



Science Magazine Podcast Transcript, 18 January 2013

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Promo

The following is an excerpt from the *Science* Podcast. To hear the whole show, visit www.sciencemag.org and click on “*Science* Podcast.”

Music

Interviewer – Sarah Crespi

Finally today, David Grimm, online news editor for *Science*, is here to give us a rundown of some of the recent stories from our daily news site. First off, Dave, we have a story about how we tell stories.

Interviewee – David Grimm

This is how we tell stories about an activity called sexual cannibalism. This is a behavior in the animal kingdom where it’s usually females that actually eat the male after mating. And this is commonly seen in spiders and other arthropods such as praying mantises and crickets. What’s interesting about this behavior is not just the behavior itself, it’s actually how scientists describe it. And this new study suggests that there’s a bit of a bias in how researchers report the behavior.

Interviewer – Sarah Crespi

So what’s the bias here? I mean, is the problem the word cannibalism?

Interviewee – David Grimm

No. It’s actually the words used to describe the female. When the researchers conducted an analysis of the scientific literature, they looked at 47 studies published between 1984 and 2009. They found that the females in these encounters were often described using aggressive words, like “aggressive” or “attack”. Other common labels included words like “predatory,” “voracious,” “rapacious,” while the males were described in much more sort of banal terms or even passive terms, terms like “escape,” “sacrifice,” “avoid.”

Interviewer – Sarah Crespi

So the scientists are editorializing, perhaps, the behavior of the insects on display here.

Interviewee – David Grimm

Well that’s what these researchers are saying. They’re saying that there’s these subtle biases that are cropping in the literature that suggests that the females are aggressive while the males tend to be more passive, or in terms of the word sacrifice, actually heroic.

Interviewer – Sarah Crespi

So why is it important to be careful or to make sure you don’t make judgments about the animals?

Interviewee – David Grimm

Scientists put a lot of stock in these words. They actually help them define and describe animal behavior. And they hope that these words are sort of normalized over various scientific studies. So if there is discrepancies in the words or the words indicate motives on the part of the animals that actually don't exist, it could actually muddle our understanding of animal behavior, and in this case, certain aspects of animal reproduction.

Interviewer – Sarah Crespi

Right. So it's good storytelling but maybe not good science.

Interviewee – David Grimm

Right.

Interviewer – Sarah Crespi

So next up we have a story about a surprising link between genes and behavior in mice.

Interviewee – David Grimm

Right, Sarah. This is another animal behavior. This is a really cool behavior by mice, specifically the oldfield mouse, which digs a pretty complicated burrow. It's 200 centimeters long, has two tunnels, and even has an escape hatch, which is pretty cool. But not all mice construct such complicated burrows. In fact, the deer mouse has a pretty simple burrow. It's a short, single crawlway. And these are two very different behaviors. And the researchers in this new study showed that, very surprisingly, that the differences in this tunnel-building can actually just be linked to a handful of genes.

Interviewer – Sarah Crespi

So how do they go about studying the tunnels and the genes behind them?

Interviewee – David Grimm

Well, they actually went out into the field – and you actually can see a pretty cool slideshow on the site of some of their field research they did. They actually filled some of these tunnels with hardening foam so they could actually see what the architecture of the tunnels was above ground. They took these two types of mice back to the lab, and they found that the mice were building very similar tunnels in the lab as they were out in the wild, which suggests that there was a very strong genetic component to the types of tunnels they were building. It wasn't just an environmental. In fact, there may be no environmental component to it. So that was their first hint that these behaviors are really genetically determined. And then to figure out exactly what genes are responsible, they did a bunch of crosses with the mice. They also used a genetic technique that linked the aspects of the various tunnel designs to specific locations on the genomes of these mice. And what they found was that there were three gene regions that underlied tunnel length, and there was one gene region that dictated whether the mice built an escape hatch.

Interviewer – Sarah Crespi

So is it surprising to researchers that this many genes are involved in this behavior?

Interviewee – David Grimm

Well, I guess the surprising thing is that we know that a lot of our behaviors are determined to a large extent by genes. And I think scientists have for a long time assumed that it was this very complicated interaction of potentially hundreds or thousands of genes that determine all the complex things that we do every day. And to just find a gene that plays a role in how long a tunnel is, or whether a tunnel has an escape hatch, really seems to suggest that this may be a little bit more simple than we thought, that there may just be a handful of genes that determine our behaviors. And we may actually be able to link specific behaviors to specific genes, which would be really cool and could even shed light on the genetic basis of some of our own behaviors.

Interviewer – Sarah Crespi

Really interesting. So our last story is on an oddly behaving planet.

Interviewee – David Grimm

Well, Sarah, we're not sure it's a planet. It's something mysterious. And this is something that's orbiting a bright star called Fomalhaut that is in the constellation the Southern Fish.

Interviewer – Sarah Crespi

And the Southern Fish is a Pisces, the smaller Pisces, and it's been known about since Ptolemy's time.

Interviewee – David Grimm

Right. And there's actually some very recent interesting history that actually deals with this particular star. It turns out that in Hubble photos taken from 2004 to 2006, astronomers saw a faint, slowly moving speck of light. Some suspected it was a planet. But it had a very long and non-circular orbit, so it was really unusual if it was a planet. And it's sort of remained a mystery ever since. Well, just last week at a meeting of the American Astronomical Society, researchers say that they've determined that they believe it actually is a planet. They're calling it Fomalhaut b.

Interviewer – Sarah Crespi

And so there's a debate about whether it's a planet, what its orbit is like, and there's also a debate about its path in the coming decades.

Interviewee – David Grimm

Right. Well, so if this actually is a planet, it orbits its star every 2,000 years. So it's got a very long orbit. But there are some unusual things about it, if it is indeed a planet. First of all, there's no radiation coming from it, as far as astronomers can detect, which would mean that it's not a large planet as some originally thought, but it would actually be a lot smaller and less massive than a planet like Jupiter. But it also puts out a large amount of light, which is unusual. You wouldn't expect it for such a relatively small object. And the team that is making the claim that it's a planet believes that this contradiction could be explained if the planet was embedded in a large cloud of dusty material. And that gets

into what the future of this planet might be. It turns out that if it actually is a planet and surrounded by this cloud of dust, it would actually smack into this cloud in 2032, and that would cause a lot of activity in its atmosphere, which astronomers might actually be able to observe. It also may give a little bit more clue about whether it's actually a planet, or some scientists are still arguing is a cloud of dust or debris in its own right.

Interviewer – Sarah Crespi

Well, let's check back in in 2032.

Interviewee – David Grimm

It's a date.

Interviewer – Sarah Crespi

What else is on the site this week, Dave?

Interviewee – David Grimm

Well, Sarah, we've got a story for *ScienceNOW* about new insights into the impacts of elephant poaching in Africa, the largest study ever done on the impact of poachers and what it's having on various populations in the continent. Also a study about new insights into how leprosy spreads in the body. For *ScienceInsider*, our policy blog, we've got a story about the first samples taken from Lake Vostok. Also a story about the latest on research into gun violence – how that is being pursued in the United States in the wake of some recent tragedies. Finally, for *ScienceLive*, our weekly chat on the hottest topics in science, this week's *ScienceLive* is about whether or not we can conquer climate change. What it would take. And next week's *ScienceLive* is about exascale computing. So be sure to check out all of these on the site.

Interviewer – Sarah Crespi

Thanks, Dave. David Grimm is the editor for *Science's* online daily news site. You can check out the latest news, and the policy blog, *ScienceInsider*, at news.sciencemag.org, where you can also join a live chat, *ScienceLive*, on the hottest science topics every Thursday at 3 p.m. U.S. Eastern time.