

A study of illegal wildlife trade and seizures in Pakistan

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ABSTRACT

Illegal wildlife trafficking is world's fourth largest illegal trade which is valued billions of US dollars. Illegal wildlife trade has been increasing day by day resulting into depletion and even extinction of some wildlife species. Different organizations have been working at national and international level to stop/reduce this tendency. Data for this article was collected from different newspapers, television channels, different organizations and search engine (i.e. Google) reporting on the illegal wildlife trade from 1997 to 2019. During the study it was noted that, the lowest (n=1) wildlife seizures was reported in 1997, 2008 and 2009; while the highest (n=20) wildlife seizures were recorded in 2016 and the second highest (n=19) were reported in 2015, while the third highest (n=17) were documented in the 2018. It is concluded that more intention has been given to save wildlife species and to stop their illegal trade with the passage of time. During the case study it was noted that the top number of wildlife species appeared in seizures were as; freshwater turtles (7872), tortoises (559), Indian pangolins (350kg scales), falcons (257), cranes (202), lizards (170) and scorpions (148).

Keywords: Traffic animal, turtles, Indian Pangolin, Falcon, Wildlife, Pakistan

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INTRODUCTION

International trade in wild fauna and flora is a huge industry in the world. Illegal wildlife trafficking is the fourth largest criminal market in the world (Welch, 2017). The world is currently noticing extinction of some wild flora and fauna unparallel since the age of dinosaur due to many factors including illegal trafficking. Different organizations at government and private level have been working to stop this tendency. It is observed that the global illegal trade of wild fauna and flora as well as their parts and derivatives, is valued several billion US dollars (Aryal, 2004).

A total of 4763 mammalian species have been documented in the world (IUCN, 2002). In Pakistan, 195 species of mammals have been reported (Roberts, 2005a,

b), while out of the total, 81 mammalian species face different threats (IUCN, 2003). A total of 9042 avian species are reported in the world (Sibley and Monroe, 1990; Sibley and Monroe Jr, 1993); while more than 668 birds species have been recorded in Pakistan (Grimmett, 1998; Mirza and Wasiq, 2007). In the world, 10,450 species of reptiles are reported (Uetz, 2016). While total of 195 species of reptiles are identified in Pakistan (Khan, 2006). A of total 7,850 amphibian species have been reported from the world (AmphibiaWeb, 2018) and a total of 24 amphibian species have been recorded from Pakistan by Khan (2010).

In Pakistan, threatened wild fauna and flora are protected through Provincial/Territorial Wildlife Laws. However Poaching and illegal trade has been going on for numerous factors. Illegal trade of freshwater turtles and Indian pangolins is reported in Pakistan (Noureen *et al.*, 2008). Demand of wildlife species as pet in big cities is a major reason of this poaching and illegal trade; for example, few people have been documented to keep crocodiles at their houses in Karachi (Ilyas, 2008). Wildlife species their parts and derivatives form a huge industry in the world involving billions of US dollars annually, therefore it has become a serious matter for which some preventive actions are necessary (Sand, 1997).

MATERIALS AND METHODS

Data for this article was collected from different newspapers(i.e. “The News”, “DAWN”, “SAMAA”, Daily Time, Tribune, Pakistan Today, The Nation, Urdu Point and Dunya News), TV channels, different organizations (i.e. “Ministry of Climate change”, Zoology Survey of Pakistan, “Marine Biological Research Laboratory” and Pakistan Customs), journals (i.e. TRAFFIC Bulletin, Ethnobiology and Ethnomedicine, Wildlife and Ecology, Pakistan Journal of Zoology and Journal of Animal and Plant Sciences) and search engine (i.e. Google) reporting on the illegal trade from 1997 to 2019.

RESULTS AND DISCUSSION

During the study it was noted that the lowest (n=1) wildlife seizures were reported in 1997, 2008 and 2009; while the highest (n=20) wildlife seizures were recorded in 2016 and the second highest (n=19) were reported in 2015, while the third highest (n=17) was documented in the 2018. It is concluded more intention has been given in Pakistan to protect wildlife species and to control illegal wildlife trade with the passage of time (Table 1 and Figure 1).

During the case study it was noted that the top number of wildlife species appeared in seizures were; freshwater turtles (7872), tortoise (559), Indian pangolin (350kg), falcons (257), cranes (202), lizards (170) and scorpions (148) (Table 1 and Figure 2).

Wildlife traders of big cities contact native poachers for illegal collection of freshwater turtles in their habitat areas. Processed body parts of wild caught river turtles are transported from native markets in little towns to nationalized markets in big cities. Illegal trade in turtles in Khyber Pakhtunkhwa was started by wildlife traders from Lahore. The deliveries collected locally are transported to

Peshawar and finally to Lahore for export. In Punjab, parts of turtles gathered from prospective sites are sent to Lahore; while in Sindh, Karachi is the main market for export of turtles and their body parts. China, Korea, Vietnam and Hong Kong are found to be the illegal importers of turtles and their parts from Pakistan. Parts of turtles from Pakistan are also exported to Iran, due to a long border between these two countries. China being major consumer, bulk of turtle consignments is exported to this country (Noureen *et al.*, 2012).

Despite the apparent decline in the number of seizures of Indian pangolin scales, trade nevertheless persistent and due to high demand from China mainly, and scales are utilized in ethnomedicines, and its increasing prices are driving the illegal trade of pangolins from Africa, South and Southeast Asia (Challender, 2011; Challender and Hywood, 2012).

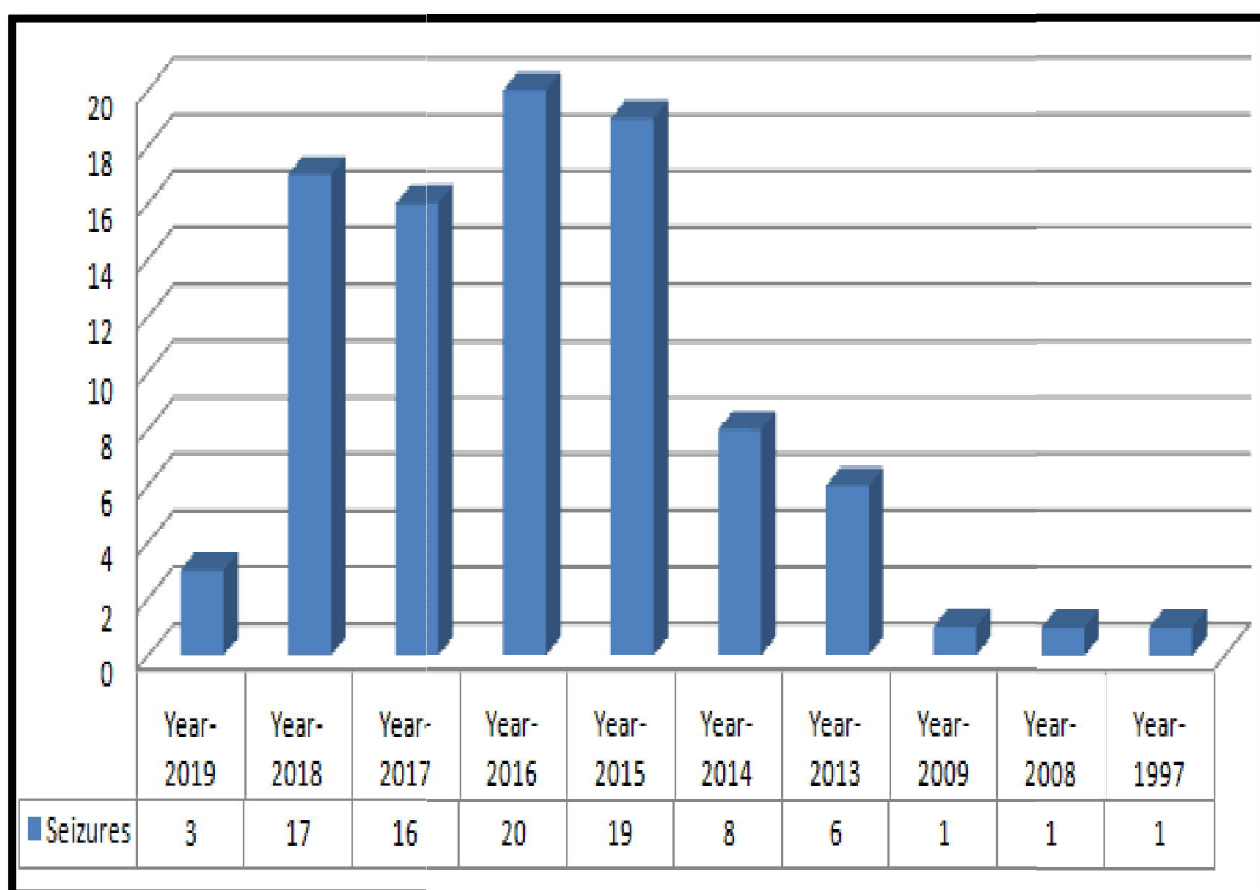


Figure 1: Graphical presentation of wildlife seizures form 1997 to 2019.

Although not proved scientifically, wildlife species are used in different traditional medicines across the world. It has been reported that parts of 8 species of freshwater turtles were used in the different treatments (i.e. skin, fat and meat is used to treat earache, backbone pain, enhance sexual power, joint pain, headache) (Table 2). Spiny-tailed ground lizard are used to treat earache, backbone pain, enhance sexual power, joint pain and headache (Arshad *et al.*, 2014; Altaf *et al.*, 2018). Black cobra are utilized to cure weak eye sight, leprosy,

arthritis, cancer, sciatica, snakebite, muscular pain and sexual weakness (Bagde and Jain, 2013; Arshad *et al.*, 2014; Bagde and Jain, 2015; Altaf *et al.*, 2018). Indian pangolin are used in traditional medicine to treat different diseases as feet swelling, earache, bone inflammation, rheumatism, infertility, sexual power, blood pressure, asthma, angina, warts, safe parturition, stomach ulcers, gastro-intestinal disorders and fibroid (Mishra *et al.*, 2011; Bagde and Jain, 2013; Betlu, 2013; Chinlapianga *et al.*, 2013; Vijayakumar *et al.*, 2015a; Vijayakumar *et al.*, 2015b; Yeshe *et al.*, 2017). Fat of bears are used to treat sexual impotency (Altaf *et al.*, 2017). Fat of foxes are also used to treat epilepsy (Altaf *et al.*, 2017). Common quail is utilized in ethnomedicine to treat skin diseases, anemia and enhance memory power (Lohani, 2011; Vijayakumar *et al.*, 2015a; Vijayakumar *et al.*, 2015b). Meat of black francolin is used to cure bronchitis disease (Arshad *et al.*, 2014). Carapace and oil of Indian flap-shelled turtle is used to treat disease as allergy, arthritis, burns, cough, epilepsy, urinary obstruction, lung diseases, malaria fever, rashes, sexual dysfunction, wounds and tuberculosis (Mishra *et al.*, 2011; Vijayakumar *et al.*, 2015a; Vijayakumar *et al.*, 2015b; Altaf *et al.*, 2018). It is also noted that many species may be used as food (i.e. Houbara bustard, turtles, tortoise and etc.) and others are kept as pet (i.e. parakeets, francolins, cranes, snakes, finches, turtles and geckos etc.). Birds of prey are kept as pets and used for falconry practices, resulting in their trade.

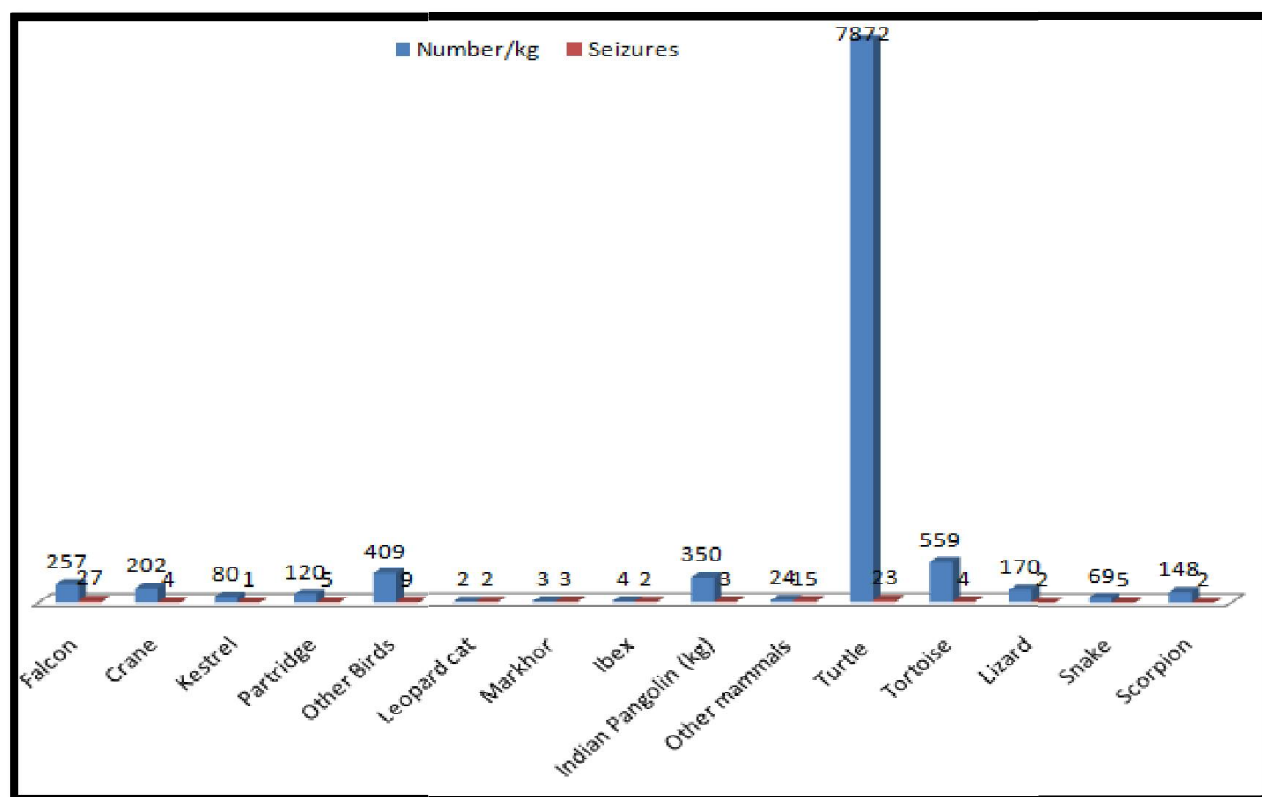


Figure 2: Graphical presentation of number of species and seizures.

Table 1: Summary of wildlife crimes and seizures in Pakistan.

Month Year	Seizures Cities	Seizures	References
1-2019	Lahore	“Customs officials on Tuesday foiled a bid to smuggle two falcons from Abu Dhabi to Pakistan”	(CUSTOMS, 2019a)
2-2019	Rawalpindi	“Leopard cat was confiscated”	(DAWN, 2109)
5-2019	Islamabad	“Customs officials recover tarantula spiders from airline passenger’s luggage”	(CUSTOMS, 2019b)
1-2018	Gilgit-Baltistan	“Three persons involved in illegal hunting of markhor in Gilgit-Baltistan were sentenced to two years in prison, ordered to pay compensation of US\$ 136,000”	(WCS, 2018)
2-2018	Quetta	“Balochistan Forest and Wildlife Department seized four falcons being smuggled from Sharjah, UAE”	(Zafar, 2018)
2-2018	Karachi	“Sindh Wildlife Department seized 151 turtles, tortoises in a raid”	(DAWN, 2018a)
8-2018	Rajanpur	“Six falcon trappers were held”	(Ismaeel, 2018)
9-2018	Astore	“A local court sentenced two persons to one year in jail and fined them Rs: 300000 each for killing a rare brown bear (<i>Ursus arctos</i>)”	(DAWN, 2018h)
9-2018	Sialkot	“Pakistan Customs seized 200 turtles which were being smuggled to Malaysia”	(CUSTOMS, 2018b)
9-2018	Lakki Marwat	“79 cranes were seized in Lakki Marwat which were being smuggled”	(DAWN, 2018g)
10-2018	Lakki Marwat	“Parrots and one falcon was seized by Khyber Pakhtunkhwa Wildlife Department in Lakki Marwat which were being smuggled to Khyber Pakhtunkhwa from Karachi”	(DAWN, 2018b)
10-2018	Islamabad	“Customs staff at New Islamabad International Airport arrested a Dubai-bound Iraqi passenger and recovered 7 falcons from his luggage”	(CUSTOMS, 2018a)
10-2018	Lakki Marwat	“Three falcons were seized by Khyber Pakhtunkhwa Wildlife Department in Lakki Marwat which were being smuggled”	(NEWS, 2018)
10-2018	Lakki Marwat	“18 red-legged partridges were Seized in Lakki Marwat which were being smuggled from Punjab to Khyber	(DAWN, 2018f)

		Pakhtunkhwa”	
10-2018	Karachi	“20 cranes were seized which were being smuggled”	(DAWN, 2018d)
10-2018	Karachi	“Sindh Wildlife Department Seized 150 Kg of turtle meat and 200 Kg of pangolin scales in a raid”	(Guriro, 2018)
10-2018	Peshawar	“Khyber Pakhtunkhwa Wildlife Department Seized 9 falcons which were illegally imported from Qatar”	(DAWN, 2018e)
11-2018	Peshawar	“Khyber Pakhtunkhwa Wildlife Department Seized 8 falcons in Peshawar”	(DAWN, 2018i; THE-NATION, 2018)
11-2018	Badin	“Rare snakes worth millions die while being smuggled from Badin”	(SAMAA, 2018)
11-2018	Pakistan	“Illegal trade in wildlife (i.e. leopard cat, Indian palm civet, Pallas cat, chinkara, hog deer, grey langur, Asiatic jackal, Indian pangolin, rhesus monkey, common leopard and Himalayan black bear cubs) rife across Pakistan, says study at: 23 cities across Pakistan”	(DAWN, 2018c)
1-2017	Dera Ismail Khan	“Khyber Pakhtunkhwa Wildlife Department seized 48 Spiny-tailed Lizards (<i>Uromastyx</i> spp.)”	(DAILY-TIME, 2017)
2-2017	Karachi	“Sindh Wildlife Department Seized freshwater turtles and hatchling of green turtles in a raid”	(THE-NEWS, 2017)
2-2017	Lakki Marwat:	“Khyber Pakhtunkhwa Wildlife Department Seized 20 Spiny-tailed Lizards (<i>Uromastyx</i> spp.)”	(DAWN, 2017d)
2-2017	Gilgit-Balistan	“Two illegal hunters of Ibex were arrested”	(Today-Pakistan, 2017)
2-2017	Gilgit-Balistan	“Two Ibex were released in Gilgit-Balistan”	(TRIBUNE, 2017b)
4-2017	Karachi	“Customs authorities seized 350 Afghan Tortoises”	(DAWN, 2017b)
5-2017	Islamabad	“11 partridges seized at Islamabad airport which were being smuggled to UK”	(DAWN, 2017f)
9-2017	Islamabad	“4 freshwater turtles were seized in a raid”	(DAWN, 2017g)
9-2017	Pakistan	“16 Kg of dried parts of freshwater turtles were recovered from a Hong Kong-bound consignment”	(DAWN, 2017c)
10-2017	Karachi	“Sindh Wildlife Department Seized 8	(TRIBUNE,

		falcons”	2017c)
10-2017	Lahore	“Punjab Wildlife Department Seized 9 falcons”	(DAWN, 2017h)
10-2017	Badin	“Sindh Wildlife Department in Badin seized 70 migratory birds from poachers”	(DAWN, 2017a)
10-2017	Khanewal	“Punjab Wildlife department seized 50kg turtle meat”	(TRIBUNE, 2017a)
11-2017	Lakki Marwat	“Khyber Pakhtunkhwa Wildlife Department officials seized one falcon”	(DAWN, 2017e)
11-2017	Karachi	“Sindh Wildlife Department in Karachi seized 6 falcons”	(PAKISTAN-TODAY, 2017)
12-2017	Gilgit-Baltistan	“Three offenders involved in illegal hunting of markhor were sent to jail for two years in addition to pay heavy compensation”	(THE-NATION, 2017)
1-2016	Lahore	“A consignment of 144 Black spotted turtles live wrapped in plaster of Paris was seized. These turtles were being carried in a cutlery consignment”	(BRG, 2016)
1-2016	Karachi	“5 falcons were seized at Karachi Airport which were being smuggled to Pakistan from UAE”	(DAWN, 2016e)
1-2016	Sindh	“Sindh Wildlife Department recovered 90 migratory birds in a raid”	(TRIBUNE, 2016f)
2-2016	Lahore	“Punjab Wildlife Department staff in collaboration with Customs officials seized 22 tortoises”	(THE-NATION, 2016)
3-2016	Faisalabad	“Customs officials at Faisalabad Airport seized 45 Black spotted turtles”	(TRIBUNE, 2016e)
4-2016	Karachi	“62 Black spotted turtles were confiscated from a Malaysia bound flight, 42 of them expired of suffocation”	(DAWN, 2016a)
4-2016	Karachi	“Sindh Wildlife Department recovered 170 turtles in a raid”	(DAWN, 2016c)
6-2016	Karachi	“Hong Kong-bound consignment of 148 black scorpions was seized”	(TRIBUNE, 2016b)
8--2016	Khyber Pakhtunkhwa	“Khyber Pakhtunkhwa Wildlife Department banned scorpion trade”	(TRIBUNE, 2016a)
8-2016	Bannu	“Khyber Pakhtunkhwa Wildlife Deptartmet seized over 100 birds”	(DAWN, 2016g)
9-2016	Karachi	“Sindh Wildlife Department recovered 780 Black-spotted turtles in a raid”	(PAWS, 2016; THE-NEWS,

			2016a)
9-2016	Dera Ismail Khan	“25 cranes were seized by Khyber Pakhtunkhwa Wildlife Department”	(TRIBUNE, 2016c)
9-2016	Dera Ismail Khan	“Khyber Pakhtunkhwa wildlife officials seized 80 Kestrel”	(THE-NEWS, 2016b)
9-2016	Lahore	“Punjab Wildlife Department arrested one poacher and nine poachers were fined for poaching migratory bird illegally”	(URDU-POINT, 2016)
9-2016	Islamabad	“Customs officials at Islamabad airport seized seven partridges from a passenger going to UK”	(CUSTOMS, 2016)
9-2016	Sindh	“Sindh Wildlife Department arrested one poacher of turtles and live snake”	(Zuberi, 2016)
9-2016	Karachi	“Sindh Wildlife Department seized Flap-shelled turtles and snake meat”	(TRIBUNE, 2016d)
10-2016	Shaheed Benazirabad	“Over 300 black spotted turtles seized”	(DAWN, 2016f)
12-2016	Lakki Marwat	“Khyber Pakhtunkhwa Wildlife Department seized over two falcons and nine monkeys”	(DAWN, 2016d)
12-2016	Islamabad	“36 turtles and tortoises were seized at Sunday bazaar”	(DAWN, 2016b)
1-2015	Hyderabad	“Sindh Wildlife Department seized 4 falcons”	(TRIBUNE, 2015g)
2-2015	Lakki Marwat	“Khyber Pakhtunkhwa Wildlife Department officials seized 2 falcons”	(DAWN, 2015c)
3-2015	Karachi	“Huge consignment containing dried body parts of freshwater turtles was seized at Karachi Port which was being sent to Hong Kong. Body parts of over 4,000 freshwater turtles were declared by the offenders as fish meat”	(Vimeo, 2015)
7-2015	Mansehra	“Khyber Pakhtunkhwa Wildlife Department officials at Mansehra seized 1 stuffed Markhor and one stuffed Ibex”	(DAWN, 2015e)
7-2015	Mansehra	“Khyber Pakhtunkhwa Wildlife Department officials at Mansehra seized a female Common Leopard cub”	(TRIBUNE, 2015c)
8-2015	Laki Marwat	“Khyber Pakhtunkhwa Wildlife Department officials seized two Houbara bustard and 24 Grey francolin which were being smuggled to Afghanistan”	(THE-NEWS, 2015)

8-2015	Karachi	“Sindh Wildlife Department officials seized over 50 protected birds and mammals in a raid”	(DAWN, 2015d)
9-2015	Jamshoro	“Sindh Wildlife Department officials at Jamshoro seized 150 Spiny-tailed Lizards (<i>Uromastyx spp.</i>)”	(TRIBUNE, 2015j)
9-2015	Lahore	“Customs officials at Lahore Airport seized 120 Black Spotted Turtle (<i>Geoclemys hamiltonii</i>), which were being smuggled to Thailand”	(THE-NATION, 2015a)
9-2015	Peshawar	“Khyber Pakhtunkhwa Wildlife Department officials seized skins of various species (including monal pheasant, common leopard, lynx, foxes, hog deer etc)”	(TRIBUNE, 2015d)
9-2015	Lahore	“Customs officials foil smuggling bid, recovered 120 rare turtles”	(DUNYA-NEWS, 2015)
10-2015	Jamshoro	“Sindh Wildlife officials in a raid apprehended falcon trappers”	(TRIBUNE, 2015h)
10-2015	Sindh	“Sindh Wildlife Department seized 12 falcons in a raid”	(TRIBUNE, 2015i)
10-2015	Sindh	“Sindh Wildlife Department seized 22 falcons in a raid”	(TRIBUNE, 2015a)
10-2015	Sindh	“Sindh Wildlife Department seized 40 falcons in a raid”	(DAWN, 2015b)
10-2015	Jamshoro	“Ranger personnel seized 29 falcons”	(DAWN, 2015a)
10-2015	Karachi	“7 falcons were seized by Coast Guards”	(TRIBUNE, 2015b)
11-2015	Peshawar	“Khyber Pakhtunkhwa Wildlife Department officials seized 2 falcons”	(TRIBUNE, 2015f)
11-2015	Lakki Marwat	“Khyber Pakhtunkhwa Wildlife Department officials seized 4 falcons”	(THE-NATION, 2015b)
9-2015	Sukkar	“Nine men held for poaching migratory birds (300 quails)”	(TRIBUNE, 2015e)
6-2014	Islamabad	“A consignment of 145Kg of Pangolin scales was seized from two Chinese nationals”	(CUSTOMS, 2014)
9-2014	Karachi	“Customs officials seized 200 Black Spotted Turtles (<i>Geoclemys hamiltonii</i>)”	(DAWN, 2014b)
10-2014	Jamshoro	“Sindh Wildlife Department officials at Jamshoro seized 38 poisonous snakes, including 18 black cobras and 20 vipers”	(ARINP, 2014)
10-2014	Bahawalpur	“Punjab Wildlife Department officials seized 2 Chinkara gazelles and 60	(TRIBUNE, 2014b)

		partridges (<i>Francolinus sp.</i>) in a raid”	
10-2014	Sindh	“Sindh Wildlife Department officials seized 78 Common Cranes”	(DAWN, 2014a)
10-2014	Laki Marwat	“Khyber Pakhtunkhwa Wildlife Department officials seized 4 falcons”	(DAWN, 2014c)
11-2014	Karachi	“Customs officials at Karachi Airport seized five falcons which were being smuggled to Dubai”	(TRIBUNE, 2014a)
4-2014	Pakistan	“Recent Seizure Highlights Pangolin Trafficking”	(Annamiticus, 2014)
1-2013	Naro, Sindh Province	“Wildlife officials seized 200 turtles in a raid”	(TRIBUNE, 2013)
1-2013	Pakistan	“10 out of 54 seized falcons were released in nature”	(DAWN, 2013a)
2-2013	Karachi	“Customs officials seized 31 pythons, imported from the US”	(Khaleej, 2013)
3-2013	Karachi	“Wildlife officials seized 38 turtles during a raid”	(DAWN, 2013b)
4-2013	Islamabad	“Customs Authorities seized 320 turtles”	(THE-NATION, 2013)
4-2013	Jiwani	“Customs Authorities seized 3 pairs of Ring-tailed lemurs”	(DAWN, 2013c)
3-2009	Karachi	“Sindh Wildlife Department officials seized a consignment of some 550 Horsefield's Tortoises <i>Testudo horsefieldii</i> ”	(TRAFFIC, 2012)
3-2008	Pakistan	“Pakistani was seized after it was found to hold 396 items containing costus, <i>Musk moschus</i> and <i>Uromastix</i> spp.”	(TRAFFIC, 2012)
11-1997	Karachi	“A consignment of 18 Houbara Bustards <i>Chlamydotis undulate</i> bound for Muscat, Oman was seized”	(TRAFFIC, 2012)

Table 2. Medicinal uses of wild animal species.

Species name	Parts use	Treatments	References
<i>Uromastix hardwickii</i> Indus Valley spiny-tail ground lizard		Earache, backbone pain, enhance sexual power, joint pain, headache	(Arshad <i>et al.</i> , 2014; Altaf <i>et al.</i> , 2018)
<i>Naja naja naja</i> Black cobra	Skin	Eye sight, leprosy, arthritis, cancer, sciatica, snakebite, muscular pain, sexual weakness	(Bagde and Jain, 2013; Arshad <i>et al.</i> , 2014; Bagde and Jain, 2015; Altaf <i>et al.</i> , 2018)
<i>Manis crassicaudata</i> Indian pangolin		Feet swelling, blood pressure, asthma, ear pain,	(Mishra <i>et al.</i> , 2011; Bagde and Jain, 2013;

		angina, heals bone inflammation, infertility, gastro-intestinal disorders, stomach ulcers, rheumatism and fibroid, sexual power	Betlu, 2013; Chinlapianga <i>et al.</i> , 2013; Vijayakumar <i>et al.</i> , 2015a; Vijayakumar <i>et al.</i> , 2015b; Yeshe <i>et al.</i> , 2017)
<i>Ursus Spp.</i> Bear	Fat	Sexual power	(Altaf <i>et al.</i> , 2017)
<i>Vulpes Spp.</i> Fox	Fat	Epilepsy	(Altaf <i>et al.</i> , 2017)
<i>Coturnix coturnix</i> Common Quail	Meat	Skin diseases, anemia, enhance memory power	(Lohani, 2011; Vijayakumar <i>et al.</i> , 2015a; Vijayakumar <i>et al.</i> , 2015b)
<i>Francolinus francolinus</i> Black partridge	Meat	Bronchitis	(Arshad <i>et al.</i> , 2014)
<i>Lissemys punctata andersoni</i> Indian Flap-shelled Turtle	Carapace and oil	Allergy, arthritis, burns, cough, epilepsy, urinary obstruction, lung diseases, malaria fever, rashes, sexual dysfunction, wounds, tuberculosis	(Mishra <i>et al.</i> , 2011; Vijayakumar <i>et al.</i> , 2015a; Vijayakumar <i>et al.</i> , 2015b; Altaf <i>et al.</i> , 2018)

REFERENCES

- Altaf, M., A. Javid, M. Umair, K.J. Iqbal, Z. Rasheed, A.M. Abbasi. 2017. Ethnomedicinal and cultural practices of mammals and birds in the vicinity of river Chenab, Punjab-Pakistan. *Journal of ethnobiology and ethnomedicine*. 13: 41.
- Altaf, M., M. Umair, A.R. Abbasi, N. Muhammad, A.M. Abbasi. 2018. Ethnomedicinal applications of animal species by the local communities of Punjab, Pakistan. *Journal of ethnobiology and ethnomedicine*. 14: 1-25.
- AmphibiaWeb. 2018. Species by the Numbers. <https://amphibiaweb.org/>.
- Annamiticus. 2014. Recent Seizure Highlights Pangolin Trafficking from Pakistan to China.
- ARINP. 2014. <http://aminals.org/2014/10/11/38-snakes-rescued-in-sindh-while-being-smuggled/>.
- Arshad, M., M. Ahmad, E. Ahmed, A. Saboor, A. Abbas, S. Sadiq. 2014. An ethnobiological study in Kala Chitta hills of Pothwar region, Pakistan: multinomial logit specification. *J Ethnobiol Ethnomed*. 10: 13.
- Aryal, R.S. 2004. CITES Implementation in Nepal and India: Law, Policy, and Practice. Bhrikuti Academic Publications.
- Bagde, N., S. Jain. 2013. An ethnozoological studies and medicinal values of vertebrate origin in the adjoining areas of Pench National Park of Chhindwara District of Madhya Pradesh, India. *International Journal of life sciences*. 1 278-283.
- Bagde, N., S. Jain. 2015. STUDY OF TRADITIONAL MAN-ANIMAL RELATIONSHIP IN CHHINDWARA DISTRICT OF MADHYA PRADESH, INDIA. *Journal of Global Biosciences*. 4: 1456-1463.

- Betlu, A.L.S. 2013. Indigenous knowledge of zootherapeutic use among the Biate tribe of Dima Hasao District, Assam, Northeastern India. *Journal of ethnobiology and ethnomedicine*. 9: 1.
- BRG. 2016. Workshop on illegal wildlife trade held. <http://epaper.brecorder.com/m/2016/02/11/9-page/559859-news.html>.
- Challender, D., L. Hywood. 2012. African pangolins under increased pressure from poaching and intercontinental trade. *Traffic Bulletin*. 24: 53-55.
- Challender, D.W. 2011. Asian pangolins: increasing affluence driving hunting pressure. *Traffic Bulletin*. 23: 92-93.
- Chinlampaing, M., R.K. Singh, A.C. Shukla. 2013. Ethnozoological diversity of Northeast India: Empirical learning with traditional knowledge holders of Mizoram and Arunachal Pradesh. *Indian J. Tradit. Knowl*. 12: 18-30.
- CUSTOMS. 2014. Customs held 2 Chinese smuggling Pangolin scales. <http://www.customstoday.com.pk/customs-held-2-chinese-smuggling-pangolin-scales/>.
- CUSTOMS. 2016. Customs recovered seven partridge from Benazir International Airport. <http://www.customstoday.com.pk/customs-recovered-seven-partridge-from-benazir-international-airport/>.
- CUSTOMS. 2018a. NIIA Customs arrests Iraqi passenger, recovers 7 falcons. <http://www.customstoday.com.pk/customs-niia-arrested-iraqi-passenger-recovers-7-falcons/>.
- CUSTOMS. 2018b. Sialkot Customs foils bid to smuggle tortoises to Malaysia. <http://www.customstoday.com.pk/sialkot-customs-foils-fid-to-smuggle-tortoises-to-malaysia/>.
- CUSTOMS. 2019a. Customs foils falcons smuggling attempt at Lahore airport. <http://www.customstoday.com.pk/customs-foils-falcon-smuggling-attempt-at-lahore-airport/>.
- CUSTOMS. 2019b. CUSTOMS officials recover tarantula spiders from airline passenger's luggage. <https://www.suchtv.pk/pakistan/general/item/86246-customs-officials-recover-tarantula-spiders-from-airline-passenger-s-luggage.html>.
- DAILY-TIME. 2017. Wildlife officials seize 48 pointed tailed lizards. <https://dailytimes.com.pk/33797/wildlife-officials-seize-48-pointed-tailed-lizards/>.
- DAWN. 2013a. 10 seized falcons set free in Gwadar.
- DAWN. 2013b. 38 turtles confiscated in raid on shop. <http://dawn.com/2013/03/20/38-turtles-confiscated-in-raid-on-shop/>.
- DAWN. 2013c. Six confiscated ring-tailed lemurs shifted to zoo. <https://www.dawn.com/news/812536/six-confiscated-ring-tailed-lemurs-shifted-to-zoo>.
- DAWN. 2014a. 78 cranes seized, three poachers fined. <http://www.dawn.com/news/1139396/78-cranes-seized-three-poachers-fined>.
- DAWN. 2014b. 200 turtles found in luggage onboard Bangkok flight. <http://www.dawn.com/news/1133251>.
- DAWN. 2014c. Four precious falcons seized. <http://www.dawn.com/news/1139378/four-precious-falcons-seized>.
- DAWN. 2015a. 29 laggar falcons seized by Rangers. <http://www.dawn.com/news/1212421>.
- DAWN. 2015b. 40 laggar falcons seized in another operation. <https://www.dawn.com/news/1212881>.
- DAWN. 2015c. One held, falcons seized. <http://www.dawn.com/news/1163346>.

- DAWN. 2015d. Over 50 protected animals confiscated in Empress Market raid. <https://www.dawn.com/news/1202611>.
- DAWN. 2015e. Stuffed markhor, ibex seized in Naran. <https://www.dawn.com/news/1191834>.
- DAWN. 2016a. 13 surviving turtles released into Haleji lake. <https://www.dawn.com/news/1251070>.
- DAWN. 2016b. 36 turtles, tortoises confiscated from Sunday Bazaar. <http://www.dawn.com/news/1304518>.
- DAWN. 2016c. 161 seized turtles released into Haleji Lake. <http://www.dawn.com/news/1255070>.
- DAWN. 2016d. Bid to smuggle falcon and Monkeys. https://epaper.dawn.com/DetailNews.php?StoryText=05_12_2016_182_008.
- DAWN. 2016e. Five falcons seized at airport. <https://www.dawn.com/news/1233693/five-falcons-seized-at-airport>.
- DAWN. 2016f. Over 300 freshwater turtles seized, four suspects held. <https://www.dawn.com/news/1287136>.
- DAWN. 2016g. Wildlife dept seizes over 100 birds in Lakki, Bannu. <http://www.dawn.com/news/1279824>.
- DAWN. 2017a. 70 migratory birds retrieved, 4 poachers arrested in Badin: Wildlife department. <https://www.dawn.com/news/1363354>.
- DAWN. 2017b. 350 Afghan tortoises seized, trafficker held. <https://www.dawn.com/news/1330031/350-afghan-tortoises-seized-trafficker-held>.
- DAWN. 2017c. Dried parts of 68 freshwater turtles confiscated. <https://www.dawn.com/news/1358746/dried-parts-of-68-freshwater-turtles-confiscated>.
- DAWN. 2017d. Lakki wildlife officials arrest man with 20 lizards. <https://www.dawn.com/news/1315823/lakki-wildlife-officials-arrest-man-with-20-lizards>.
- DAWN. 2017e. Man with precious falcon arrested in Lakki. <https://www.dawn.com/news/1368893>.
- DAWN. 2017f. Partridge smuggling attempt foiled. <https://www.dawn.com/news/1331173/partridge-smuggling-attempt-foiled>.
- DAWN. 2017g. Protected freshwater turtles confiscated. <https://www.dawn.com/news/1357313>.
- DAWN. 2017h. Qatari man arrested at Lahore airport while trying to smuggle 9 falcons worth Rs50m. <https://www.dawn.com/news/1364424>.
- DAWN. 2018a. 151 rare turtles, tortoises seized in Liaquatabad. <https://www.dawn.com/news/1391055>.
- DAWN. 2018b. Bid to smuggle parrots, falcon foiled in Lakki. <https://www.dawn.com/news/1437522>.
- DAWN. 2018c. Illegal trade in wildlife rife across Pakistan, says study. <https://www.dawn.com/news/1394654/illegal-trade-in-wildlife-rife-across-pakistan-says-study>.
- DAWN. 2018d. Man with Siberian cranes held in Lakki. <https://www.dawn.com/news/1441149>.
- DAWN. 2018e. Nine falcons seized at Peshawar airport. <https://www.dawn.com/news/1442557/nine-falcons-seized-at-peshawar-airport>.
- DAWN. 2018f. Partridges seized, carrier held in Lakki. <https://www.dawn.com/news/1440465>.

- DAWN. 2018g. Two fined for catching Siberian cranes without permit. <https://www.dawn.com/news/1433349>.
- DAWN. 2018h. Two get jail for killing rare brown bear in Astore. <https://www.dawn.com/news/1430987>.
- DAWN. 2018i. Wildlife dept seizes eight falcons, frees nine others. <https://www.dawn.com/news/1444273/wildlife-dept-seizes-eight-falcons-frees-nine-others>.
- DAWN. 2109. Wildlife staff save rare leopard cat, arrest poachers. <https://www.dawn.com/news/1465672/wildlife-staff-save-rare-leopard-cat-arrest-poachers>.
- DUNYA-NEWS. 2015. Lahore: Customs officials foil smuggling bid, recover 120 rare turtles. <http://dunyanews.tv/en/Pakistan/297708-Lahore-Customs-officials-foil-smuggling-bid-reco>.
- Grimmett, R., Inskipp, C. & Inskip, T. 1998. Birds of the Indian subcontinent. Christopher Helm an imprint of A and C Black (Publisher) Ltd, 35 Bedford Row, London WC1R 4JH.
- Guriro, A. 2018. Sindh Wildlife Dept recovers pangolin and turtle remains from a shop in Lyari Daily Time. Daily Time. Pakistan.
- Ilyas, F. 2008. Illegal wild animals trade flourishing DAWN. DAWN. Karachi, Pakistan.
- Ismaeel, T. 2018. Wildlife dept nabs six poachers. <https://tribune.com.pk/story/1791688/1-wildlife-dept-nabs-six-poachers/https://www.urdupoint.com/en/pakistan/10-held-as-wildlife-deptt-launches-operation-422359.html/>.
- IUCN. 2002. Red Lists of IUCN.
- Khaleej. 2013. Seized pythons handed over to zoo officials. <https://www.khaleejtimes.com/article/20130218/ARTICLE/302189863/1028>.
- Khan, M.S. 2006. Amphibian and Reptiles of Pakistan. Krieger Publisher Company.
- Khan, M.S. 2010. Checklist of amphibians of Pakistan. Pakistan Journal of Wildlife. 1.
- Lohani, U. 2011. Traditional uses of animals among jirels of Central Nepal. Ethno Med. 5: 115-124.
- Mirza, Z.B., H. Wasiq. 2007. A field guide to birds of Pakistan Bookland, Lahore.
- Mishra, N., S. Rout, T. Panda. 2011. Ethno-zoological studies and medicinal values of Similipal Biosphere Reserve, Orissa, India. African Journal of Pharmacy and Pharmacology. 5: 6-11.
- NEWS. 2018. Bid to smuggle falcons foiled. <https://www.thenews.com.pk/print/382628-bid-to-smuggle-falcons-foiled>.
- Noureen, U., G. Braulik, M. Arshad, N. Khan. 2008. Illegal Trade in Freshwater Turtle Parts: Preliminary Findings of Turtle Trade in Major Barrages and Head-Works of Punjab. Report to the Ministry of Environment's Pakistan Wetlands Programme.
- Noureen, U., A. Khan, M. Arshad. 2012. Exploring illegal trade in freshwater turtles of Pakistan. Rec. Zool. Surv. Pakistan. 21: 19-24.
- PAKISTAN-TODAY. 2017. Wildlife dept recovers six endangered falcons. <https://www.pakistantoday.com.pk/2017/11/22/wildlife-dept-recovers-six-endangered-falcons/>.
- PAWS. 2016. Sindh Wildlife Department officials face pressure regarding the alleged turtle smugglers in Karachi. <http://pawspakistan.org/tag/turtles/>.

- SAMAA. 2018. Rare snakes worth millions die while being smuggled from Badin. <https://www.samaa.tv/news/2018/10/man-held-for-possessing-150-rare-snakes-worth-millions/>.
- Sand, P.H. 1997. Commodity or taboo? International regulation of trade in endangered species. *Green globe yearbook*. 19-36.
- Sibley, C., B. Monroe Jr. 1993. A world checklist of birds. Ann Arbor, MI: Edwards Brothers Inc.
- Sibley, C.G., B.L. Monroe. 1990. Distribution and Taxonomy of Birds of the World.
- THE-NATION. 2013. Bid to smuggle rare turtles to Thailand foiled.
- THE-NATION. 2015a. Customs officials recover 120 rare turtles at Lahore Airport. <https://nation.com.pk/08-Sep-2015/customs-officials-recover-120-rare-turtles-at-lahore-airport>.
- THE-NATION. 2015b. Four falcons seized. <https://nation.com.pk/07-Nov-2015/four-falcons-seized>.
- THE-NATION. 2016. Anti-smuggling team of wildlife departments recover 22 tortoises. <https://nation.com.pk/06-Feb-2016/anti-smuggling-team-of-wildlife-departments-recover-22-tortoises>.
- THE-NATION. 2017. Three jailed for killing Markhors. <https://nation.com.pk/31-Dec-2017/three-jailed-for-killing-markhors>.
- THE-NATION. 2018. Bid to smuggle eight falcons foiled. <https://nation.com.pk/08-Nov-2018/bid-to-smuggle-eight-falcons-foiled>.
- THE-NEWS. 2015. Bid to smuggle precious birds foiled. <https://www.thenews.com.pk/print/58039-bid-to-smuggle-precious-birds-foiled>.
- THE-NEWS. 2016a. Back to the wild: Recovered turtles to be released in Indus River today. <https://tribune.com.pk/story/1180200/back-wild-recovered-turtles-released-indus-river-today/>.
- THE-NEWS. 2016b. Bid to smuggle kestrel birds foiled. <https://www.thenews.com.pk/print/151064-Briefs>.
- THE-NEWS. 2017. Endangered sea, freshwater turtles recovered in overnight raids. <https://www.thenews.com.pk/print/184743-Endangered-sea-freshwater-turtles-recovered-in-overnight-raids>.
- Today-Pakistan. 2017. Two held for illegally hunting ibex in GB. <https://www.pakistantoday.com.pk/2017/02/12/two-held-for-illegally-hunting-ibex-in-gb/>.
- TRAFFIC. 2012. TRAFFIC Bulletin Seizures and Prosecutions: Vol. 16 No. 3 (March 1997) to Vol. 24 No. 1 (April 2012).
- TRIBUNE. 2013. Preserving wildlife: 200 turtles recovered during raid. <https://tribune.com.pk/story/488668/preserving-wildlife-200-turtles-recovered-during-raid/>.
- TRIBUNE. 2014a. Clipped wings: Five falcons saved from being smuggled abroad. <https://tribune.com.pk/story/790789/clipped-wings-five-falcons-saved-from-being-smuggled-abroad/>.
- TRIBUNE. 2014b. Saving the endangered: Chinkara deer recovered in raid. <https://tribune.com.pk/story/777683/saving-the-endangered-chinkara-deer-recovered-in-raid/>.

- TRIBUNE. 2015a. Caught mid-flight: 22 rare Saker falcons seized by wildlife officials. <https://tribune.com.pk/story/970732/caught-mid-flight-22-rare-saker-falcons-seized-by-wildlife-officials/>.
- TRIBUNE. 2015b. Foiled: Seven rare falcons recovered. <https://tribune.com.pk/story/974771/foiled-seven-rare-falcons-recovered/>.
- TRIBUNE. 2015c. Forest and fauna: Wildlife authorities seize leopard cub. <https://tribune.com.pk/story/913780/forest-and-fauna-wildlife-authorities-seize-leopard-cub/>.
- TRIBUNE. 2015d. A matter of hide: Shopkeeper caught selling skins of endangered animals. <https://tribune.com.pk/story/962386/a-matter-of-hide-shopkeeper-caught-selling-skins-of-endangered-animals/>.
- TRIBUNE. 2015e. Nine men held for poaching migratory birds. <https://tribune.com.pk/story/962326/caught-red-handed-nine-men-held-for-poaching-migratory-birds/>.
- TRIBUNE. 2015f. Smuggling bid foiled: At least two Saker falcons recovered. <https://tribune.com.pk/story/983406/smuggling-bid-foiled-at-least-two-saker-falcons-recovered/>.
- TRIBUNE. 2015g. Smuggling bid foiled: Wildlife department officials rescue four falcons. <https://tribune.com.pk/story/820849/smuggling-bid-foiled-wildlife-department-officials-rescue-four-falcons/>.
- TRIBUNE. 2015h. Wildlife dept nabs five hunters, rescues as many falcons. <https://tribune.com.pk/story/966384/illegal-hunting-wildlife-dept-nabs-five-hunters-rescues-as-many-falcons/>.
- TRIBUNE. 2015i. Wildlife officials rescue 12 laggar falcons. <https://tribune.com.pk/story/967871/illegal-hunting-wildlife-officials-rescue-12-laggar-falcons/>.
- TRIBUNE. 2015j. Wildlife officials seize 150 desert lizards. <https://tribune.com.pk/story/951464/wildlife-officials-seize-150-desert-lizards/>.
- TRIBUNE. 2016a. Attempted conservation: Wildlife department bans scorpion trade in KPK. <http://tribune.com.pk/story/746113/attempted-conservation-wildlife-department-bans-scorpion-trade-in-k-p/>.
- TRIBUNE. 2016b. Bid to smuggle 148 black scorpions from Karachi airport foiled. <https://tribune.com.pk/story/1122704/bid-smuggle-148-black-scorpions-karachi-airport-foiled/>.
- TRIBUNE. 2016c. Busted: 25 cranes, quails seized in DI Khan. <https://tribune.com.pk/story/1175933/busted-25-cranes-quails-seized-di-khan/>.
- TRIBUNE. 2016d. Flap-shelled turtles, snake meat seized in Karachi. <https://tribune.com.pk/story/1175029/combating-trafficking-flap-shelled-turtles-snake-meat-seized/>.
- TRIBUNE. 2016e. Shame : Man caught trying to smuggle turtles. <http://tribune.com.pk/story/1061962/shame-man-caught-trying-to-smuggle-turtles/>.
- TRIBUNE. 2016f. Wildlife dept recovers 90 migratory birds from poachers. <http://tribune.com.pk/story/1037797/wildlife-dept-recovers-90-migratory-birds-from-poachers/>.

- TRIBUNE. 2017a. 50kg tortoise meat meant for Chinese nationals seized in Khanewal. <https://tribune.com.pk/story/1539236/1-50kg-tortoise-meat-meant-chinese-nationals-seized-khanewal/?amp=1>.
- TRIBUNE. 2017b. Two suspects held in G-B for illegal ibex hunt. <https://tribune.com.pk/story/1324603/two-suspects-held-g-b-illegal-ibex-hunt/>.
- TRIBUNE. 2017c. Wildlife dept recovers eight endangered falcons. <https://tribune.com.pk/story/1528731/wildlife-dept-recovers-eight-endangered-falcons/>.
- Uetz, P. 2016. The Reptile Database Turns 20. *Herpetol. Rev.* 47: 330-334.
- URDU-POINT. 2016. One Held, Nine Poachers Fined. <https://www.urdupoint.com/en/pakistan/one-held-nine-poachers-fined-22025.html>.
- Vijayakumar, S., S. Prabhu, J.M. Yabesh, R. Prakashraj. 2015a. A quantitative ethnozoological study of traditionally used animals in Pachamalai hills of Tamil Nadu, India. *Journal of ethnopharmacology*.
- Vijayakumar, S., J.M. Yabesh, S. Prabhu, M. Ayyanar, R. Damodaran. 2015b. Ethnozoological study of animals used by traditional healers in Silent Valley of Kerala, India. *Journal of ethnopharmacology*. 162: 296-305.
- Vimeo. 2015. 4,342 turtles confiscated at Karachi Port. <https://vimeo.com/121417869>.
- WCS. 2018. Message Sent: Justice Served Swiftly to Markhor Poachers in Pakistan. <https://newsroom.wcs.org/News-Releases/articleType/ArticleView/articleId/10939/Message-Sent-Justice-Served-Swiftly-to-Markhor-Poachers-in-Pakistan.aspx>.
- Welch, S.E. 2017. Promised Land or Fool's Paradise?: a Comparison of International Wildlife Crime and United States Drug Crime.
- Yeshi, K., P. Morisco, P. Wangchuk. 2017. Animal derived natural products used in the Bhutanese Sowa Riga medicine. *Journal of Ethnopharmacology*.
- Zafar, M. 2018. Four falcons seized in smuggling attempt at Quetta Airport The Express Tribune. Pakistan.
- Zuberi, M.A. 2016. Ringleader arrested: Sindh Wildlife Department's efforts against illegal trade lauded. <http://fp.brecorder.com/2016/09/2016090281803/>.