सत्यमेव जयते
Rajasthan
Forest Department

BUSTARD
RECOVERY PROGRAM

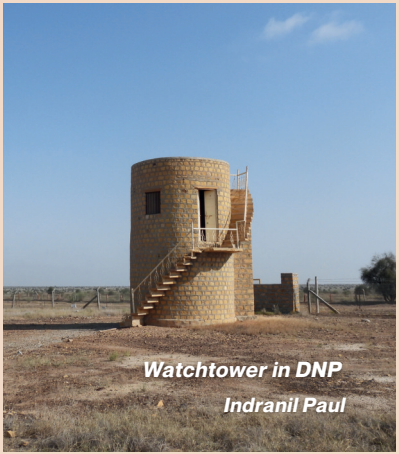
DESERT NATIONAL PARK SANCTUARY, JAISALMER

A LANDSCAPE OF LIFE IN EXTREMES

THE DESERT

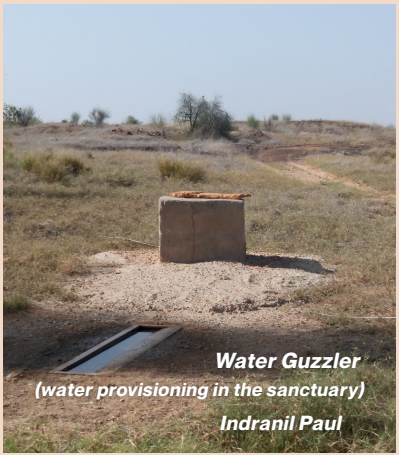
In the western most part of India lies the hot desert. Spread over 20,000 km^2, the 'Thar' desert is also the most densely populated of desert landscapes in the world. Technically, the desert spreads across 2/3rd of Rajasthan, parts of Gujarat and Haryana, and across the international border in Pakistan. However, much of its eastern limits are impacted by centuries of anthropomorphic activities. Historically these arid and semi-arid areas have seen low rainfall (100-150mm annual), limited rain-fed agriculture, presence of pastoral communities whose cattle (sheep, goat and milch cattle) survive on a wide array of palatable grass species that grow in these arid and semi-arid grasslands. Tourism is a primary economic driver in this region, especially in Rajasthan which offers a unique bouquet of experiences in textiles, crafts, flavors, music and dance, architecture and landscapes.

Lt. Colonel James Todd, Scottish travelogue and political agent of East India Company is attributed to creating the most commonly referred treatise, his two-volume work called '*The Annals and Antiquities of Rajasthan or the Central and Western Rajpoot States of India (Volumes - 1 and 2)*'. Col. Todd talks of thriving trade routes cutting across the desert with sarais and forts enroute. Even today, remnants of mud/ brick fortifications exist, Mirgarh (Pakistan Punjab) is one such example. Jaisalmer fort in Rajasthan is however a much grander representation - poetry carved out of golden sandstone - a Unesco World Heritage Site. The ruins at Kuldhara, Gadisar lake, Patuon ki Haveli, Akal wood fossil park and the sand dunes at Sam and Khudi are some of the better known tourist attractions in Jaisalmer district while in Barmer district, the ruins at Kiraru, Mahabar sand dunes and Siwana fort are certainly on the to do list.



Watchtower in DNP

Indranil Paul



Water Guzzler

(water provisioning in the sanctuary)

Indranil Paul

What was once referred to as the 'Thull', in over 4 centuries of English speaking civilizations since Col. Todd, became the Thar. With time, folk experiences lost their connection with the 'roee', the wilderness. Call it a resource, a garden, the interdunal flat with ephemeral vegetation, the 'roee' in local language was a part and parcel of existence – it was a pasture, a source for thatching, for wild collected food, for brushwood, an oasis in the desert. Mughal and British occupation and 'taught' knowledge replaced the appreciation and importance of the indigenous wisdom. The amazing biological diversity of the desert was designated as 'wasteland' and since independence, scarce resources have been ploughed into 'greening' the desert, often with limited returns. In recent years, with better science, the manner in which the desert is appreciated has started to change. The role of these vast semi-arid and arid annual grasslands in carbon sequestration is better understood and the manner in which a thin, ecologically fragile yet biologically active crust supports incredible biological diversity and fosters seasonal migration is more appreciated.

The geological history of the Thar suggests a base of pre-cambrian formations (4 billion years) which was subjected to global cycles of humidity and aridity. Widespread fossil deposits, both of Pteridosperms and Gastropods suggest a moist past. Aeolian sand deposition can be traced back to the Quaternary period (1.8 million years).

DESERT NATIONAL PARK SANCTUARY, JAISALMER

The Desert National Park (DNP) occupies 3162 km^2 of land in the Western edge of Rajasthan over the districts of Barmer and Jaisalmer. It was notified as a Sanctuary in 1980 to protect its unique flora and fauna. The DNP has expansive grasslands, hills with hard rocky surfaces and shifting sand dunes that can tower up to 316 metres in height. It is the inter-dunal flat which serves as a refuge for vegetation, some of which are actually ephemeral and can be seen during the rains only.

The Park is managed by the Rajasthan Forest Department (RFD). The majority of the park is revenue land. The Forest Department has enclosed and fenced ~5 % of the land. The enclosures provide safe areas for the native flora and fauna to thrive as the rest of the park is often farmed, overgrazed and disturbed. Frontline Forest staff patrols these enclosures and protects all animals and birds in the park. There are some watchtowers in the Park for wildlife monitoring, of which the RKVY watchtower is open to the public. As water is a scarce resource, its provisioning is done in the enclosures by guzzlers (a water tank attached to a small water trough). Guzzlers are maintained by the department and many species of mammals, reptiles and birds are seen at these man-made water points. Forest staff stay in the Park and operate from huts called 'jhopas', such as the ones that can be seen in Sudasari. The 'jhopas' are made with yellow sandstone and the roof is made of dried 'kheemp' *Leptadenia pyrotechnica* which keeps the temperature lower than the surroundings and is often used by the locals.

Ecologically an annual grassland, DNP supports more than 21 species of mammals, 329 species of birds, 51 species of reptiles, 114 species of spiders and 26 species of grasshoppers.

Plant life in the desert shows xerophytic adaptations – deep root system, waxy cuticles, often spines. Species of local economic and ecological importance include Kheemp - *Leptadenia pyrotechnica*, Boee, *Arva javanica*, Jaal *(Salvadora persica)*, Ber/ Bor *(Zizyphus mauritiana, Z. nummularia)*, Kair/ Ker *(Capparis decidua)*, Motha *(Cyperus rotundus)*, Sewan *(Lasiurus sindicus)*, Bitter Apple *(Citrullus colocynthis)*, Thor *(Euphorbia caducifolia)*, Kumtha *(Acacia sengal)*, Babul *(Acacia nilotica)* and Khejri, Rajasthan's state tree *(Prosopis cineraria)*.

Fenced enclosures in the sanctuary

Pradyuman Sindha

01 CHINKARA

The Chinkara *Gazella bennettii* is one of the most enchanting sights in Desert National Park. It is a medium-sized gazelle that camouflages with its sand-colored coat and a face with dark eye stripes. When alarmed, it usually stomps and makes a sneeze-like noise ‘cheenk’, before leaping away in a classic desert ballet. Chinkara are usually found solitarily or in small groups of 2-5 individuals, sometimes forming larger herds. Males have impressive ringed horns, and females have smaller stick-like horns. Young ones called fawns are born hornless, and remain hidden in dense bushes to avoid predation. This arid adapted species can survive on very little water intake, obtaining it mostly from grasses, leaves and fruits. It is the only native ungulate of the DNP ecosystem and is essential for dispersing seeds of grasses and fruits. However, their populations are declining due to habitat loss from agricultural expansion, fragmentation of habitats due to agricultural fences, free-ranging dogs, and poaching. Conservation of this species requires safeguarding its habitats, limiting human interventions, and raising awareness about its ecological value. This ungulate is revered and protected by *Bishnoi* and other local communities of the region.

TaleScope Pictures

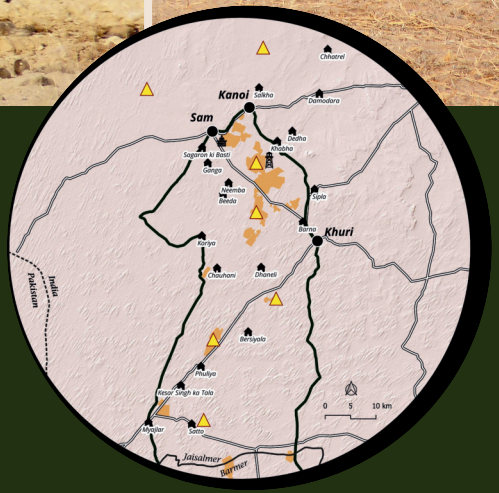
RED LIST

LEAST CONCERN

LC

Chinkara got its name from the sneeze-like (‘*cheenk*’ in hindi) call they emit when alarmed.

Breeding season depends on the rainfall but is generally between March-April and Jul-Oct



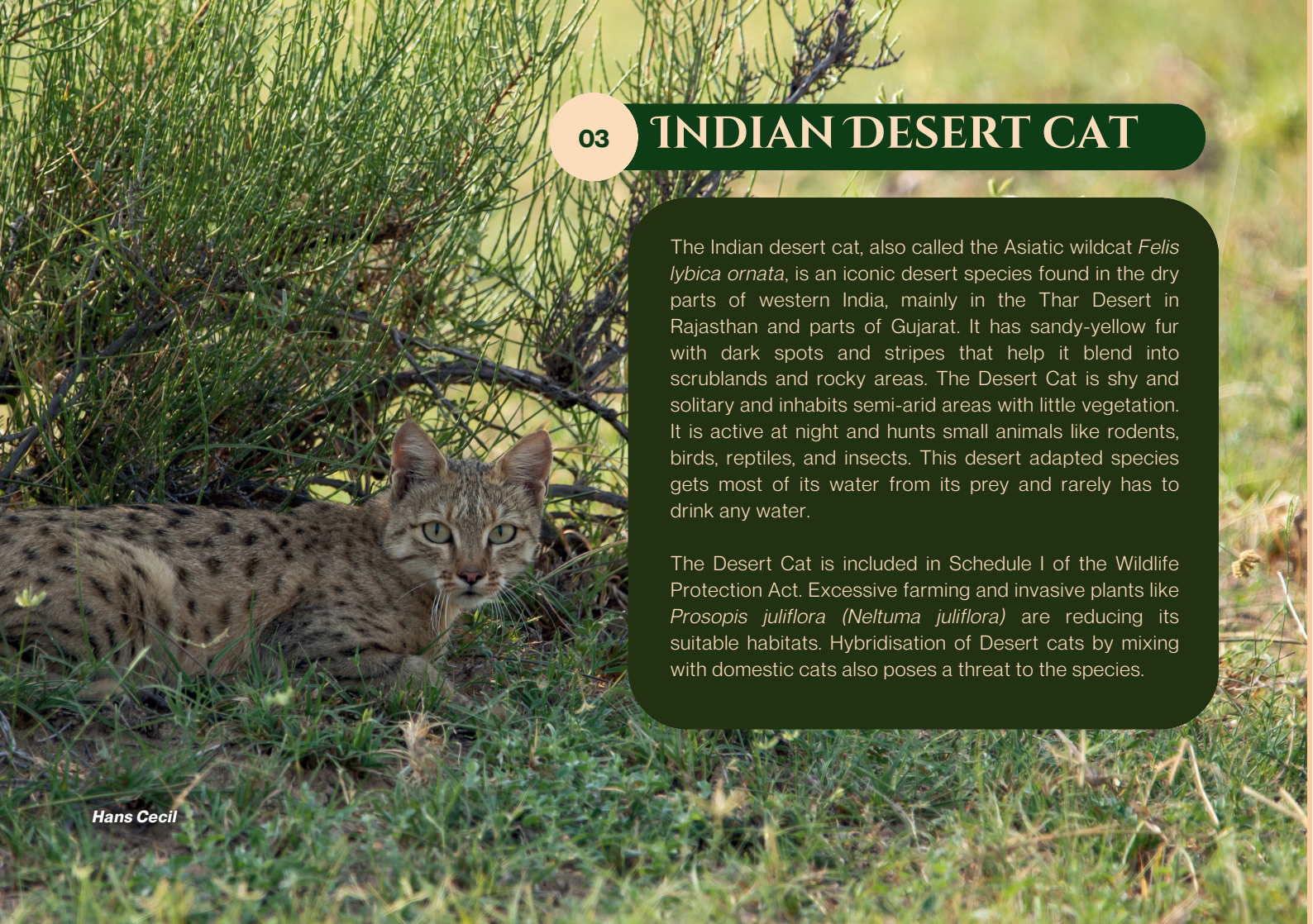
02 DESERT FOX

The Desert Fox *Vulpes vulpes pusilla*, also known as the White-footed Fox, is a subspecies of the globally widespread Red Fox. In India, they are found in arid and semi-arid regions of Rajasthan and Gujarat. They have reddish-brown fur with lighter patches near their shoulders and a bushy tail tipped with white (in contrast to the Indian Fox's black tip) .Their large ears help them stay cool in the desert heat. The Desert fox is omnivorous and feeds on small mammals like jirds and gerbils, along with insects, reptiles, and birds. It also consumes fruits and plant matter. They reside in sandy terrain, such as sand dunes, open desert scrub and sandy dry river beds. They use burrows to escape extreme temperatures and predators. The Desert fox is mostly nocturnal, with peak activity during early morning and evening hours. It adjusts its behaviour seasonally to avoid extreme heat, conserving energy and hunting when conditions are cooler.

Swayam Thakkar

The species is listed in Schedule I of the WPA and classified as Least Concern by the IUCN, although its number could be in decline due to habitat loss caused by increasing agriculture and the invasive Prosopis juliflora.

Breeding season typically is between December and February



03 INDIAN DESERT CAT

The Indian desert cat, also called the Asiatic wildcat *Felis lybica ornata*, is an iconic desert species found in the dry parts of western India, mainly in the Thar Desert in Rajasthan and parts of Gujarat. It has sandy-yellow fur with dark spots and stripes that help it blend into scrublands and rocky areas. The Desert Cat is shy and solitary and inhabits semi-arid areas with little vegetation. It is active at night and hunts small animals like rodents, birds, reptiles, and insects. This desert adapted species gets most of its water from its prey and rarely has to drink any water.

The Desert Cat is included in Schedule I of the Wildlife Protection Act. Excessive farming and invasive plants like *Prosopis juliflora (Neltuma juliflora)* are reducing its suitable habitats. Hybridisation of Desert cats by mixing with domestic cats also poses a threat to the species.

Hans Cecil

TaleScope Pictures

Devesh Gadhvi

LEAST CONCERN
LC

The feet of the Desert Cat are covered in thick fur, which acts as a natural footwear that protects the animal from the hot sand of the desert. It also helps them move silently.

Breeding season ranges from November to February

04 INDIAN DESERT JIRD

The Indian Desert Jird *Meriones hurrianae* (formerly known as Desert Gerbil) is a light-brown to grey rodent with a black tail tuft. Jirds inhabit the sandy plains of Rajasthan and Gujarat, occupying grasslands and shrublands of the region. These diurnal rodents are impressive burrowers and dwell in underground colonies consisting of a network of burrows clustered together - often found at the base of trees and shrubs. The colonies are transient and shift over time, possibly tracking food sources around them. These rodents largely forage on seeds, grasses, berries and occasionally insects. They possess physiological adaptations to withstand extreme temperatures such as reducing water loss and regulating body temperature. They are active throughout the day during winters and become mostly crepuscular in the hot summer months, restricting their activity to the cooler parts of the day. Jirds are preyed upon by mammals like foxes and cats, multiple species of raptors and reptiles such as snakes and monitor lizards. They are often spotted standing upright on their hind limbs and scanning the surroundings to detect these threats. Earlier regarded as crop pests, they have been pushed out of areas converted into agriculture due to increase in irrigation which renders the soil unsuitable for them to burrow.

The Grassland Trust

TaleScope Pictures

Devesh Gadhvi

When alarmed by a predator, jirds ‘foot drum’ with their well-built hind limbs, thumping one leg vigorously on the ground which can be heard from more than 10-15 metres away.

They can breed all year round, however breeding peaks in February and July.

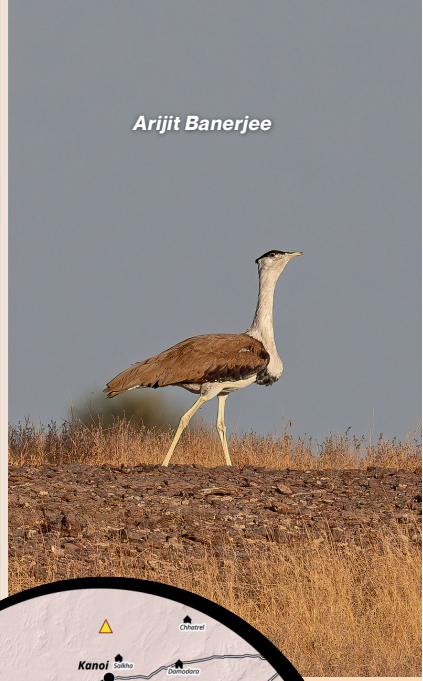
LEAST CONCERN
LC

05 GREAT INDIAN BUSTARD

The Critically Endangered Great Indian Bustard *Ardeotis nigriceps*, standing over a meter tall and one of the heaviest flying birds, is the State bird of Rajasthan and a symbol of India's unique natural heritage. Once widespread across the subcontinent, its population has drastically declined due to habitat loss and hunting, while collisions with power lines are a new threat. Today, fewer than 150 individuals survive, largely restricted to Rajasthan's Thar Desert and a few pockets in Gujarat, Maharashtra, and Karnataka. Adapted to arid and semi-arid open grasslands, the bird feeds opportunistically on insects, fruits, grass seeds and small reptiles. Bustards have a 'lek' mating system wherein males loosely congregate in flat open undisturbed grasslands for breeding. They perform elaborate breeding displays with a prominent white pouch hanging below the neck accompanied with far-ranging 'booming' calls to attract females. Females are ground-nesters and lay a single egg on the ground, but may lay multiple times in the year if an egg is lost to predation. One of the most shy and sensitive species, the bustard avoids areas intensively used by humans or with infrastructure, thriving only in the few remaining remote grassland habitats of Thar desert. Their presence once defined India's grassland ecosystems, and their survival remains tightly bound to the fate of these threatened habitats. Ambitious efforts to revive the species through effective habitat restoration, threat mitigation, supported with conservation breeding and release of birds are underway in Desert National Park, as a joint initiative of Rajasthan Government and Wildlife Institute of India under the aegis of Ministry of Environment, Forest & Climate Change and collaboration of the International Fund for Houbara Conservation.

Hans Cecil

Swayam Thakkar



Arijit Banerjee

RED LIST
CRITICALLY ENDANGERED
CR

When the national bird was being chosen, the Great Indian Bustard was a leading contender! However, officials felt that its name could be easily mispronounced or misspelt, causing potential embarrassment, and the peafowl was chosen instead.

Breeding season lasts from March to October

06 RED-HEADED VULTURE

Red-headed Vulture, also known as the Asian King Vulture, is a medium-sized vulture which lives solitarily or in pairs. Its scientific name is *Sarcogyps calvus* (calvus meaning “bald” in Latin) and they are the only members of their genus Sarcogyps. It often arrives early at carcasses and uses its strong and sharply hooked beak which is adapted to tear open the thick hide of large mammal carcasses. Males and females look alike but can be differentiated by their eye colour, with males having a white iris and females a black one. It is a shy species and generally timid around carcasses, though it can dominate over smaller scavenging raptors like the Egyptian Vulture.

Despite having a large range, ranging from Pakistan to Cambodia, their populations are highly fragmented and numbers are universally low, thus requiring urgent conservation action. Like Gyps vultures, the Red-headed Vulture is also suspected to be negatively affected by harmful NSAIDs (Non-steroidal Anti-inflammatory Drugs) administered in livestock such as diclofenac, aceclofenac, ketoprofen and nimesulide.

Marvel Andrews

CRITICALLY ENDANGERED
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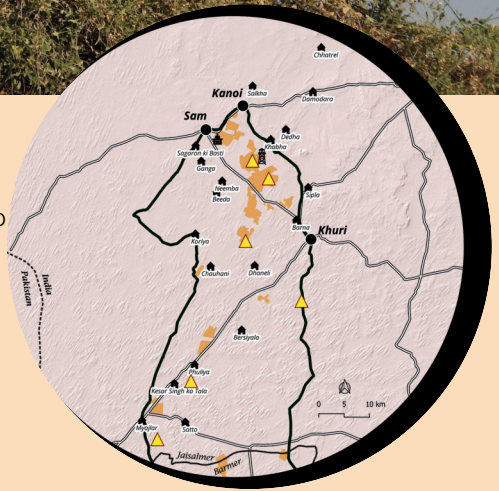
The red in the head of a Red-headed Vulture is due to pigmentation on the bare skin

Breeding season lasts from April - July



07

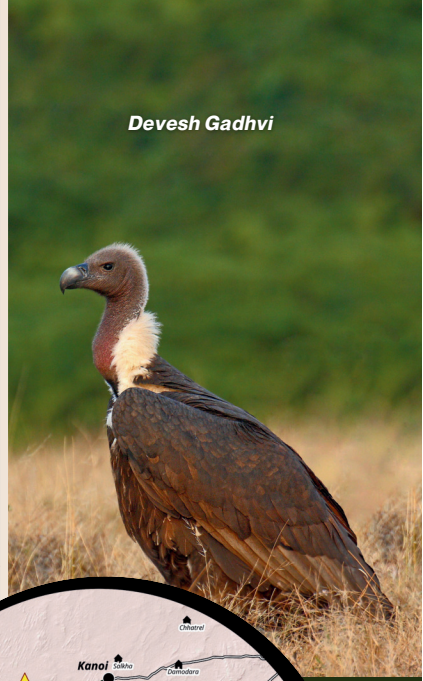
WHITE-RUMPED VULTURE

The Grassland Trust

White-rumped Vulture, also known as the Oriental White-backed Vulture *Gyps bengalensis*, is a Critically Endangered medium-sized vulture characterised by a pale rump patch and bare dark head. Adults are easily distinguishable in flight owing to the white slabs on the underside of the wings. This vulture nests colonially, often close to human settlements or forest edges. Breeding pairs lay 1-2 eggs a year, and the chick is reared by both parents. They depend purely on animal carcasses for food and can locate them from kilometres away using their acute vision. Their role in removing dead animals from the ecosystem helps tremendously in nutrient recycling and preventing the spread of diseases like rabies, botulism, and anthrax.

Once the most abundant raptor in South Asia, their populations suffered a catastrophic decline of about 99% in the 1990s due to kidney poisoning by veterinary drugs such as diclofenac, ketoprofen, aceclofenac and nimesulide administered rampantly to livestock. Their population decline led to a sharp rise in the numbers of feral dogs and pigs, who now pose another threat to these vultures by excluding them from animal carcasses. Today, safer drug alternatives like meloxicam and captive breeding initiatives offer a fragile hope for the recovery of this species.

Manas Shukla



Devesh Gadhvi

CRITICALLY ENDANGERED
CR

During chick rearing, the adults bring back partially digested carrion stored in their oesophagus and regurgitate it for the chick to eat. This process is important for building up the gut microbiome of the chicks, which will then aid them in scavenging as adults.

Breeding occurs between October - March

08 TAWNY EAGLE

The Tawny Eagle *Aquila rapax* is a threatened wide-ranging raptor, usually found in open habitats. It has a wide range of colour morphs, from white-ish to dark brown, but can be distinguished by its relatively pale upperwing feathers, slit-shaped nostrils and a gape line which stops right below the centre of the eye. It feeds on a variety of prey, being an adept hunter of reptiles, small mammals and ground birds; and an opportunistic scavenger, often seen feeding with other scavenging raptors. These eagles are long-lived but have a slow reproductive rate, making their breeding success crucial for population stability.

They are now facing a growing threat from habitat loss by conversion of grasslands into woodlands, electrocution by powerlines, and indirect poisoning by contaminated carcasses. However, they stand as one of the most resilient desert raptors due to their flexible foraging strategies.

Marvel Andrews

TaleScope Pictures

Marvel Andrews

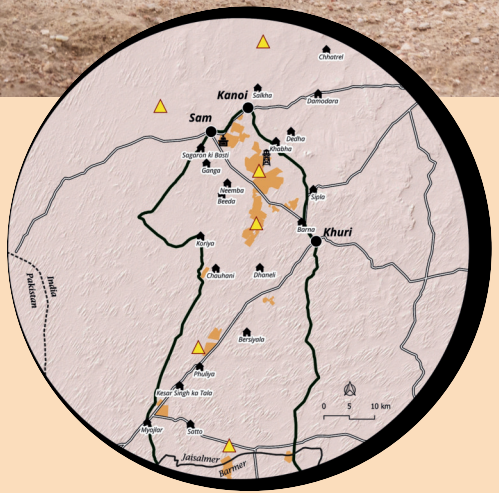
RED LIST

VULNERABLE

VU

Females can sometimes lay up to two eggs during the nesting season. However, this will only result in one fledgling due to siblicide by the dominant chick.

Breeds in colder months, usually between October - March and sometimes till April



09

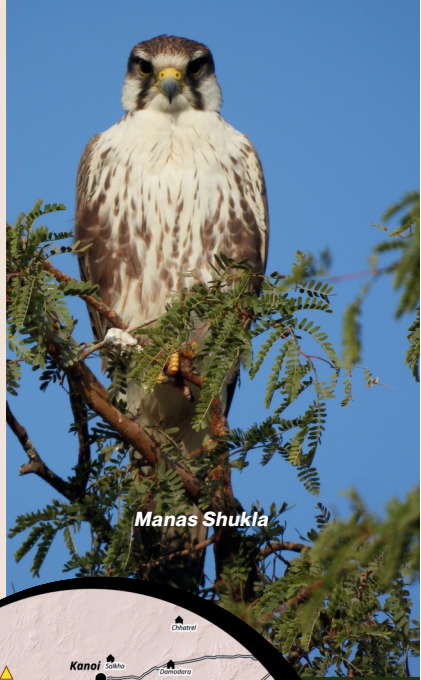
LAGGAR FALCON

Laggar Falcon *Falco jugger* is a medium-sized falcon, and a fierce predator of birds and reptiles. They have pointed wings and a streamlined body which is aerodynamically beneficial to them in prey pursuits and aerial manoeuvres by reducing air drag mid-flight. They also have bony tubercles in their nostrils to regulate airflow when they are diving at high speeds, preventing overpressure damage to their respiratory systems during these rapid pursuits.

Their diet includes birds, small mammals, reptiles and large insects, enabling them to survive in diverse habitats with varying food availability. They do not make their own nests but rather use nests constructed by other species such as Egyptian Vultures. 3-4 eggs are laid in late winter and the chicks grow quickly to become expert flyers by 2 months of age.

Marvel Andrews

Marvel Andrews



Manas Shukla

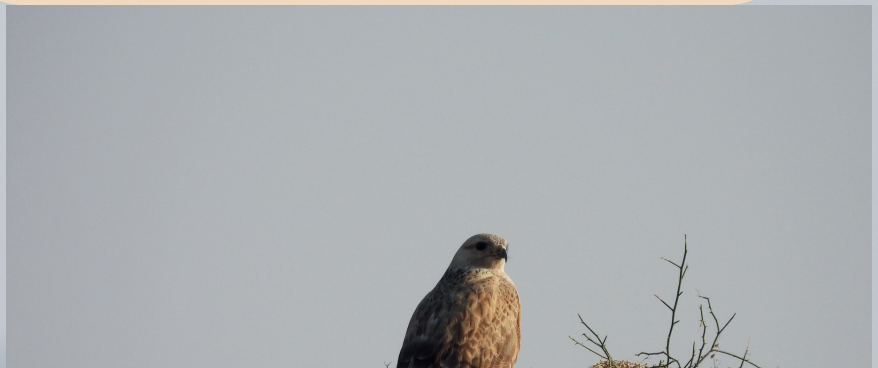
NEAR THREATENED
NT

Laggar Falcon is commonly hunted in Pakistan, and often used as bait to capture the more sought-after Saker Falcon.

Breeds in late winter, February-May

10 LONG-LEGGED BUZZARD

The Long-legged Buzzard *Buteo rufinus rufinus* is a medium-sized, polymorphic raptor widely distributed across Eurasia and North Africa. During winter, it migrates to the arid plains of northwestern India, arriving in the Thar by October and leaving by late April. It is widely scattered across a variety of habitats, including cultivated fields, grasslands, rocky outcrops, and semi-wooded areas. It typically perches on trees, rocks, posts, and other elevated structures while hunting. Rather sluggish in behavior, it often waits for long periods on a perch or on the ground. It also forages while soaring, hanging on the wind without beating its wings to survey the ground below. Its main diet consists of rodents such as jirds, as well as snakes, large insects, and lizards such as Spiny-tailed lizards, Desert and Bengal monitors.



Marvel Andrews

Mohib Uddin

LEAST CONCERN
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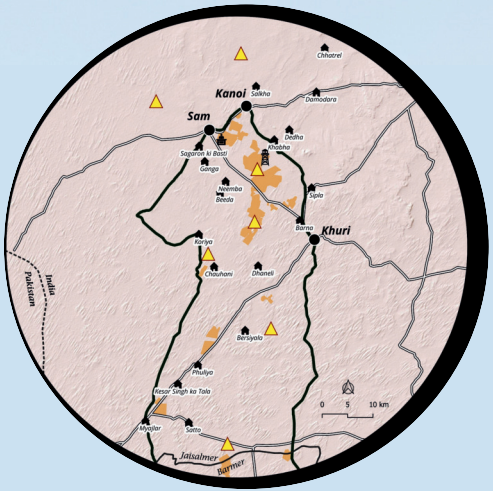
Mohib Uddin



11 WHITE-BROWED BUSHCHAT

Swayam Thakkar

The White-browed bushchat *Saxicola macrorhynchus* is a small passerine bird, characterised by its relatively petite size and distinctive long, slender bill. Males are adorned with striking blackish upperparts, complemented by a dark facial mask, contrasting white chin, and a prominent whitish eyebrow. Females are more drab.These birds are commonly observed foraging on the ground, engaging in a peculiar display behaviour known as the "puff-and-roll," characterized by puffing out the chest and executing side-to-side movements. The species primarily feeds on insects, including beetles, ants, and winged insects, procured either from the ground or through aerial sallies.

They inhabit dry, arid scrublands, where it has faced population declines due to agricultural intensification and encroachment. Historical records indicate its presence in low-lying arid regions of north-western India, including western Uttar Pradesh, Punjab, Haryana, south-eastern Rajasthan, and Gujarat. Recent sightings have confirmed its continued existence in the Thar Desert, along the western borders of Rajasthan and Gujarat.

Mohib Uddin

RED LIST

VULNERABLE

VU

Despite its historical distribution, the White-browed bushchat has experienced a marked decline, rendering it a single-country endemic species with a dwindling overall population.

Information on the breeding ecology remains scarce, although the season is estimated to be from late March to August.

12 CHESTNUT BELLIED SANDGROUSE

The Chestnut-bellied Sandgrouse *Pterocles exustus hindustan* is a large, plump, dove-like granivorous bird with a pointed tail. Males have sandy brown plumage with a thin black breast band and a solid chestnut-colored belly, while females are sandy brown with black bars on the back and a mottled neck. Their flight is fast and direct, and they are often seen in flocks.

This species typically inhabits semi-desert regions, dry plains, and sparsely vegetated scrubby areas. It feeds during the cooler hours of the morning and evening. The birds are typically seen near water points, drinking water 2–3 hours after sunrise, and in very hot weather, some individuals may drink again before sunset. Although not globally threatened, widespread habitat loss and hunting pressure are increasing concerns for the species' long-term conservation.

Swayam Thakkar

Devesh Gadhvi

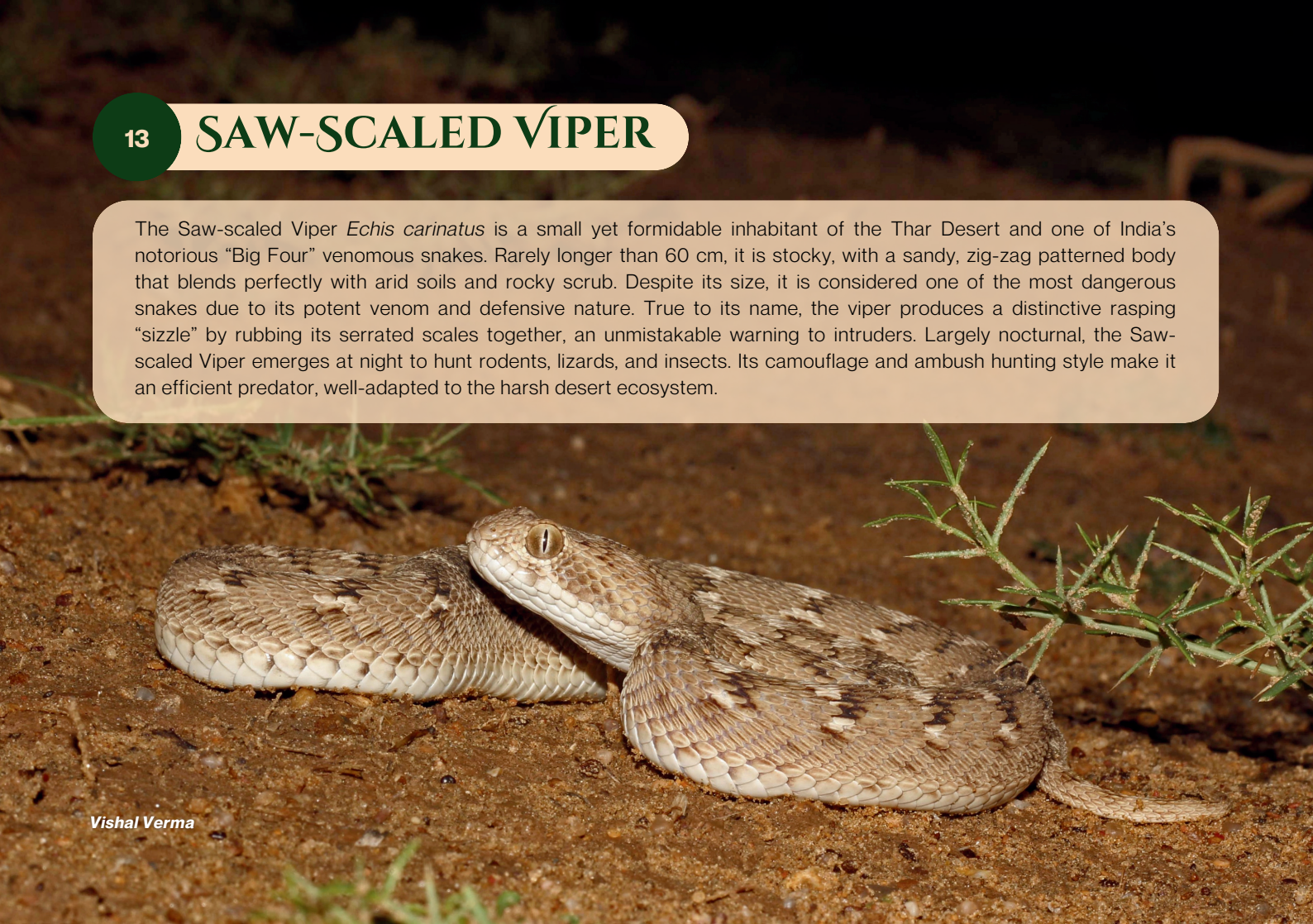
LEAST CONCERN
LC

During chick rearing, they soak the feathers on their abdomen in water and travel for large distances to quench the thirst of their chicks

In the Thar region, the Chestnut-bellied Sandgrouse breeds between March and May.

13 SAW-SCALED VIPER

The Saw-scaled Viper *Echis carinatus* is a small yet formidable inhabitant of the Thar Desert and one of India's notorious "Big Four" venomous snakes. Rarely longer than 60 cm, it is stocky, with a sandy, zig-zag patterned body that blends perfectly with arid soils and rocky scrub. Despite its size, it is considered one of the most dangerous snakes due to its potent venom and defensive nature. True to its name, the viper produces a distinctive rasping "sizzle" by rubbing its serrated scales together, an unmistakable warning to intruders. Largely nocturnal, the Saw-scaled Viper emerges at night to hunt rodents, lizards, and insects. Its camouflage and ambush hunting style make it an efficient predator, well-adapted to the harsh desert ecosystem.



Vishal Verma

Hans Cecil

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14 RED SAND BOA

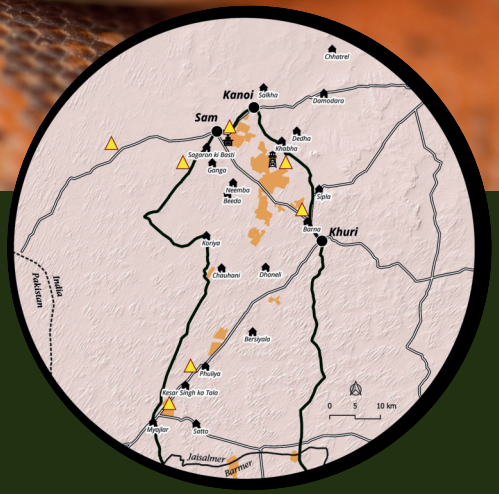
Swayam Thakkar

The Red Sand Boa *Eryx johnii*, often nicknamed the “two-headed snake,” is a fascinating yet misunderstood reptile of India, Pakistan, and Iran. Belonging to the boa family, it is non-venomous and completely harmless to humans. Its thick, cylindrical body, reddish-brown colouration, and short, blunt tail that closely resembles its head give it a unique appearance and an effective defense strategy, confusing predators about which end is dangerous. Adapted to arid plains, scrublands, and sandy soils, it is primarily nocturnal and fossorial, spending most of its time underground. It feeds on rodents, lizards, and even other snakes. Despite its ecological importance, the Red Sand Boa is entangled in myths and superstitions which drive illegal poaching and trade, making the species vulnerable despite its wide distribution.

Swayam Thakkar

RED LIST
NEAR THREATENED
NT

It is one of the most traded reptiles in India.



15 GLOSSY BELLIED RACER

The Glossy-bellied Racer *Platyceps ventromaculatus*, or Indian Sand Snake, is a slender, non-venomous species adapted to the Thar Desert's scrublands and sandy terrain. Its sandy-brown body and glossy pale underside provide excellent camouflage. An active diurnal hunter, the racer preys on lizards and small rodents. Unlike venomous desert snakes, it relies on speed and agility for both hunting and escape.

RED LIST

LEAST CONCERN

LC

Vishal Verma

16

RED SPOTTED ROYAL SNAKE

The Red Spotted Royal Snake *Spalerosophis arenarius* is a large, non-venomous colubrid inhabiting sandy and rocky habitats in the deserts of the north-western region of the Indian Subcontinent. In India, it is only found in the Thar region of Rajasthan. It is a large-sized snake that can grow up to 1.5m. Its body is slender and covered with keeled scales. The upper body is ashy grey, pale, light brown and entirely covered with variable-sized reddish-brown spots. It's a diurnal snake, mainly preying on rodents and sometimes birds and lizards.

Girish Choure

RED LIST

LEAST CONCERN

LC

17 Sind Awl-Headed Snake

The Sindh Awl-Headed Snake *Lytorhynchus paradoxus*, is a small, non-venomous, nocturnal snake found in the arid desert regions of Pakistan and India, particularly Rajasthan. Named for its distinctive pointed, awl-like snout, it uses this adaptation to burrow efficiently into loose soil. It is easily identified by its uniquely pointed snout, dark brown H or X-shaped dorsal spots, and its short, triangular head. This burrowing snake feeds on lizards and small rodents found in its sandy, desert habitat.

Swayam Thakkar

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18 SPINY TAILED LIZARD

The Spiny-tailed lizard *Saara hardwickii*, or “Sanda,” as it is locally called, inhabits the semi-arid and arid landscapes of the Indian subcontinent. Once found from Rajasthan in the west to Uttar Pradesh in the east, today its range has shrunk to isolated pockets in Rajasthan and Gujarat owing primarily to habitat loss and agriculture expansion. They play a vital role in the desert ecosystem by dispersing seeds and acting as a favourite prey for many raptors. These lizards live in colonies, but each individual maintains and defends its territory, which can include multiple burrows. These burrows provide protection against both the predators and the scorching summer heat. When threatened, they rely on explosive sprints to retreat to these refuges.

During breeding season, males leave their refuge and engage in courtship displays of head bobbing and chasing to deter rival males and to attract females. They endure harsh temperatures and scarce resources after emerging from hibernation post winter, yet they continue to persist as one of the most distinctive reptilian inhabitants of India’s desert.

Swayam Thakkar

Arijit Banerjee

Tushna Karkaria

RED LIST

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At first glance, the Spiny-tailed lizard's tail appears to be armoured with small, spiky, modified scales, but it's also a secret pantry for these lizards. Fat is stored beneath that armour, keeping it alive during the harsh summer months and long winter sleep.

Breeding season lasts from March to early September

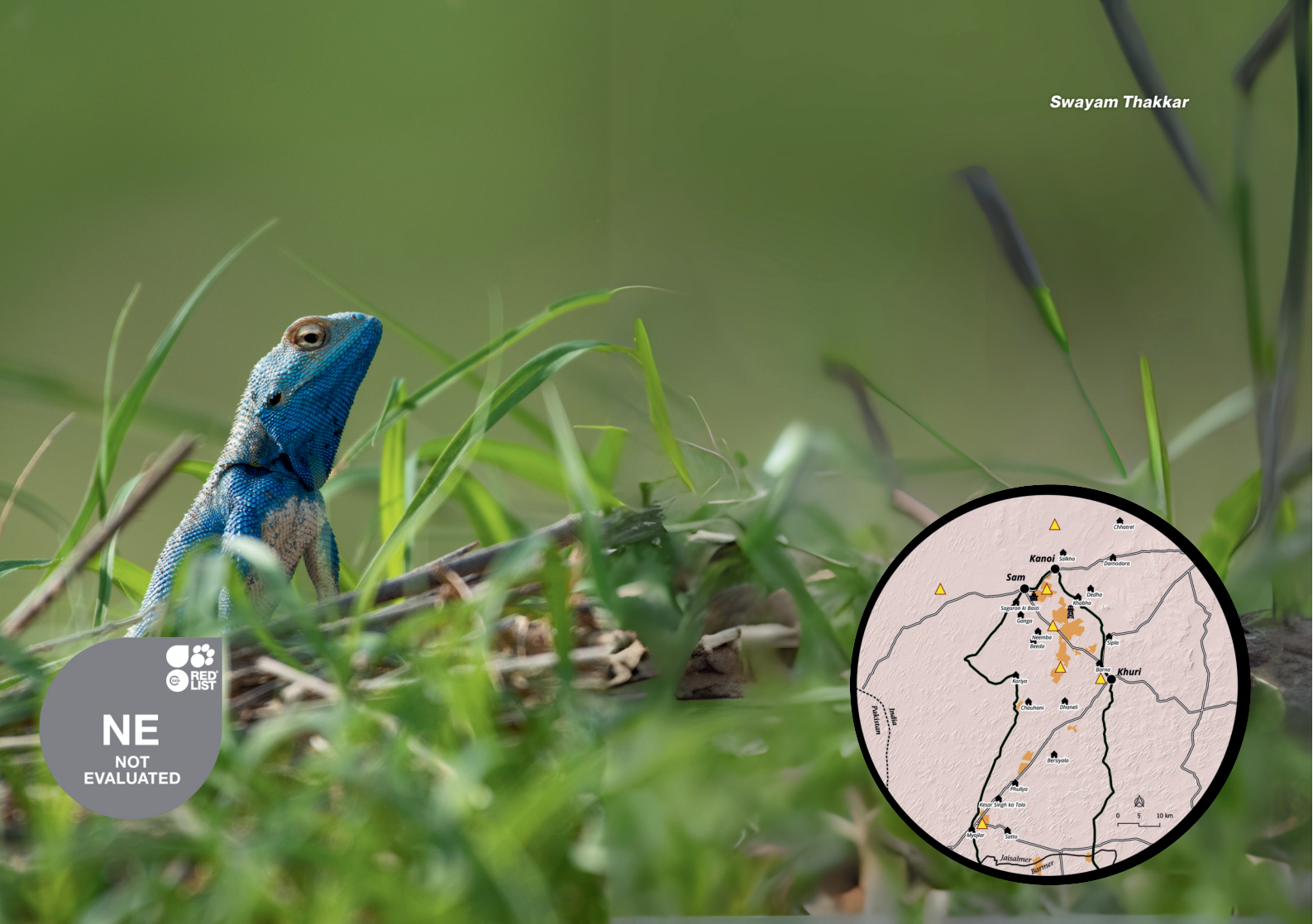
19

BRILLIANT GROUND AGAMA

The Brilliant Ground Agama *Trapelus agilis* is a striking lizard species native to arid regions across Central, West, and South Asia, including Iran, Pakistan, India, and parts of Russia and China. This moderately sized agamid is known for its flattened body and smooth, scaly skin, which varies in colour from grey to brown, allowing it to blend seamlessly into its environment. During the breeding season, adult males display brilliant blue hues on the sides of their bodies and throat, complemented by a striking yellow tail, adding to their vibrant appearance. The brilliant ground agama predominantly feeds on arthropods, including insects, spiders, and scorpions, employing a probing hunting strategy to tackle ground-dwelling prey. Males exhibit territoriality, often engaging in displays to assert dominance. Females typically reside in burrows, with males seeking shelter under stones or in the burrows of other animals.

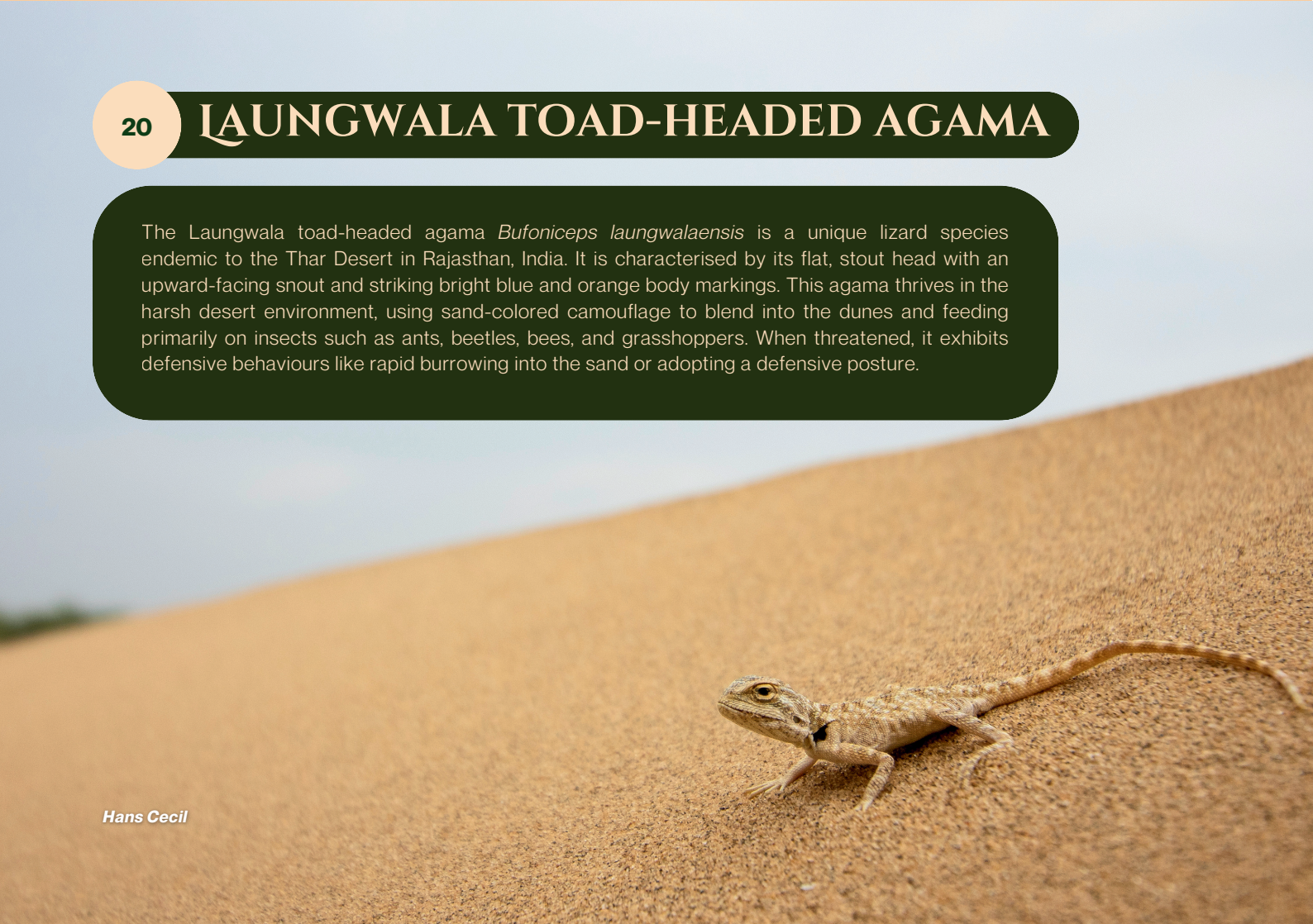
Hans Cecil

Swayam Thakkar



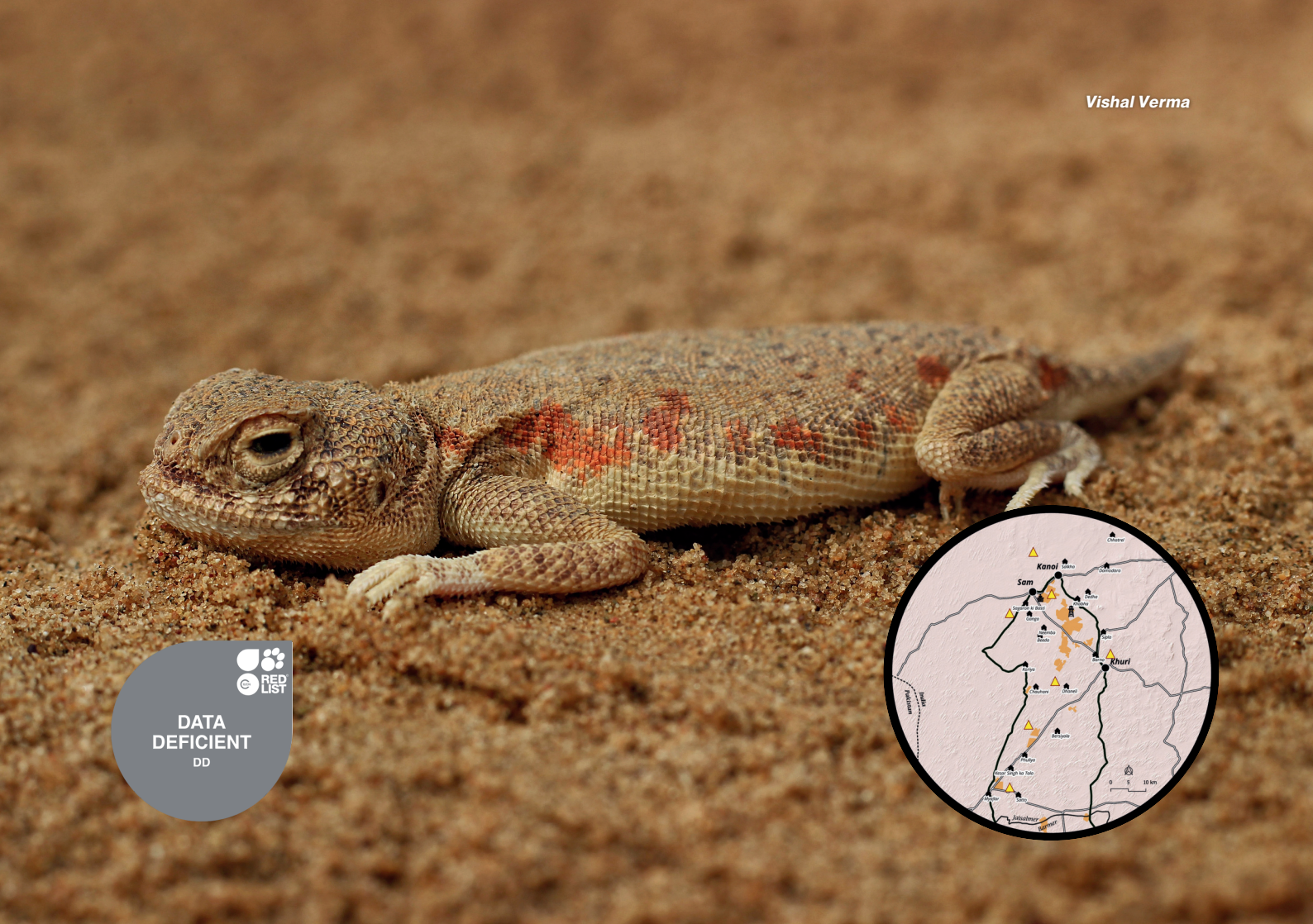
20 LAUNGWALA TOAD-HEADED AGAMA

The Laungwala toad-headed agama *Bufoniceps laungwalaensis* is a unique lizard species endemic to the Thar Desert in Rajasthan, India. It is characterised by its flat, stout head with an upward-facing snout and striking bright blue and orange body markings. This agama thrives in the harsh desert environment, using sand-colored camouflage to blend into the dunes and feeding primarily on insects such as ants, beetles, bees, and grasshoppers. When threatened, it exhibits defensive behaviours like rapid burrowing into the sand or adopting a defensive posture.



Hans Cecil

Vishal Verma



RED LIST

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21 PERSIAN DWARF GECKO

The Persian gecko *Microgecko persicus* is a tiny, crevice-dwelling lizard found in rocky patches of the Thar Desert in India, Iran and Pakistan. It grows to just about one inch in length, making it one of India's smallest gecko species. It is striking with its black bands and yellowish-golden colours, adding to its distinctive appearance. The gecko's biggest threats include habitat destruction due to mineral mining and collection for the pet trade.

Vishal Verma

RED LIST

LEAST CONCERN

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Marvel Andrews

22 SIND SAND GECKO

The Sind sand gecko *Crossobamon orientalis*, is a nocturnal reptile native to the arid regions of Pakistan and India, particularly the Thar Desert. It exhibits a cryptic lifestyle, often blending seamlessly into sandy environments. This gecko plays a crucial role in the desert ecosystem, serving as prey for various predators, including birds, snakes, and spiders. Its diet primarily consists of insects and small invertebrates.

Vishal Verma

Swayam Thakkar

DATA DEFICIENT
DD

As one of the lesser-known fauna of the Thar Desert, this species has received little to no scientific attention, and not much is known about its natural history.

23 GRASSHOPPERS

Orthopteran insects, chiefly grasshoppers-colloquially known in India as ‘tiddee’- are among the most conspicuous insect inhabitants of the open natural ecosystems, notable for their hind legs adapted for leaping, short antennae and beautiful wing colours. With over 1200 described species from India, they display remarkable ecological breadth, occupying grasslands, savannas, steppes, and deserts. Their life cycle is hemimetabolous, advancing from eggs deposited in subterranean pods to wingless nymphs which, through successive moults, attain the form and function of adults. Primarily keystone herbivores, grasshoppers consume grasses and forbs, exerting profound influence on plant community dynamics while serving as a crucial food source for birds, reptiles, and small mammals. Their abundance, coupled with sensitivity to vegetation structure and composition, makes them valuable bioindicators of habitat integrity and land-use transformation. In temperate zones, populations are very seasonal, whereas in arid or tropical regions reproduction often tracks rainfall and vegetation pulses.

Anshuman Pati

Anshuman Pati

TaleScope Pictures

Grasshoppers are found in highest densities in grasslands during monsoon that attract many insectivorous bird species, and disappear when grasslands are converted to agriculture at large scales.

Breeding season lasts from June to September depending on rainfall

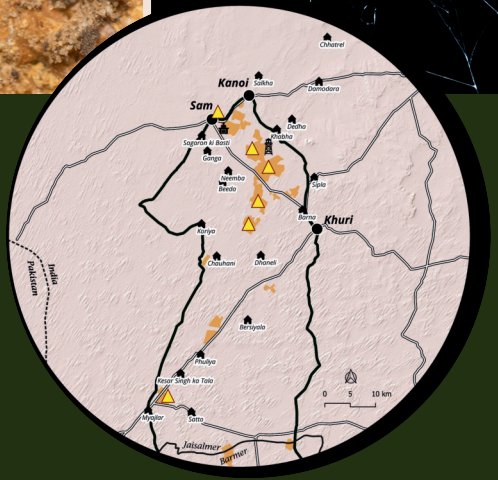
Swayam Thakkar

24 SPIDERS

Extensive surveys for spiders across dunes, grasslands, and scrub outcrops of Desert National Park have resulted in a staggering 16,775 individuals representing 29 families, 80 genera, and 114 species. There have been remarkable taxonomic discoveries of 21 species new to science and nearly 15 others recorded from India for the first time, underscoring the park's significance as a hub of arachnological discovery. Among these, notable highlights include *Stegodyphus thar, Latrodectus indicus*, *Afraflacilla miajlarensis*, and the pioneering genus *Azarkina rahmani* — representing only a fraction of the newly described fauna. Grasslands were found to be the hotspots for spider populations, contributing to 51% of all individuals (8,512 spiders) and showing the highest species richness and diversity.

Swayam Thakkar

Swayam Thakkar



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VULNERABLE

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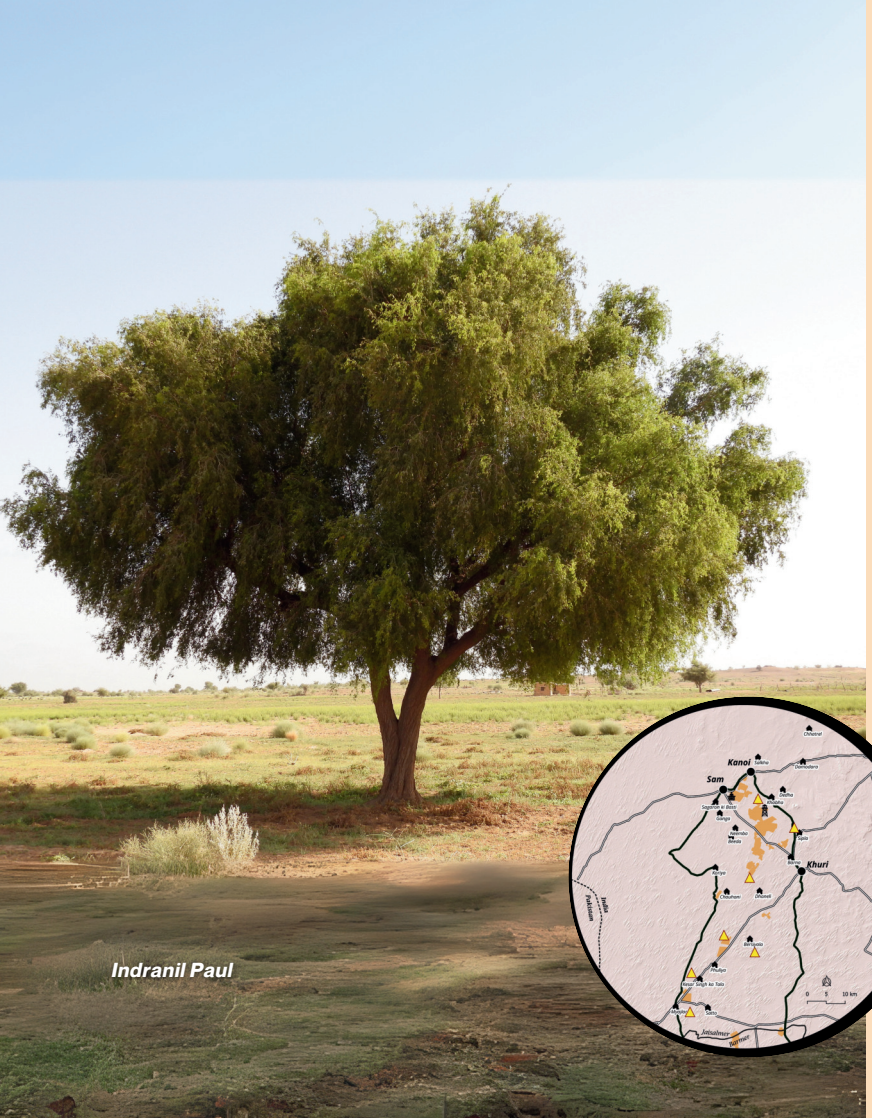
These findings spotlight Desert National Park as a hidden biodiversity refuge and demonstrate that conservation designed for a flagship species like the Great Indian Bustard can deliver cascading benefits for non-target taxa, strengthening the case for ecosystem-wide management in arid landscapes.

Indranil Paul

25 KHEJRI

Prosopis cineraria locally known as Khejri is the state tree of Rajasthan and has a deep cultural significance among the locals as a sacred tree. The tree attains a height of 3-5 m with a dense cascading canopy providing refuge from the sun. The canopy often appears trimmed from the bottom which are signs of animals like camels having foraged on the leaves and formed a visible 'browse line'. The leaves are feathery bipinnate and contain many small leaflets. The flowers are cylindrical yellow to pale yellow spikes and the fruits are slender long green pods with a sweet pulp and are called 'sangri', which is coveted as a local delicacy. The tree is surrounded by bees during its flowering and is pollinated by insects. Galls formed by mites are often observed on branches, leaves and inflorescence, which significantly reduce the yield. Khejri is a leguminous plant and is attributed to improving the soil fertility.



Indranil Paul

This tree is important for raptors – resident eagles and vultures prefer this species for nesting. *P. cineraria* has several medicinal properties, e.g., bark paste is used for rheumatism, healing injuries and scorpion bites, and decoction of young pods is used for curing pneumonia.

In 1730 AD, Maharaja Abhai Singh of Marwar ordered the cutting of the Khejri trees of Khejrali village near Jodhpur to build a new palace there. The family of Amrita Devi, including her young daughters, gave their lives to protect those Khejri trees, which led to widespread protest and later turned into a massive movement in which 363 people were killed in the attempt to save the trees.

Flowers start blooming from December to April and fruiting occurs from March to June.

26 KER

Ker or Caper Berry *Capparis decidua* is a highly drought resistant plant which thrives in a wide variety of substrates from loose sandy soil to rocky outcrops. It is commonly seen growing as a spiny short shrub or a small tree. The characteristic spindly twisting green branches of this plant bear tiny succulent leaves growing sparsely during monsoon, giving it the appearance of a leafless tree and thereby the epithet 'bare caper'. The branches are armed with short paired spines at each node. The coral red/orange flowers blanket the canopy of the shrub as they grow in clusters. The fruits are in the form of pink berries with orange-yellow flesh which turn deep purple as they ripen, and they are consumed by Chinkara and many birds including Rosy Starling, White-eared Bulbul and the Great Indian Bustard.

Indranil Paul

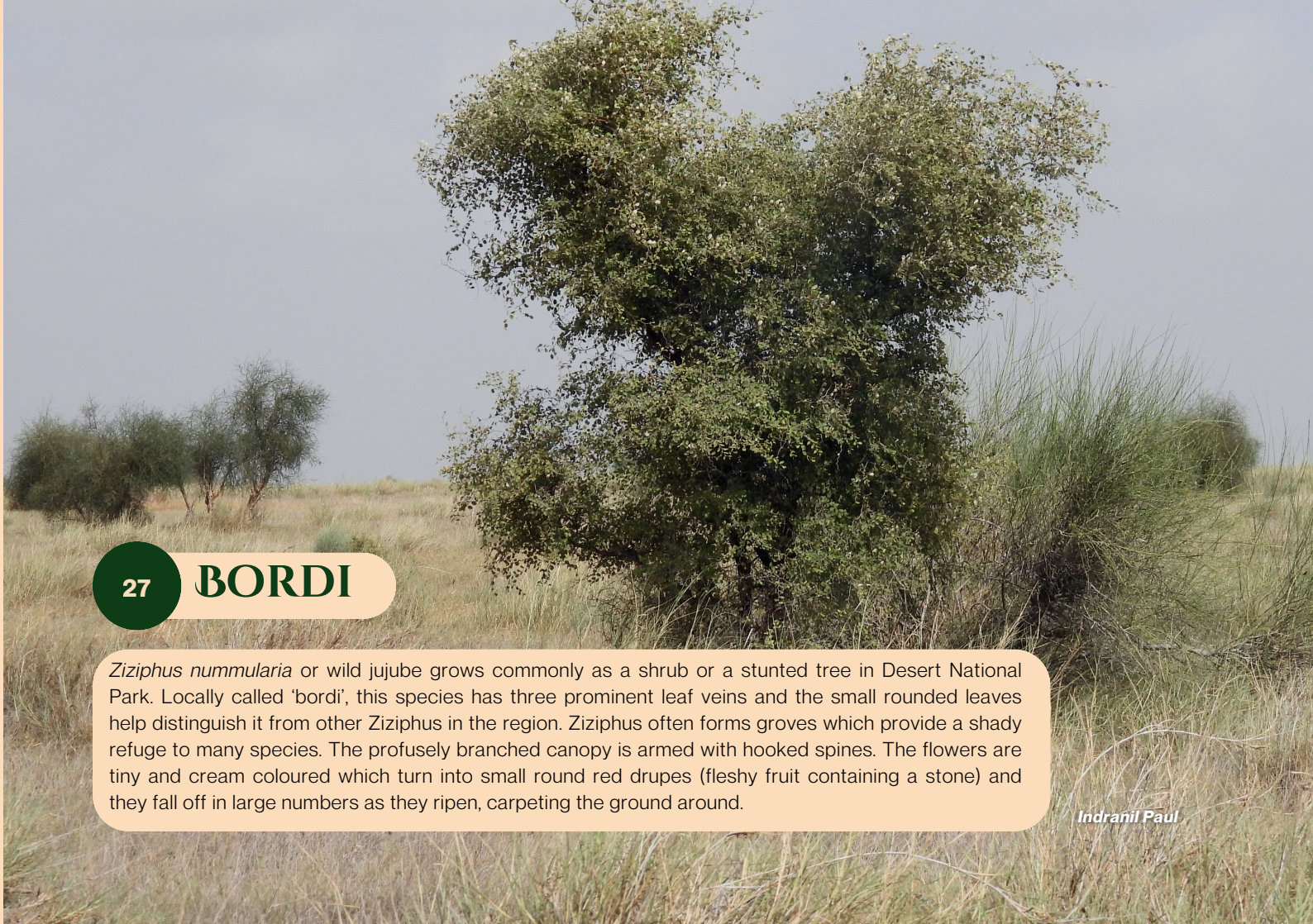
Ker generally has a mound formed at its base owing to its root system binding the soil, which is often dotted with burrows of Indian Hare and native rodents like gerbils. It is also favoured by raptors for roosting. Ker is known for its multiple medicinal properties such as anti-inflammatory, anti-diabetic, laxative and analgesic attributes.

Young fruits of C. decidua are used for pickles and as a vegetable; these fruits are one of the main constituents of the classic Rajasthani dish, “Ker-Sangri”

The plant flowers twice a year. At the beginning of summer, March-April is the main flowering season, followed by a second flowering in September-October. Subsequently, fruiting can be seen in the months of May-June and November.

Manas Shukla

Arijit Banerjee



27 BORDI

Ziziphus nummularia or wild jujube grows commonly as a shrub or a stunted tree in Desert National Park. Locally called 'bordi', this species has three prominent leaf veins and the small rounded leaves help distinguish it from other Ziziphus in the region. Ziziphus often forms groves which provide a shady refuge to many species. The profusely branched canopy is armed with hooked spines. The flowers are tiny and cream coloured which turn into small round red drupes (fleshy fruit containing a stone) and they fall off in large numbers as they ripen, carpeting the ground around.

Indranil Paul

They are foraged upon by many species like Chinkara, foxes, hares, rodents, frugivorous birds and insects such as ants and beetles. During its fruiting season, fox scats are invariably full of Ziziphus seeds. It is also used in traditional folk medicine.

Sacred groves called ‘Oran’ in Rajasthan have grasslands interspersed with patches of Ziziphus.

Flowering and fruiting of both types of Zizyphus occur from August to December

28 SEWAN

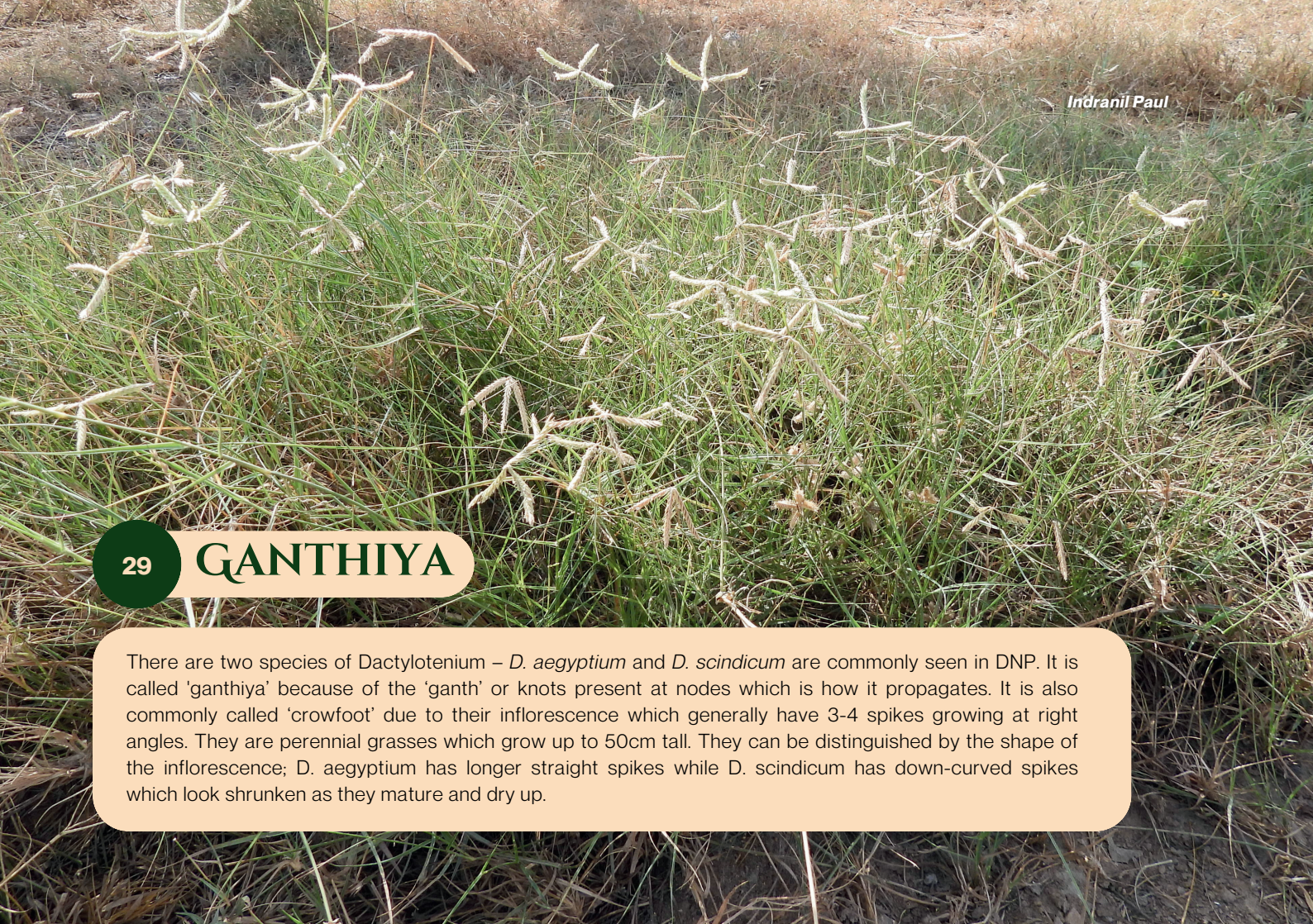
Sewan grass *Lasiurus scindicus* is one of the most important plants of this region. This perennial grass can survive in harsh arid conditions up to 20 years, making it a crucial forage for herbivores when other food sources deplete, especially in spells of low rainfall. This dominant grass forms dense tussocks dotting the bare landscape and grows up to a metre tall. The stem or culm is multi-branched, leaves are long flat with hairy edges, the root system has a woody rhizome and the inflorescence grows as white silky spikelets. This grass is palatable even when mature, has a high nutrient content and a good regeneration capacity. The inhabitants of this desert – wildlife, people and livestock owe their resilience to this species.

Indranil Paul

Pradyuman Sindha

With a height of more than one metre, Sewan grass easily conceals even a large-bodied bird like the Great Indian Bustard. GIB prefers a mosaic of short grasses with tall grasses like Sewan for nesting, where they can swiftly hide themselves in the presence of predators.

Flowering and fruiting of Sewan grass continues throughout the year. Although the flowering peaks during the month of July-October.



Indranil Paul

29 GANTHIYA

There are two species of Dactylotenium – *D. aegyptium* and *D. scindicum* are commonly seen in DNP. It is called 'ganthiya' because of the 'ganth' or knots present at nodes which is how it propagates. It is also commonly called 'crowfoot' due to their inflorescence which generally have 3-4 spikes growing at right angles. They are perennial grasses which grow up to 50cm tall. They can be distinguished by the shape of the inflorescence; D. aegyptium has longer straight spikes while D. scindicum has down-curved spikes which look shrunken as they mature and dry up.

Grasshoppers prefer to feed on both species of Dactyloctenium. Therefore, grasshoppers are abundant in grasslands with Dactyloctenium cover. Due to the high abundance of grasshoppers and the height of this grass, the critically endangered Great Indian Bustard also uses Dactyloctenium grasslands widely.

Flowering and fruiting of both of the Datyloctenium starts during late summer months of June. Fruiting peaks during July-October. Perennial grass D. scindicum goes to dormant stage by January, all the seeds dispersed and only bare culms remain by the end of winter season. D. aegyptium dries off by the onset of summer, approximately by the month of February-March.

LOCAL LIVELIHOOD

The Desert National Park houses within it 88 villages supporting a population of 38696 individuals based on the 2011 census. The locals were primarily nomadic pastoralists who now live more sedentary lives, settling in villages spread across the park. Many households also prefer staying away from the villages in small houses clustered together, commonly called as ‘dhanis’. These dhanis are mostly made of mud and have thatched roofs made of a commonly found plant known as ‘kheemp’ (Leptadenia pyrotechnica).

The primary source of livelihood continues to be animal husbandry. Major livestock include sheep, goats, cattle and camels. The sheep, goats and cattle are mostly reared for their milk, meat and wool. The camels are primarily used as tourist attractions during the tourist season, being involved in taking tourists on rides across sand dunes.

The locals also practice seasonal rain-fed agriculture as one of their main sources of livelihood. Crops like Guar, aka Cluster beans, are grown during the monsoon owing to their high demand. While the beans are a popular food item, the unused part of the crop is used as livestock feed. Other crops commonly grown in the region are bajra (pearl millet), jeera (cumin) and occasionally channa (Bengal gram).

With resources being scarce in the landscape, the locals have learnt to utilise whatever plant species are available as food. Common dishes made include ker sangri, which is a dish made of the pods of the khejri (Prosopis cineraria) tree and the ker (Capparis decidua) plant. Locals also make dishes out of several cucurbitaceae species, including kaachri and matira or melons. Locals also use the fruits of zizyphus nummularia, commonly known as ber.

Tourism in another major source of income. Tourist season commences in the winters (October to March). Popular attractions include safari rides on the dunes, nearby historical and religious sites like Laungewala War Museum, Tanot Mata Temple, the villages of Kuldhara, Khaba, Lodhurva and the city of Jaisalmer itself. The Desert National Park is a hotspot for wildlife enthusiasts and birdwatchers during the winter. Birdwatchers often come to spot the resident critically endangered Great Indian Bustard and other winter migrant species that include thousands of larks, pipits, coursers, vultures, falcons, harriers and more.

Developed by:
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