BOOKS

Cataclysm Has Arrived: Man's Inhumanity to Nature

'The Sixth Extinction,' on Endangered and Departed Species

FEB. 2, 2014

Books of The Times

By MICHIKO KAKUTANI

The plight of doomed, extinct or nearly extinct animals is embodied in Elizabeth Kolbert's arresting new book, "The Sixth Extinction," by two touching creatures.

Suci, a 10-year-old Sumatran rhino who lives at the Cincinnati Zoo, is one of the few of her endangered species to be "born anywhere over the past three decades." Efforts by her caregivers to get her pregnant through artificial insemination, Ms. Kolbert reports, have been complicated because female Sumatrans are "induced ovulators": "They won't release an egg unless they sense there's an eligible male around," and "in Suci's case, the nearest eligible male is ten thousand miles away."

A Hawaiian crow (or alala) named Kinohi, one of maybe a hundred of his kind alive today, was born at a captive breeding facility more than 20 years ago and now lives at the San Diego Zoo. He is described as an odd, solitary bird, who does not identify with other alala, and has refused to mate with other captive crows, despite his human caregivers' hope that he will contribute to his species' limited gene pool. "He's in a world all to himself," the zoo's director of reproductive physiology said of Kinohi. "He once fell in love with a spoonbill."

In these pages, Ms. Kolbert, a staff writer for The New Yorker and a former reporter for The New York Times, uses Kinohi and Suci and the stories of other imperiled or already vanished species vividly to illustrate the fallout of what

some scientists have called the sixth extinction — caused not by some unstoppable force of nature (like a falling asteroid or plummeting temperatures) but by mankind's transformation of the ecological landscape.)

Ms. Kolbert wrote a lucid, chilling 2006 book about global warming ("Field Notes From a Catastrophe"), and in "The Sixth Extinction," she employs a similar methodology, mixing reporting trips to far-flung parts of the globe with interviews with scientists and researchers. Her writing here is the very model of explanatory journalism, making highly complex theories and hypotheses accessible to even the most science-challenged of readers, while providing a wonderfully tactile sense of endangered (or already departed) species and their shrinking habitats. She writes as a popularizer — or interpreter — of material that has been excavated by an army of scientists over the years and, in many cases, mapped by earlier writers.

Her book covers some ground that will be familiar to readers of books like "The Song of the Dodo" by David Quammen, "The Ghost With Trembling Wings" by Scott Weidensaul and the writings of the biologist Edward O. Wilson. It even borrows the title of a 1995 book by Richard Leakey and Roger Lewin, which also addressed the story of the previous five mass extinction events and the human role in the so-called sixth.

The tireless Ms. Kolbert hikes through a Peruvian forest, where "the trees were not just trees; they were more like botanical gardens, covered with ferns and orchids and bromeliads and strung with lianas." Here, her guide is a forest ecologist named Miles Silman, who's been looking at how global warming restructures ecological communities. She meets with the atmospheric scientist Ken Caldeira, known for his pioneering work in ocean acidification (changing pH levels in seawater brought about by the absorption of growing levels of carbon dioxide), on the Great Barrier Reef off Australia and gives us a succinct — and scary — assessment of the deadly effect that growing acidity and rising temperatures are having on coral reefs (which, in turn, help support "thousands — perhaps millions — of species" directly or indirectly).

In another chapter, about the spread of invasive species (hastened by human travel and commerce), she investigates the case of a sudden bat die-off in New

York and New England, brought about a cold-loving fungus that was "accidentally imported to the U.S., probably from Europe." Accompanying wildlife and conservation experts on a hike into the chilly depths of Aeolus Cave in Vermont, she sees there a kind of bat hell — thousands of dead and dying bats littering the frozen ground, many of them crushed and bleeding underfoot.

Ms. Kolbert is nimble at using such dramatic scenes to make sense of larger ideas. In the course of this volume, she traces the history of human understanding of the concept of extinction (which first developed thanks largely to the animal now known as the American mastodon and the work of the naturalist Georges Cuvier in revolutionary France), and she describes how the understanding of annihilation by catastrophe modified the Darwinian concept of survival of the fittest.

Whether it was the giant asteroid that took out the dinosaurs at the end of the Cretaceous period (one geologist says, "Basically, if you were a triceratops in Alberta, you had about two minutes before you got vaporized") or the glaciation believed to have brought an end to the Ordovician period, catastrophes have the effect of fundamentally altering the rules of the survival game. "Traits that for many millions of years were advantageous all of a sudden become lethal," Ms. Kolbert writes, adding that it may be "the very freakishness of the events" that made them so deadly, forcing organisms to contend with conditions for which they were "evolutionarily, completely unprepared."

Today's deadly change agent, Ms. Kolbert observes, is man himself. And by the end of this book, she's left us with a harrowing appreciation of the ways in which human beings have been altering the planet: hunting to death big mammals (like the mammoth or giant sloth or, more recently, elephants and big cats); introducing alien (sometimes invasive) species to regions where they disrupt a delicate ecological balance; and altering the geologic surface of the earth (damming major rivers, mowing down forests and cutting up habitats in ways that impede migration).

Most significant, she says, has been mankind's effect on the atmosphere. By one estimate cited by Ms. Kolbert, the combination of fossil fuel use and deforestation has caused the concentration of carbon dioxide in the air to rise "by

40 percent over the last two centuries," while making the concentration of methane ("an even more potent greenhouse gas") more than double.

Over the years, Ms. Kolbert writes, "a number of different names have been suggested for the new age that humans have ushered in": including the "Catastrophozoic era," the "Homogenocene," the "Myxocene" (from the Greek word for "slime") and the "Anthropocene."

Human-driven change is happening faster than ever — "warming today is taking place at least 10 times faster than it did at the end of the last glaciation," she writes — and its fallout looks to be devastating. "It is estimated," Ms. Kolbert says, "that one third of all reef-building corals, a third of all freshwater mollusks, a third of sharks and rays, a quarter of all mammals, a fifth of all reptiles, and a sixth of all birds are headed toward oblivion. The losses are occurring all over: in the South Pacific and in the North Atlantic, in the Arctic and the Sahel, in lakes and on islands, on mountaintops and in valleys."

Ms. Kolbert shows in these pages that she can write with elegiac poetry about the vanishing creatures of this planet, but the real power of her book resides in the hard science and historical context she delivers here, documenting the mounting losses that human beings are leaving in their wake.

THE SIXTH EXTINCTION

An Unnatural History

By Elizabeth Kolbert

Illustrated. 319 pages. Henry Holt and Company. $28.

Correction: February 4, 2014

Two passages in the Books of The Times review on Monday, about "The Sixth Extinction" by Elizabeth Kolbert, were transposed in the continuation of the review. The passage above a photograph of Ms. Kolbert should have been below the photograph, and the passage below should have been above it.

A version of this review appears in print on February 3, 2014, on page C1 of the New York edition with the headline: Cataclysm Has Arrived: Man's Inhumanity to Nature.

A Certain Middle-Aged Man's VRMMO Activity Log; OVRMMO; The Record by an Old Guy in the world of Virtual Reality Massively Multiplayer Online; To Aru Ossan no VRMMO Katsudouki; ã¨ã‚‹ã‚ãŠã£ã•ã‚“ã®VRMMOæ´»å‹•è¨˜; æŸå¤§å”çš„VRMMOæ´»åŠ¨è®°; ì–´ë–¤ ì•„ì €ì”¨ì˜ VRMMOí™œë™ê¸°. Author(s): Shiina Howahowa. Artist(s): Rikudou Shuuya. Type: Manga. Genre(s): Action, Adventure, Comedy, Cooking, Fantasy, Harem, Sci-fi, Shounen, Slice of Life. Status: Ongoing. Views: 108247. Man, almost by default, improves the state of nature by his existence, which demands that he better it or suffer the stasis. 1.6K views Â·. View 3 Upvoters. Related Questions. More Answers Below. If nature has evolved to be so apparently symbiotic how do we account for humans devastating the planet and our natural resources? Or could it be natures way of making sure it produces the likes of us to do away with itself and if so, why?Â Man in his form has been causing damage to natural resources right from time, things only are worse due to advancement in technology. Some of these practices include : deforestation,pollution (off-site and on-call site pollution) causing damage to biodiversity at large, unsustainable Agricultural practices is part of it over exploitation of resources and Minning activities.