

South Africa: Wild animals at risk of 'genetic pollution'

Lions, rhinos and cheetahs are among the wild species at risk of irreversible "genetic pollution" from breeding experiments, scientists have warned.

South African game farmers have increasingly been breeding novel trophy animals, including some freakishly-coloured varieties such as the black impala, golden wildebeest or pure-white springboks. Some hunters pay more to bag unusual trophies, but now the South African government is under fire for permitting further gene manipulation ventures that scientists say could have a damaging effect on the continent's wildlife.

Writing in the latest issue of the South African Journal of Science, a group of 10 senior wildlife scientists and researchers have criticised the government for quietly amending the country's Animal Improvement Act last year to allow for the domestication and "genetic improvement" of at least 24 indigenous wildlife species – including rare and endangered animals such as rhino, cheetah, lion, buffalo and several antelope species.

The researchers warn that: "A logical endpoint of this legislation is that we will have two populations of each species: one wild and one domesticated ... domesticated varieties of wildlife will represent a novel, genetic pollution threat to South Africa's indigenous wildlife that will be virtually impossible to prevent or reverse."

Lead author Prof Michael Somers, a senior researcher at the Mammal Research Institute at the University of Pretoria, says the government should scrap

the controversial law amendment which lumps together rare and endangered species such as rhinos with rabbits and domesticated dog breeds.

Somers and his colleagues say the act typically provides for domesticated species to be bred and "genetically improved" to obtain "superior domesticated animals with enhanced production and performance".

These animals "can also be used for genetic manipulation, embryo harvesting, in-vitro fertilisation and embryo transfers," say the scientists. They argue that the law will not improve the genetics of the affected wildlife species but rather will pose ecological and economic risks as it will be expensive and almost impossible to maintain a clear distinction between wild and domesticated species.

Somers and his colleagues say the government did not appear to have consulted either scientists, government wildlife agencies or the general public about the controversial move. Last year, in response to concerns that the legal amendment would remove the listed species from the ambit of conservation legislation, the government's environment department issued a statement to emphasise that that game breeders would still have to comply with the National Environmental Man-



agement Biodiversity Act and regulations concerning threatened or protected species.

But Somers and his co-authors remain concerned, saying that in the province of KwaZulu-Natal, where there is close cooperation between game breeders and the provincial conservation organisation, the authorities still had difficulty keeping track of what happens on game farms and in enforcing legislation.

The "golden wildebeest" is a novel species derived through the ranching and selective breeding of the common or blue wildebeest (*Connochaetes taurinus*), much darker animals whose coats are typically a deep slate or bluish grey colour. Moves to allow more intensive genetic manipulation of several wildlife species in South Africa have raised the concern of scientists around irreversible genetic pollution of the original wild species. Photograph: Prof Graham Kerley/Nelson Mandela University "This new law will add to this difficulty, and will likely be less controlled in some other provinces," they said, adding that the genetic consequences of intensive or semi-intensive breeding of wildlife species were "negative and considerable".

"Intensive breeding through artificial (non random) selection of individuals for commercially valuable traits

(eg horn size/shape, coat colour) represents humans taking over this natural process. Such artificial selection by humans is even more powerful than natural selection in creating distinct phenotypes within very short time frames." Michael Bruford, a professor of biodiversity at the University of Cardiff and co-chair of the Conservation Genetics Specialist Group of the IUCN Species Survival Commission, added his support to the concerns raised. "The Convention on Biological Diversity's 2020 targets clearly state that signatory countries should minimise genetic erosion (loss of genetic diversity) in domestic, socio-economically and culturally valuable species," he said. "However you regard these species – and they cannot reasonably be classified as domestic animals – South Africa's proposal will very likely lead to genetic erosion, in contravention of the CBD target," he added. "This proposal also comes at a time of rapid environmental deterioration, when we need to be increasing the resilience of our species by ensuring they retain as much genetic diversity as possible". In the weeks and months ahead, our journalism will investigate the prospects for a new green settlement. We will showcase the big thinkers and protagonists and amplify the arguments for authorities everywhere to consider as they lead us out of coronavirus. Our credentials suit us well to the task: we are independent, we have no owners, no paymasters or oligarchs pulling the strings. We have committed to carbon neutrality by 2030, divested from the oil and gas sectors and renounced fossil fuel advertising. But at this crucial moment, news organisations like ours are facing a daunting financial challenge. —Agencies



Twitter disables Trump tweet over copyright complaint

WASHINGTON DC: Twitter Inc disabled a campaign-style video that President Donald Trump retweeted citing a copyright complaint. The video, which included music from the group Linkin Park, disappeared from the president's Twitter feed late Saturday with the notification: "This media has been disabled in response to a report by the copyright owner." Twitter removed the video, which Trump had retweeted from White House social media director Dan Scavino, after it received a Digital Millennium Copyright Act notice from Machine Shop Entertainment, according to a notice posted on the Lumen Database which collects requests for removal of online materials. Machine Shop is a management company owned by the rock band Linkin Park, according to its LinkedIn page. "We respond to valid copyright complaints sent to us by a copyright owner or their authorized representatives," a Twitter representative said in an email statement. The White House did not immediately respond to a request for comment. Twitter began challenging Trump's tweets in May and has repeatedly clashed with him since. The social media company has several times disabled or commented on tweets by the president because of what it said were copyright complaints or violations of a policy against threatening violence. Twitter removed an image the president tweeted on June 30, which included a picture of Trump, because of a complaint from the New York Times, whose photographer had shot the image. The company also put a tweet from the president behind a warning label in late May, saying that he had violated its rules against "glorifying violence" when he advocated that Minneapolis authorities be tough in responding to protests over the death of George Floyd. —Reuters

TikTok considers London and other locations for headquarters

LONDON: TikTok has been in discussions with the UK government over the past few months to locate its headquarters in London, a source familiar with the matter said, as part of a strategy to distance itself from its Chinese ownership. London is among one of several locations the company is considering, but no decisions have been made, the source said. It was not immediately clear what other locations are under consideration. But it has hired aggressively in California this year, including poaching Kevin Mayer, a former Walt Disney Co executive, to be TikTok's chief executive. He is based in the United States. TikTok is facing heavy scrutiny in Washington over suspicions China could force the company to turn over user data. TikTok is owned by China-based ByteDance. The source said the company is largely focused on its issues in the United States over the last few weeks, but has not ruled out London as a potential location for its new

Scientists unravel secrets of ultra-black fish swimming the deepest depths

WASHINGTON: For fish inhabiting the immense darkness of the deep sea, being ultra-black offers great camouflage in a fish-eat-fish world. Scientists studying some of these exotic creatures now have unraveled the secret behind their extreme color. These fish - like the fangtooth, the Pacific blackdragon, the anglerfish and the black swallower - have modified the shape, size and packing of the pigment in their skin to the point that it reflects less than 0.5% of light that hits it, researchers said on Thursday.

They studied 16 species that fit this definition of



ultra-black. These spanned six different orders of fish - large groupings that each have a shared evolutionary history - indicating this modification evolved independently in all of them.

"In the deep, open ocean, there is nowhere to hide and a lot of hungry predators," said zoologist Karen Osborn of the Smithsonian Institution's National Museum of Natural History in Washington, a co-author of the research published in the journal *Current*

Biology. "An animal's only option is to blend in with the background." Very little sunlight penetrates more than 650 feet (200 meters) below the ocean's surface. Some of these fish reside three miles (5,000 meters) deep. At such depths, bioluminescence - light emission by living organisms - is the only light source. Some of the ultra-black fish have bioluminescent lures on their bodies to coax prey close enough to be eaten.

The skin of these fish is among the blackest material known, absorbing light so efficiently that even in bright light they appear to be silhouettes, as Os-



born discovered when trying to photograph them after they were brought to the surface. The pigment melanin is abundant in this skin and distributed in an unusual fashion. By packaging perfectly sized and shaped melanosomes - pigment-filled structures within the skin cells - into tightly packed and continuous layers at the skin's surface, the fish ensure that essentially all light reaching them will hit this layer and never escape. "This mechanism of making

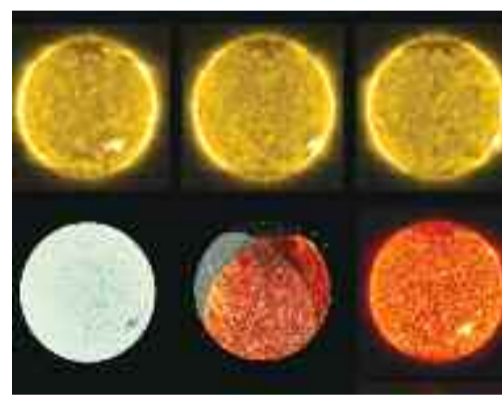
thin and flexible ultra-black material," Osborn said, "could be used to create ultra-black materials for high-tech optics or for camouflage material for night ops." —Reuters



Solar probe reveals sun's tiny 'campfires' in closest-ever photos

WASHINGTON: A solar probe built by the European Space Agency and NASA has delivered the closest photos ever taken of the sun's surface, revealing a landscape rife with thousands of tiny solar flares that scientists dubbed "campfires" and offering clues about the extreme heat of the outermost part of its atmosphere. "When the first images came in, my first thought was, 'This is not possible - it can't be that good,'" David Berghmans, principal investigator for the Solar Orbiter spacecraft's ultraviolet imager at the Royal Observatory of Belgium, told reporters.

The spacecraft, launched from Florida in February, snapped the images in late May using the probe's Extreme Ultraviolet Imager as it orbited nearly 48 million miles (77 million km) from the sun's surface, or roughly halfway between the sun and Earth. The "campfires" are believed to be tiny explosions, called



nanoflares, and could explain why the sun's outer shield, the corona, is 300 times hotter than the star's surface. Scientists are awaiting more data from the

spacecraft's other instruments to know for sure. "We've never been closer to the sun with a camera, and this is just the beginning of the long epic journey of Solar Orbiter," said Daniel Müller, ESA's Solar Orbiter project scientist. Scientists typically have relied upon Earth-based telescopes for closeups of the sun's surface. But Earth's atmosphere limits the amount of visible light needed to glean views as intimate as those obtained by the Solar Orbiter. The spacecraft also carries plasma-sampling instruments to offer researchers further data. "That combination really allows us to make links and connections to what's happening on the sun and what's happening at the spacecraft," said Holly Gilbert, Solar Orbiter project scientist at NASA.

Solar Orbiter's primary mission of examining the sun's polar regions will help researchers understand the origins of the solar wind, charged particles that blast through our solar system and affect satellites and

It is still early in the morning as Chakwal district's wildlife officer Mirza Abid Hussain leaves his office on a field visit to the Salt Range. His brow is furrowed as he worries over a nagging concern: the persistent poaching of partridges and urial, a species of mountain sheep. The acute shortage of manpower and equipment in his office provides him little help in the way of conserving these endangered species found in the mountain range that skirts the southern part of Punjab's Chakwal district.

Fifteen sanctioned posts, of wildlife watchers and inspectors, in Hussain's Punjab Wildlife and Parks Department (WPD) lie vacant. That leaves hardly enough wildlife watchers to cover the vast terrain of the Salt Range. With only one vehicle in use by Hussain, it is next to impossible for the existing staff to nab any poachers who go about killing the urial unnoticed.

The Salt Range boasts of historic sites including the Katas Raj Temples, the Rohtas, Malot and Nandna Forts, while its lower areas are enriched with vast beds of salt, coal and gypsum. The rugged mountains, covered with dense scrub forest, sprawl over an area of 300 square km and include the Jhelum, Chakwal, Khushab and Mianwali districts, where natural springs wend their way into lakes and where different species of wildlife, including migratory birds, play a vital role in the ecosystem of the area. There is a national park, six game reserves and five sanctuaries in the Salt Range, made for the purpose of wildlife preservation.

What makes the Salt Range particularly attractive is that it is the habitat of the Punjab urial (*Ovis vignei punjabiensis*), a mammal with six sub-species. Just as the markhor is known as a wild goat, the urial is known as a wild sheep. The Punjab urial has large horns and reddish-brown long fur that fades in colour during winters. The male urial is characterised by a black ruff that stretches from its neck to its chest. The average shoulder height of the Punjab urial is 78cm to 92cm and, ac-

Wildlife: Can the urial be saved?



cording to the Gazetteer of the Jhelum District (1904), the average size of the male urial's horns is 24 inches to 26 inches — although males with horns as long as 32 inches have also been found. Besides being hunted for sport, the urial is often killed for its meat, while upper-class drawing rooms are also decorated with their taxidermied heads.

The current status of the urial population in the Salt Range is unknown to the wildlife department, as it is to the International Union for Conservation of Nature (IUCN) and the World Wildlife Fund (WWF). The first-ever survey to gauge the population of the urial was carried out in June 2011. Based on the survey, a report published by WWF, in the same year, revealed that 50 percent newborn lambs were taken away by poachers within a week of their birth, every year.



April-May is breeding season for the urial and the poachers keep an eye out for pregnant females. According to the report, 110 urial were found in select 28 percent areas of the entire Salt Range, while in some pockets their presence was rare.

It was not until 2019, eight years after the first survey, that the Ministry of Climate Change took the initiative last September and conducted another survey. Despite the survey being completed in November, its findings are yet to be released. According to two members of the survey team, the findings are being kept confidential deliberately as they present a dismal picture.

"Although a scientific analysis is yet to be done on the findings of the survey, the situation is bleak," says one team member. The Chumbi Surla Wildlife Sanc-

tuary in Khushab, sprawling over 55,000 acres, is supposedly a safe haven for the urial. The law does not permit any person to even enter the sanctuary, even for the purpose of a visit. But even here the urial had not flourished. "Even though the urial lives in herds, during our survey, we did not see a single male urial in the sanctuary. Not even a herd of more than four or five urials was spotted," the surveyor says.

Although it is illegally hunted throughout the year, the annual trophy hunting of urial takes place in winters under official patronage. From December till the end of March, mostly American and Russian hunters participate in this sport after paying a hefty permit fee of 18,000 US dollars for one animal. Last winter, about 16 male urial were killed.

In an initiative for better wildlife conservation, and in an effort to combat the poaching of urial in particular, the Punjab government has allowed the setting up of community-based organisations (CBOs) under the Punjab Wildlife Act (amended in 2007). Presently, five CBOs are operating in the Salt Range.

Trophy hunting is conducted by the CBOs in their respective areas. Each CBO gets an average of three permits a year. As per law, the government gives 80 percent of the permit fee to each CBO, to hunt one urial in an allotted area. The fee is intended to be used for the conservation of wildlife and the welfare of the people of the area. But so far, neither the performance of the CBOs nor the money given to them has been audited.

"The CBOs are not being monitored, and wildlife conservators, poachers and the general public who frequent the areas have complained that the CBO heads are also involved in poaching," says an official, on request of anonymity. "In many cases, CBOs get the urial killed in the sanctuary instead of their allotted area," says Suleyman Khan, the inspector general and joint secretary at the Ministry of Climate Change.