

Ravine ecology: Waste to Wealth

Ravine landscapes are generally associated with fear. Infamous for being home to dacoits like Phoolan Devi, Pan Singh Tomar and Mohar Singh in the past, this 'lost world' is also the world of wolves, jackals, hyaenas, jungle cats, desert foxes, gharials and some amazing avifauna. In fact, these ravines are one of the most unique and charismatic ecosystems in the world, and act as pasture land for the local villagers

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The mounds and gullies of the Chambal River and its tributaries form a vast network of ravines, which are estimated to be spread over 3,000 sqkm in Rajasthan alone



Despite the biodiversity that these ravines host and the ecological services they provide, ravines are considered wastelands in India

A young hyaena emerged from a dusty den under the stable soil of a *Salvadora* tree and stretched. He rolled about on a patch of loose dry sand to discourage skin parasites, yawned widely and started off on his evening trail. A few metres on, he pounced on a scorpion, broke its stingy tail with his foreleg, and ate it alive. Further on, to our surprise, he picked up fecal dropping of a jackal on a stunted half-grazed *Capparis* shrub. The young hyaena crushed the jackal territory flag and spent the next 10 minutes in finding small edible indigested substances from it. The hot summer months are a time of hardship for a young hyaena, when it has to wait for the mother to bring home a meal that may or may not come. All along, we could hear background sounds that would enthrall anyone: the yelping of jackals, howling of wolves, the churring calls of Nightjars. Several incredible neighbours like badgers, porcupines, hedgehogs, and jungle cats soundlessly left behind

track marks that would soon disappear under the hooves of goats and sheep. Sundown in the maze of mounds and gullies of the Chambal ravines is really a curtain raiser to the world of elusive animals.

The ownership of the land changes between dawn and dusk. In the day, this area is the territory of pastorals, who use it for grazing animals. This sort of coexistence and land-sharing is amazing; a secure home for wild species and a grazing land for livestock keepers. The ravines in question here, are the undulating banks of the Chambal river and its tributary river system. This river is regarded as the cleanest in the north Indian plains, blessed with water coming from small and big tributaries like the Parbati, Kali Sindh, Mez, Morel, Chakal, Galva, Galndi, Kanduli, Seep, Kwari, Param, Banas, etc. The other small companion rivers not only bring water to Chambal, but also provide channel paths to various areas.



Indian long-eared hedgehog (*Hemiechinus collaris*)



Bengal monitor lizard (*Varanus bengalensis*)



Striped hyaena (*Hyaena hyaena*)

The network of these river systems gives this area a very distinctive landscape. A gullied terrain of ravines characterises Chambal and the banks of its tributaries. Formed by the complex processes of erosion, these ravines are undulating mounds of clayey and loamy soil, and like any other ecosystem, provide habitat to a variety of species.

To protect the rich biodiversity of Chambal, the 400km stretch of the river plus a kilometre on both sides of the bank is protected as the National Chambal Sanctuary. The sanctuary covers the tri-states of the central India – Rajasthan, Madhya Pradesh, and Uttar Pradesh – and is famous for the critically endangered Gharial. Interestingly, while the river itself is protected, its tributaries are not. Not that the protected land is faring much better – the banks are encroached and used

for illegal agriculture with almost no action taken to stop it. The areas beyond this, which are labelled as wastelands by the government, are promoted for flattening for agriculture. So, it is ironic that this rich habitat is considered wasteland in government records.

This year, the Government of Rajasthan sanctioned ₹ 25 crores for the flattening of this habitat for agricultural activities. Flattening for agriculture reduces the surface area of a piece of land; this folded landscape actually has a surface area that is three to four times more than a flattened landscape. Such land conversion projects adversely affect both pastoralists, who lose the much-needed grazing land, and the wildlife of this unique habitat. There is not enough water in the area for agriculture, which hints at digging deep borewells by farmers to grow crops, reducing the water table further. The shortage of water in the Chambal river is due to many irrigation projects: the Gandhi



Indian star tortoise (*Geochelone elegans*)



A jackal (*Canis aureus*) scavenges a domestic camel carcass

Dharmendra and Divya Khandal



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Indian Eagle-Owl (*Bubo bengalensis*)



Indian wolf (*Canis lupus pallipes*) in the gullies of the Chambal ravines

Sagar Dam, Rana Pratap Sagar Dam, Jawahar Sagar Dam, Kota Barrage, etc on Chambal river and Bisalpur Dam on its tributary Banas. This has altered the flow of water drastically, causing the Chambal to flow at minimum levels. It is in these conditions that the critically endangered Gharial is trying to make its last survival attempt (read more about the Gharial's fight to survive in this issue's Save Us section).

India has about 17.5 per cent of the world's population and covers a bit more than 2 per cent of the planet's surface. As a growing economy, every inch of available land suitable is usually slotted for economic use. However, environmentalists and ecologists find this approach unviable and destructive. An estimated 17 per cent of India's terrestrial surface area is categorised as wasteland, which includes snow-covered glaciers, beaches, wetlands, steep hill slopes, and ravines. This makes the wasteland area three times more than the protected areas of India. 'Waste' simply means that the land is non-productive in terms of human use. Crores are allocated annually to make these wastelands suitable for development and economic use. But these 'wastelands' host unique ecosystems and are crucial to the survival of several species of animals and birds. The ecological services of these lands are essential for the environmental integrity of this country. To appreciate the need for wasteland management, there is a need to change mindsets first. But even before we turn from a purely economic perspective to a holistic view of development, we need to better understand these neglected landscapes with modern research methods so that we can conserve them in their entirety.

Recently, we conducted an ecological survey in these ravines and presented a report on the presence of the Indian wolf and other unique species in those areas. The findings led to 3,000 acres being declared as pasture land by Mr Giriraj Singh Kushwaha, District Collector of Sawai Madhopur. This status makes any kind of land conversion illegal on this stretch and promotes the co-existence of pastoralists and wildlife.

Without understanding the intricacy of ecosystems, we have tagged these landscapes that were once home to dacoits and have in effect become so ourselves, looting the nature of all its beauty and resources. ○