Page last updated at 16:48 GMT, Wednesday, 17 February 2010

The truth behind elephant brainpower

By Andrew Luck-Baker
Inside the Elephant mind

Are elephants so smart that they can spot the difference when they hear people speaking different languages?

Armed with a giant loudspeaker in the back of a land rover, it is a possibility that researchers have been exploring on the plains of Amboseli National Park in Kenya.

They have also been trying to see if elephants can count lions and figure out the age of other elephants.

Elephants do not have good eyesight but their sense of hearing is acute. It is much more sensitive than ours.

The same is true for their sophisticated sense of smell.

The scientists on the research team have been playing sounds or laying down scents which elephants would encounter in nature, but doing so in clever ways that reveal elephant knowledge and thought processes.

> **“We are a bit limited by how little we know about elephants, but the odd glimmers we get seem to be rather remarkable”**
>
> Professor Dick Byrne

Mental skills

Dick Byrne, Professor of Evolutionary Psychology at St Andrew's University has studied the cognitive abilities of primates and has been carrying out the experiments with elephants at Amboseli, using different scents to probe mental skills.

He said: "They've proved to have abilities which have only been found elsewhere in the great apes and humans.

"We are a bit limited by how little we know about elephants, but the odd glimmers we get seem to be rather remarkable."

One of the team's findings has been the elephants' ability to recognise many other

individual elephants from the sound of their call.
Karen McComb, an animal psychologist at the University of Sussex, UK, carried out a sound playback study designed to discover how many other elephants a single elephant might recognise from the sound of their calls.
The specific call in question was a long, deep rumble known as the contact rumble. An elephant makes it to say, "I'm here. Where are you?".
The low frequency message can be heard by other elephants several kilometres away.
The contact call was played to numerous elephant family groups.
It was calculated that elephant matriarchs were able to learn the identity of at least 100 other individual elephants by voice.
Dr McComb's Sussex colleague, Graeme Shannon said it was akin to putting 100 people behind a wall in the far distance, getting each one to shout something and asking someone to identify each person correctly.

Numerical skills

There is also evidence from a study with animals in zoos in Japan that elephants have considerable numerical skills.
Elephants have proved adept at recognising the difference between two quantities of objects as they were placed into buckets. It is a test which has also been done with a range of primates, including human children.
According to Professor Byrne, elephants outperformed all those other species.
"Their abilities didn't seem to be limited in quite the same way as monkeys, apes and children would be.
"Most of us would find it much easier to discriminate two from one than from five and six...
"But these effects didn't show up with the elephants. They are just as good at telling five from six as one from two."
The latest playback experiment by the Sussex team has been designed to see if Amboseli's elephants can discriminate between different human languages.
The elephants commonly encounter speakers of three different human tongues as they move in and out of the national park's boundaries.
There are the semi-nomadic cattle herders of the Maasai ethnic group, who speak a language called Maa.
The animals also travel through land farmed by the Kamba people, who have their own language, and they hear English, which is spoken by the majority of tourists.


Elephants can be alarmed when they hear the Massai speaking

Detecting whether they can tell languages apart depends on whether the elephants exhibit defensive or perhaps aggressive behaviour.
According to Graeme Shannon, the animals are most likely to be alarmed when they hear the Maasai speaking.
Amboseli's elephants and Maasai community are wary of each other. Sometimes elephants

will kill Maasai cattle and, very occasionally, people. When this happens, young Maasai warriors will go out and spear an elephant to death in retaliation.

Least threatening to the animals are the English-speaking tourists who just want to watch and take photos.

The Sussex team have only just begun to play recordings of these different languages to the animals so it is too early to tell if elephants can tell the difference.

However Mr Shannon recalls an incident when his assistant, Katito Sayialel, a Maasai who speaks Maa, was talking to the elephants.

Katito said: "They were nervous, raising their heads."

Yet when she spoke in Swahili they calmed down, relaxed and continued feeding.

Mr Shannon said that as a scientist, he was a little cautious about saying it was definitely a response by the elephants but "there seemed to be something going on there".

Inside the Elephant Mind will be on BBC Radio 4 at 9pm on Wednesday 17th February 2010 and afterward on BBC iPlayer