

Upfront

AMPHIBIANS RUN OUT OF SPACE

It's no longer a mystery why amphibians are marching towards extinction. Loss and degradation of habitat is by far the most important factor in their alarmingly rapid decline, according to the largest global analysis to date.

About a third of the world's amphibian species are threatened with extinction, and almost half of all known species are dwindling. Researchers have identified various threats, but until now the relative importance of each has not been clear.

Navjot Sodhi at the National University of Singapore and colleagues studied environmental and ecological data on 2583 amphibian species, which equates to about 45 per cent of all known species. To identify global drivers of extinction risk they excluded localised threats, like the chytrid fungus, which has contributed to the decline of many amphibian species.

They found that living in a restricted geographic range – 5000 square kilometres or smaller – was the most important factor in predicting extinction risk (*PLoS Biology*, DOI: 10.1371/journal.pone.0001636). "It was surprising how much more important geographic range size was, relative to other factors," says team member David Bickford.

About a third of amphibians now live in restricted ranges, and nearly all of their habitats are shrinking. This work provides solid evidence for the importance of habitat loss as a threat, says Robin Moore of Conservation International, Arlington, Virginia. "This is significant given the huge emphasis that disease has been given in declines and extinctions," he says.

Making more habitats open to amphibians is the only realistic way to avert a mass extinction, says Bickford.



Habitat size matters

Alien stowaways

THESE aliens we'd rather not hear from, but they're invading our coastlines in their thousands. From giant jellyfish and toxic seaweed to muscle-bound mussels and oysters, alien species are stowing away on container ships and wrecking marine habitats worldwide.

The first global assessment of the threat to fisheries and ecosystems posed by invasive marine species found that alien species have invaded 84 per cent of the world's coastlines and that

species are estimated to be in transit at any one time."

The US alone now harbours some 800 invaders, and the damage they cause amounts to \$120 billion each year. San Francisco bay has emerged as the world's most invaded habitat – more than half of its fish are aliens, as are the majority of animals and plants living on the bay floor.

Molnar's study highlights 329 of the "worst-offending" species. The rogues' gallery includes Pacific oysters that were originally from Japan, toxic *Caulerpa* seaweed from the tropics, diseases spread by escaped farmed salmon and the notorious comb jellyfish, which all but wiped out native species in the Black Sea (*Frontiers in Ecology and the Environment*, DOI: 10.1890/070064).

Potential invaders would fall at the first hurdle, says Molnar, if ships had their hulls cleaned regularly and destroyed invasive species in their ballast water before purging it. She notes that the US plans new laws to force incoming ships to do just that.

"Thousands of vessels cross our oceans with invasive species hitch-hiking on their hulls"

four-fifths of the aliens are accidental tourists – arriving either by ship or by escaping from aquaculture farms.

"Every day, thousands of vessels cross our oceans with invasive species hitch-hiking on their hulls," says Jennifer Molnar of the Nature Conservancy in Arlington, Virginia, lead author of the study. "As many as 10,000

Funding furore

SECRETIVE decision-making was the "catastrophic error" behind the UK's current physics funding crisis, according to the Royal Astronomical Society (RAS).

Last December, the UK's Science and Technology Facilities Council (STFC) announced plans to axe a number of astronomy projects, such as the UK's involvement in the Gemini observatory. Though Gemini astronomers won a stay of execution last week, the RAS condemned the secrecy that

preceded the cuts: "The STFC has failed miserably to communicate with the community," it said.

The RAS statement came on the same day as a proposal by the UK government, the STFC and other partners to build a new space facility at Harwell, Oxfordshire, and a review into sending a British astronaut into space. Andrew Kavanagh, a space scientist at Lancaster University, wants to know where the money will come from: "We know that the STFC is broke. Are we sacrificing important astronomy and space science research for this?"

WHERE THE NEW BUGS ARE

HOW do you predict where the next infectious disease will emerge? Studying human population density might be a good start.

Peter Daszak of the Consortium for Conservation Medicine based in New York and his colleagues collected reports of new infectious diseases from 1940 to 2004 and found that most of them were bacterial, with many emerging in rich countries.

Their study also showed that 60 per

cent involved pathogens that had jumped to people from animals (*Nature*, DOI: 10.1038/nature06536).

Density of population was the strongest predictor of where new infections would emerge, making disease "a hidden cost of human economic development".

This means that future hotspots of infections are more likely to be found in wildlife-rich and population-dense tropics.