

# New Scientist

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## Zoology

# Tadpoles change colour to blend in with surroundings

Jason Arunn Murugesu

THE skin colour of tadpoles can change to better match their environment, making them harder for predators to spot.

Christoph Liedtke at the Doñana Biological Station in Seville, Spain, and his colleagues studied the tadpoles of western spadefoot toads (*Pelobates cultripes*). They grew five tadpoles for 40 days in each of 10 trays that were painted different colours: black, white, red, green, blue and five different shades of grey.

The tadpoles changed colour to match their background in the black, white and grey trays, but not the red, green and blue trays. This suggests they change their colour based on the brightness of their backgrounds and not hue or saturation, says Liedtke.

If a tadpole was moved from the darkest tray to the lightest, or vice versa, it would change colour again.

“You can see both darkening and lightening with your eyes in 24 hours,” says Liedtke. It took a week for tadpoles to reach their darkest colouration, but three to four weeks to match the lightest tray, he says (*Scientific Reports*, doi.org/ktqc).

Tadpoles change colour in a different way to animals like chameleons. Chameleons do it by rearranging how pigments are distributed in a cell, which can occur very quickly. In tadpoles, changing colour involves the synthesis or degradation of pigments. Liedtke suspects it is quicker to produce the pigment required for darkening than it is to break down that same pigment, which explains why they are slower to go from dark to light.

Tadpoles probably need this camouflage ability to hide from predators because a pond can go from having very little vegetation in the early spring to far more vegetation later in the year, which makes the water darker, says Liedtke. ■

## Alien life

# NASA's UFO task force finds no evidence for alien craft

Leah Crane

THE task force at NASA investigating UFOs and other unexplained objects in the sky has released its final report. It found no sign of any alien craft, just benign terrestrial phenomena such as balloons and weather events.

The team was formed in 2022 with the task of gathering and analysing all the available data on unidentified anomalous phenomena (UAPs), and developing a path forward for NASA to continue studying them. Now it has done so. The final results were released in a report and press conference on 14 September.

“We find no evidence that UAPs are extraterrestrial in origin,” said team lead David Spergel at Princeton University during the press conference. “Most events are explainable as planes, balloons, drones, weather phenomena and instrument features.”

Some of the events remain

**A meeting of NASA's task force studying unidentified phenomena**

unexplained, but that is mostly due to the limited amount and low quality of the data on most UAPs. Military data is largely classified because the US government keeps the nature of the instruments collecting it secret, and civilian data is often just blurry mobile phone photos and vague recollections.

“While there are numerous eyewitness accounts and visuals associated with UAPs, they're not consistent accounts, they're not detailed and they're not curated observations that can be used to make definitive scientific conclusions about the nature and the origin of UAPs,” said Nicola Fox, the head of NASA's Science Mission Directorate, in the press conference.

One of the recommendations in the final report is that NASA begins a programme to use scientific instruments for UAP detection, as well as enhancing its communication and data gathering within and beyond the government. Within NASA, the hope is that this will help reduce the stigma around reporting apparent UFO

sightings – often seen as unscientific and unserious – so we can better characterise strange phenomena in the sky.

Part of that is a focus on transparency, said NASA administrator Bill Nelson in the press event. “There's so much concern that there's something locked up, classified, and that the American government is

**“We are the American government and we are open, but we don't know what these UAPs are”**

not being open. Well, we are the American government and we are open and we're going to be open about this – but we don't know what these UAPs are.”

NASA has appointed a director of UAP research “to centralize communications and leverage NASA's extensive resources and expertise to actively engage in the whole-of-government UAP initiative”, according to the report. During the press conference, NASA officials declined to name this director and didn't share information on budgetary allocations for UAP studies.

For now, there is no evidence of alien technology in our skies. The overall conclusion of the UAP team's study is that if we want to find any evidence of that, we need to observe and study objects in the skies much more rigorously. “In a process like this... you need to know what typical, regular things look like under all conditions,” said Spergel. “You need to know what balloons look like when pilots see them under unusual conditions.”

Otherwise, it may be impossible to tell apart a weird balloon and an alien craft. ■



NASA/JOEL KOWSKY