

Astronomy

Ron Cowen reports from Berkeley, Calif., at a meeting of the American Astronomical Society

Quasar count poses dark-matter puzzle

Cosmologists believe that the amount of dark matter — mysterious material that exerts a gravitational influence on its surroundings but doesn't emit light — far exceeds the quantity of visible, luminous mass in the universe. A clump of dark matter can betray its presence if it acts as a gravitational lens, bending and brightening light from a more distant object. This cosmic mirage can make visible a dim source that would otherwise remain too faint to detect.

To study dark matter that might reside in clusters of galaxies, Liliya Rodrigues-Williams and Craig J. Hogan of the University of Washington in Seattle compared quasar densities in sky regions with and without foreground galaxy clusters. They predicted that dark-matter "lensing" would cause regions with clusters to appear to have a 1 percent excess of known quasars. Instead, they found that regions with clusters have a 70 percent greater abundance of quasars. Although theory already suggests that galaxy clusters have huge halos of dark matter, some six times larger than the width of a visible cluster, the new analysis may indicate that clusters have even bigger halos, says Rodrigues-Williams. The study "is also probably telling us we don't fully understand [gravitational] lensing," she says.

Confirmation of these results in further studies would indicate that dark-matter lensing is far more powerful than believed, she notes. Such knowledge is critical for calculating the mass density and expansion rate of the universe.

Strip show in M15: Naked blue stars

Globular clusters, the densely packed regions surrounding the disk of the Milky Way, contain some of our galaxy's oldest stars. But peering into the cluster M15, the Hubble Space Telescope has spied 15 seeming youngsters among the elderly residents. Astronomers say these stars — which are unusually blue and hot, and thus appear youthful — belong to a new stellar class. And if speculation about their origin proves correct, these objects are laying bare the evolution of stars like our sun.



False-color image depicts a new class of stars in M15.

De Marchi, Paresce

Francesco Paresce and Guido De Marchi of the Space Telescope Science Institute in Baltimore suggest the stars were once red giants, aging stellar objects known for their bloated atmospheres. The researchers speculate that close encounters with other stars in the crowded cluster ripped away the atmospheres of these stars, exposing their naked, blue-hot cores.

"This is the first time we have seen inside [a star]," says De Marchi, who is also affiliated with the University of Florence in Italy. He notes that the stripped atmosphere won't alter the fate of these stars, which will evolve into tiny, burned-out relics called white dwarfs. About 5 billion years from now, our sun will become a red giant, and eventually it too will end its life as a white dwarf. The ability to view even the outer cores of stars older than the sun but similar in mass offers an opportunity to predict the sun's future, he says.

Finding fainter, very blue stars in the cluster may reveal the cores of stars slightly older than the 15 already imaged, says De Marchi. He notes that if Hubble's flawed optics are repaired as planned this December, spectroscopy may be able to determine whether the stars are truly naked.

Biology

Bizarre bovid identified in Vietnam

The montane rainforest of northern Vietnam has disclosed an ancient inhabitant, an animal that resembles a mix between a primitive ox and an antelope. Although hunters trap the creature, biologists only recently took stock of it, classifying it as



Arctander/Nature

Stuffed Pseudoryx on display.

Pseudoryx, a new genus in the bovid family of cattle, goats, and antelopes. Scientists first stumbled across a *Pseudoryx* skull in the hut of a hunter. Local people use the skulls as kitchen utensils, says Peter Arctander, a geneticist at the University of Copenhagen in Denmark. He and his co-workers from Vietnam and Hong Kong describe the find in the June 3 NATURE.

The animal's habitat, in the Du Quang nature reserve, is pristine and made largely inaccessible by rocky cliffs and dense foliage. Located just north of an old military supply route, the forest barely escaped defoliation during the Vietnam war. It has remained ecologically stable for tens of millions of years, enabling it to harbor relict species, says Arctander.

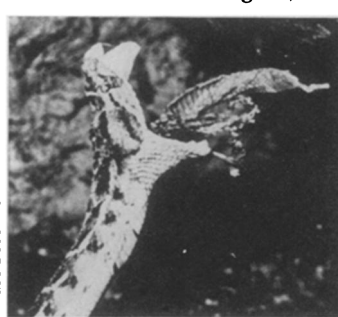
His genetic studies indicate that *Pseudoryx* evolved around 10 million years ago. Arctander suspects that further genetic analysis will help explain the early speciation of bovids. "My guess is that this is a very primitive cow, close to some basic splits in this group of animals," he says.

Arctander also compared a specific segment of mitochondrial DNA from 11 *Pseudoryx* and found no genetic variation among the samples. This genetic uniformity may mean that as few as 200 of the animals survive today, he says.

Since the discovery, the Vietnamese government has expanded the reserve from 16,000 to 60,000 hectares. Arctander says he has heard rumors of other new species in the area, including a tortoise, two types of pheasant, and another bovid.

Dermatophagy: Waste not, want not?

A panoply of amphibians and reptiles regularly feast on their own shed skins or those of their brethren, researchers report in the June JOURNAL OF HERPETOLOGY. Scientists previously viewed this practice, called dermatophagy, as a freak occurrence, but a new survey of more than 100 zoos and aquariums worldwide has documented it in 285 species of frogs, salamanders, lizards, snakes, turtles, tuatara, and caecilians, says coauthor Paul J. Weldon, a herpetologist at the Smithsonian Institution in Washington, D.C. Weldon suspects that the



Klaus Dedekind

Puff adder eats its molted skin.

animals dine on epidermis for the extra protein, although other scientists have suggested that skin-shedders protect themselves from stalking predators by eating the evidence of their presence. Since the animals swallow their skins in the blink of an eye, observations of dermatophagy were rare until Weldon and his colleagues enlisted the aid of animal caretakers to compile

new data. "Observations still need to be made in the wild," he adds, "because it's hard to know how captivity affects behavior."