

Media Coverage
Department of Zoology
“Time is in the Eye of the Beholder”
Press Release – paper in Animal Behaviour
16th September 2013

Introduction

An international collaboration led by scientists from Trinity College Dublin including researchers from the University of Edinburgh and the University of St Andrews showed that animals' ability to perceive time is linked to their pace of life. The study was published in leading international journal *Animal Behaviour*.

A press release was developed with the TCD Academics Dr. Andrew Jackson and Kevin Healy and was issued to Irish, UK, US, Australian, and international print and broadcast media in collaboration with the University of Edinburgh Press Office.

Broadcast Coverage

[Today FM, Ray D'Arcy Show, Interview, Monday 16th September, 2013](#)

[Today FM, Ian Dempsey Show, Newspaper Review, Monday 16th September, 2013](#)

[Today FM, Ray D'Arcy Show, Newspaper Review, Monday 16th September, 2013](#)

[Kildare FM, Newspaper Review, Monday 16th September, 2013](#)

[BBC TV World News Today](#)

[BBC Radio 4, Today show with John Humphries, Monday 16th September, 2013](#)

[BBC Radio 5, Breakfast on 5 live with Nick Campbell, Monday 16th September, 2013](#)

[BBC World Service](#)

[BBC Radio Scotland](#)

[BBC Radio Wales](#)

[BBC Radio Newcastle](#)

[BBC Radio Coventry](#)

[Sydney Australia radio](#)

Online and International Coverage

Ireland

[The Journal, Monday 16th September, 2013](#)

[RTE News Online, Monday 16th September, 2013](#)

[Irish Examiner Breaking News, Monday 16th September, 2013](#)

[Independent Online, Monday 16th September, 2013](#)

[BreakingNews.ie, Monday 16th September, 2013](#)

[Waterford News and Star Online, Monday 16th September, 2013](#)

[Evening Echo Online, Monday 16th September, 2013](#)

[Roscommon Herald Online, Monday 16th September, 2013](#)

[Wexford Echo Online, Monday 16th September, 2013](#)

[Western People Online, Monday 16th September, 2013](#)

[Kildare Nationalist Online, Monday 16th September, 2013](#)

[Carlow Nationalist Online, Monday 16th September, 2013](#)

[DublinNews.com, Monday 16th September, 2013](#)

[Eircom News, Monday 16th September, 2013](#)

[Build.ie, Monday 16th September, 2013](#)

UK

[BBC News – Science \(Lead Story\), Monday 16th September, 2013](#)

[Metro UK, Monday 16th September, 2013](#)

[Mail Online, \(listed in 'Most Read' within Science\) Monday 16th September, 2013](#)

[The Guardian \(Editor's Picks\), Monday 16th September, 2013](#)

[Independent UK Online, Monday 16th September, 2013](#)

[The Telegraph, Monday 16th September, 2013](#)
[UK Wired News, Monday 16th September, 2013](#)
[BT News, Monday 16th September, 2013](#)

International

[Voice of America, Monday 16th September, 2013](#)
[United Press International - UPI.com, Monday 16th September, 2013](#)
[Yahoo News UK/Irl, Monday 16th September, 2013](#)
[The Australian, Monday 16th September, 2013](#)
[News.com.au, Monday 16th September, 2013](#)
[New Zealand Herald Online, Monday 16th September, 2013](#)
[Sky News Australia, Monday 16th September, 2013](#)
[The Special Broadcasting Service \(SBS\) Australia, Monday 16th September, 2013](#)
[MSN New Zealand, Monday 16th September, 2013](#)
[Gizmodo Australia, Monday 16th September, 2013](#)
[Big Pond News, Monday 16th September, 2013](#)
[The Toronto Telegraph, Monday 16th September, 2013](#)
[The Nation, Pakistan, Monday 16th September, 2013](#)
[IO9.com, Monday 16th September, 2013](#)
[MSN Now, Monday 16th September, 2013](#)
[Polish News Agency \(PAP\), Monday 16th September, 2013](#)
[Medical Daily, Monday 16th September, 2013](#)
[WebIndia123, Monday 16th September, 2013](#)
[News Track India, Monday 16th September, 2013](#)
[Voice Of Russia Online, Monday 16th September, 2013](#)
[Times Of Malta, Monday 16th September, 2013](#)
[IOL South Africa, Monday 16th September, 2013](#)
[Business Insider, Monday 16th September, 2013](#)
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[Philippine Times, Monday 16th September, 2013](#)
[Cambodian Times, Monday 16th September, 2013](#)
[Britain News.net, Monday 16th September, 2013](#)
[Big News Network.com, Monday 16th September, 2013](#)

Print Coverage

See Overleaf



Fiona Looney

fiona.looney@dailymail.ie

□ **FASCINATING** new research from Trinity College has revealed that time actually moves more slowly for tiny creatures such as flies than it does for humans – which might explain why they can so easily avoid being swatted, but really gives us no new insight into why they spend so much time pointlessly dive-bombing over our heads in the early dawn.



Time doesn't fly... if you're a fly!

Daily Mail Reporter

FLIES avoid being swatted in the same way that Keanu Reeves dodges bullets in the film *The Matrix* – by watching time pass slowly.

To the insect, that rolled-up newspaper moving at lightning speed might as well be inching through thick treacle.

Like Reeves side-stepping slow motion bullets, the fly has ample time to escape.

Of course, time is really passing at the same speed. But the fly's eyes send updates to its brain far more frequently than a human's eyes, and its mental processes are similarly much more rapid than ours.

The result is that a fly sees objects moving slowly in comparison to its own rapid reactions. It makes a decision and buzzes away from danger far more quickly than a human can follow it with a newspaper.

Flies are not the only species to perceive time differently. Research suggests that time perception is related to size.

Generally the smaller an animal is, the faster its brain works, so outside events appear to be happening slowly.

Scientists worked this out by flashing a

light in rapid flickers in front of animals. If the flashes are close enough together, an observer sees them as a continuous blur.

But researchers found that the flicker speed at which flashes seemed to merge together was different for different species.

Small creatures could see much shorter gaps, suggesting that to them, the light appeared to be flickering more slowly.

'A lot of researchers have looked at this in different animals,' said Dr Andrew Jackson of Trinity College Dublin. 'Interestingly, there's a large difference between big and small species. Animals smaller than us see the world in slo-mo.'

He said: 'If you look at flies, they can perceive light flickering up to four times faster than we can. You can imagine a fly literally seeing everything in slow motion.'

More than 30 species were included in the study, including rodents, eels, lizards, chickens, pigeons, dogs, cats and leatherback turtles – very large creatures for whom time passes relatively rapidly.



'Got the fly'



Proof that time doesn't actually fly... if you're a fly

By John von Radowitz

FLIES avoid being swatted in just the same way Keanu Reeves dodges flying bullets in the movie *The Matrix* – by watching time pass slowly.

To the insect, that rolled up newspaper moving at lightning speed might as well be inching through thick treacle.

Like Reeves standing back and side-stepping slo-mo bullets, the fly has ample time to escape.

And it is not alone in its ability to perceive time differently from us. New research from Trinity College suggests that across a wide range of species, time perception is directly

related to size. Generally the smaller an animal is, and the faster its metabolic rate, the slower time passes. The evidence comes from research into the ability of animals to detect separate flashes of fast-flickering light.

'Critical flicker fusion frequency' – the point at which the flashes seem to merge together in the eyes of the animal, so that a light source appears constant – provides an indication of time perception. Comparing studies of the phenomenon in different animals

revealed the link with size. 'A lot of researchers have looked at this in different animals by measuring their perception of flickering light,' said Dr Andrew Jackson, from Trinity.

'Some can perceive quite a fast flicker and others much slower, so that a flickering light looks like a blur.

'Interestingly, there's a large difference between big and small species. Animals smaller than us see the world in slo-mo. It seems to be almost a fact of life. Our focus was on vertebrates, but if you look at flies, they can perceive light flickering up to four times faster than we can. You can imagine a

fly literally seeing everything in slow motion.' The effect may also account for the way time seems to speed up as we get older, said Dr Jackson, who led the research.

He was inspired to conduct the study after noticing the way small children always seem to be in such a hurry.

'It's tempting to think that for children time moves more slowly than it does for grown ups, and there is some evidence that it might,' he said. 'People have shown that, in humans, flicker fusion frequency is related to a person's subjective perception of time, and it changes with age.'





Time flies for humans but slows for flies

Breda Heffernan

SCIENTISTS at Trinity College Dublin say the humble housefly manages to escape being swatted by rolled-up newspapers because time is in the compound-eye of the beholder.

The study, published in the journal 'Animal Behaviour', found that time is perceived at different rates across animals – so when a newspaper looms, the fly sees it coming in slow motion and can easily get away.

Kevin Healy, lead author of the study and a PhD student at Trinity, explained that researchers took the body mass and metabolic rates of 34 species of vertebrates.

"We found that small things with high metabolic rates, meaning they burn a lot of energy, see time faster. How they see things is like in slow motion for bigger animals."

The evidence comes from research into the ability of animals to detect separate flashes of fast flickering light.

Flies perceived light flickering up to four times faster than humans and therefore experience time in slow motion.



Mystery swatted by Irish scientist

by **HAYDEN SMITH**

THE mystery of how flies seem impossible to swat may have been solved – to them, your rolled-up newspaper or fly-swat is moving as slowly as the bullets in *The Matrix*.

That's the conclusion of an Irish scientist, who says the smaller an animal is, the slower it perceives time to be moving, giving the pesky housefly ample dodging time.

'Animals smaller than us see the world in slo-mo,' said Dr Andrew Jackson, of Trinity College Dublin. 'It seems to be almost a fact of life.'

Objects appear to move slowest to animals with the fastest metabolic rates, according to the research, which was based on the results of previous studies on more than 30 species.

The authors compared animals' 'flicker fusion frequency' – the point at which they begin to see separate flashes of light as a blur.

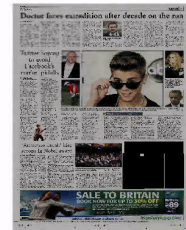
Dr Jackson was inspired to lead the project on small animals including rodents, eels, chickens, pigeons and turtles, after noticing that small children often seem in a hurry.

'It's tempting to think that for children time moves more slowly than it does for grown-ups and there is some evidence that it might,' he said.

'Flicker fusion frequency is related to a person's subjective perception of time, and it changes with age.'

While flies use their slo-mo sight to dodge us, other animals lack the speed to ram home the advantage – but you might want to show pity next time an earwig crawls on your picnic table.

By flicking him onto the ground, you'll be cancelling out a journey that probably felt like it lasted for years.



Time flies: Insects' 'bullet time' helps avoid swatting

by Evelyn Ring

Flies may not be deep thinkers but they can make good decisions very quickly to avoid being swatted.

Irish and Scottish scientists have now shown that animals, insects and birds' ability to perceive time is linked to their pace of life.

They have found that the rate at which time is perceived varies across animals.

In particular, flies owe their skill at avoiding rolled up newspapers to their ability to observe motion on a finer time-scale than human eyes can achieve.

They avoid the newspaper in a similar fashion to the 'bullet time' sequence in the film, *The Matrix*.

Not so fortunate is a species of tiger beetle that

runs faster than its eyes can keep up — it becomes blinded and has to stop now and again to re-evaluate its prey's position.

Even in humans, athletes in various sports have been shown to quicken their eyes' ability to track moving balls during games.

In essence, the study led by scientists from Trinity College Dublin, and including researchers from the University of Edinburgh and University of St Andrews, found that animals' ability to perceive time is linked to their pace of life.

The study, published in the leading international journal — *Animal Behaviour*, found small animals, such as some birds, perceive more information in a unit of time and experience time more slowly than larger animals, such as turtles.

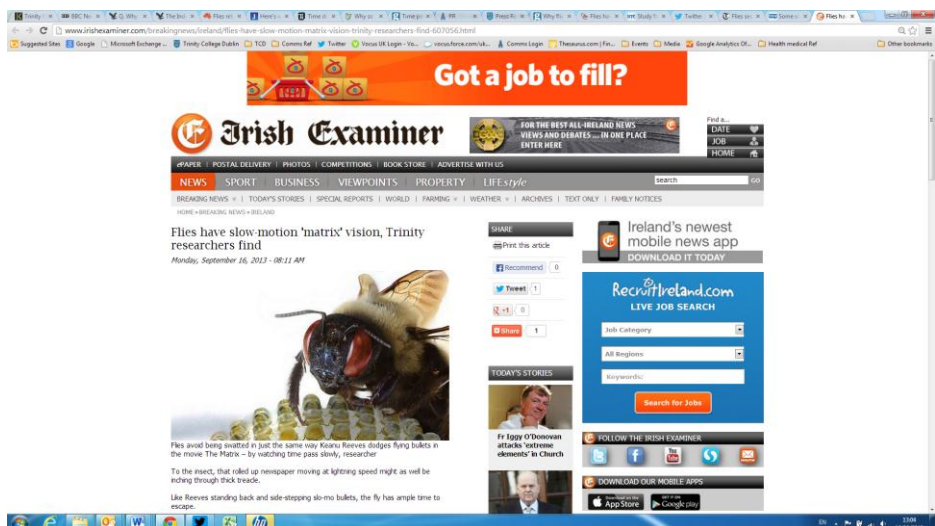
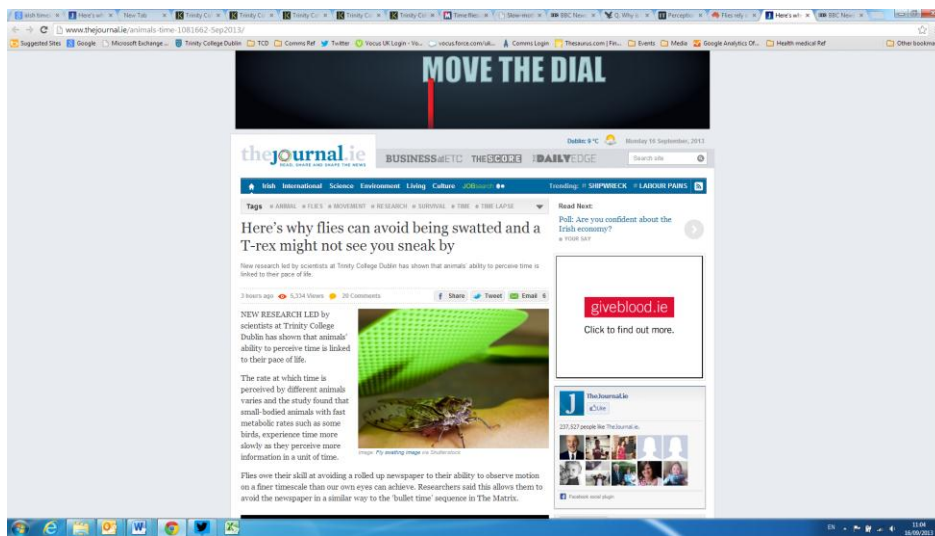
"We are beginning to understand that there is a whole world of detail out there and that only some animals can perceive, and it's fascinating to think of how they might perceive the world differently to us," said Prof Andrew Jackson from the School of Natural

Science at TCD.

The reason pet dogs see flickering televisions is their eyes have a refresh rate higher than the TV screen.

Prof Graeme Ruxton from the University of St Andrews in Scotland said having eyes sending updates to the brain at much higher frequencies than human eyes would be of no value if the brain could not process that information equally quickly.

Online and International Coverage – Visual Snapshot



16 September 2013 Last updated at 09:58 GMT

Slow-motion world for small animals

Smaller animals tend to perceive time in slow-motion, helping them to escape from larger predators, a study finds.




Hot summer helps boost butterflies
UK butterfly numbers are up following a summer of warm weather, according to a nationwide survey. BBC NATURE

Sun shines on UK butterflies
Rare butterflies found by student
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Features & Analysis



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Flies live in Matrix time: How the insect sees rolled up newspaper moving in slow motion and buzzes away from danger quickly

- Time is passing at the same speed, but the fly's eyes send updates to its brain for more frequently than a human's eyes
- Like Reeves side-stepping slow motion bullets, fly has ample time to escape
- The smaller an animal is, the faster its brain works, so outside events appear to be happening slowly

By DAVID M. KOPPEL

PUBLISHED: 09:00 GMT, 16 September 2013 | UPDATED: 08:21 GMT, 16 September 2013

33 shares 65 comments

Flies avoid being swatted in the same way that Keanu Reeves dodges bullets in the film The Matrix – by watching time pass slowly.

To the insect, that rolled-up newspaper moving at lightning speed might as well be inching through thick treacle.

Like Reeves side-stepping slow motion bullets



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Time passes more slowly for flies, study finds

Research suggests perception of time is linked to size, explaining why insects find it easy to avoid being swatted

Press Association
theguardian.com Monday 16 September 2013 09:53:05Z
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Q. Why is it so hard to swat houseflies? A. They see us coming in slow motion

New research claims that for some animals, such as a fly and a dog, time moves at a slower rate


IAN JOHNSTON MONDAY 16 SEPTEMBER 2013

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Flies See The World In Matrix-Style Slow Motion

ASHLEY FEINBERG TODAY 12:30 PM



If you've ever sat puzzling over a fly's ability to outmanoeuvre your path of death almost every single time — puzzle no more. According to science, you're just mealy Agent Smith to the bug's keen new research shows that a creature's perception of time is directly related to its size, meaning flies live in a world where time passes as if in slow motion.

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