



## [EcoWorldly](#)

Like this post? [Subscribe to our RSS feed](#) and stay up to date.

### [Elephants Pass Self-Awareness Test \(http://ecoworldly.com/2009/08/04/elephants-pass-self-awareness-test/\)](http://ecoworldly.com/2009/08/04/elephants-pass-self-awareness-test/)



Written by **Michael Ricciardi**

Published on August 4th, 2009 in **4270**

**15 Comments**



<http://ecoworldly.com/files/2009/07/elephanttrainingcamp.jpg>

33  
tweets

retweet

It was called the “red mark test”, or just the “mark test”, and it was first tried out on a Gorilla over two decades ago. Scientists applied a smudge of red powder to the forehead of a sleeping gorilla, then placed a large viewing mirror close by, and waited for the ape to awaken. To the surprise of all, after the gorilla first noticed its reflection (and reacted to it as a social response), it then began to recognize that it was looking at itself, somehow, and, noticing the smudge over its eyes, immediately began trying to wipe it off. Later, the gorilla would use the mirror to groom itself and even examine parts of its body.

The test is now referred to as *mirror self recognition* (MSR). The test indicates self-awareness of a higher, and formerly, *distinctly human* level. The test is also thought to correlate to higher brain behaviors

such as empathy and altruism.

- » See also: [Why Do Buffalo Roam? - Short Term Loss vs. Long Term Gain \(http://ecoworldly.com/2009/08/05/why-do-buffalo-roam/\)](http://ecoworldly.com/2009/08/05/why-do-buffalo-roam/)
- » [Get EcoWorldly by RSS \(/feed/\)](#) or [sign up by email \(http://feedburner.google.com/fb/a/mailverify?uri=ecoworldly.com\)](http://feedburner.google.com/fb/a/mailverify?uri=ecoworldly.com).

Most every animal in nature, when confronted with a mirror, will interpret the image therein as another animal, possibly a threat, and may attack the image, or, be scared away. After awhile, the animals habituate and ignore the reflected image entirely. But the gorilla—a “higher” ape—recognized the image as its own, a feat that require a degree of abstract thought and cognitive association.

Dolphins too recognize their image when confronted with a reflecting surface (the “mark test” was not performed with them, owing to their under water state) and have shown other remarkable abilities such as abstract reasoning (regarding object series recognition), and self-selected vocalizations with human trainers.

Now, we can add elephants to the very short list of animals besides apart form humans with self-awareness.

Researchers (Plotnik, *et al*, reporting in the [Proceeding of the National Academy of Science \(http://www.pnas.org/content/103/45/17053.abstract?sid=bd3a6a7e-3fdb-4bfd-a0d0-8936d90b01f7\)](http://www.pnas.org/content/103/45/17053.abstract?sid=bd3a6a7e-3fdb-4bfd-a0d0-8936d90b01f7),) working with Asian elephants (*Elephas maximus*) at the Bronx zoo, conducted an MSR test. They applied “real” and “sham” marks to the rights sides of the pachyderms’ heads and waited to see how the elephants would respond to these when a large mirror was placed in their presence. Sure enough, the elephants demonstrated that they understood they were looking at themselves (and not another elephant) and begin touching the marks with their trunks. In all, their behavior during the MSR tests matched those of apes and dolphins. According to the paper’s authors: “These parallels suggest convergent cognitive evolution most likely related to complex sociality and cooperation.”

The intelligence of elephants has long been known (though tribal lore, and from field observations) and established. They have complex social lives

and relations and do indeed have excellent memories. Also, a full grown male's brain may weigh 14 pounds. It is believed that the size and structure of our larger, more recently evolved brains enables higher states of conscious perception (such as self awareness). The animals tested here all possess large brains—some, like the dolphin and elephant, larger than our human ones. Each has a cerebral cortex (the outer-most layer of brain matter, known as the *neomammalian brain*), although this is quite small in the gorilla as compared to the humans.

But we humans are not just self aware, we are *aware that we are aware*. We express this "higher" form of awareness primarily through speaking (e.g., Isn't this a strange conversation that we're having?) or through symbolic manipulation and recursion (e.g., "This statement is false.") This is called meta-awareness, and so far, it has not been found outside of our species.

photo: Public Domain

[Tweet This Post \(http://twitter.com/home/?status=Elephants+Pass+Self-Awareness+Test+http://digg.com/d1zg7H\)](http://twitter.com/home/?status=Elephants+Pass+Self-Awareness+Test+http://digg.com/d1zg7H)

Tags: [abstract reasoning](http://greenoptions.com/tag/abstract-reasoning) , [Asian elephant](http://greenoptions.com/tag/asian-elephant) , [Bronx Zoo](http://greenoptions.com/tag/bronx-zoo) , [convergent cognitive evolution](http://greenoptions.com/tag/convergent-cognitive-evolution) , [cooperation](http://greenoptions.com/tag/cooperation) , [dolphins](http://greenoptions.com/tag/dolphins) , [elephants](http://greenoptions.com/tag/elephants) , [gorillas](http://greenoptions.com/tag/gorillas) , [higher apes](http://greenoptions.com/tag/higher-apes) , [large brains](http://greenoptions.com/tag/large-brains) , [mark test](http://greenoptions.com/tag/mark-test) , [meta-awareness](http://greenoptions.com/tag/meta-awareness) , [mirror self recognition](http://greenoptions.com/tag/mirror-self-recognition) , [MSR](http://greenoptions.com/tag/msr) , [neomammalian brain](http://greenoptions.com/tag/neomammalian-brain) , [red mark test](http://greenoptions.com/tag/red-mark-test) , [self recognition](http://greenoptions.com/tag/self-recognition) , [self-awareness](http://greenoptions.com/tag/self-awareness) , [smudge test](http://greenoptions.com/tag/smudge-test) , [sociality](http://greenoptions.com/tag/sociality)

You might also like:



<http://ecoworldly.com/2009/08/05/why-do-buffalo-roam/> Why Do Buffalo Roam? - Short Term Loss vs. Long Term Gain

<http://ecoworldly.com/2009/08/05/why-do-buffalo-roam/>

<http://ecoworldly.com/2009/08/05/worlds-lakes-sentinels-of-climate-change/> World's Lakes: Sentinels of Climate

Change <http://ecoworldly.com/2009/08/05/worlds-lakes-sentinels-of-climate-change/>

<http://ecoworldly.com/2009/08/04/orangutans-change-their-gestures-until-understood-ape-charades/> Orangutans Change Their Gestures Until Understood - Ape Charades?

<http://ecoworldly.com/2009/08/04/orangutans-change-their-gestures-until-understood-ape-charades/>

<http://ecoworldly.com/2009/08/03/why-dont-whales-get-the-bends/> Why Don't Whales Get "The Bends" ? <http://ecoworldly.com/2009/08/03/why-dont-whales-get-the-bends/>

[Add a comment or question \(#respond\)](#)

[Recommend this post \(1\) \(javascript:void\(0\)\)](#)

15 Comments

1. 1



Mike said on [August 5th, 2009 at 9:39 pm](#)

Altruism is a specific belief about morality, not a "higher brain function".

2. 2



Grammar hammer said on [August 5th, 2009 at 9:39 pm](#)

"Also, a full grown male's brain may way 14 pounds."

I believe it is "weigh" not "way"

3. 3



TheFuzzball said on [August 5th, 2009 at 9:44 pm](#)

weigh\*

4. 4



Heads Up said on [August 5th, 2009 at 9:56 pm](#)

"Also, a full grown male's brain may way 14 pounds."

They may weigh 14 pounds, too!

5. 5



Justa Comment said on [August 5th, 2009 at 10:12 pm](#)

You mis-spelled weigh, thereby failing some kind of self-awareness test

☺ Brains may consider a "way" but they "weigh" a certain weight.

6. 6



jlerch said on [August 5th, 2009 at 10:21 pm](#)

"Now, we can add elephants to the very short list of animals besides apart form humans with self-awareness."

besides apart form humans with...?

7. 7



Skillacore said on [August 5th, 2009 at 10:23 pm](#)

"besides apart form" huh?

8. 8



David said on [August 5th, 2009 at 10:36 pm](#)

Check your facts. The "mark" test with zinc-oxide and an underwater mirror has indeed been done with dolphins (Ken Martins, Sea Life Park) and repeated (Emory Univ.).

9. 9



Television Spy said on [August 5th, 2009 at 11:32 pm](#)

Few things to note, the study is flawed as there are numerous creatures that are self-ware - including almost all primates (mirror test), cats, dogs, parrots and other birds, dolphins, whales..the list goes on despite what most may think

Animals are underestimated for the amount of awareness they have and their comprehension of this world. It's safer and convenient for us to just assume that they are inferior to us in all things of cognition and awareness but this isn't true.

Also the pic you used of the elphants shows off the horrendous abuse of these creatures to help logging and timber interests. They're still used as beats of burden to this day in areas like India and Thailand.

10. 10



Law said on [August 6th, 2009 at 1:21 am](#)

@Television Spy

Dogs and cats are self-aware? How do you explain the countless number clips of dogs/cats attacking their own image on Youtube (search keywords: dog + mirror)?

"used as beasts of burden"?? You realize how many people in the 3rd world countries still struggle for a living? I have faith that these people look after their elephants well enough for the elephants not to stomp them over.

Pages: [\[1\]](#) [2](#) »

EcoWorldly is a [Green Options Media](#) Production. [Some Rights Reserved](#)

[Powered by Virgance](#)

