

ARTICLE

THE DISTRIBUTION AND STATUS OF THE EURASIAN OTTER (*Lutra lutra*) IN ASIA - A PRELIMINARY REVIEW

CONROY Jim¹, MELISCH Roland², and CHANIN Paul³

¹ Institute of Terrestrial Ecology, Banchory Research Station, Banchory,
Aberdeenshire AB31 4BY, Scotland

² Umweltstiftung WWF-Deutschland, Hedderichstr. 110, 60591 Frankfurt, Germany

³ Department of Continuing Adult Education, University of Exeter, Cotley,
Streatham Rise, Exeter, Devon EX4 4PE, England

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Abstract: In this paper we review the available literature on the distribution of the Eurasian otter in Asia. We have also collated unpublished information from a number of contemporary sources. We report on the situation of the otter in 32 'countries' showing that in the majority of these the otter population is declining or has declined, but that in eleven, the status of otters is unknown. Otters are known to be afforded some protection in 12 countries but in a quarter of these they are still persecuted despite this. We note that few systematic surveys have been carried out in Asia and suggest that the method used for otter surveys in Europe may be unsuitable in some Asian countries. It would be beneficial to investigate alternative methods which might provide standardised repeatable surveys in countries with a lower road density than Western Europe.

Key words: otter, *Lutra lutra*, status, Asia

INTRODUCTION

There are possibly six species of otter occurring in Asia - the Eurasian (*Lutra lutra*), smooth-coated (*Lutrogale perspicillata*), hairy-nosed (*Lutra sumatrana*), Asian small-clawed (*Aonyx cinerea*), and Japanese (*Lutra nippon*) [see page 22] and sea otter (*Enhydra lutris*). Here the distribution and abundance of one of these, the Eurasian otter is reviewed. This species has been described as having *one of the widest distributions of all Palearctic mammals* (Corbet, 1966). Its range extends from Ireland in western Europe to the Kamchatka Peninsula in eastern Asia, and from the Arctic to the southern shores of the Mediterranean. In Asia, it is found as far south as Sumatra in Indonesia (Corbet and Hill, 1992). This review uses the nomenclature and taxonomy given in Corbet and Hill (1992). Throughout its range several sub-species have been identified, and many synonyms have been proposed. In fact, such is the confusion concerning the taxonomy of the species that Pocock (1939) stated. *There has been greater confusion over the names and characters of the otters of British India than of any other group of mammals inhabiting those districts of the Oriental region.* This situation may reflect the difficulties to be dealt with when evaluating older and historical accounts. Corbet and Hill (1992) have tried to revise the classification.

In Europe there is a fairly extensive database on otter distribution and status, and, in several countries, e.g. Britain, information on otters has been collected over a number of years, (see Conroy and Chanin, in press), but the situation in Asia is far less clear. Reviews of the status of the otters in Asia by Foster-Turley and Santiapillai (1990) and de Silva (1995a) clearly show the paucity of information of the species over much of the continent. These reports and new information on the status of the Eurasian otter are summarised here. This paper clearly demonstrates that there are still large areas of the continent where little is known about these animals, and it is hoped that this review will stimulate further integrated research into their status. There are omissions from the paper - some accounts, especially from China and Russia have not been translated, and consequently have not been available to the authors.

In many countries throughout its Asian range, the species is still hunted for its pelt, for food, as sport and/or persecuted as a pest. According to Foster-Turley and Santiapillai (1990), otters in Asia are being threatened by a combination of habitat destruction, hunting and environmental pollution.

Over the past 40 years there have been marked declines in the number of animals throughout much of its range, particularly in western Europe, and concern expressed for the survival of the species in several countries (von Müffling, 1977; Reuther, 1980; Mason and Macdonald, 1986). Less detailed information from Asia suggests that in many countries in Asia there have been declines in numbers and reduction of ranges, and concern is expressed about the conservation of the species in many parts of the continent (Foster-Turley and Santiapillai, 1990; de Silva, 1995a).

Otters are afforded some protection in twelve countries and none in a further three, while we have no information for the remainder. However the effectiveness of this protection may be questioned since there continue to be reports of otters being persecuted in some countries where they are theoretically protected: Turkey, China and India. There are also reports of persecution in a further three countries where the level of protection is unknown (Afghanistan, Mongolia, Nepal) and in Vietnam, where they are not protected.

THE EURASIAN OTTER IN ASIA

Near and Middle East - Turkey, Israel and Palestine, Jordan, Syria, Lebanon, Iraq, Iran, Afghanistan

The species was once widespread and common throughout **Turkey** (Turan, 1984), with healthy populations in the western and eastern parts of the country (M. Eroglu, pers. comm.). According to Kumerloeve (1967) in Smit and Van Wijngaarden (1976), 30,000 otters were killed annually. It is now considered endangered in the south and threatened in the north, the population having been reduced over the past 50 years, the main cause of the decline being habitat destruction, and river management (Eroglu, 1994). In recent years there has been an increase in the number of otters in the north-east part of the country, associated with the development of a fish pond culture. There is, however, some evidence that this population might again be on the decline because of illegal killing, despite the fact that the species is currently protected throughout the country (M. Eroglu, pers. comm.).

In **Israel** the otter has disappeared from the coastal plain, but it is still found in good numbers throughout the catchment of the River Jordan. In June 1994, a survey of 54 sites found that 25 (53%) had evidence of otters, a decline of 26% from a similar survey carried out in 1986 (Macdonald et al. 1986; Shalmon 1992; B. Shalmon, pers. comm.). The otter is protected and considered "endangered" by the Nature Reserves Authority (B. Shalmon, pers. comm.).

The **Jordan** population is restricted to the three permanent rivers in the country, and is considered threatened (Foster-Turley and Santiapillai, 1990). Because the species occurs in Israel and Jordan, Foster-Turley and Santiapillai (1990) assume that the species also occurs in **Lebanon** and **Syria**.

Hatt (1959) showed evidence of otters on the upper sections of the Euphrates River in **Iraq**. He also reported *plentiful of otters* from the Hindiya Barrage (some 95km south of Bagdad on the Tigris River) and concluded that *it seems probable that the species ranges through all the major streams of Iraq from the Persian Gulf to the northern frontiers*. Thesiger (1964), recounting his experiences with the marsh Arabs, writes of the otter as being common around Zirki, where it breeds on floating islands. He also tells that over a period of two months, 40 animals were killed by a single hunter. The current status of otters in Iraq is unknown.

There is little detailed information from **Iran**. Gutleb et al. (1996) reviewed current knowledge, and according to Tajbakhsh (1995) the otter can be found on most rivers throughout the country, being absent only from the central desert region, this, in part, being confirmed by more specific information supplied by Ishunin (1977) for north-east Iran. Misonne in Melisch and Rietschel (1996) recorded the species as present from the west, north and east of the country, but absent from the central and south. Ziaie and Gutleb (1997) report that the species can be found in the Zagros, Elbruz and Koppe-Dagh mountain range and in Iranian Azarbaiejan. It is present in the Hamoon Wetland bordering with Afghanistan and possibly found on the south shores of the Caspian Sea.

The situation in Iraq, and to a lesser extent in Iran will have been affected by the recent hostilities, also by the fact that more than one species is found there e.g. Hatt (1959) pointed out that two of the three species brought from southern Iraq by Gavin Maxwell were smooth-coated, and only one a Eurasian.

Until recently, the most comprehensive work on the distribution of the otter in **Afghanistan** was Hassinger (1973), who compiled the data available to 1968. More recently, Melisch and Rietschel

(1996) published 22 distribution records from throughout the country. They showed the species was widely distributed. Otters are still hunted in the country and the skins are highly prized (Niethammer, 1983; Nauroz, 1974 in Melisch and Rietschel, 1996).

Cis - Russian Federation, Tadjikistan, Turkmenistan, Kazakhstan, Uzbekistan, Kirghizstan

Russia extends from eastern Europe through Asia to the Pacific Ocean. Within this area are many republics and provinces. Information from such a vast country is, as would be expected, patchy. In this paper, no attempt is made to separate Russia into that part in Europe and that part in Asia. Also, there has been little research on otters since the collapse of the Soviet Union, most references therefore refer to the overall region. The otter is distributed throughout the country with the exception of the tundra. It became extinct on the Kuril Islands at the beginning of the 20th century and more recently has disappeared from many waterways in the regions of Krasnodar and Kursk (Bytchkov and Chachin, 1994). On the basis of census returns, Rozhnov and Tumanov (1994) estimated the Russian population to be in the region 60,000 individuals in 1987 - 27,000 in the European sector; 3,500 in the region of the Urals and 30,000 in the Asian sector. There is a decrease in density from west to east. In the European sector, the otter population is thought to have been stable over the past decade, but overall numbers have declined by 30-40% since the 1930s and 1940s when the population was thought to number 80,000-100,000.

The annual estimate of the condition of the "hunting animal resources" is undertaken by the State Service of Hunting Resources in Russia and summarised every five years. Borisov (1996) described the latest figures relating to the otter. Between 1991 and 1995 numbers dropped from 60,400 to 52,600 animals, a decline of 13% over the five year period. Declines were recorded in all but one of the 12 regions listed, with the greatest decline 17.5% in the Far East. Unfortunately, we have been unable to find details of how these figures were arrived at.

Kranz et al. (1995) confirmed the presence of the species in the Zabaikalsky National Park from the eastern shore of Lake Baikal, Siberia. Zholnerovskaya et al. (1994), while compiling the mammalian collections in Novosibirsk museum found evidence of the recent occurrence of otters from Sakhalin Island, Kargasoksky District (Tomskaya Region), Todzhinsky District (Tuvinskaya Autonomous Region) and the mid-reaches of the Pur River (Tyumenskaya Region). The status is Northern Magadan district, Chukotka or Koryak is unknown.

In the Far Eastern Primorye Province, R. Melisch confirmed the presence of the species in January/February 1997. This was close to the Japanese sea front, between the towns of Olga and Terney. On an earlier visit, the presence of the species was confirmed throughout the Province, but the evidence as to whether or not the species was on the decline or stable remains contradictory.

Two sub-species *L. l. seistanica* and *L. l. meridionalis* were listed in the RED DATA BOOK OF THE USSR (Vol. 1) published in 1984 and both are protected in the Russian Federation. Hunting and trapping are regulated on a Provincial basis, according to the gamebag regulation of the Federal Game and Hunting Management Department. Each year, 500 bags are realised from a total of 1,500 licenses issued.

In **Tajikistan**, the presence of the Eurasian otter was confirmed by Zholnerovskaya et al. (1994) from museum specimens collected in the Tigrovaya Balka reserve (Kurgan-Tyube Region).

Marochkina (1995), while collecting material from eastern **Turkmenistan**, confirmed the presence of the Eurasian otter from the Amudariya River, the Amudariya River Islands in the desert and the Karakumsky Canal. In the Amudariynsky Reserve, tracks of Eurasian otters are regularly seen. Twenty otter are believed to live in the Lebapsky Velayat, a man-made hydro system. The species is protected in the Amudariynsky Reserve and the Kelifsky Preserve.

Lutra lutra seistanica is mentioned as being present in **Kazakhstan** and **Uzbekistan** (Anonymous, 1977, 1983).

At present the species is protected in some, but not all of the republics (Romanowski, 1991). According to Pereladova et al. (1998), *L.l. seistanica*, the subspecies occurring in the Central Asian republics of the former Soviet Union, is listed, and therefore protected, in the Red Data Books of Kazakhstan, Turkmenistan, Tajikistan, Uzbekistan, Kirghiztan. It is considered rare in both Tajikistan and Uzbekistan.

East Asia - Mongolia, North Korea, South Korea, Taiwan, China, Japan

According to Stubbe et al. (1989) otters still exist in three areas in **Mongolia**, but at low densities. The species is listed in the Red Data Book of Mongolia 1987, and should therefore be protected in that country. There are, however, reports of Eurasian otter pelts being on sale between 1985 and 1994, some reportedly from the Changai Mountains of Central Mongolia (H. Mix in litt. 1998).

There is no information from **North Korea**. In **South Korea** the species was once widely distributed throughout the country, but it is now considered rare. Ando (1995) reported that spraints are found on most coastal areas, but are less common on rivers. After surveying the country from 1992 to 1996, Sasaki et al. (1998) found the species to be present throughout the country but in decline in most places due to wetland reclamation and fisheries conflicts. Despite being declared a National Monument in 1982, there was evidence of a decline over the next decade, and the author is not optimistic about the future of the species in that country.

The otter is found throughout **China**, but like the other species found there, numbers have decreased in recent years (Foster-Turley and Santiapillai, 1990). This species, and *Aonyx cinerea*, are listed under The Schedules of Nationally Protected Fauna and Flora in China. The Eurasian otter is found in the provinces of Sichuan, Yunnan, Shaanxi, GaoLi, Guangxi, Fujian, Zhejiang, Heilongjiang and Jiangsu.

Despite being protected, the otter is still hunted. It is highly valued as a fur bearer and illegal killing has resulted in its decline; hunting returns showed that the number of pelts reported in 1980-82 was 382; 6.75% of the 1950s total (Sheng, 1992). The species also provides material for traditional Chinese medicine. R. Melisch will review this in a forthcoming paper entitled "The consumptive use of otter species".

Tieyi (1992) considered the Eurasian otter to be endangered after a sharp decline in numbers along the Yangtze River during the 1960s and 1970s. The author predicted that it would become extinct in the area following the construction of the Three-Gorge Dam.

Xu et al. (1983) reports that the species is found throughout Hainan, part of China, where it has been described as a new sub species *L.l. hainana*.

According to Foster-Turley and Santiapillai, (1990) otters were found in Hong Kong, now part of China, in the north-west New Territories in the 1960s, but with the exception of one found in 1986, the species had not been recorded since then. In December 1997, however, R. Melisch and L. Young found fresh spraints of *L. lutra* in the Mai Po Nature Reserve in the New Territories of Hong Kong (Melisch et al., 1998). The area is mangrove swamp marshes with brackish-water fish ponds. The species is also found in Tibet (Smit and van Wijngaarden, 1976; L. Young in litt. 1997).

Foster-Turley and Santiapillai (1990) state that the species was recorded in **Taiwan**, but there is no recent information about its status.

Following the analysis of DNA taken from a 30 year-old carcass Suzuki et al. (1996) proposed that the otter found on the islands of Honshu, Kyushu and Sjikoku in **Japan** was not a subspecies of *L. lutra*, but should be considered as a separate species which they named *L. nippon*. Because of this, only the island of Hokkaido in Northern Japan had been included as being within the range of *L. lutra*, where a separate subspecies *L. l. whitleyi* occurred. However, according to H. Sasaki and T. Shinohaha (pers. comm.) this form of the Eurasian otter is now thought to be extinct on Hokkaido.

L. nippon is now also thought to be extinct in Japan, where the last animal was found in 1986. Sasaki (1995) reported that the otter was widely distributed throughout the country until the 1920s. The population, thought to number about 20 in the early 1970s, was restricted to Shikoku Island. No animals have been seen since 1983, and few signs have been recorded; these too have been decreasing (Akoi, 1995). The species has been protected, as a national monument, since 1965.

Southern Asia - India, Pakistan, Sri Lanka, Bangladesh, Nepal , Bhutan

Three species of otters occur on the Indian subcontinent, viz. *Lutra lutra* the smooth-coated otter *Lutrogale perspicillata* and the Oriental small-clawed otter *Aonyx cinerea*. The smooth-coated otter is distributed throughout the country from the Himalayas southward, but the other two are restricted to

the Himalayas, north of the Ganges and to southern India. They are considered to be absent from central India (Pocock, 1949; Prater, 1980; Foster-Turley and Santiapillai, 1990; Hussain, 1993; Hussain and Choudhury, 1977; Hussain, in press).

The existing populations of otter species in **India** and their habitat are being surveyed (Hussain, in press; Nagulu et al., 1997). In the north Indian plains, otters are either extinct and getting extremely rare outside the protected areas. In upper Gangetic plains small isolated breeding populations, species unconfirmed, are found in the Corbett and Dudhwa Tiger Reserves, the Katarniaghat Wildlife Sanctuary (Uttar Pradesh) (Hussain, in press.), and the Valmiki Tiger Reserve in Bihar (S.A. Hussain, unpublished data). In north-west India, otters have been reported from the Kashmir valley, from the Trans Himalayan region of Ladakh and also from Himachal Pradesh.

The Eurasian otter has been observed along the eastern coast in particularly from the Sunderbans (Sanyal, 1991), the Bhitarkanika Wildlife Sanctuary in Orissa, and the Koringa Wildlife Sanctuary in Andhra Pradesh (S.A. Hussain, unpublished data). In addition, it has also been reported from the Manjira Wildlife Sanctuary, and the Nagarjuna Sirisailam Tiger Reserve in the Deccan plateau of Andhra Pradesh (S.A. Hussain, unpublished data). *L. lutra* was recorded from the Mudumali Wildlife Sanctuary and from the Eastern Ghat of Tamilnadu, especially from Hogenakkal and Sathnur.

Both smooth-coated and Eurasian otter has also been reported from the Nagarhole National Park in Karnataka. There are large breeding population of otters in the Periyar Tiger Reserve, the Waynad and Idukki Wildlife Sanctuary (Western Ghat). It is believed that all three species are sympatrically distributed in the Western Ghat. However there has been no detailed work in this region to confirm the statement. There are no data on otter distribution from the north-east Indian states where it is believed that all three species are found. Tate (1947) included Assam within the range of the Eurasian otter.

It has only been in recent years that otter surveys have been carried out in this country. Previous work on Indian otters has mostly involved observations on captive animals (Desai, 1974; Acharjyo, 1983), with occasional notes on their occurrence from different parts of the country (e.g. Hinton and Fry, 1923; Pocock, 1939; Chitampalli, 1979) and a few studies on their feeding habits (e.g. Wayre, 1978). All three species of otters are protected under the Indian Wildlife (Protection) Act, 1972, which prohibits both trapping and killing. In India, the major causes of decline in otter populations is the destruction of otter habitats for the construction of dams and barrages, declining prey availability because of intense over exploitation by man, pollution of waterways and wetlands, and to some extent poaching.

According to local legend, in Ladakh, and the adjacent countryside of the Indus valley, snow leopards (*Panthera uncia*) mate with otters along the river banks in winter. These legends arose because local residents regularly found tracks of both species together (J. Fox pers. comm.).

Like India, the otter in **Pakistan** is rare, and it is restricted to areas away from human populations (Foster-Turley and Santiapillai 1990). According to Roberts (1977) the species was rare along the Pakistan/Afghanistan border by the 1970s. It formerly occurred in all northern river systems to an altitude of 3,500m, and is known as the Himalayan otter (Chaudry, 1991). In recent years there has been a serious decline in the populations, it is currently rare in the accessible mountain regions, but absent from the plains areas. Today, it has partial protection, but bounties were paid on otters until 1970 (Chaudry, 1991).

Lutra lutra is the only species of otter found in **Sri Lanka**. It occurs in all river systems, where it is moderately plentiful, but numbers have declined in recent years (Phillips, 1984). However, de Silva (1991a) surveyed six rivers in 1990, and found evidence of otters at 68% of the sites visited, while in the south west highlands, otter presence was established at nearly 85% of the sites visited (60 from 71) (de Silva, 1991b). According to de Silva (1995b), the species in Sri Lanka has been squeezed out of much of its former range.

In **Bangladesh**, the population was once widespread, but the otter is now very rare, and is absent from large tracts of the country (Foster-Turley and Santiapillai, 1990; de Silva, 1995a). It is interesting, however, that Rahman (1995) and Rahman (1996) when discussing endangered, rare and uncommon mammals of that country makes no mention of the otter.

From a recent survey in a lake area of 46 km² in western **Nepal**, Acharya and Gurung, 1994 concluded that the species was still common in the area. Population estimates of between 1,000 and 4,000 animals were based on interviews with local people. These figures are, however, considered by the authors to be exaggerated. Conflicts between man and otters are common place due to competition for fish. There is an increasing number of reports on the occurrence of otters from Nepal (S. Hussain, pers. comm.).

Little is known about the status of the species in **Bhutan**, but according to de Silva (1995a), the species is found in the Terai region of the Himalayas, of which Bhutan is a part. She also reports that the otter (no species mentioned) moves upstream in the summer to altitudes of 3,500m following migrating fish. According to material deposited in the Zoologische Museum in Hamburg, there is evidence that both Eurasian and smooth-coated otters co-existed along the Jankosh River in 1957 (H. Schliemann, pers. comm.). The current status is not known.

Southeast Asia - Myanmar (Burma), Cambodia, Laos, Malaysia, Indonesia, Thailand, Vietnam

As has been recently discussed and highlighted at the 7th International Otter Colloquium, Trebon, March 1998, *Lutra lutra* cannot be clearly identified separately from the hairy-nosed otter (*Lutra sumatrana*) in the field. Any reports of either species have thus to be treated with caution in those regions where both species potentially occur sympatrically or parapatrically. Gaining a better understanding of the *L. lutra/L. sumatrana* complex is thus a priority point of action recommended by the IUCN Otter Specialist Group in order to enable correct conservation measures.

In **Myanmar (Burma)**, the otter is not protected by national law. It occurs in upper Burma, but was considered rare (Salter, 1983). Its present status is unknown.

Foster-Turley and Santiapillai (1990) state the species was recorded in **Cambodia**, but there is no recent information about its status.

The species may be one of four otter species found in **Laos**, but no detailed work has been undertaken on these animals (de Silva 1995a). Otters are still traded in this country. Osgood (1932), reviewing material collected between 1928 and 1929, referred to a specimen from Phong Saly in northern Laos. After surveying Sekong Province and Hongsa Special Zone, Bergmans (1995) reviewed the existing literature on the mammals of Laos. He found reports, but no recent hard evidence for the presence of *Lutra lutra* in the country.

The Eurasian otter is found on the island of **Sumatra** and the western regions of **Indonesia**, where it is considered threatened (Foster-Turley and Santiapillai, 1990; Asmoro and Kusumawardhani, 1995). Initially, Melisch et al. (1994) found evidence suggesting that the species might be found on **Java**, but more recent investigations suggest that this claim was due to misidentification; Melisch et al. (1996) undertook extensive field surveys, and examined museum collections, and from these studies concluded that the Eurasian otter never reached Java. The island of Borneo is politically separated among three countries (Brunei, Sarawak and Sabah which belong to Malaysia; and Kalimantan, the Indonesian part). Payne et al. (1985) list *L. lutra* from the island, but stated its status as uncertain. Reviewing the literature on the mammalian fauna of Borneo, we found no evidence of the species from that island. There is, however, evidence of a *Lutra* sp. from the island, but, partially because of the *L. lutra/L. sumatrana* complex, we cannot be certain as to which species this is.

None of the four species of otters found in Indonesia is currently protected, although their status is threatened (Kusumawardhani et al., 1994). Along the **Malaysian Peninsula**, there has been only one record of the species, which according to Foster-Turley and Santiapillai (1990), was recorded in 1978 on Langkawi Island. Sivasothi and Nor (1994), however, reviewed the status of the species in the area and pointed out that there are only two records, both from 1900 (Flower, 1900; Miller, 1900); the first is unconfirmed, the second a female from Pulau Langkawi. It is this last named that Foster-Turley and Santiapillai (1990) refer, mistaking the reference in Medway (1978) to a recent record and not one made over 70 years previously. Sivasothi and Nor (1994) stated that the species might not have lived in Malaya this century.

Foster-Turley and Santiapillai (1990), believed that the species might already be extinct in **Thailand**, Lekagul and McNeely (1997) reported the presence of the otter from the mountainous part of the country, Kruuk et al. (1993, 1994) found it to be abundant in the Uthai Thani Province in west Thailand, while Pierce et al. (1990) recorded the species in the southern part of the country. According

to Kruuk et al. (1993) the original distribution of the species was in the north and north-west of the country. All otters in Thailand have been protected since 1961, being listed under Schedule 1 of the Wild Animals Preservation and Protection Act.

In **Vietnam**, the current status of the species is uncertain, it has, however, been identified as living in seven of the northern provinces of that country *viz.* Kuangbinh, Hatinh, Nghean, Laitiau, Hoabinh, Bacthai, Zalam and Phang-Vong Island (Rozhnov et al., 1993). In 1989-90, 43 one-kilometre sections of river were surveyed in the Thainguen Plateau, and 331 spraints collected (Kuznetsov et al., 1996). Anh et al. (1995) report the species range is restricted to north of the 17th Parallel, and live in both marine and freshwater habitats. The species remain unprotected in the country, where they are killed for both food and their pelts.

SUMMARY

With the inevitable changes in political boundaries which take place from time to time, for example the break up of the former USSR, it is very difficult to make realistic comparisons in otter populations over long periods of time for an area as large as Asia. We have collected information for 32 'countries' in this review attempting as far as possible to recognise current 'states' while taking account of the fact that some historical records may correspond to different political circumstances.

Of these 32 we have no recent factual information for four: Iraq, Syria, Lebanon, and North Korea, although previous authors have assumed that otters are present in Syria and Lebanon, as they occur in neighbouring countries. Otters are believed to be extinct in Laos and Malaya. Of the remaining 26 countries there are implications of declines in otter populations (use of words such as threatened, endangered, rare, declining; presence of otters in red data books) for 17 with a further seven where otters are known to be present but their status is unknown.

In Sri Lanka the otter may be widespread and 'moderately plentiful' or have been 'squeezed out of much of its former range'. In Thailand, where Eurasian otters were considered to be extinct by Foster-Turley and Santiapillai (1990), they are apparently now present in mountainous parts of the country and the south and abundant in one province in the west. This seems likely to reflect a lack of sound data for the earlier authors rather than a real increase in the population.

Otters are afforded some protection in twelve countries and none in a further three, while we have no information for the remainder. However the effectiveness of this protection may be questioned since there continue to be reports of otters being persecuted in some countries where they are theoretically protected: Turkey, China and India. There are also reports of persecution in a further three countries where the level of protection is unknown (Afghanistan, Mongolia, Nepal) and in Vietnam, where they are not protected.

Systematic surveys have been carried out in very few countries and only in Israel and Vietnam have standardised repeatable surveys been carried out on a basis comparable with those in Europe.

Overall, the most significant feature of this review is the lack of information on the status and distribution of otters in Asia. At a time when the situation in Europe is becoming increasingly well known it seems appropriate to press for further work on the otter in the eastern part of its range. The standardised survey methods used in Europe depend on searching large numbers of sites but relatively short stretches of waterway at each one. These may be appropriate in countries with relatively high human densities and consequently numerous metalled roads but quite inappropriate in countries where access to waterways by road is only possible at infrequent intervals. One might suggest therefore that the IUCN Species Survival Commission should investigate alternative methods of surveying otters in such countries with a view to providing a standard repeatable method which could not only be used to assess the current status of otters but to provide a baseline against which to monitor future changes.

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