NMML
OCCASIONAL PAPER

PERSPECTIVES IN
INDIAN DEVELOPMENT

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Nehru Memorial Museum and Library
2014

NMML Occasional Paper

Published by

Nehru Memorial Museum and Library
Teen Murti House
New Delhi-110011

e-mail : ddnehrumemorial@gmail.com

ISBN : 978-93-83650-48-4

Price Rs. 100/-; US $ 10

Page setting & Printed by : A.D. Print Studio, 1749 B/6, Govind Puri Extn. Kalkaji, New Delhi - 110019. E-mail : studio.adprint@gmail.com

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I. Introducing a Pangolin Perspective

The discipline (or, as some would have it, the indiscipline) of environmental history has expanded in recent decades from its roots in field and forest to encompass the hydrological and the atmospheric, the microscopic and the transnational, the urban and the rural, and, increasingly, the animal, alongside the human.[1] From our many vantage points, environmental historians have grappled with the problematics of a persistent nature–culture binary, the interplay between so-called "scientific" and "local" knowledges, the uneasy politics of conservation and development, and the role of the environmental sciences in rationalizing global interventionism and what has been called "environmental Orientalism".[2] In this search for answers, some have struggled to redefine the archive, the scope of historical inquiry, and even the nature of the historical subject.[3] We are increasingly recognizing the environment writ large, as well as its innumerable components, as active or even agentive, and making attempts to write histories beyond the narrowly human.

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* Public lecture delivered under the series 'Science, Society and Nature' at the Nehru Memorial Museum and Library, New Delhi, 20 March 2014.

Some of the most stimulating research is taking place within the sub-field of human and animal history, and this is only partly due to the charismatic potential of tigers, wolves, and bears, to mention only a few recent stars.[4] When historians produce their human-animal histories, they invite readers to experience an identity crisis. How much "human" history has been accomplished by the rinderpest virus? How have people and mountain lions negotiated each other's presence in the hills in and around Los Angeles? What can periodic "lion plagues" in the Kathiawar peninsula tell us about connections among culture and memory in large carnivores, human policies towards wildlife, and the influence of major weather events?[5] Questions like these force researchers and readers alike to consider animal lives, which in turn raises the problem of sources. It seems that no avian memoirs, canine apologia, or archives of piscine ephemera are forthcoming, with the partial exception of human-curated collections in natural history museums or, more recently, in animal history museums, and information culled from "between the lines" of familiar sources.[6] Because of this and related complications, Erica Fudge has called "the history of animals ... impossible". What historians are studying through the "animal turn" is, yet again, nothing more than a history of ourselves and our own perceptions, albeit from an "indispensable" new perspective.[7] Aaron Skabelund, in contrast, carves out space for a conversation between the historical animal and the human historian, reassuring us that "the subaltern" can, indeed, "bark". For her part, Sandra Swart challenges us to read animal bodies as texts, insisting on the corporeal legibility of "the bloody horse".[8] If we look carefully, we can better understand the ways in which human and animal histories have intersected to produce changing interspecific interactions between "us" and "them", and even how these histories have inflected the ways humans have dealt with one another within the bounds of our own intraspecific relationships.

But what is a historian to do when aspiring to go beyond the well-documented non-human, such as Sandra Swart's horse and Aaron Skabelund's domestic dog, to write a history of what might be called a "subaltern species"? What happens when a putative

historical subject does not even deign to bark (contenting itself with no more than a hiss when disturbed), rarely crosses paths with human beings (reportedly walling itself into earthen burrows during daylight hours), is so little known that uncertainty and misinformation abound regarding its ecology and behavior (does it enjoy an "exclusive" diet of ants and termites, are its tastes "not necessarily strictly" myrmecophagous, or might it enjoy a spot of port wine?), and has failed to inspire any sizeable, traditional historical archive (anonymity being precisely to its taste)?[9] How might a historian tempt the Indian pangolin (*Manis crassicaudata*) into the spotlight, and is it desirable or even appropriate to do so?

This paper will first take up the question of the pangolin itself. It will then present a history—necessarily broad due to the regionally and temporally scattered nature of the evidence—of the pangolin's encounters with south Asians, British imperialists, and miscellaneous others. Finally, it will theorize on the pangolin's place in the early twentieth-century history of the southern Rajputana States, particularly the princely states of Dungarpur during the reign of Maharawal Lakshman Singh (r. 1918–1989), under whose rule the Indian pangolin appears to have first received official protection in 1935, and Banswara during the reign of Maharawal Prithvi Singh (r. 1914–1944), where the pangolin made an appearance in state correspondence in 1928.[10]

II. Getting to Know the Pangolin

Just what *is* a pangolin? By tracing its journey through the annals of natural history, this paper aims to give a sense of the pangolin as a distinct species, embedded in dynamic relationships with its surrounding environments and neighboring species. In addition to the pangolin-as-species, the discussion will focus on those rare animals that have left behind some evidence in the historical record, however slight, of their individual lives. Along the way, we will find the pangolin to be an unlikely muse of popular legends and scientific speculation; of folk remedies and curry recipes; of descriptive notes and taxonomic debates; of line

drawings and charismatic watercolors; and of lucrative markets and conservation attempts.

In brief, the pangolin is a medium-sized mammal with a pink nose, barely discernible ears, and glossy black eyes, set in a small, conical head. Its strong, stout body is nearly hairless. Instead, pangolins are covered in scales, save for a proverbially soft underbelly and around the sensitive snout, eyes, and ears. Its forelegs feature four or five "robust" yet "blunted" claws, depending on the species, that are used for digging burrows, tearing into rotten stumps, and excavating their prey.[11] At the rear, the pangolin sports a muscular, prehensile tail that, in females, doubles as a sort of open palanquin for one (or rarely two) offspring. Largely nocturnal, pangolins subsist on a diet of ants, termites, and other insects. In captivity, they have survived on "milk, custard, sago and tapioca puddings, and raw eggs".[12]

Scientists formerly classified the eight extant pangolin species of Africa and Asia in the order Edentata alongside American sloths, armadillos, and anteaters.[13] These New World species now comprise an entirely different order, reflecting their distinct phylogeny and correcting for earlier misclassification on the basis of superficial similarities with pangolins—such as "toothlessness", defensive mechanisms, and preferred diet—that likely arose from convergent evolution within geographically distant, yet similar, ecological niches. Pangolins are now placed entirely on their own in order Pholidota, family Manidae, and genus Manis.

Just one pangolin species is widely distributed in the South Asian subcontinent today: *Manis crassicaudata*, the thick-tailed or Indian pangolin. Factoring in the tail, adults are between 104 and 120 cm long and weigh around 13 kg.[14] The Indian pangolin lives in "various types of tropical forests, open land, [and] grasslands".[15] It is equally well "adapted to desert regions".[16] Two other pangolin species are found on the margins of the subcontinent: *Manis pentadactyla*, the five-toed or Chinese pangolin, within a range running through the Himalayan foothills from Uttarakhand through Nepal and Assam, and then south into

portions of West Bengal and Bangladesh; and *Manis javanica*, the Sunda or Javan pangolin, presently limited to mainland and maritime Southeast Asia, but perhaps once extending into adjacent portions of the subcontinent.[17] Chinese and Javan pangolins are around half the size of the Indian species.

Glimpsed out of the corner of an eye, the Indian pangolin—like its relatives—is easily mistaken for a monitor lizard or, less easily, for a snake.[18] The first time Jawaharlal Nehru saw one he thought it looked like a cross "between a lizard and a crocodile".[19] To the uninitiated and initiated alike, this "prehistoric looking" animal can even take on the mien of "a baby dinosaur", specifically a stegosaurus.[20] Some have described it as a sort of animated artichoke or walking pinecone with a tail, while the striations on its scales have reminded at least one author of cockle shells.[21] The experienced wildlife photographer and forester F.W. Champion, in a flight of fancy, happily imagined it as a cross between "a knight of the mediæval ages, in armour-plating" and a fish covered in scales.[22] Others have called on lobster tails or ornamental roofing tiles in their descriptive attempts.[23] Not long after the Second World War, one inspired author even dubbed the Indian pangolin as no less than "Nature's living Tank".[24]

Judging by the names applied to the animal in South Asian languages, it is clear that the tendency to define the Indian pangolin in terms of other things, both animate and inanimate, is well-established and by no means a practice limited to foreigners. *Ban-rohu* in the Deccan and *ban roi* in Bengali, both meaning "jungle carp", parallel the Chinese names *linli* and *lianli*, as well as *shanyu* or "mountain fish".[25] A Marathi term, *khavaḷyā māñjar*, names the pangolin by calling on its scales.[26] Another Hindi term, *sūraj-mukhī*, makes reference to the sun and may indicate popular confusion (or a metaphorical association) between the pangolin and the cold-blooded monitor lizard.[27] Common Bengali and Hindi terms making reference to the toughness of the animal's scales are derived from the Sanskrit *vajra-kiṭa*, meaning "adamant reptile" or, as Sir William Jones translated in 1788 for the Asiatic Society of Bengal, "stone-vermin".[28]

In ancient texts, the Sanskrit *vajra* is preeminently "the well-made, golden, thousand-edged [thunder] bolt [weapon], [that] Indra took [from its artificer, Tvaṣṭar] ... to perform manly deeds".[29] It only takes a little imagination to get from the pangolin—with its dusty to tawny hue, innumerable hard, sharp-edged scales, and spherical rolled shape—to the celebrated *vajra*. When added as a prefix to *-kiṭa* to render the compound *vajra-kiṭa*, the possible associations between the attributes and capabilities of Indra's iconic weapon and the pangolin expand. As a *vajra-*, the pangolin was counted among those "various objects or entities which exert a favourable influence upon vegetation or which are instrumental in producing what is good and useful for man in a more general sense, [and] ... which are regarded as active for the sake of the annihilation of evil".[30] The use of *vajra-* in the pangolin's Sanskrit name, then, may suggest that Sanskrit speakers viewed the animal in a generally positive light, and possibly as driving away bad and facilitating good. If the field in which these effects were perceived was the vegetative, then the additional ancient associations of *vajra-* with fertility may also apply.[31]

In India the pangolin also bears names related to its primary prey—ants and other small insects—either suggesting knowledge of its diet, or simply operating as a visual metaphor between the pangolin's scaled body and the segmented exoskeletons of arthropods. The Hindi *bajr-kīṭ* can refer to the animal itself or to "a kind of penetrating insect which bores holes in wood and stone".[32] Likewise, the Sanskrit-origin Hindi *ghun* denotes "a kind of insect (destructive to wood, grain, and flour); wood-louse; weevil", along with the pangolin itself.[33] As for the common Malay term, from which the English "pangolin" is derived, it simply means "that which rolls up".[34]

Due to its secretive habits and singularly difficult to classify appearance—partly a product of the eight extant species being the sole representatives of their taxonomic genus and family—the pangolin tends to inspire curiosity in people who come across it for the first time.[35] Pangolins are relatively slow moving and

not difficult to catch hold of, so long as they are reached before they descend below ground. They can be dug out of their burrows, but at least one authority speculated (on the basis of personal experience) that any pangolin so pursued simply tunnels away, making good their escape at a faster rate than their burrow can be excavated.[36] Pangolin burrows certainly present a challenge: they extend as far as eight feet long and can descend as deep as twenty feet in loose soil.[37] In addition, there is no guarantee that a burrow is occupied, even if fresh tracks show activity around the entrance and a daylight hour suggests that any self-respecting pangolin is fast asleep. Field research has documented the selection process that one Chinese pangolin applied when faced with three potential burrows—investigating the entrance of one, entering and exiting another, and finally settling into a third—and has tracked another individual that moved between three different burrows over the course of two and a half weeks in a landscape that was "Swiss-cheese with old pangolin holes".[38] Despite S.H. Prater's report that Indian pangolins "live in burrows made by themselves", the loyalty of *Manis crassicaudata* to burrows of their own construction, and even to one specific "home", seems suspect given their similarities with the "nomadic" *Manis pentadactyla*, which scientists believe must move "from burrow to burrow as it uses up [local] termite resources".[39] Indeed, in Pakistan "the Indian pangolin usually abandons its living burrow after [a] few months and digs [a] new one close to the availability of prey species", sometimes returning later to its former burrow, presumably after the recovery of nearby prey stocks.[40]

Burrows provide a safe retreat, but pangolins have at least one additional means of defending themselves.[41] When facing a threat with no means of escape, they assume a characteristic defensive posture: ducking their heads, they tuck their noses into their bellies, curl their limbs tightly against their bodies, and fold their armored tails over the whole package, ending up around the size and shape of a basketball.[42] In this position, a pangolin's vulnerable underbelly, eyes, ears, and nose remain safely in the middle, leaving only a remarkably tough coat of keratin scales

to face the world. The sharp edges on these scales help discourage all but the most determined aggressors, such as people and tigers. Gnawed on by a hungry tiger or poked at with a stick by an inquisitive (or hungry) human, the pangolin remains adamant and, for the most part, impenetrable.[43] Glancing off the angled surface of the animal's scales, bullets and axe blows—regrettable tests of strength applied by more than one—have failed to wound a curled pangolin.[44] The brute strength of one or two men is insufficient to pry them open.[45] One Javan pangolin that climbed a tree in Burma and wrapped itself around a branch could only be removed from its defensive post by felling the tree.[46] Left alone for a sufficient stretch of time, however, a rolled pangolin will gradually loosen and, "after a little reconnoitring [*sic*] thrust forth, first one leg, and then the other, and so starting to its feet", wholly uncurl to make a thorough investigation of its surroundings.[47]

III. South Asians, British Imperialists, and the Pangolin

Judging by published accounts, a surprising number of pangolins have been privately held, generally for brief spans of time, as captive pets and specimens for observation. One of the most engaging accounts is that of J. Emerson Tennent, Colonial Secretary in Ceylon, who had two pangolins at his post in Colombo in the late 1840s. One found near Kandy proved to be "a gentle and affectionate creature" that would habitually demand "attention to its wants" by climbing up Tennent's knee.[48] Perhaps a juvenile still developmentally open to strange new acquaintances, this pangolin proved far friendlier than Tennent's second, evidently adult specimen, which came to him from a jungle near Chilaw.[49]

Two other pangolins were brought to Englishmen in Ranchi, Jharkhand, in 1876, one of which lived for several weeks while the other died "almost immediately".[50] As for the individual extracted from the tree in Burma, it only remained with its English captor for a day in 1914 before being released.[51] In 1949, another pangolin was found "in the Nilgiris ... and brought to the Anamallais ... where it survived for three days". Before its death,

"it was extremely active and climbed all over the chairs" in its host's sitting room—an investigative response noted in other recently captured pangolins, as well.[52] Another caught at Tukvar, in Darjeeling, was subsequently photographed—still very much alive—for the *Journal of the Bengal Natural History Society*'s April 1949 issue.[53] The frequency with which pangolins died after only a few days in captivity, and with which female specimens proved to be pregnant, raises the possibility that ill or gravid animals were easier to catch. Yet, an overwhelming majority of pangolins born in captivity have also failed to thrive, likely confirming that these creatures are ill-suited to captivity as well.[54]

Government museums and zoological gardens in South Asia were common destinations for captured Indian pangolins in the nineteenth and early twentieth centuries. The fate of Indian and Chinese pangolins housed at the Calcutta Zoological Garden prior to 1892 is uncertain, but it is known that the institution "had not yet succeeded in keeping" Javan specimens alive by that date.[55] The Calcutta zoo, however, did have two Indian pangolins by 1914.[56] Farther south, the Madras Government Museum received an Indian pangolin—possibly its first—from J.H. Mitchell of Coimbatore in 1885.[57] Another was sent to the museum from Mettur in 1941, but survived only two weeks.[58] In Sri Lanka, the Colombo Museum received a live juvenile from a young Anglo-Indian woman, Miss Joanna Chelamma Rockwood, in 1905.[59] An adult came the following year, this time donated by a Mr. H. Stork.[60] The Director of the Colombo Museum, Dr. Joseph Pearson, later acquired a female and its baby in the 1920s.[61] Around the same time, a young captive male thrived on milk, puddings, and the leaf nests of red ants for at least eighteen months under careful supervision, also in Colombo.[62] Institutions beyond South Asia have welcomed Indian pangolins into their collections, too. For example, the Oklahoma Zoo received two animals—procured in Pakistan—in 1965.[63]

Where did these animals come from? Even when a donor's name appears in the records—whether it be the relatively anonymous Miss Rockwood in 1905 or the celebrated Maharaja

Bir Mitrodaya Singh of Sonepur in 1914—it is not always clear how or precisely where individual pangolins were sourced.[64] Because they were "extremely difficult to procure", Englishmen in colonial South Asia tended to hire the job out.[65] Modern researchers have also relied on local residents, including farmers, herders, hunters, and poachers familiar with the area under study for their specimens.[66]

Among the earliest records of Indian pangolins captured and brought live to an Englishman were the animals delivered by Kols to R.S. Tickell of the Bengal Army in 1838 and 1842. Tickell initially kept the first animal in his home, where it used its "almost supernatural strength" to upset a bookcase as it made "several tours" around the room, finally settling down to dig its way out through a wall. Tickell transferred it to an "empty beer-chest" before it could escape, taking the precaution of weighing the lid down with "large stones". Over the week that he managed to keep this pangolin, it "got pretty tame, seldom rolling itself up when touched or patted".[67] Tickell's second specimen came from Chaibasa, now in Jharkhand. It had one hind foot missing and was suffering from intestinal worms, a paralyzed tongue, and infection; it died soon after he acquired it.[68]

In 1871, a Gond captured a live, pregnant female in the forested hills near Chindwarra in the Central Provinces and brought her to a local gentleman for inspection.[69] Gonds also supplied Robert Sterndale of the Indian Civil Service with more than one specimen in the mid-nineteenth century.[70] Accordingly, in a fictionalized account based on his own experiences, Sterndale had "a wild-looking Gond" deliver a pangolin to his protagonist, Fordham, "in a basket with a net tied over it".[71]

Evidence suggesting some continuing familiarity with the pangolin among the "forest tribe and cultivator" Gonds in the 1920s appears in C.G. Chenevix-Trench's *Grammar of Gondi* in the form of an example sentence translated as "The scaly pangolin, whatever it eats I don't know", as the taxonomically inaccurate (and eccentrically spelled) "armaḍḍillo" in the author's

list of "chief animals" of the hunt, and in a brief narrative offered up as a "useful conversational opening" about men waiting for a pangolin, which they have pulled from a burrow, to unroll so they may kill it with an axe.[72] These examples reflect Chenevix-Trench's fascination with the pangolin, but not necessarily that of the Gonds. Indeed, it was not Gonds but "members of a criminal tribe (usually the best field naturalists)" who presented him with a 14 inch long juvenile in 1915. Quite literally he nursed the animal to health on cow's milk using a "small rubber nipple and a baby's bottle". Apparently taking behavioral cues from its new companions, this young pangolin was active during the day (yawning upon waking in the morning and fussing to be fed), uninterested in consuming white ants, and fast asleep at night, generally curled up in a cloth for warmth. The degree to which it imprinted upon humans is suggested by Chenevix-Trench's comment that it "followed [his] chaprassis like a sheep at a shambling trot".[73]

Stationed in the United Provinces as a forester, F.W. Champion obtained both his live specimens by "offering rewards to ... members of jungle tribes".[74] As in the experience of Tickell and Chenevix-Trench, Champion's pangolins quickly became accustomed to being handled and, rather than rolling themselves up when he tried to lift them, took to sweeping his hands aside with their powerful tails, cutting his fingers in the process with their scales.[75] One made itself at home in his drawing-room, climbing the furniture and walking between his legs after the fashion of a cat, even expressing its displeasure—perhaps at the lack of a convenient burrow—with an "occasional hiss". Despite becoming relatively tame, Champion's pangolins clearly resented their confinement. He briefly enclosed one in his bathroom, returning an hour later to find it had "dug up the floor in several places" and nearly breached the stone wall. Another that he placed in a wooden box—with the lid nailed shut and his own weight of fourteen stone seated on top—got out in two minutes flat.[76]

The "tribal" peoples that Englishmen recorded, almost exclusively, as catching pangolins were not necessarily the only

peoples that would have had the knowledge necessary to obtain these animals. Some village farmers likely could have done the job, too. Their absence from the records perhaps indicates they were not approached in the first place, because the English stereotyped forest-dwelling groups as India's most "natural" hunters, poachers, and trackers. But pangolins are not limited to the deep jungle; the species "is thought to adapt well to modified habitats", and it can and does live in "close proximity to villages".[77] The species' presence and thus its potential for capture by villagers and farmers near their homes is well-documented. In 1885, the *Ceylon Observer* reported that pangolins, in their quest for red ants, were "very injurious" to the bark and branches of cacao trees growing on plantations at Gannoruwa.[78] A pangolin that must have been especially tolerant of people burrowed its way into the post office at Purulia in 1907.[79] More recently, a pangolin survey carried out in Nepal's Royal Nagarjung Forest in 1993 found a landscape similar to the "Swiss-cheese" appearance of Chinese burrows, with pangolin holes "located at intervals [of] 1–5m", fifty "old" burrows along one 4 km stretch of road, and sixteen "new" and "old" burrows near the village of Ratamata alone.[80] The survey's informants also reported that local pangolins frequented maize, bean, and yam fields in July and August, presumably feasting on insects attracted by the ripening produce.[81] Meanwhile, in the countryside around Etawah, pangolins are known for entering villages and digging their way into "houses with mud walls" in search of ants and other food.[82] Even the outskirts of New Delhi still hosted pangolins in the late 1980s.[83]

Nevertheless, the pangolin's habitat preferences may have facilitated association with the very forest communities the British colonialists tended to approach in their effort to procure pangolins. This association was not necessarily the direct result of intimate knowledge on the part of Gonds and Kols, gained from a lifetime spent in the forest. Rather, it may have been a by-product of these peoples' use of fire in shifting cultivation. For example, some Gonds in Central India practiced *penda* cultivation on "steep slopes ... cleared of trees and undergrowth"

followed by a period of drying and then burning, and *erka* "on fairly level ground" with immediate burning.[84] Assuming the colonial-era Indian pangolin followed the habits of the Chinese species today, the animals would have been deeply "attracted to recently burned areas", where they were sure to find their favorite insect foods "nest[ing] around dead stumps".[85]

IV. Putting the Pangolin to Use

Most captured pangolins were not destined to be pets or zoological specimens but rather to serve as food or medicine. The palatability of pangolin flesh is widely attested "throughout Asia".[86] The "forest dweller" that Jawaharlal Nehru saw at Dehra Dun was intending to use his pangolin in "a kind of curry". This man's method of transporting his live specimen surely suggested some familiarity with the species and its habits: Nehru thought that the animal had been "twisted round" to form "a kind of knot" through which "its owner had passed a pole".[87] While this may have been the case, it is perhaps more likely that the man had taken advantage of the pangolin's instinctive reaction to danger by sliding a pole under the animal's body and lifting it against its belly, inducing it to curl up into an easily movable bundle on a stick. With constant noise and motion signaling ongoing danger, the pangolin, conveniently for its captor, would likely have remained in this posture all the way home to the cooking pot.

As Francis Zimmermann has said of the meats of other wild animals during the classical and medieval periods, the pangolin's flesh, too, had "therapeutic savors and qualities".[88] In the twentieth century, F.W. Champion claimed that "some jungle tribes" deemed it "an efficient aphrodisiac", but his failure to specify *which* communities tends to demote his testimony to the level of rumor, despite the frequency with which later authors seem to have independently reported (or obligingly repeated) the same information.[89] A story supposedly "prevalent among the aboriginal tribes" of Bengal and published in the late 1940s suggested that even sambar deer knew the medicinal properties of pangolin scales and dosed themselves accordingly.[90] The same source

claimed that rheumatism was treated in Bastar State not with the animal's flesh, but with "finger rings and buckles" made from its scales.[91] Another report of people ascribing medicinal properties to pangolin meat is that of Kesri Singh, who deemed his Bawariya informant Nathu, who assisted on royal hunting expeditions and lived near the Sawai Madhopur game reserve in Jaipur State, "a great expert on the properties of various kinds of wild flesh". Unfortunately, Nathu's description of "the flesh of the pangolin [as] a splendid rejuvenator" sheds meagre light on its precise application.[92]

Whether or not these particular reports are wholly reliable, there is no doubt that pangolins are prized by many for their meat and that the animal "suffers ... because of its scales", which are in demand in China and elsewhere for their purported medicinal properties.[93] Kesri Singh feared as early as 1959 that the Indian pangolin was "rapidly approaching [the] vanishing point", along with Indian rhinoceros, Himalayan musk deer, great Indian bustard, and several other species.[94] Even in 1916, the employees of an Indian Forest Service officer in Burma claimed they "could get Rs 15 ... from any Chinaman" for a live specimen.[95]

Yet, in contrast to the early twentieth and preceding centuries, the pangolin today is protected under national and international laws throughout Asia. They cannot be hunted in Nepal or Sri Lanka. India includes them in Schedule I of the Wildlife Protection Act of 1972, and disallows trade in their parts and products under Section 5 of the Foreign Trade (Development and Regulation) Act of 1992. Malaysia, Singapore, Bangladesh, and Pakistan protect pangolins as well, the latter under the Islamabad Wildlife (Protection, Preservation, Conservation, and Management) Ordinance of 1979 and the North-West Frontier Province Wildlife (Protection, Preservation, Conservation, and Management) Act of 1975. Taiwan, Thailand, Myanmar, Laos, Vietnam, and the Philippines provide various levels of protection. A special license is required to hunt or catch pangolins in China, where they are a Class II protected species deemed important in traditional medicine.[96] On the international front, all Asian species

were included in the Convention on International Trade in Endangered Species (CITES) in 1975. They currently appear under Appendix II, a list of "species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled".[97]

With the re-establishment in 2012 of the Pangolin Specialist Group of the International Union for the Conservation of Nature's (IUCN) Species Survival Commission and the group's "first ever [global] pangolin conservation conference" in Singapore in June 2013, the conservation status of Asian pangolin species is being reassessed. Conference participants came together in a special IUCN Red List workshop to recommend that Endangered Chinese and Sunda pangolins be reclassified as Critically Endangered, that Near Threatened Indian, Philippine, and African White-bellied and Giant ground pangolins be listed as Endangered, and that the remaining two African species, the Black-bellied and Temminck's ground pangolins, be upgraded from Least Concern to Endangered.[98]

The need for "scaling up pangolin conservation" in South Asia looms ever more urgently in light of "decreasing populations" and documented increases in the pangolin trade in the region. As has historically been the case, most pangolins killed in South Asia through the mid-1990s were still consumed locally for their meat and scales, but by the end of the decade the price of whole animals that did reach the market was between $50 and $70 USD in India.[99] By way of comparison, a whole, live pangolin could be had around the same time in China for $125 USD, pangolin meat for $10 or $12 per pound, and scales—ground into an antiseptic powder with internal and external applications—for considerably less.[100] Writing just over a decade later of recent events, one researcher noted in 2012 that "more than two hundred kilos of Pangolin [sic] scales have been seized from Dermorae border near Myanmar, Guwahati and Kolkata airport" in India, after moving through myriad smuggling networks involving railways, postal and courier services, and airplanes in Tamil Nadu, Andhra Pradesh, Odisha, Bengal, and the North Eastern states.[101] Other

researchers that same year found that villagers in the Chambal ravines of Etawah, at least, were still "kill[ing] the animal for food", and not for the market.[102]

The pangolin figures as an item of trade on the black market in Pakistan. Between July 2011 and May 2012, a single research team confirmed the illegal capture or killing of 115 Indian pangolins on the Potohar plateau in Pakistan's Punjab province, some of which may have been intended for foreign markets.[103] Most carcasses were stripped of their scales, perhaps reflecting a lagging market for pangolin meat, or simply the comparative portability of scales versus flesh. Some "ethno-medical practitioners (*hakims*)" process pangolin scales into a "traditional" aphrodisiac, and it has been suggested that non-medical uses for the scales include the "manufacturing of bullet-proof jackets".[104] Similar uses of the pangolin are posited for Bangladesh and Sri Lanka. The going price for live animals at the time ranged between $108 and $163 USD.[105] Brought to market in China today, just one kilogram of scales would sell for upwards of $700 USD.[106]

If pieces of a dead pangolin were (and unfortunately remain) so potent, what might a whole, live pangolin been capable of? Wherever pangolin species are found, their power appears to rest in their talent for muddling boundaries between ethnotaxonomic categories and between discrete environments, and for deflecting inquisitive gazes and hostile advances with their hard scales and intractability.[107] In contemporary China, the Chinese pangolin is deemed powerful both because it "defies categorization" and because it quite literally embodies "ambiguity and mystery".[108] It is scaled like a fish but walks on land, lives underground, and responds to all inquiries—polite or otherwise—by shape-shifting into a tightly coiled, featureless ball.[109] Pangolin species resident in Africa today are likewise thought "so odd" that the improbable reality of their very existence warrants that "*anything* is possible!"[110] In some African locations, the pangolin is a "central emblem" of healers who offer "hope" to the barren.[111] Healers in Zaire, meanwhile, "wear beaded headbands with triangular

designs called 'pangolins', which cover and protect the secrets of their craft", just like the pangolin allegedly wears its own scales to "cover the secrets buried in its body".[112] In China, too, the pangolin "like the village shaman ... protects itself with secret powers".[113]

Such powers make it imperative that any one who seeks to catch or kill these animals acts with due caution, lest they risk "illness, injury, loss of money, or any number of other misfortunes". Before opening their steel leghold traps, poachers in contemporary China use formulaic chants to construct "a verbal aegis against any evil the little anteater may conceal".[114] According to Coggins, all such chants seek to establish "an affinal relationship" between the pangolin and the human, to raise the human above the pangolin in a hierarchy of dominance, and to justify the killing or capture by "explaining [to the pangolin] how the human is going to benefit".[115] Temptingly meaningful as all of these notions of the pangolin may be, they are not specific to India, much less to any of India's (presumably) innumerable pangolin cultures.[116] In any event, F.W. Champion does not provide enough detail to check these Chinese chants against the actions of the "exceedingly intelligent aboriginal of Oudh", who caught a pangolin in north Kheri and brought it to Champion for observation in Nainital. Entrusted with the animal's subsequent release, this man reportedly "went down on his knees before [the pangolin] and with folded hands begged that he might be forgiven for having caused the poor beast so much trouble!" While Champion saw this as a somewhat unusual instance of "consideration for animals ... among the natives", it may well have been an attempt, akin but not identical to those employed by the Chinese, to manage the dangers these creatures posed.[117] The dark potential of pangolins for some South Asians is, perhaps, reflected as well in Tennent's comment that the people of Sri Lanka "regard[ed] it with aversion" and called it "the 'Negombo devil'".[118] Another account from colonial Burma credited pangolins with the ability to speak. If anyone made the mistake of answering them, thinking that an acquaintance was calling their name, death was the inevitable result.[119] The alleged fact that the

Burmese people in question used the fear of name-calling pangolins to avoid answering their British master's summons in the forest is, perhaps, an important context here.

V. Protecting Pangolins in Southern Rajputana

The Aravalli range defined the landscape of the former Southern Rajputana States with its thinly soiled, rocky, scrub-covered peaks. In the early twentieth century, the semi-arid plains below these hills were covered with tropical thorn forest. Deeper soils accumulated in the colluvial zones between the hills, making these the most promising sites for dry deciduous forests and agriculture alike. Man-made lakes, Persian wheels, step-wells, and tanks helped ameliorate seasonal water shortages in village homes and fields.[120] With the availability of water acting as a major limiting factor, this landscape matrix provided habitats for wildlife including tiger, leopard, sambar, nilgai, wild boar, and many other species, including the Indian pangolin.[121] As of 2010, the Rajasthan State Forest Department could still report 1 leopard, 1 sloth bear, 3 wolf, 12 chausingha, and 49 chinkara in the district of Dungarpur alone. Smaller predators, scavengers, and generalists were more numerous, with 68 civet, 119 jungle cat, 344 fox, 722 mongoose, 775 jackal, 68 hyena, 58 wild boar, and 166 porcupine. As for the widely tolerated and adaptable nilgai or "blue bull", there were 559.[122]

Most ungulate prey species were more numerous in Dungarpur in 1928. The state *diwan* recorded minimum populations of 800 nilgai, 200 sambar, 150 chausingha, 50 chital, and 35 blackbuck, along with too many chinkara and wild boar to count. Among the larger predators and scavengers there were 6 sloth bear, 1 transient tiger, and "plentiful" leopard and hyena. In the context of the late 1920s and with earlier decades as reference points, these numbers appeared low and so became a cause for concern.[123] While state officials did not attempt to count Dungarpur's pangolins at this time, the animal did appear on a list "of rare animals which are specially protected", which the diwan forwarded to D.M. Field, British Agent to the Southern Rajputana

States in 1935.[124] Why did the pangolin step into the spotlight—just barely—in this particular place and at this precise moment? The evidence at hand may not allow for a definitive answer, but the following theories offer the best fit given what *is* known.

Theory #1. The Maharawal found inspiration in his library

Awareness of the pangolin, sometimes quite independently of ever having seen one, seems to have been rising in the 1920s in British India and the princely states alike. A classic example is the account of E.P. Stebbing, who "had seen pictures of this curious beast in books, but never a live one" before being introduced, by an Indian huntsman in the Central Provinces, to "a dirty greyish lump" that slowly resolved itself into a pangolin before going on its way.[125] A sea-change, however, came in the 1930s.

Quickly embraced by English and Indian readers interested in sport and natural history, F.W. Champion's *The Jungle in Sunlight and Shadow* was published by Chatto & Windus of London in September 1933. A second impression came out in January 1934 and, that same year, Charles Scribner's Sons of New York released an American edition. The book was known and available in the Southern Rajputana States from an early date: the Maharana Mewar Special Library, which contains the books of the former princes of Udaipur, has the Chatto & Windus first edition. It was read in British Malaya by 1935 at the latest and, by 1941, even Nehru had seen Champion's book.[126] It is tempting to suppose that Champion's intimate and engaging portrait of the pangolin as "the most remarkable animal ... in the Indian jungles to-day" inspired the Maharawal of Dungarpur, or perhaps his professionally-trained forester brother, to pick the animal out for special consideration when composing their list in January 1935. The appearance on this list of two other nocturnal and relatively obscure animals that also received unusually positive attention in Champion's book—the "most interesting" and "courageous" ratel and the "most hideous" yet "unjustly condemned" striped hyena—supports this possibility.[127] The state's ratels were judged

"rare" and became "exclusively preserved". The hyena population was deemed healthy enough to require no special protection.[128] In contrast, elsewhere in Rajputana the 1924 and 1932 *Game Laws of the Bharatpur State* classed hyena and ratel as vermin that could "be destroyed by any one at all times". The 1921 *Marwar Shooting Rules* made no mention of hyena, ratel, or pangolin, and Jhalawar State's 1931 *Ākheṭ Niyamāvalī* failed to list the pangolin but expressly forbade the unlicensed hunting of small animals including all kinds of fowl, duck, geese, snipe, florican, crane, bustard, and hare.[129]

If inspiration from Champion was a factor in Dungarpur State in 1935 (as it could not have been for the earlier appearance of the pangolin in official documents in 1928), it had its limits and did not extend to thoughtless imitation. Champion's book was not kind to porcupines, which he characterized as "wretched creatures [that] seem to know the exact date on which one intends to dig a crop of potatoes, or cut one's Indian corn, and cheerfully remove the whole crop the night before!"[130] So "gluttonous" as to consider even "tent-pegs" a potential delicacy, the porcupine was a nuisance, and a "ubiquitous" one at that.[131] Nevertheless, they were protected in reserved areas in Dungarpur.[132] Besides their status as an agricultural pest, this is all the more remarkable considering that many sportsmen and natural historians blamed porcupine quill wounds for irritating or incapacitating tigers to the extent that they either died or became man-eaters.[133]

By the early 1930s, Lakshman Singh of Dungarpur and his brothers would also have had access, in theory, to several other engaging accounts of the pangolin in well-known hunting memoirs, accounts of Indian mammalia, and journals of natural history. Among those most likely to have been familiar and influential were E.P. Stebbing's account of his first sighting of a pangolin in the *Diary of a Sportsman Naturalist in India* (1920) and, judging by the contents of the Maharana Mewar Special Library, Alfred H. Miles's brief (and somewhat sensationalist) account in his *Natural History in Anecdote* (1895), the detailed and attractively illustrated pages in the third volume of Richard

Lydekker's *Royal Natural History* (1894–1895), and the various articles and brief notices that had appeared in the *Journal of the Bombay Natural History Society* up to that time.[134]

Theory #2. Big game was scarce so other wildlife gained prominence

Several years before the publication of Champion's *The Jungle in Sunlight and Shadow*, the "nocturnal" and "very rarely" seen pangolin and ratel also received official, if passing, notice in Banswara, a Southern Rajputana State bordering Dungarpur to the west and Mewar and Partabgarh to the north. Responding to an inquiry received in 1928 from the Society for the Preservation of the Fauna of the Empire regarding the variety and number of game in the princely states—an inquiry that did *not* mention the pangolin and *specifically* requested information about game, a category generally omitting the pangolin and ratel—Zalim Singh Kothari, Diwan of Banswara reported that unknown numbers of "anteaters" and "Indian badger" lived in the Maharawal's realm, along with abundant sambar, leopard, bear, wild boar, hog deer, and chinkara, a few chital, and the occasional tiger passing through.[135]

Like Banswara, Dungarpur had few, if any, tigers living within its borders by the late 1920s.[136] In fact, tigers were generally admitted to be locally extinct, with the exception of itinerant cats visiting from neighboring state forests. Could a shortage of highly prized carnivorous game in both of these states—accompanied by attempts to improve on the situation and a growing attendant awareness of conservationism and its methodologies—help explain the pangolin's sudden appearance in the archives? It is possible. After all, as I have argued elsewhere, blackbuck and Imperial sandgrouse did a fine job of standing in for tigers *inside* Bikaner State (without by any means obliterating the desire to hunt tigers *elsewhere*) during the reign of Maharaja Ganga Singh (r. 1887–1943).[137] Perhaps noticing and protecting (rather than hunting) pangolins, ratels, and porcupines were the analogous, regional solutions in the Southern Rajputana States.[138]

Theory #3. Tribal peoples were the issue, not pangolins

The pangolin, along with the porcupine and perhaps the ratel, constituted a desirable if not always easy to obtain source of meat for people dwelling within reach of these animals' preferred habitats.[139] If the Bhils of Southern Rajputana consumed pangolin meat with any regularity, the likelihood that they saw the animal as particularly potent in any spiritual sense, or important in any cosmological sense, is small."The practical issue" faced by all peoples, according to Mary Douglas, "is to know what is safe to eat".[140] If pangolins were safe for the Bhils of Dungarpur and therefore "good to eat", chances are they were not particularly "good to think" and we should not expect to find special taboos, rules, or rituals surrounding their killing or consumption.[141]

Assuming the pangolin and the ratel's protection throughout Dungarpur State, and the porcupine's protection within reserved forests, was more than an arbitrary result of living in reserved forests, the rationale behind their privileged standing could, instead, relate to this unproblematic edibility among all (or at least some) Bhils.[142] If hill communities survived, in part, by hunting these animals for food, then a ban on killing could have been intended as an attack on the lifestyles of Bhils and other hill communities in the state.[143] In fact, Maharawal Lakshman Singh, like his father before him and with British support, actively encouraged Bhil communities to change their habits from shifting to settled agriculture while, at the same time, stereotyping (and admiring) these peoples as accomplished (if not always sporting) hunters, superior trackers, and folk naturalists.[144]

Theory #4. The trees were responsible

On Pakistan's Potohar plateau, the Indian pangolin today demonstrates "special association with or prefers [grounds under the shelter of] *Capparis decidua* and *Salvadora oleoides* [tree] species ... for making its permanent burrows". As for favored shrubs, *Acacia*, *Zizyphus*, and *Prosopis* subspecies—as producers of "nectars and fruit" consumed by ants—are likely candidates.[145]

Indeed, the location of pangolin feeding burrows positively correlates with *Acacia modesta and Zizyphus nummularia*, as well as with *Zizyphus mauritiana*, *Acacia nilotica*, *Prosopis cineraria*, and the invasive *Lantana camara*.[146]

A 1907 report on the forests of Dungarpur State suggests that some, although not all, of these preferred species—the two Pakistani permanent burrow cover trees are conspicuously absent—were common in the area. Out of the state's five-hundred forested square miles, the seventy square miles or so that featured low, poorly drained grounds might not have pleased the Indian pangolin, covered almost entirely as they were with a non-favored tree, the flame of the forest (*Butea frondosa*). Where drainage was somewhat better and alongside streams, these "pure" stands thinned out and mixed with teak and its allies, including tendu (*Diospyros melanoxylon*), khair (*Acacia catechu*), pihu (*Dalbergia sissoo*), neem (*Azadirachta indica*), ghorar (*Albizzia procera*), and arjun (*Terminalia arjuna*). With the exception of khair, none of these are known associates of the pangolin.[147]

Surely the "light and comparatively poor soil" of the higher grounds, dominated by khair, khejra (*Prosopis cineraria*), and *Zizyphus mauritiana*, *nummularia*, and *zylopara*, were the favored landscapes, along with "old abandoned village sites" with their shrub coverage of khejra, *Zizyphus* ssp., and babul (*Acacia nilotica*). Notably, some of the best habitats may have been near Dungarpur town itself, where "pure or almost pure Khejra [was] found".[148] A similar array and distribution of known pangolin-friendly species existed in 1907 in Banswara State, and to a somewhat lesser degree in Partabgarh State.[149]

Perhaps burgeoning state interests in and attention to these trees drew attention to pangolins as well. Were the ruling princes of Dungarpur and Banswara or their agents spending more time in landscapes featuring well-drained, light soil dominated by acacias, khejra, and *Zizyphus* ssp., thereby increasing their chances of noticing these animals? Was the composition of the forests themselves changing to favor these species, thereby extending the pangolin's range and their potential visibility?

Theory #5. The pangolins did it themselves

Some have called attention to the ways in which pangolins may be taken to resemble humans in general (they are viviparous and uniparous; they suck milk from bottles and fuss in the mornings), or to how specific peoples have mapped their own social mores and hierarchies onto pangolins (*Manis tricuspis* is "quasi-human", feels shame, and a "chief" for the Lele; *Manis gigantea* is "representative of the human world in the forest" for the Hamba, and a "respected, protected" elder brother among the Lega).[150] In contrast to what this author and others have argued for the tiger, leopard, and wild boar, however, there is no evidence to suggest that Rajput princes in Dungarpur, Banswara, or elsewhere saw anything of themselves in pangolins.[151]

Nevertheless, the Indian pangolin is a singular creature, taxonomically isolated (alongside its Asian and African fellows) in its own order, within one family, under a single genus. They have confounded categories, drawn attention on the basis of supposed supernatural and medical powers, and otherwise piqued human curiosity. Their adaptability to short-term captivity, once acquainted with people, has provided occasional opportunities for interspecies (or perhaps unidirectional) bonding. Finally, their relative lack of offensive capabilities—aside from wielding the sharp edges of their scales and, rarely, emitting skunk-like secretions from their anal glands—has also endeared this peaceable creature to many. Was it the pangolin's own charisma, then, that earned it inclusion in the Dungarpur list of protected animals in 1935—where it was glossed as an "interesting animal" about which "very little [was] known"—and mention in the Banswara response to the Society for the Preservation of the Fauna of the Empire in 1928?[152]

Alternately, might the species have changed their behavior around this time, thereby either coming into contact with people more frequently, or simply meeting with new human demographics? Such developments most likely would have been in response, directly or indirectly, to anthropogenic changes

affecting pangolin habitats, although the impact of weather variability and other such factors should not be discounted. Perhaps fewer tigers in these Southern Rajputana states—the likely result of over-hunting and habitat degradation—translated into more pangolins, or into a population that was less cautious in the near absence of predators capable of breaching their defenses. Another possibility is that state-led attempts to expand settled cultivation brought human habitations closer to pangolin burrows. Even more likely, perhaps, was that increased working of Southern Rajputana forests for profit by the 1930s resulted in a boom in stumps and felled trees left to rot *in situ*. Both constitute ideal food for termite or white ant colonies, which in turn, are a major food source for Indian pangolins.[153]

VI. Conclusion: Wrapping Up the Pangolin

Despite being an unlikely historical subject, the pangolin has attracted interest in myriad forms and, in doing so, has helped muddle human divisions just as thoroughly as we humans have tended to accuse it of confounding taxonomic categories and natural orders.

In British India, the pangolin played a role in mediating the complex relationships between colonizer and colonized. When a Eurasian girl, Indian prince, or British officer donated a pangolin to a museum or zoological garden, they participated in a popular culture of doing natural history and, to varying degrees, enjoyed the status associated with gifting rare specimens to state institutions for the promotion of science and the "public good". When a Gond, Kol, or Bawariya brought a pangolin to an Englishman, or when an Englishman showed a pangolin to Indian villagers, they shared a moment, however transitory, of mutual fascination with this paradigm-disrupting beast, and of learning at the feet—so to speak—of the natural world. The *status quo* was no doubt quickly reasserted in the wake of all parties apprehending the animal's strangeness, but the moment remained, and remains significant.

In the princely states of Southern Rajputana, the pangolin intervened in the relationship between ruling chiefs and "tribal" subjects. Here, the pangolin may not have contributed to bridging divides. Rather, it was involved in the process, first, of "othering" hill communities (as hunters of the pangolin) and, then, in stripping these peoples of aspects of their culture and lifestyles (as consumers of pangolins). Whether or not the pangolin was able to excite moments of shared fascination in the states between Indian princes and their subjects, akin to the role they played in British India, the archives have yet to reveal.

And so, in the end, it seems that it is possible to draw the Indian pangolin into the spotlight, despite their fleeting appearances in the archives, published literature, and the arts. Doing so has added nuance to already known histories of colonial relations between Englishmen and "tribal" peoples, Rajput princes and their forest and hill communities. Moreover, it has demonstrated that even one of the most obscure of South Asia's medium-sized mammals, and not just the subcontinent's charismatic megafauna, deserves its rightful place in the annals of history.

Notes

[1] For laments on the incoherence of environmental history as a discipline, see "What's Next for Environmental History", Anniversary Forum, *Environmental History* 10, 1 (2005), 30–109, especially Linda Nash, "The Agency of Nature or the Nature of Agency?", 67–69, Harriet Ritvo, "Discipline and Indiscipline", 75–76, and Ellen Stroud, "Postcards from the Edge of a Field", 96–97; see also Douglas R. Weiner, "A Death Defying Attempt to Articulate a Coherent Definition of Environmental History", *Environmental History* 10, 3 (2005): 404–420.

[2] For a foundational text on the nature-culture binary in the American context, see William Cronon, "The Trouble with Wilderness; or, Getting Back to the Wrong Nature", in *Uncommon Ground: Rethinking the Human Place in Nature*, ed. William Cronon (New York: W.W. Norton & Co., 1995), 69–90; see also the essays by geographers collected in *Social Nature: Theory, Practice, and Politics*, eds. Noel Castree and Bruce Braun (Malden, MA: Blackwell Publishing, 2001); on science and "local" knowledge, see David Arnold, *The Tropics and the Traveling Gaze: India, Landscape, and Science, 1800–1856* (Seattle: University of Washington, 2006); see also Richard H. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860* (New York: Cambridge University Press, 1995); on conservation and development see, eds., Ghazala Shahabuddin and Mahesh Rangarajan, *Making Conservation Work: Securing Biodiversity in this New Century* (Ranikhet: Permanent Black, 2007); on science and global interventionism, see Michael L. Lewis, *Inventing Global Ecology: Tracking the Biodiversity Ideal in India, 1947–1997* (Athens, OH: Ohio University Press, 2003); for "environmental Orientalism", see Suzanna Sawyer and Arun Agrawal, "Environmental Orientalisms", *Cultural Critique* 45 (Spring, 2000): 71–108.

[3] For example, see Dipesh Chakrabarty, "The Climate of History: Four Theses", *Critical Inquiry* 35, 2 (Winter 2009): 197–222.

[4] Taking the interdisciplinarity of environmental history to heart, I am thinking of Annu Jalais, *Forest of Tigers: People, Politics and Environment in the Sundarbans* (New Delhi: Routledge, 2010); Brett L. Walker, *The Lost Wolves of Japan* (Seattle: University of Washington Press, 2005); Michael Pastoureau, *The Bear: History of a Fallen King*, trans. George Holoch (Cambridge, MA: Belknap Press, 2011).

[5] On rinderpest, see Chris Roche, "'The Fertile Brain and Inventive Power of Man': Anthropogenic Factors in the Cessation of Springbok Treks and the Disruption of the Karoo Ecosystem, 1865–1908", *Africa*

78, 2 (2008): 157–188; see also Daniel Gilfoyle, "Veterinary Research and the African Rinderpest Epizootic: The Cape Colony, 1896–1898", *Journal of Southern African Studies* 29, 1 (2003): 133–154; on mountain lions, see Andrea Gullo, Unna Lassiter, and Jennifer Wolch, "The Cougar's Tale", in *Animal Geographies: Place, Politics, and Identity in the Nature-Culture Borderlands*, eds. Jennifer Wolch and Jody Emel (London: Verso, 1998), 139–161; on livestock and American colonialism, see Virginia DeJohn Anderson, *Creatures of Empire: How Domestic Animals Transformed Early America* (New York: Oxford University Press, 2004); on Kathiawar lions, see Mahesh Rangarajan, "Animals with Rich Histories: The Case of the Lions of Gir Forest, Gujarat, India", *History and Theory* 52 (December 2013): 109–127.

[6] In the United States, for example, there is the National Museum of Animals and Society, based in Los Angeles and founded in 2010.

[7] Erica Fudge, "A Left-Handed Blow: Writing the History of Animals", in *Representing Animals*, ed. Nigel Rothfels (Bloomington, IN: Indiana University Press, 2002), 6.

[8] Aaron Skabelund, "Can the Subaltern Bark? Dogs, Japan, and the Making of the Modern Imperial World" (lecture, Vassar College, 19 February 2014); Sandra Swart, "'But Where's the Bloody Horse?': Textuality and Corporeality in the 'Animal Turn'", *Journal of Literary Studies* 23, 3 (2007): 271–292; see also Sandra Swart, *Riding High: Horses, Humans and History in South Africa* (Johannesburg: Wits University Press, 2010).

[9] On vocalizations: W.T. Blanford, *The Fauna of British India, Including Ceylon and Burma: Mammalia* (London: Taylor and Francis, 1888–1891); P.W. Ogilvie and D.D. Bridgwater, "Notes on the Breeding of an Indian Pangolin *Manis crassicaudata* at Oklahoma Zoo", *International Zoo Yearbook* 7 (1967), 117; for other rumored vocalizations in what may have been, given the location in British Burma, *M. pentadactyla* or perhaps *M. javanica*, see S.F. Hopwood, "Note on the Scaly Anteater (*Manis crassicaudata*)", *Journal of the Bombay Natural History Society* 25, 1 (1917), 149; on burrows: Blanford, *Fauna of British India*, 598; Martha E. Heath, "*Manis crassicaudata*", *American Society of Mammalogists* 513 (October 1995), 3; on diet: Heath, "*Manis crassicaudata*", 1 and 3; F.W. Champion, *The Jungle in Sunlight and Shadow* (London: Chatto & Windus, 1933), 31. For a lone scholar contending that pangolins "do not avoid humans" and "in most villages ... are common visitors", see Alexandra van der

Greer, *Animals in Stone: Indian Mammals Sculptured through Time* (Leiden: Brill, 2008), 427. This scholar also contends that the pangolin is entirely missing from Indian arts, van der Greer, *Animals in Stone*, 428. This may be true of stone sculpture, but certainly does not hold for clay figures from Harappan sites, see Object no. 66-31-1J, University of Pennsylvania Museum of Archaeology and Anthropology,*http://www.penn.museum/collections/object/110228* (accessed 10 March 2014).

[10] The Javan pangolin, however, "has been protected in Indonesia since 1931, under Wildlife Protection Ordinance No. 266 of 1931 (promulgated by the Dutch administration)," CITES Prop. 11.13, 4.1.1, p. 10.

[11] Heath, "*Manis crassicaudata*", 1; S.H. Prater, *The Book of Indian Animals* (1971; Bombay Natural History Society and Oxford University Press, 2005), 302. The claws can be 5 cm long in Chinese pangolins, see Heath, "*Manis pentadactyla*", 2.

[12] Prater, *Book of Indian Animals*, 303. For more detail on historical and optimal diets in captivity, see Ci Wen Yang, Suming Chen, Chi-Yen Chang, Mei Fong Lin, Erik Block, Ronald Lorentsen, Jason S.C. Chin, and Ellen S. Dierenfeld, "History and Dietary Husbandry of Pangolins in Captivity," *Zoo Biology* 26, 3 (2007): 223–230.

[13] Some sources quote seven while others give eight extant species. I follow the IUCN-SSC Pangolin Specialist Group on this matter, see *http://www.pangolinsg.org/.*

[14] Prater, *Book of Indian Animals*, 302; "*Manis crassicaudata* Indian Pangolin,"*Encyclopedia of Life*, *http://eol.org/pages/982442/data* (accessed 9 February 2014).

[15] S. Molur, "*Manis crassicaudata*" (2008), *IUCN Red List of Threatened Species*, Version 2013.2, *http://www.iucnredlist.org* (accessed 9 February2014).

[16] Tariq Mahmood, Riaz Hussain, Nausheen Irshad, Faraz Akrim, and Muhammad Sajid Nadeem, "Illegal Mass Killing of Indian Pangolin (*Manis crassicaudata*) in Potohar Region, Pakistan", *Pakistan Journal of Zoology* 44, 5 (2012), 1457.

[17] Prater does not include the Sunda pangolin among those living in South Asia today, see *Book of Indian Animals*, 302. According to Section 2.1 of Proposition 11.13, Eleventh Meeting of the Conference of the

Parties of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, Gigiri, Kenya, 10–20 April 2000, the "northern and western limits of its range are very poorly defined", with "highly conjectural" but possible extension into Bangladesh. Assuming they were correctly identified, *Manis javanica* were found from Sylhet (now in Bangladesh) to Tipperah (now Tripura, India), and possibly in the hills south of Assam, in the late nineteenth century, see Blanford, *Fauna of British India*, 600; for a similarly suspect report of *Manis javanica* in Cachar, Assam, see Charles M. Inglis, "The Indian Pangolin (*Manis crassicaudata*) in the Darbhanga District", *Journal of the Bombay Natural History Society* 22, 3 (1913), 624.

[18] S.F. Hopwood, "Note on the Scaly Anteater (*Manis crassicaudata*)", *Journal of the Bombay Natural History Society* 25, 1 (1917), 149.

[19] Jawaharlal Nehru, *Toward Freedom: The Autobiography of Jawaharlal Nehru* (New York: John Day Company, 1941), 14.

[20] Nury Vittachi, "Travelers' Tales", *Far Eastern Economic Review* 163, 46 (2000), 76; C.R. Roy, "The Indian Pangolin", *Journal of the Bengal Natural History Society* 23, 4 (April 1949), 95. For the pangolin as "antediluvian-looking", see Champion, *The Jungle in Sunlight and Shadow*, 44.

[21] Allen F. Roberts, "An Unexpected King of Beasts", *Faces* 11, 5 (January, 1995), 26; Heerak Nandy, "Pangolins of West Bengal", *West Bengal* (September–October 2009), 9; "Natural History of the Pangolin, from Dr. Goldsmith and Other Eminent Writers", *Universal Magazine of Knowledge and Pleasure* (July 1780), 13; Champion, *The Jungle in Sunlight and Shadow*, 33. Among the remnants of the Vassar College Natural History Museum is an African species, lately displayed in a glass case in Olmstead Hall next to a large pinecone, to which it bore a striking resemblance. For the Chinese pangolin (*Manis pentadactyla*) as "a giant prehistoric pinecone", see Mrill Ingram, "Tailing a Pangolin: First Team Ever Tracks Rare Chinese Insectivore through Tropical Forest", *Earthwatch News* (August 1986), 3. On the resemblance to cockle shells, see "The Manis", *The Penny Magazine of the Society for the Diffusion of Useful Knowledge* 4, 190 (21 March 1835), 105.

[22] Champion, *The Jungle in Sunlight and Shadow*, 24; see also E.P. Stebbing, *The Diary of a Sportsman Naturalist in India* (New York: John Lane Company, 1920), 87–88; see also Chris Coggins, *The Tiger and the Pangolin: Nature, Culture, and Conservation in China* (Honolulu: University of Hawai'i Press, 2003), 2.

[23] Compared with the lobster: Mathew Leslie, "On the Pangolin of Bahar", *Asiatic Researches* (April 1790), 566; for a whirlwind comparison including lobster, artichoke, "gigantic woodlouse", armadillo, serpent, bear, and rat, see "Mofussil News", *Amrita Bazar Patrika* (9 August 1896); for roofing tiles: "The Many-Scaled Pangolin", *The Leisure Hour: A Family Journal of Instruction and Recreation* (24 May 1855), 326.

[24] Roy, "Indian Pangolin", 95.

[25] Blanford, *Fauna of British India*, 596; Roy, "Indian Pangolin", 95; Coggins, *Tiger and Pangolin*, 2 and 245.

[26] J.T. Molesworth, *A Dictionary, Marathi and English*, second ed., revised and enlarged (Bombay: Printed for Government at the Bombay Education Society's Press, 1857), s.v. खवळया मांजर or खवळया मार्जर

[27] Blanford, *Fauna of British India*, 596.

[28] Henry Yule and A.C. Burnell, *Hobson Jobson: A Glossary of Colloquial Anglo-Indian Words and Phrases, and of Kindred Terms, Etymological, Historical, Geographical and Discursive*, ed. William Crooke (1886; London: John Murray, 1903), s.v. "pangolin"; Vaman Shivaram Apte's *Revised and Enlarged Edition of Prin. V.S. Apte's The Practical Sanskrit-English Dictionary* (Poona: Prasad Prakashan, 1957–1959) gives "a worm, insect" for *kīṭ*, and "a hog" for *kiṭi*. Arthur Anthony Macdonell, *A Practical Sanskrit Dictionary with Transliteration, Accentuation, and Etymological Analysis Throughout* (London: Oxford University Press, 1929) likewise gives "kita [kîta] m. insect; worm". Sir William Jones, "On the Pangolin of Bahar", *Transactions of the Asiatic Society* 1 (1788), 377. For especially thorough lists of the pangolin's names in various Indian languages, see Blanford, *Fauna of British India*, 597.

[29] śB. 1, 85, 9, in J. Gonda, *Aspects of Early Viṣnuism* (1954; Delhi: Motilal Banarsidass, 1993), 42.

[30] Gonda, *Aspects of Early Viṣnuism*, 41. Other "objects or entities" termed *vajra-* in the brāhmaṇas include "The sun, water, rain, ghee, butter, the sacrifice, a knife or butcher's axe, the wooden sword used in sacrificing, the press-stones are called a *vajra-*, and so are the *yūpa-* (sacrificial post), a space, a club, an axe, a staff, reed, and, further, cattle, the triṣṭubh-metre, the *vaṣaṭ*-call, seed, *ojas* ["vital energy", p. 32], speech, praise, the year, the moon, brightness, and some other entities", ibid.

[31] See Gonda, *Aspects of Early Viṣnuism*, 36–37 and 42.

[32] John T. Platts, *A Dictionary of Urdu, Classical Hindi, and English* (London: W.H. Allen & Co., 1884), s.v. "H. بجر बज्र bajr".

[33] Ibid., s.v. "S. گھن घुण ghuṇ; and H. घुन ghun".

[34] Charles Payson Gurley Scott, *The Malayan Words in English* (New Haven, CT: The American Oriental Society, 1897), s.v. "pangolin".

[35] By asserting that animals species, through their genetic make-up, do play some role in determining human classifications, I am going against Mary Douglas's caution that "[t]he idea that perception of an anomalous animal kind comes to us out of the nature of biological orders can be firmly laid aside. Animal anomalies are not installed in nature but emerge from particular features of classificatory schemes". While her point has undeniable value and must be taken into consideration, it overcorrects for biological determinism with an excess of cultural (or perhaps social) determinism, see Mary Douglas, "The Pangolin Revisited: A New Approach to Animal Symbolism", 25–36, in *Signifying Animals: Human Meaning in the Natural World*, ed. Roy Willis (London: Unwin Hyman, 1990), 25.

[36] Champion, *The Jungle in Sunlight and Shadow*, 27. For a pangolin successfully "dug out of the soil bank of a tank", see Charles M. Inglis, "The Indian Pangolin (*Manis crassicaudata*) in the Darbhanga District", *Journal of the Bombay Natural History Society* 42, 3 (1913), 624.

[37] Prater, *Book of Indian Animals*, 302–303. For 8–10 feet as the length of a pangolin's burrow, see Champion, *The Jungle in Sunlight and Shadow*, 27. For distinctions between feeding (temporary) and living (permanent) pangolin burrows, see Tariq Mahmood, Khalida Jabeen, Iftikhar Hussain, and Amjad Rashid Kayani, "Plant Species Association, Burrow Characteristics, and the Diet of the Indian Pangolin, *Manis crassicaudata*, in the Potohar Plateau, Pakistan", *Pakistan Journal of Zoology* 45, 6 (2013): 1533–1539.

[38] Numi C. Goodyear, "Studying Fine-Scale Habitat Use in Small Mammals", *Journal of Wildlife Management* 53, 4 (1989), 944 and Numi C. Goodyear, quoted in Ingram, "Tailing a Pangolin," 4.

[39] James Lazell, quoted in Ingram, "Tailing a Pangolin," 3.

[40] Mahmood et al., "Plant Species Association, Burrow Characteristics and the Diet of the Indian Pangolin", 1538.

[41] A second may be a gland located under the tail, which several authors have noted as containing an unpleasant odour, for example see Angus F. Hutton, "Notes on the Indian Pangolin (*Manis Crassicaudata*, Geoffery St. Hilaire)", *Journal of the Bombay Natural History Society* 48, 4 (1950), 805.

[42] Size 7 basketballs have a circumference of 74.9–78 cm, "FIBA Equipment & Venue Approval Programmes—Basketballs", FIBA, *http://www.fiba.com/downloads/v3_abouFiba/prog/equipment/RequirementsforBasketballs2013.pdf* (accessed 17 February 2014). The length of an Indian pangolin's head and body(not including the tail), accounting for most of the circumference of the rolled pangolin (the tail and head being tucked inside), is 60–75 cm, see Prater, *Book of Indian Animals*, 302.

[43] Tigers sometimes do succeed; in China "when tigers were more numerous, their dens were a good place to find pangolin scales", Coggins, *Tiger and Pangolin*, 2.

[44] For bullets and musket balls, see Georges Louis Leclerc, *Buffon's Natural History of Man, the Globe, and of Quadrupeds*, vol. 2 (1791; New York: Leavitt & Allen, 1857), 86, J.G. Wood and Theodore Wood, "The Edentata", *Anecdotal Natural History* 3, 7 (September 1883), 396, and "Natural History of the Pangolin: From Dr. Goldsmith and Other Eminent Writers", *Universal Magazine of Knowledge and Pleasure* 67, 464 (July 1780), 14; for an axe, K.D. Singh, "The Indian Pangolin *Manis crassicaudata* Gray near Delhi", *Journal of the Bombay Natural History Society* 91, 2 (1994), 309.

[45] For one man failing in this endeavor, see J. Emerson Tennent, *Sketches of the Natural History of Ceylon with Narrative and Anecdotes Illustrative of the Habits and Instincts of the Mammalia, Birds, Reptiles, Fishes, Insects, & c.* (London: Longman, Green, Longman, and Roberts, 1861), 48. For two men, see R.S. Tickell, "*Manis crassicaudata*, (Auct.). *Manis pentadactyla*, (Ibid.). Short-tailed or Thick-tailed Manis", *Journal of the Asiatic Society of Bengal* 11, 1 (1842), 227.

[46] Hopwood, "Note on the Scaly Anteater", 149.

[47] R.S. Tickell, "*Man is crassicaudata*, (Auct.). *Manis pentadactyla*, (Ibid.). Short-tailed or Thick-tailed Manis", *Journal of the Asiatic Society of Bengal* 11, 1 (1842), 227.

[48] Tennent, *Sketches*, 46–47.

[49] The size could indicate either a gender (male for the larger specimen) or age difference, but the friendliness of the smaller pangolin is

suggestive of a juvenile, ibid. 47.

[50] W.W. Hunter, *Statistical Account of Bengal*, vol. 27, *Singhbhum District, Tributary States of Chutia Nagpur, and Manbhum* (London: Trübner & Co., 1877), 268.

[51] Hopwood, "Note on the Scaly Anteater", 149.

[52] Hutton, "Notes on the Indian Pangolin", 805.

[53] Roy, "Indian Pangolin", 98.

[54] Of captive-born pangolins "[a]bout 71% die within the first year and only 11.5% live more than 2.5 years", Q. Ashoka Chakkaravarthy, "Research and Conservation Needs of the Indian Pangolin", 52. Note that it is unclear where these numbers come from. For anecdotal evidence of the precariousness of pangolin lives even when well-cared for in captivity in Vietnam, see John D. Sutter, "The Most Trafficked Mammal You've Never Heard Of", CNN, 2 April 2014, *http://www.cnn.com/interactive/2014/04/opinion/sutter-change-the-list-pangolin-trafficking/index.html?hpt=hp_t5* (accessed 30 May 2014).

[55] Ram Brahma Sanyal, *A Hand-Book of the Management of Animals in Captivity in Lower Bengal* (Calcutta: Committee for the Management of the Zoological Garden, Bengal Secretariat Press, 1892), 168. The Calcutta Zoo kept Chinese pangolins from 1877 through 1970, and Indian pangolins from 1941 through 1981, see Yang et al., "History and Dietary Husbandry of Pangolins in Captivity", 225.

[56] "Calcutta Zoological Garden", *Amrita Bazar Patrika*, 19 November 1914. They were presented separately by the Maharaja of Sonepur and H.M. Sydenham Clarke.

[57] "Madras News", *Madras Mail*, evening edition, 24 September 1885.

[58] A. Aiyappan, "Notes on the Pangolin (*Manis crassicaudata*)", *JBNHS* 43, 2 (1942), 254.

[59] "Local News", *Ceylon Observer*, weekly edition, 2 May 1905.

[60] "Colombo Museum", *Ceylon Observer*, weekly edition, 20 March 1906.

[61] W.W.A. Phillips, "A Note on the Habits of the Indian Pangolin (*Manis crassicaudata*)", *Spolia Zeylanica* 14, 2 (1928), 333.

[62] Ibid., 333–334.

[63] P.W. Ogilvie and D.D. Bridgwater, "Notes on the Breeding of an Indian Pangolin *Manis crassicaudata* at Oklahoma Zoo", *International Zoo Yearbook* 7 (1967), 116. Other American and European institutions that housed Indian pangolins at some point between 1941 and 1970 include the Detroit Zoo, New York Zoological Society, Pittsburgh Zoo, Chicago Brookfield Zoo, Prague Zoo, Stuttgart's Wilhelma Zoo, Miami Crandon Park, Oklahoma Zoo, Antwerp Zoo, Mesker Park Zoo, St. Louis Zoo, and the Milwaukee Zoo, see Yang et al., "History and Dietary Husbandry of Pangolins in Captivity", 225.

[64] Likely a member of Sri Lanka's Eurasian community, Joanna Chelamma Rockwood was the youngest daughter of a surgeon, Dr. William Gabriel Rockwood. She married in Colombo in 1906 (for a detailed description of her wedding see "Today's Wedding in Colombo, Homer-Rockwood", *Ceylon Observer*, weekly edition, 18 June 1906) and died there in 1909, see "Death of Mrs. Francis J. Homer", *Ceylon Observer*, weekly edition, 26 May 1909.

[65] Adam Burt, "On the Dissection of the Pangolin, in a Letter to General Carnac from Adam Burt, Esq.", *Asiatic Researches* 2 (1799), 354.

[66] Numi C. Goodyear, "Fine-Scale Habitat Use", 944; Goodyear, quoted in Ingram, "Tailing a Pangolin", 4; Ishwar Prakash, "Breeding of Mammals", 386. See also Juddha Bahadur Gurung, "A Pangolin Survey in Royal Nagarjung Forest, Kathmandu, Nepal", *Tiger Paper* 23, 2 (1996), 31.

[67] Tickell, "*Manis crassicaudata"*, 228–229.

[68] Ibid., 229.

[69] Falco (pseud.), "The Pangolin", *The Pioneer* (3 August 1871); Falco (Pseud.), "The Pangolin", *The Pioneer*, 1 September 1871.

[70] Robert A. Sterndale, *Natural History of the Mammalia of India and Ceylon* (Calcutta: Thacker, Spink, and Co., 1884), 521.

[71] Robert A. Sterndale, *Seonee, or Camp Life on the Satpura Range*, second edition (London: Sampson Lowe, Marston, Searle, and Rivington, 1877), 58–60.

[72] R.V. Russell and Rai Bahadur Hira Lal, *The Tribes and Castes of the Central Provinces of India*,vol. 3 (London: Macmillan and Co., Ltd., 1916), v; C.G. Chenevix-Trench, *Grammar of Gondi as Spoken in the Betul District, Central Provinces, India*, vol. 1 (Madras: Government

Press, 1919),13, 61, and 56.

[73] C.G. Chenevix-Trench, "Notes on an Indian Pangolin or Scaly Anteater (*Manis crassicaudata*)", *Journal of the Bombay Natural History Society* 24, 3 (1916), 590.

[74] Champion, *The Jungle in Sunlight and Shadow*, 28.

[75] Ibid.,29.

[76] Ibid.,30.

[77] S. Molur, "*Manis crassicaudata*" (2008), *IUCN Red List of Threatened Species*, Version 2013.2, *http://www.iucnredlist.org* (accessed 9 February 2014).

[78] Review of Robert A. Sterndale, *Natural History of the Mammalia of India and Ceylon* (1884), in *The Weekly Ceylon Observer* (11 April 1885). The text gives Gangoruwa, which I have taken as a misprint for Gannoruwa.

[79] H. Coupland, *Bengal District Gazetteers. Manbhum* (Calcutta: Bengal Secretariat Book Depot, 1911), 22. The population of Purulia town in 1891 was 17,291, see *Imperial Gazetteer of India*, 20: 421.

[80] Gurung, "Pangolin Survey", 31.

[81] Ibid., 31.

[82] Rajeev Chauhan and S. Narain, "The Indian Pangolin (*Manis crassicaudata*) in the Chambal Ravines of Etawah", *Zoos' Print Journal* 16, 5 (2001), 501.

[83] Singh, "Indian Pangolin", 309.

[84] B.H. Mehta, *The Gonds of the Central Indian Highlands*, vol. 2 (New Delhi: Naurang Rai, 1984), 583–584; see also Mahesh Rangarajan, *Fencing the Forest*: *Conservation and Ecological Change in India's Central Provinces, 1860–1914* (New Delhi: Oxford University Press, 1996), 102. For a colonial era account of Gonds clearing forest for cultivation by fire, see J. Forsyth, *The Highlands of Central India, Notes on their Forests and Wild Tribes, Natural History, and Sports* (London: Chapman and Hall, Ltd., 1889), 104.

[85] Coggins, *Tiger and Pangolin*, 238. A penchant for freshly burnt landscapes may also explain why one Englishman met with a pangolin "along a fire line" in the Central Provinces, see Stebbing, *Diary of a*

Sportsman Naturalist, 87–88. "Line burning" along with "line cutting" were used to maintain fire lines in the forests of the Central Provinces in the 1880s, see E.D.M. Hooper, Deputy Conservator of Forests, "A Note on Fire-Protection as Carried Out in the Central Provinces", *Indian Forester* 9, 11 (1883), 559 and 562.

[86] CITES Prop. 11.13, p. 4. For an Indian example, see Champion, *The Jungle in Sunlight and Shadow*, 25. For China, see Coggins, *Tiger and Pangolin*, 237–238.

[87] Nehru, *Toward Freedom*, 14.

[88] Francis Zimmermann, *The Jungle and the Aroma of Meats: An Ecological Theme in Hindu Medicine* (Berkeley: University of California Press, 1987), 97. The pangolin was among the five *pañcanakha* (five-nailed) animals deemed permissible to eat, see Zimmermann, *Jungle*, 173–174. Note, however, that Zimmermann also provides hedgehog or porcupine as alternate interpretations of the Sanskrit *śalyaka*, which another scholar prefers to translate simply as "hedgehog", see Brian K. Smith, "Classifying Animals in Ancient India", *Man* (1991), 529. For the *śalyaka* unambiguously interpreted as the pangolin, see van der Greer, *Animals in Stone*, 24. Translating from a different source, yet another scholar renders *śalyaka* as "pangolin or monitor-lizard", see Kenneth G. Zysk, *Religious Medicine: The History and Evolution of Indian Medicine* (New Brunswick, NJ: Transaction Publishers, 1993), 88.

[89] Champion, *The Jungle in Sunlight and Shadow*, 25. For a recent attestation, see Mahmood et al., "Illegal Mass Killing", 1460.

[90] C.R. Roy, "The Indian Pangolin", *Journal of the Bengal Natural History Society* 23, 4 (April 1949), 97–98.

[91] Ibid., 97.

[92] Kesri Singh, *One Man and a Thous and Tigers* (New York: Dodd, Mead and Company 1959), 176. Among those living in close proximity to pangolin populations in Eastern Nepal today, most express uncertainty about the pangolin's precise medicinal value, but "think that it is used for gastro intestinal problem, pain killer during pregnancy, cardiac problem, back pain relief, bone problem etc.," see Hem Bahadur Katuwal, Kaustuv Raj Neupane, Dipendra Adhikari, and Sanjan Thapa, *Pangolins Trade, Ethnic Importance and its Conservation in Eastern Nepal* (Kathmandu: Small Mammals Conservation and Research

Foundation and WWF-Nepal, 2013), 18.

[93] Champion, *The Jungle in Sunlight and Shadow*, 26. For Tamil and Sinhalese estimations of its flesh in Sri Lanka, see Phillips, "Note on the Habits", 289.

[94] Kesri Singh, *One Man and a Thousand Tigers*, 167.

[95] Hopwood, Note on the Scaly Anteater", 149.

[96] Information about legal protections from CITES Prop. 11.13, 4.1.1, p. 10.

[97] "The CITES Appendices", *CITES*, *http://www.cites.org/eng/app/index.php* (accessed 11 March 2014).

[98] Rajesh Kumar Mohapatra, "IUCN-SSC Pangolin Specialist Group Conservation Conference, 24–27 June 2013 at Wildlife Reserves, Singapore", *Zoo's Print* 28, 7 (July 2013): 14–16. See also "'Scaling Up Pangolin Conservation' Conference a Success but Highlights Challenges to Conserving Pangolins", IUCN-SSC Pangolin Specialist Group, July 7, 2013, *http://www.pangolinsg.org/2014/05/29/scaling-up-pangolin-conservation-conference-a-success-but-highlights-challenges-to-conserving-pangolins-070713/* (accessed 30 May 2014).

[99] CITES Prop. 11.13, p. 6. "At a minimum, several tens of thousands of animals have been harvested and traded annually during the 1990s," see CITES Prop. 11.13, p. 4; TRAFFIC India *in litt*. to TRAFFIC International, March 1999, in CITES Prop. 11.13, p. 5. For Nepali villagers' use of pangolins in the mid-1990s and its minimal impact on local economies, see Gurung, "Pangolin Survey", 32.

[100] Coggins, *Tiger and Pangolin*, 237–238.

[101] Mohapatra, 14; Q. Ashoka Chakkaravarthy, "Research and Conservation Needs of the Indian Pangolin (*Manis crassicaudata*)", *Proceedings of Third Seminar on Small Mammals Conservation Issues: Small Mammals Vulnerable to Climate Change*, eds. Hem Bahadur Katuwal and Sabina Koirala (Kathmandu: SMCRF, 2012), 54.

[102] Chauhan and Narain, "Indian Pangolin", 501.

[103] Mahmood et al., "Illegal Mass Killing", 1458 and 1459.

[104] Ibid., 1460.

[105] Ibid., 1461.

[106] "Seizures Show Scale of Pangolin Peril", Science blog, University of Oxford, 13 March 2014, *http://www.ox.ac.uk/media/news_stories/2014/140313. html* (accessed 20 May 2014).

[107] Or, following Douglas, in being potential (but not biologically foreordained or culturally necessary) targets of human notice and thought, see Douglas, "Pangolin Revisited", 25.

[108] Coggins, *Tiger and Pangolin*, 245.

[109] For the power of the pangolin in relation to its burrowing habits in China, see Coggins, *Tiger and Pangolin*, 2.

[110] Allen Roberts, quoted in Kofi Opoku, "Animals in African Mythology", 351–359, in *A Communion of Subjects: Animals in Religion, Science, and Ethics*, eds. Paul Waldau and Kimberley Patton (New York: Columbia University Press, 2006), 356.

[111] Ibid., 356.

[112] Opoku, "Animals in African Mythology", 356. For a classic study of the pangolin among the Lele of the Kasai river region, see Mary Douglas, *Implicit Meanings: Selected Essays in Anthropology* (London: Routledge, 1975), 27–46, for an updated treatment, see Douglas, "Pangolin Revisited", 25–36. For pangolins among the Lele, Hamba, and Lege, see Luc de Heusch, *Sacrifice in Africa, A Structuralist Approach*, trans. Linda O'Brien and Alice Morton (Bloomington: Indiana University Press, 1985), 26–37.

[113] Coggins, *Tiger and Pangolin*, 2.

[114] Ibid., 238, 245–246.

[115] Ibid., 246.

[116] "The exercise is to identify some sameness in both fields. However, there is no limit to the power of the imagination for seeing patterns and finding resemblances. So there is no limit to the scope for finding similarity between any sets of objects", Douglas, "Pangolin Revisited", 26.

[117] Champion, *The Jungle in Sunlight and Shadow*, 28. Punctuation is in the original.

[118] Tennent, *Sketches*, 48.

[119] Hopwood, "Note on the Scaly Anteater", 149.

[120] K.D. Erskine, *Rajputana Gazetteers: The Mewar Residency*, vol. II-A (Ajmer: Scottish Mission Industries, Co., Ltd., 1908), 8–9, 46–48, 129, and 142–143.

[121] This paragraph is adapted from Julie E. Hughes, "Royal Tigers and Ruling Princes: Wilderness and Wildlife Management in the Indian Princely States", *Modern Asian Studies* (forthcoming).

[122] Banswara had 17 leopard, 12 wolf, 27 civet, 2 chausingha, 181 jungle cat, 260 jungle cat, 442 mongoose, 1,002 jackal, 76 hyena, 34 wild boar, 156 porcupine, and 451 nilgai. Partabgarh had 13 leopard, 14 civet, 13 chausingha, 2 chital, 41 chinkara, 52 hyena, 23 jungle cat, 440 jackal, 37 porcupine, 517 nilgai, 94 fox. Pangolins were not counted in these or any other districts, inside or outside protected areas. *Wild Life Census, 2010, Outside Protected Areas (Rajasthan)*, *http://www.rajforest.nic.in/cwlw/pdf/Wild%20Animal%20Census_outside_2010.pdf* (accessed 30 May 2014).

[123] Diwan of Dungarpur, to Southern Rajputana States Agent, 15 November 1928, Southern Rajputana States Agency, 261-G of 1928, National Archives of India.

[124] Diwan of Dungarpur, "Particulars of Rare Animals Which are Specially Protected", in Mewar Resident and Southern Rajputana States Agent, to Secretary to the Agent to the Governor General, Rajputana, 10 January 1935, no. 150/296/34, Government of India, Rajputana Agency Office, Political Branch, 175-P of 1939, National Archives of India.

[125] Stebbing, *Diary of a Sportsman Naturalist*, 87–88.

[126] V.W. Ryves, *Blang, My Tiger* (London: Arrowsmith, 1935), 65–75; Nehru, 14. Jim Corbett credited F.W. Champion's *With Camera in Tigerland* (London: Chatto & Windus, 1927) with inspiring him to take up photography and only kill man-eaters, see his *Man-Eaters of Kumaon* (1944; New York: Oxford University Press, 1959), 217.

[127] Champion, *The Jungle in Sunlight and Shadow*, 60, 175, and 169.

[128] Diwan of Dungarpur, "Particulars of Rare Animals Which are Specially Protected", in Mewar Resident and Southern Rajputana States Agent, to Secretary to the Agent to the Governor General, Rajputana, 10 January 1935, no. 150/296/34, Government of India, Rajputana Agency Office, Political Branch, 175-P of 1939, National Archives of India. In contrast, the 1924 and 1932 *Game Laws of the Bharatpur State*,

in northeastern Rajputana, classed hyena and ratel as vermin that could "be destroyed by any one at all times", see *Game Laws of the Bharatpur State* (n.p.: published by authority, 1924), no. 5, p. 1; *Game Laws of the Bharatpur State* (Bharatpur: State Press, 1932), no. 5, p. 1.

[129] *The Marwar Shooting Rules 1921* (Jodhpur: Jodhpur Government Press, c. 1930); *Ākheṭ Niyamāvalī Rājya Jhālāwār* (Jhalawar: Jhalawar State, 1931).

[130] Champion, *The Jungle in Sunlight and Shadow*, 163.

[131] Ibid., 164, 188, and 163.

[132] Diwan of Dungarpur, "Particulars of Rare Animals which are Specially Protected", in D.M. Field, Mewar Resident and Southern Rajputana States Agent, to Agent to the Governor General, Rajputana, no. 150/296/34, 10 January 1935, Rajputana Agency Office, Political Branch, 175-P of 1939, National Archives of India, New Delhi.

[133] For examples, see G.E.C. Wakefield, "A Porcupine-Tiger Tragedy", *Journal of the Bombay Natural History Society* 22, 3 (1913), 619, and Reginald Gilbert, "Notes on Man-Eating Tigers", *Journal of the Bombay Natural History Society* 4, 1 (1889), 203. For a famous later account, see Jim Corbett, *Man-Eaters of Kumaon* (New York: Oxford University Press, 1944), x and 138.

[134] For pangolin scales that "strike fire like a flint", see Alfred H. Miles, *Natural History in Anecdote* (New York: Dodd, Mead and Company, 1895), 246. Miles likely got this idea from the classic eighteenth-century account of the pangolin: Leclerc, *Buffon's Natural History*, 85.

[135] Diwan of Banswara, to D.M. Field, Southern Rajputana States Agent, 11 September 1928, Southern Rajputana States Agency, 261-G of 1928, Rajasthan State Archives, Bikaner. The *Imperial Gazetteer of India* broadly concurred, listing "the ordinary small game, including jungle-fowl, a few tigers, leopards, bears, *sāmbar* (*Cervus unicolor*), and *chītal* (*C. axis*) ... and occasionally wild dogs and wolves", William Stevenson Meyer, et al., *Imperial Gazetteer of India* (Oxford: Clarendon Press, 1908–1931), 6: 407–408.

[136] Hughes, "Royal Tigers and Ruling Princes" (forthcoming).

[137] Julie E. Hughes, *Animal Kingdoms: Hunting, the Environment, and Power in the Indian Princely States* (Cambridge, MA: Harvard University Press, 2013), 140–141.

[138] While pangolins were not a standard object of the hunt, they were killed and mounted by the occasional sportsman as something between a trophy and a specimen. For example, a "stuffed pangolin" graces the collection of the descendants of the ruling family of the former state of Shahpura, alongside the usual "snarling tiger", see Amita Baviskar, "Royalty And Sympathy: The Homestyle Pleasures of Shahpura Bagh", *Outlook India*, 1 June 2011, *http://old.outlooktraveller.com/article.aspx?277411* (accessed 31 May 2014).

[139] The ratel is eaten and targeted for medical purposes in parts of Africa, see K. Begg, C. Begg, and A. Abramov, '*Mellivora capensis*' (2008), in IUCN, *IUCN Red List of Threatened Species*, Version 2012.2 (2012), *http://www.iucnredlist.org* (accessed 12 January 2013).

[140] Douglas, "Pangolin Revisited", 34.

[141] See Claude Levi-Strauss, *Totemism*, trans. Rodney Needham (1964; London: Merlin Press, 1991). For an informative if outdated survey relating to India, see Gabriella Eichinger Ferro-Luzzi, "Food Avoidances of Indian Tribes", *Anthropos* 70, 3/4 (1975): 385–427.

[142] Dietary restrictions are often mediated by social hierarchies, subgroup identities, or other factors such as gender and age, see ibid., 396–397.

[143] This paragraph is adapted from Hughes, "Royal Tigers and Ruling Princes" (forthcoming).

[144] On the changed circumstances of the Bhils by the mid-1930s under Lakshman Singh's reign, see Diwan of Dungarpur, to Southern Rajputana States Agent, 15 November 1928, no. 2651, Government of India, Southern Rajputana States Agency, 261-G of 1928, National Archives of India. On his predecessor Bijay Singh's (r. 1898–1918) opinions, see Bijay Singh, 'The Bhils,' in Ian Malcolm, *Indian Pictures and Problems* (London: E. Grant Richards, 1907), 71–73. For his Forest Law of 1909 in relation to the Bhils, see Diwan of Dungarpur, to Southern Rajputana States Agent, 15 November 1928, no. 2651, Government of India, Southern Rajputana States Agency, 261-G of 1928, National Archives of India. On his settlement policies, see D.M. Field, "Foreword", *Report on the Administration of the Dungarpur State, Rajputana, for the Samvat Year 1977–78 (Bikrami) (Corresponding to 1920–21 A.D.)* (Dungarpur: Published by Authority, c. 1922), v–vi. For the origins of British interventions in "Bhil political affairs" in Dungarpur in 1824 and subsequent "pacification", see Paul R. Kauffman, "Brokers of Status: The Development of *Bhakti* (Devotion) and *Sarkar*

(Government) by Bhils of Southern Rajasthan" (PhD diss., Australian National University, 1983), 68 and 85–92. For the Dungarpur State imposing "centralization of legal authority and ... intervention ... in Bhil internal disputes" and opening schools for Bhil children in the 1880s, as part of a bid for increased power that had begun in the 1860s, see ibid., 95–96. For the first Land Revenue Settlements in Dungarpur, dating to 1902–1904 and 1905–1906 "attempt[ing] to prohibit shifting cultivation", see ibid., 129.

[145] Mahmood et al., "Plant Species Association, Burrow Characteristics and the Diet of the Indian Pangolin", 1538; Tariq Mahmood, Nausheen Irshad, and Riaz Hussain, "Habitat Preference and Population Estimates of Indian Pangolin (*Manis crassicaudata*) in District Chakwal of Potohar Plateau, Pakistan", *Russian Journal of Ecology* 45, 1 (2014), 73.

[146] Mahmood et al., "Habitat Preference and Population Estimates of Indian Pangolin", 75.

[147] Lala Mulraj, *Notes on the Forests of the Dungarpur State* (Ajmer: n. p., 1907), 4, 10, and 20.

[148] Ibid., 4.

[149] Lala Mulraj, *Notes on the Forests of the Banswara State*, (Ajmer: n. p., 1907), 24–25 and passim; Lala Mulraj, *Notes on the Forests of the Partabgarh State*, (Ajmer: n. p., 1907), 20–23 and passim.

[150] Douglas, *Implicit Meanings*, 29 and 33; Chenevix-Trench, "Notes on an Indian Pangolin or Scaly Anteater", 590; Heusch, "Sacrifice in Africa", 29, 33, and 34.

[151] Hughes, *Animal Kingdoms*, chapter 3; see also Anand S. Pandian, "Predatory Care: The Imperial Hunt in Mughal and British India", *Journal of Historical Sociology* 14, 1 (March 2001): 79–107.

[152] Diwan of Dungarpur, "Particulars of Rare Animals Which are Specially Protected", in Mewar Resident and Southern Rajputana States Agency, to Secretary to the Agent to the Governor General, Rajputana, 10 January1935, no. 150/296/34, Government of India, Rajputana Agency Office, Political Branch, 175-P of 1939, National Archives of India.

[153] E.P. Stebbing, *Injurious Insects of Indian Forests* (Calcutta: Office of Superintendent of Government Printing, 1899), 6 and 8.