

But applying the findings to conservation efforts may be difficult, because it's not always obvious how that knowledge should guide decisions about animal protection. "So far, we haven't really been able to fully appreciate the power of genomics in conservation," says Aaron Shafer, a geneticist at Trent University in Peterborough, Canada.

FINDING CLARITY

Amato notes strong parallels between giraffes and African elephants, which were classified as a single species until a 2010 study³ provided genetic evidence that there were actually two: forest elephants (*Loxodonta cyclotis*) and savannah elephants (*Loxodonta africana*). That finding increased calls for extra protection of the forest elephant, the rarer of the two.

However, assessments by the International Union for Conservation of Nature still treat the animals as one species, owing to concerns that splitting them into two would place elephant hybrids into a kind of conservation limbo.

Evidence showing that many populations of American bison (*Bison bison*) carry a little domestic-cattle DNA⁴ prompted concerns over whether it was worth saving the contaminated herds, because they weren't completely wild. Amato and other biologists have argued that the animals still deserve protection. "They are ecologically functional bison," he says.

It is unclear whether this study will have any impact on giraffe conservation, says Amato. The most immediate effects may be felt in zoos that trade the mammals for breeding purposes: now that researchers have identified several species, it should be easier for zookeepers to make appropriate matches.

The discovery of these giraffe species could have come sooner, but science has neglected the animals. "Giraffes were fairly ubiquitous in their habitat, and they weren't much of a target for poachers," Amato says. "They are an iconic animal, but they were taken for granted." ■

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Studies of people who survived Ebola are altering scientists' understanding of the virus.

PUBLIC HEALTH

Ebola virus and its legacy linger on

Long-term tracking of people who beat the virus reveals its remarkable longevity in the human body.

BY ERIKA CHECK HAYDEN

Ebola survivors are teaching scientists some surprising lessons. Long-term studies have revealed that the virus lasts longer in survivors' bodies than previously suspected.

The findings, presented on 12 September at an Ebola-virus conference in Antwerp, Belgium, underscore the need for extended tracking of people who have beaten Ebola and other rare infections. Researchers have long known that the virus can persist in people who have recovered from the infection. But the size of the West African outbreak, coupled with improved monitoring technologies, is changing how scientists view life after Ebola — and how to prevent future outbreaks.

"Now that you have tens of thousands of survivors and systemic approaches to follow them, you can detect things that happen more rarely and attribute them to Ebola," says physician and epidemiologist Daniel Bausch of the World Health Organization in Geneva, Switzerland.

Researchers will soon publish the first confirmed report of a person without obvious Ebola symptoms infecting another person. A seemingly healthy mother in Guinea passed the virus to her nine-month-old daughter in breast milk, and the child died from Ebola-virus infection in August 2015, according to a European Union-funded team led by Sophie Duraffour from the Bernhard Nocht Institute for Tropical Medicine in Hamburg, Germany.

A study due to be presented at the Antwerp meeting also suggests that some people ▶



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► who became infected during the recent outbreak escaped detection. Miles Carroll, an epidemiologist at Public Health England in Porton Down, and his colleagues tracked 80 people who had contact with Ebola patients in Guinea but did not themselves become noticeably ill. Yet 15–20% of these contacts developed immune responses capable of neutralizing Ebola viruses, suggesting that they had contracted mild infections that went undetected.

This 'sub-symptomatic' or 'asymptomatic' Ebola was known to exist, but the latest studies involve more people who have been studied more intensively than in the past. Researchers caution, however, that it is still rare for Ebola lingering in a person's body to spark new outbreaks. The phenomenon would probably have escaped notice if the recent epidemic had been smaller.

Thousands of men who are infected have survived, but until recently scientists did not know that the Ebola virus could be transmitted in semen beyond three months, says Mary Choi, an epidemiologist at the US Centers for Disease Control and Prevention. The agency and the Liberian government are running the largest-ever investigation of Ebola viruses in the semen of survivors. So far, the team's study of 466 men has detected virus fragments in semen up to 18 months after a man has recovered from his infection¹.

In February, two months after the outbreak was declared over in Guinea, Duraffour and her colleagues traced a cluster of new Ebola cases to a man who transmitted the virus to a sexual partner 17 months after recovering from his infection². Yet another study, which examined 26 male Ebola survivors, found that the vast majority eliminated the virus from their semen within 4 months of recovery³. The precise timing varied widely from person to person, however.

Choi says that the virus probably lasts for longer than 18 months in semen. Her team will continue to monitor the virus's persistence, while counselling survivors to use condoms or abstain from sex until their semen tests negative twice. "The primary takeaway is that semen testing should be incorporated earlier on as part of services that survivors receive," Choi says.

Researchers must show sensitivity in communicating such findings, says virologist Stephan Günther of the Bernhard Nocht Institute, and take care not to make life more difficult than it already is for Ebola survivors, who face discrimination and lingering health problems. "We have to be careful to stress that these are very, very rare events." ■

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The Gaia telescope's data will help to measure the distances to 'standard candles' such as RS Pup (centre).

GAIA SPACECRAFT

Galaxy map will change astronomy

Data will shed light on exoplanets, cosmology and more.

BY DAVIDE CASTELVECCHI

Astronomers the world over are about to get their first taste of a transformative tool. As *Nature* went to press, Gaia, a space telescope launched by the European Space Agency (ESA), was due to release its first map of the Milky Way on 14 September. Initially, the catalogue will show the 3D positions of 2,057,050 stars and other objects, and how they have changed over two decades. Eventually, it will contain one billion objects or more.

The release is expected to include 19 papers by the Gaia astronomers who have seen the data. Independent teams could produce 100 or so papers just in the weeks following the release of the draft catalogue, says Lennart Lindegren, an astronomer at the Lund Observatory in Sweden and a driving force for Gaia.

"Gaia is going to revolutionize what we know about stars and the Galaxy," says David Hogg, an astronomer at New York University. He and others are leading 'Gaia hacking' events that will attempt to exploit the burst of data. So, what might some of the discoveries be?

MILKY WAY ARCHAEOLOGY

Gaia's 3D view will reveal how stars move under the Milky Way's combined gravitational pull. This will add to knowledge of the Galaxy's structure, including that of parts not directly visible from Earth, such as the 'bars' that join the Galactic Centre to the Milky Way's spiral arms.

Researchers will also be able to identify outlying stars that stream together at high speeds and are thought to be remnants of mergers with smaller galaxies, says Michael Perryman, a former senior scientist for Gaia at ESA. Combined with data about stars' colour, temperature and chemical composition, this will enable researchers to reconstruct the Galaxy's 'archaeology' from the past 13 billion years.

WHERE IS THE GALAXY'S DARK MATTER?

The details of star trajectories will uncover the Milky Way's distribution of dark matter, which constitutes the bulk of matter in the Universe. That could help to reveal what dark matter is.

Gaia might also put some exotic theories to the test. MOND (modified Newtonian dynamics) predicts a different Galactic gravitational field from standard dark-matter theory; star