Lankan elephants were larger and more pugnacious than those of India, (b) Megasthanes (c.300 BC) referred to them in the same terms, (c) Aelian (44 AD) mentioned these qualities and the fact that the elephants were exported to Kalinga (a province of India) from Sri Lanka in special boats from about 200 BC, (d) Ptolemy (150 AD) identified on his map of Sri Lanka, the feeding grounds of elephants in the Ruhuna district and wrote that Modouttou, the present Mantai of Mannar, was the main port for the export of elephants.

In the Mahavamsa, the first reference to Sri Lankan domesticated elephants was during the time of King Devanampiya Tissa (c: 300 BC). It refers to a chief elephant of the king's stable. Therefore, even earlier kings must have possessed domesticated elephants. In India, the epic Mahabharathaya makes many references to war elephants. Since there was communication between Sri Lanka and India at all times, it is quite likely that elephants were domesticated in Sri Lanka too from the very early times. During ancient times, there were exchanges of elephants between Sri Lanka and India (and other countries in the region) as gifts and in trade. There had been large number of war elephants and others in the possession of the kings up to about the period of invasion by the colonial forces (1505 AD onwards) who brought with them cannon and musket, against   which elephants were no match.

Sinhala literature of the 3rd Century BC indicates that the state elephant or *Mangalahasti* was the elephant on which the king rode. This elephant was always a tusker which had a special stable called *hatthisala.* The post to which it was tethered was called *alheka* (Seneviratne, 1973). Seneviratne (1973) goes on to state "A 12th Century inscription on a stone seat at Polonnaruwa records that King Nissanka Malla

sat upon it while watching elephant fights. These fights were staged for the entertainment of nobles." A rock sculpture of an elephant on the banks of the *Mahaweli*, the longest river in Sri Lanka is described thus by archaeologist H.C.P. Bell: "This piece of animal sculpture is probably unique in Ceylon. Cut in full round from a rock, life-size are the head and shoulders of an elephant feet the river washed when low. The elephant stands in the water, looking slightly upstream, as though hesitating to cross. At present the river in semi-flood reaches it eves. There are signs of 'sets' for some building's foundations on a boulder adjoining, but no ruins or inscriptions are known likely to *afford* a clue to the object of this solitary *tour de force* of a skilful sculptor" (Bell & Bell. 1993). Unfortunately this rock sculpture no longer exists having been blasted probably by fishermen dynamiting for fish.

Ancient Sinhalese kings captured and tamed elephants who used to abound in the country. Gradually the number of elephants captured increased. All elephants were kept by the king in his stables. The methods of capture were refined and modified as time went on. Elephants were used on all important ceremonial occasions especially where pomp and pageantry were required. The annual *Perahera* (pageant) in Kandy, which dates back nearly 220 years, brings together over a hundred elephants that parade the streets during the nights on certain predetermined days in July-August each year. New Year festivities in Sri Lanka feature elephants in various sports and competitive combat. Elephant fights were a popular form of Sinhala sport in early times and was called "Gaja keliya". Being built like a tank elephants were used in war not only as a means of transport but also as an instrument of defense and offence. They were used to ram barricades and, as Ives points out "in time of war, they now and then fix a heavy iron chain to the end of their trunks, which they whirl around with such agility, as to make it impossible for an enemy to approach them at that time."

From the earliest times there had been a significant demand for Sri Lankan elephants from other countries. Aelian quoted by Tennent (1859) says that the export of elephants from Ceylon to India had been going on without interruption from the period of the First Punic War. India wanted them for use as war elephants, Myanmar as a tribute from

ancient kings, and Egypt probably for both war and ceremonial occasions. The elephants from Sri Lanka were found to be more easily adapted for war and considered better than those from the mainland. Their excellent qualities were well known to the Greeks even as far back as the 3rd Century BC, in the time of Alexander the Great. An Admiral of the Fleet of Alexander the Great and probably the first European to describe the trained elephants of Ceylon, has stated that the elephants from Taprobane (later Ceylon and then Sri Lanka) "are bigger, more fierce and furious for war service than those of India." (Pliny, 1855). Greek writers like Megasthenes (circa 300 BC) and Aelian (44 AD) corroborate this. The sixth century writer Cosmos Indicopleustes said that Sri Lankan elephants were highly prized in India for their excellence in war.

There are a number of references in early writings to the use of elephants by Sri Lankans. The *Mahawamsa* details many such instances, especially that of Kandula the elephant on which King Dutugamunu (200 BC) rode to war. Dutch, Portuguese and British reports and books record several instances of elephant capture, their use by the Sinhala kings in their armies, elephant fights and the execution of criminals by elephants. In certain instances the strength of a King or Potentate was judged by the number of elephants he used in war. D'Oyly (1809) writes of the elephant establishment of the Sinhala king, the laws designed to protect these animals, elephant fights organized as a sport and the capture of elephants. He states that "All elephants are considered the property of the Crown and they are employed in the king's service, for his recreation at public festivals. Hence the slaughter of them, especially of tusked and large elephants, are amongst heinous offences."

The King of Kandy maintained a special unit that dealt with all matters concerning elephants including their capture, training, conservation and export. This unit was under a chief officer known as the *Gajanayake Nilame.* The *Gajanayake Nilame* was of a high caste and received many favors, including land, from the king. The elephant catchers and keepers were from the lower castes. During the times of the Sinhala kings, even though there were tens of thousands of elephants in all parts of the country, this animal was afforded complete protection by royal decree. Accordingly,

no elephant could be captured, killed or maimed without the king's authority. All offenders were punished by death. Unlike today the cultivators of that time could not plead that the elephants were harmed in the protection of their crops. Any depredation or damage to crops by wild elephants had to be prevented by stout fencing together with organized and effective watching by the farmers. It is interesting to note that there were many more elephants then than now, but still Sri Lanka was considered the granary of the East.

The King's Elephant Unit continued to operate within the Kandyan kingdom even after the Portuguese occupation of the maritime provinces in Sri Lanka in 1505 AD. The Porteguese conquered the coastal areas and made Colombo their capital and main seaport. Subsequently, the function of the King's Elephant Unit was only to supply the King's army with elephants. This is because with the development of cannons and musketry, the elephant was both frightened and vulnerable. Export demand for it as an instrument of war greatly reduced. However, with Portuguese occupation of the Maritime Provinces the export trade in elephants began to flourish. Abesinghe (1966) wrote that the Portuguese maintained an annual demand of 37 elephant for export from two kraals. The Dutch, who captured the maritime provinces of the country from the Portuguese in 1658, held them until 1796. During their occupation of the country, the Dutch too, continued and even expanded the elephant hunt in order to increase their revenue through the number of elephants exported. Records show that a large number of elephants were caught in kraals, both by the Portuguese and the Dutch in the Southern Province, especially the Matara Dissawa areas and Udawalawe (Woolf, 1997).

The British took over the coastal areas from the Dutch in 1796 and ruled the entire island with the capture of the Kandyan Kingdom in 1815 from the last Sri Lankan King (Knox, 1981). The period of British colonial rule was perhaps the worst time for the elephant. When the British captured Sri Lanka, they continued the capture of elephants for some time but on a low-priority basis. The British, however, indulged in the shooting of elephants as a form of sport. As the elephant was a threat to the agricultural activities

of the rural population, the British provided guns freely to villagers to keep away the marauding elephants from their cultivations. However, when the coffee and tea plantations were being opened up in 1830, elephants were used for a number of tasks. Uprooting the jungle was one of its first tasks. Drawing logs for the construction of buildings, and stones and rocks for bridges, culverts, walls, etc., were other tasks that elephants were engaged in. Later elephants were used to draw heavy machinery for plantation factories. Most plantations employed elephants on a rate determined daily on the type of work they performed. However, at present, no wild elephant can be captured, except by the Department of Wildlife Conservation, and that too only when it becomes a grave danger to the life and property of people (See Tisdell and Bandara, 2005). The captured elephants are released to a distant wildlife reserve, usually a National Park.

4. Economic Value of Conservation of Remaining Asian Elephant Population in Sri Lanka: Empirical Evidence

Many wild animal species such as Asian elephants are perceived as having opposing attributes because for some individuals in society they are assets, but for others they are pests (Bandara and Tisdell, 2003). For example, many farmers in the elephant regions in Sri Lanka regard the wild elephant as an agricultural pest because of the economic damages it causes and the absence of a proper mechanism to recompense these economic losses (see Bandara and Tisdell, 2002). However, many people, including some of these farmers, may consider this species as a valued resource due to its use or non-use economic values. The rationale for assessing the economic value of such endangered species has been well documented in literature (Perman *et al.* 2003). Taking stock of what has been learnt from non-market valuation research, Smith (1993) states that the valuation of non-marketed commodities is important at least for three reasons. First, it helps to gauge whether available methods and estimates will be capable of meeting the current demands on them. Second, it identifies the new research required to keep pace with policy needs. Finally, it may help in understanding why (despite the sustained research in this area) it has taken so long for non-market valuation to be taken seriously. In addition, in recent years, the social importance of valuing endangered species has received increasing recognition as

economically valuable species are being lost because they are inadequately valued in policy formulation (Hanemann, 2001).

In the literature, from an anthropocentric perspective, the benefits that derive from endangered species are generally grouped into two major categories: 'use' and 'non-use' values, which together comprise a species 'total economic value (TEV)' (see Boyle and Bishop, 1987; Loomis and White, 1996; O' Doherty, 2001; Bandara, 2005). Although a theoretically disjointed classification of the different components in the TEV of the elephant may be possible, in practice many of these components are interconnected or overlapping. For example, the satisfaction that one obtains from the knowledge that the elephant exists in the wild may also be linked with its other perceived non-use values as well as its non-consumptive use value to a some extent. Loomis and Larson (1994) believe that this is because conservation of any wildlife species is a joint product. For example, ensuring the existence of a species in its natural habitat would initially assure the continued existence of the species for future generations (bequest value) but would also leave open various other use and non-use values.

From an empirical analysis by Bandara and Tisdell (2003)[1], Bandara (2005), the TEV of the Asian elephant has been divided into six components while indicating the practical issues involved in theoretical disjointed classification of TEV. In this analysis the author includes two types of consumptive use values (direct and indirect non-consumptive use values, and indirect use value); three types of non-use values (existence, bequest and intrinsic values). However, in this analysis of the TEV of elephant, the direct consumptive use value is not included because such use of elephants is illegal in Asia and culturally not condoned. Nonetheless, the analysis by Bandara and Tisdell (2003), Bandara (2005), revealed that the largest portion of the individual willingness to pay (WTP) for the conservation of the Asian elephant is attributable to its non-use values. Of this, about one third of their WTP was for the existence value (see Table 2). Several valuation studies of

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[1] The data presented in this analysis was based on contingent valuation survey of a sample of 300 randomly selected urban residents in three major housing schemes in Colombo, the capital of Sri Lanka. The survey elicited their WTP for the conservation of the elephant and to contribute to a publicly funded insurance scheme to compensate farmers for the economic losses caused by this species.

wildlife, in particular of endangered species, have found the existence values to be very important components of the TEV (see Whitehead, 1993; Fredman, 1995; Tisdell and Willson, 2003). Unfortunately, no TEV estimates of the elephant in Sri Lanka (or elsewhere in Asia) are available to compare the findings of Bandara (2005).

Table 2: The distribution of the individual WTP attributable to the specific TEV-components of the Asian elephant in Sri Lanka (n=266)

The survey question; *What proportion of your WTP would be contribution attributed to the following benefits that could derive from the TEV of conserving the Asian elephant in Sri Lanka?*	Mean monthly WTP contribution (in Rupees)
1. The knowledge that the elephant exists in the wild (existence value)	37.73 (34.24)[a]
2. Wild elephant based recreation and eco-tourism (direct non-consumptive use value)[b]	26.17 (23.75)
3. The continued existence for successive generations (bequest value)	17.63 (16.00)
4. The use of elephant in religious and cultural pageantry (indirect non-consumptive use value)[c]	11.52 (10.45)
5. Maintaining biodiversity and ecological balance in the natural areas (intrinsic value?)	13.86 (12.58)
6. Educational, scientific and journalistic value (indirect use value)	3.26 (2.99)
Total mean WTP contribution	110.17 (100)

Note: a. As % of the mean monthly WTP contribution in each sample, b. This includes the benefits that could be derived conserving the elephant in it natural habitat, c. This includes benefits that could be obtained from the elephant outside of its natural habitat (Source: Bandara, 2005).

The above analysis of Bandara and Tisdell (2003), Bandara (2005), has also presented fixed-response questions (attitude statements) in examining the various dimensions of the respondents' conservation attitudes towards the elephant conservation. The respondents' opinions about these statements were recorded as 'agree', 'neutral' and 'disagree'. The summary of the responses obtained is presented in Table 3. Although some variations existed in the responses to statements 'A' and 'E', the majority of respondents interviewed were ostensibly in favour of the conservation of elephants in Sri Lanka. Several authors have observed a similar situation for conservation of the elephants and other wild animals (see for example, Infield, 1988; Thouless, 1994; Hill, 1998). Statement 'D' was used to assess the respondents' reaction to a reduction in the current elephant population in the country by 50% in order to provide more land for agriculture and human settlements.

About 94% of respondents rejected this proposition as a solution to agricultural land scarcity in Sri Lanka. Hill, (1998) observes a similar situation in a study of human-elephant conflict (HEC) in Uganda where, she argues that conservationists must find ways to raise public tolerance of elephants and this requires a better understanding of elephants as an agricultural pest. This is also the case for the Asian elephant. Bandara and Tisdell, (2002) argue that the survival of the elephant in Sri Lanka hinges on improved schemes to compensate farmers for damage caused by elephants.

Table 3 Attitudes towards conservation of the elephant in Sri Lanka (n =300).

Attitude Statements and Responses	Frequency	Relative frequency
A. Conservation of elephants in the wild is important for economic and non- economic reasons**.**		
Agree	272	90.7
Neutral	20	6.7
Disagree	8	2.6
B. The Government and international organisations should pay more attention to elephant conservation and the mitigation of HEC in the country.		
Agree	254	84.7
Neutral	28	9.3
Disagree	18	6.0
C. Local farmers in the vicinity of the nature reserves should be allowed a greater freedom to control the 'problem elephants' which cause crop and property damage.		
Agree	14	4.6
Neutral	32	10.7
Disagree	254	84.7
D. The current wild elephant population in Sri Lanka is less than 5,000. It does not matter if this number is reduced by 50% to provide more land for agriculture and human settlement.		
Agree	6	2.0
Neutral	12	4.0
Disagree	282	94.0
E. The value of the protected areas and their beauty would be the same, with or without elephants.		
Agree	12	4.0
Neutral	14	4.6
Disagree	274	91.3

Statement 'B' was used to assess the respondents' attitudes towards government involvement in the conservation of elephants and its mitigation of HEC. The majority of the respondents believed that both government and international organisations should pay more attention to both these issues. In Sri Lanka, a national policy for elephant

conservation and mitigation of human-elephant conflict has to be developed. Desai, (1998) sees the absence of such a policy and clearly defined management strategies as the major reasons for the current elephant-related problems in the country. While several government agencies, such as the Department of Wildlife Conservation, *Mahaweli* Authority and the Department of Social Welfare have been involved in taking various actions to alleviate human hardship caused by elephant crop raiding and the resulting HEC over the last three decades (Jayewardene, 1998), most policy actions taken by these organisations have appeared as transient measures and have been taken largely to tie over a particularly critical time on an *ad hoc* basis (De Silva, 1998).

Respondents were asked to express their opinion about whether local farmers in the vicinity of the nature reserves should be granted more freedom to control the 'problem elephants' which cause crop and property damage in Sri Lanka. About 81% of the respondents in the sample rejected this proposal. Our preliminary discussions with the respondents in the sample indicate that they believe that if the local farmers were granted a free hand to control crop raiding elephants, they will use quite destructive methods such as guns, traps and poison, and this could eventually lead to the elimination of the entire elephant population in the country. Therefore, urban respondents believe it is quite inappropriate for farmers to be granted complete freedom to control elephants. They believe the government and wildlife authorities should take responsibility for elephant management and land use planning in the elephant region.

5. Concluding Remarks

The range of values of the Asian elephant appears to be wider than those of the African elephant. This may be partly because the Asian elephant has been able to be domesticated but not the African elephant. As a result, a closer relationship has been established between Asians and the Asian elephant than between Africans and the African elephant. The close association between Asians and elephants dates back to more than 4,000 years and there are strong traditional cultural ties between Asians and the elephant. The elephant enjoys a quasi-religious status in the long-established Buddhist and Hindu traditions of these societies. The widespread emotional attachment of Asians to the elephant (and its plight) is

indicated by its press coverage. Because of the deep and widespread cultural and emotional attachment of the people to the elephants, it is regarded as a 'flagship species' for conservation in most countries in Asia. Many believe that the elephant can be used as a 'flagship species', to pave the way for not just elephant conservation but also to support biodiversity conservation in general in this region. In this sense, the Asian elephant is a mixed economic good because some attributes are marketable whereas others are not. Furthermore, it has both positive and negative (pest) attributes. Changes in the relative values of these components have a considerable impact on social decision-making about the conservation of elephants.

The empirical analysis undertaken by using the total economic valuation framework indicates that the elephant still has a special place in Sri Lankan society and there is a strong economic case for ensuring the survival of wild elephants in Sri Lanka. The results also suggest that the community as a whole will experience a net economic benefit from ensuring the survival of wild elephants in Sri Lanka. Moreover, the results of these analyses also indicate that the nation will suffer a net economic loss if wild elephants become extinct in Sri Lanka. The overall findings of this study provide an improved economic assessment of the value of the elephant in Sri Lanka and a basis for wildlife authorities to explore new strategies and formulate appropriate policies for conserving this endangered species in order to preserve the historical affiliation that elephants have been maintaining in Sri Lankan society.

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