

The Star-Ledger

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# Quest

SCIENCE FOR ALL AGES

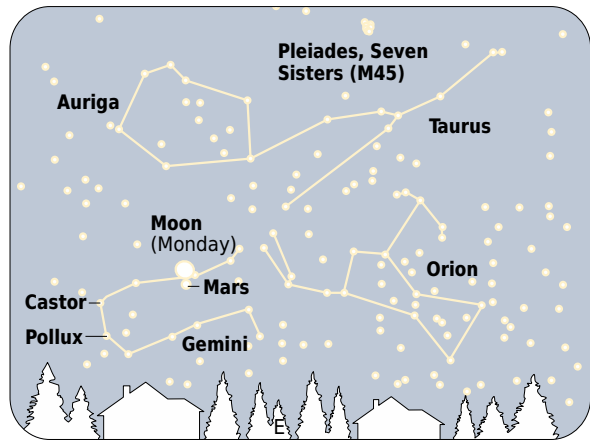


## CHECK IT OUT

### Save the turtles

Sea turtles have been around since before the dinosaurs, but now they're facing extinction. Find out about it at [www.oceana.org/sea-turtles](http://www.oceana.org/sea-turtles).

## ASTRONOMY CLASS



## It's a good time to look for Mars

BY KEVIN D. CONOD  
FOR THE STAR-LEDGER

Mars is finally returning to the evening sky. The red planet sits squarely in the constellation Gemini and can be seen low in the east just about at the rooftops as early as 8:30 p.m. Mars is in the sky all night. You will find it high in the south at 1:30 a.m. It is visible in the western sky at dawn.

In the early evening, you can see the twin stars of Gemini, Castor and Pollux below and to the left of Mars. Over the last few weeks, Mars has been drifting eastward towards them. Now the Earth is beginning to pass the slower-moving red planet. Thus Mars will soon appear to move "backwards" in the sky — known as retrograde motion. It is not really changing direction — it is just like passing a slow moving car on a highway.

The moon will be near Mars Monday night. Face the eastern sky again at about 8:30 p.m. and look for the gibbous moon. Mars appears as a reddish orange point of light beneath it. The two should be nice sight in a pair of binoculars.

To get a closer look at Mars, you'll need a telescope. Even with magnification, the red planet does not appear very large. It is not a very big planet to begin with. It is only half the size of Earth. Also, Mars is not very close — right now it is about 59 million miles away.

Despite its size, with careful and patient viewing you should be able to pick out a few details. The ice cap at the north pole is likely the easiest feature to see. Look for a bright white spot. In a good quality 4- to 6-inch diameter telescope, you can also make out some darker markings on the Martian surface.

For a fun interactive map of Mars, visit [www.google.com/mars](http://www.google.com/mars).

For updates on the night sky, call the Newark Skyline at (973) 596-6529 or visit Sky Watch at [www.NewarkMuseum.Org/Planetarium](http://www.NewarkMuseum.Org/Planetarium).

Kevin D. Conod is the planetarium manager and astronomer at the Newark Museum's Dreyfuss Planetarium.

## Experience is the key if sparrows go off course

FROM PRINCETON UNIVERSITY

Even bird brains can get to know an entire continent — but it takes them a year of migration to do so, a Princeton University research team suggests.

The scientists have shown that migrating adult sparrows can find their way to their winter nesting grounds even after being thrown off course by thousands of miles, adjusting their flight plan to compensate for the displacement. But similarly displaced juvenile birds, which have not yet made the complete round trip, are only able to orient themselves southward, indicating that songbirds' innate sense of direction must be augmented with experience if they are to find their way home.

Two long-standing questions about migrant songbirds are how quickly they recover when thrown off course — as they can be when they encounter powerful winds — and just what navigational tools they use to do so. To address the two questions, the team

decided to fit a group of white-crowned sparrows with tiny radio transmitters no heavier than a paper clip and track their movements from a small plane.

The team first brought 30 sparrows to Princeton from northern Washington state, where the birds had been in the process of migrating southward from their summer breeding grounds in Alaska. Half the birds were juveniles about 3 months old that had never migrated before, while the other half were adults that had made the round trip to their wintering site in the southwestern United States at least once.

After the birds were released, they attempted to resume their migration, but both age groups grew disoriented quickly.

The adults, said team member Richard Holland, recovered their bearings because they possess something the younger birds do not, which is an internal map.

# PLANTS BEWARE



LARRY FELDER

A rendering of *Gryposaurus monumentensis* shows its robust jaws that allowed it to eat just about any vegetation it stumbled across.

## Strong jaw and hundreds of teeth aided vegetarian dinosaur

FROM THE UNIVERSITY OF UTAH

The newest dinosaur species to emerge from Grand Staircase-Escalante National Monument in Utah had some serious bite, according to researchers from the Utah Museum of Natural History at the University of Utah.

"It was one of the most robust duck-billed dinosaurs ever," said museum paleontologist Terry Gates, who is also with the university's Department of Geology and Geophysics. "It was a monster."

Researchers from the Utah museum, the national monument and Raymond M. Alf Museum of Paleontology in California unearthed fossils of this ancient plant-eater from the rocks of the Kaiparowits Formation. Researchers announced the name of the creature — *Gryposaurus monumentensis* ("*Gryposaurus*" means "hook-beaked

lizard" and "*monumentensis*" honors the monument where the fossils were found).

The first description of the duck-billed dinosaur — which dates to the Late Cretaceous Period 75 million years ago — appeared in the Oct. 3 issue of the *Zoological Journal of the Linnean Society*.

"*Gryposaurus monumentensis* is probably the largest dinosaur in the 75-million-year-old Kaiparowits fossil ecosystem," said Alan Titus, paleontologist for the national monument.

Gates, lead author on the study, explained that this creature could have eaten just about any vegetation it stumbled across.

"With its robust jaws, no plant stood a chance against *G. monumentensis*," he said.

Scott Sampson, another paleontologist with the Utah museum who was involved with the

project, emphasized the massively built skull and skeleton, referring to the animal as the "Arnold Schwarzenegger of duck-billed dinosaurs."

The creature's large number of teeth embedded in the thick skull is among the features that made *G. monumentensis*, as well as other closely related duck-billed dinosaurs, such a successful herbivore.

At any given time, the dinosaur had more than 300 teeth available to slice up plant material. Inside the jaw bone, there were numerous replacement teeth waiting, meaning that at any moment, this *Gryposaurus* may have carried more than 800 teeth.

"It was capable of eating most any plant it wanted to," Gates said. "Although much more evidence is needed before we can hypothesize its dietary its dietary preferences."

## How safe is it to reuse water bottles?

FROM THE EDITORS OF THE ENVIRONMENTAL MAGAZINE

Dear *EarthTalk*: Are the rumors true that refilling and reusing some types of plastic bottles can cause health problems?

— Regina Fujan, Lincoln, Neb.

Most types of plastic bottles are safe to reuse at least a few times if properly washed with hot soapy water. But recent revelations about chemicals in Lexan (plastic No. 7) bottles are enough to scare even the most committed environmentalists from reusing them (or buying them in the first place).

Studies have indicated that food and drinks stored in such containers — including those ubiquitous clear Nalgene water bottles hanging from just about every hiker's backpack — can contain trace amounts of Bisphenol A, a synthetic chemical that interferes with the body's natural hormonal messaging system.

The same studies found that repeated re-use of such bottles

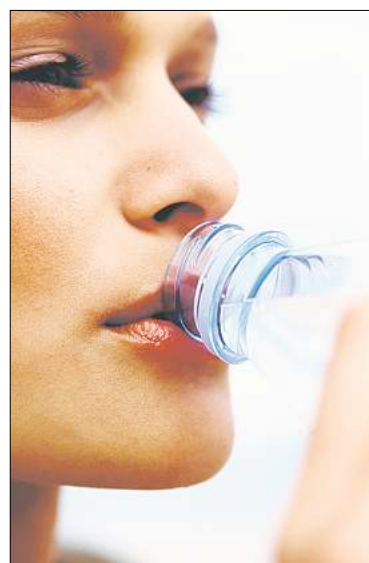
— which get dinged up through normal wear and tear and while being washed — increases the chance that chemicals will leak out of the tiny cracks and crevices that develop over time.

According to the Environmental California Research & Policy Center, which reviewed

130 studies on the topic, BPA has been linked to breast and uterine cancer, an increased risk of miscarriage and decreased testosterone levels. BPA can also wreak havoc on children's developing systems. (Parents beware: Most baby bottles and sippy cups are made with plastics containing BPA.)

Most experts agree that the amount of BPA that could leach into food and drinks through normal handling is probably very small, but there are concerns about the cumulative effect of small doses.

Health advocates also recommend



not reusing bottles made from plastic No. 1 (polyethylene terephthalate, also known as PET or PETE), including most disposable water, soda and juice bottles. According to the Green Guide, such bottles may be safe for

one-time use, but reuse should be avoided because studies indicate they may leach DEHP — another probable human carcinogen — when they are in less than perfect condition.

The good news is that such bottles are easy to recycle; just about every municipal recycling system will take them back. But using them is nonetheless far from environmentally responsible: The nonprofit Berkeley Ecology Center found that the manufacture of plastic No. 1 uses large amounts of energy and resources and generates toxic emissions and pollutants that contribute to global warming. And even though PET bottles can be recycled, millions find their way into landfills every day in the U.S. alone.

Got an environmental question? Send it to *EarthTalk*, c/o *The Environmental Magazine*, P.O. Box 5098, Westport, Conn. 06881, or e-mail [earthtalk@emagazine.com](mailto:earthtalk@emagazine.com). Visit *EarthTalk* online at [www.emagazine.com/earthtalk/thisweek/](http://www.emagazine.com/earthtalk/thisweek/).



## MEET OUR FACULTY AT KEAN UNIVERSITY

### DR. LAURIE KNIS-MATTHEWS

ASSOCIATE PROFESSOR AND ACTING CHAIR

DEPARTMENT OF OCCUPATIONAL THERAPY

- One of only 31.8 percent of occupational therapy faculty to hold a Ph.D. in OT, which she earned in 2005, from New York University
- Published research with OT graduate students in peer-reviewed journals such as *Occupational Therapy in Mental Health*, *Journal of Recreational Therapy* and *Psychiatric Rehabilitation Journal*
- Received Presidential Excellence Award for Distinguished Teaching for Faculty in 2006 at Kean University
- Co-chair of the New Jersey Mental Health Partnership whose purpose is to expand the visibility and leadership of occupational therapy practitioners in the area of mental health

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