

# Call this science?

Japan's whaling activities should not be allowed to masquerade as research, argue **Nichola Raihani** and **Tim Clutton-Brock**

IN 1986, the International Whaling Commission (IWC) imposed a moratorium on commercial whaling to allow stocks to replenish. However, this ongoing ban allows member nations to grant themselves special permits to kill whales for scientific research, with the proviso that the whale meat is utilised following data collection.

Only Japan holds a special permit. Its current research programme, which started in 2000 and is run by the Japanese Institute of Cetacean Research (ICR), proposes to kill more than 1000 whales a year in the Antarctic and the western north Pacific. The stated objectives are to determine the population structure and feeding habits of several whale species, including endangered fin and sei whales, in order to "manage" stocks.

Japan has already been widely



criticised for its whaling, which is generally seen as a thinly disguised hunting operation. But with the 2009 IWC meeting looming, it is worth rehearsing the arguments against scientific whaling.

Although Japan's early results produced useful information, recent advances in non-lethal techniques such as biopsies mean that data can now be obtained without killing whales. Similarly, it is no longer necessary to kill whales to work out what they have been eating, as this can be determined from DNA in samples of faeces.

The scientific impact of the research is also limited. Relatively little research is published in international peer-reviewed journals, compared with research programmes on other marine mammals such as dolphins. According to the ICR, scientific whaling has produced 152 publications in peer-reviewed journals since 1994. However, just 58 of these papers were published in international journals. The rest were IWC reports or articles published in domestic journals, largely in Japanese. Most of the findings are not circulated among the wider scientific community, and the failure to

## Last line of defence

We must not let malaria develop resistance to the best drug we have, says **Martin de Smet**

REPORTS from Cambodia that malaria is developing resistance to artemisinins have set alarm bells ringing. Artemisinins are the best drugs we have to treat malaria, and until recently there have been no reports of resistance.

Containing resistance in Cambodia is an urgent priority. But sadly, the factors that led to

it emerging are all too common in countries where malaria is endemic. Unless we stamp them out there is a risk of artemisinin drugs becoming useless.

To prevent the parasite evolving resistance, artemisinins must not be used alone but with a companion drug such as amodiaquine. Combination pills

are available to ensure that this happens. But in many countries, including Cambodia, artemisinins are widely available as a monotherapy. Patients are also prescribed co-blister packs, in which the two drugs are packaged together rather than combined in one pill. There is therefore a risk that patients will take only one drug. We clearly need exclusive use of combination therapies and international commitment to subsidise only combination drugs.

There is another problem. In many countries during transmission season, anyone presenting to a clinic with fever is treated as a malaria patient.

In fact no more than 70 per cent of these patients will have malaria, and sometimes as few as 30 per cent. The millions treated unnecessarily are a potential source of resistance: if they become infected shortly after treatment, the malaria parasite is exposed to sub-therapeutic doses of drugs still in the bloodstream, which allows resistance to develop. Use of rapid diagnostic tests or microscopy to confirm malaria is therefore imperative.

**"During transmission season anyone presenting with a fever is treated for malaria, encouraging resistance"**

subject papers to impartial review renders the value of much of this literature questionable.

Whether the results from scientific whaling are useful for stock management has also been questioned. The Scientific Committee of the IWC has explicitly stated that the results generated by the Japanese Whale Research Program in the Antarctic (JARPA) "were not required for management". Independent research shows that the data may overestimate whale abundance by up to 80 per cent (*Marine Ecology Progress Series*, vol 242, p 295).

Finally, given that there is considerable variation in the capacity of different whale populations to recover from stock depletion (*Marine Mammal Science*, vol 24, p 183), the value of the research for understanding populations outside the Antarctic and western north Pacific – which may one day be reconsidered for commercial whaling – is limited. This fundamentally undermines the justification for scientific whaling. ■

Nichola Raihani is at the Institute of Zoology in London. Tim Clutton-Brock is Prince Philip Professor of Ecology and Evolutionary Biology at the University of Cambridge

What has happened in Cambodia is a stark reminder of the threat of drug resistance. Without proper diagnosis and treatment, resistance to artemisinin is likely to develop on the scale it did to chloroquine – once the main drug used to treat malaria, but now virtually useless.

We must remove all barriers to malaria healthcare everywhere, or risk losing the only effective drug to treat a disease that still kills a child every 30 seconds. There is no excuse not to act. ■

Martin de Smet is leader of the Médecins Sans Frontières malaria working group based in Brussels, Belgium

## One-minute interview

# How I'll spend \$3 billion

Arden Bement Jr. is arguably the most powerful person in US science. What is he planning to do now Obama is in charge?

### What's the difference between working under Barack Obama and under George W. Bush?

Pace and intensity. The Obama administration understands the role of science in dealing with national problems. It's built into their priorities and the people they've appointed to get the agenda moving.

### You've received a huge sum of money to help get the economy going, but basic research takes years to turn into products. How is that one-off sum going to help the economy?

Long term, there is a recurring return as postdocs and researchers use the knowledge they have acquired during their research. Education keeps paying us back, and these people will help us to move out of recession.

### How are you going to use that \$3 billion?

We haven't had the money in the past to fund all our good research proposals. This gives us a one-time opportunity to clear the backlog.

### Won't this give you a headache in three years' time, when the grants you award run out?

If we plan well, this will not be a major factor. President Obama has plans for a big increase in National Science Foundation (NSF) funding in 2012. By integrating our usual budget increases with the stimulus money, we will make this work.

### One pot of money being highlighted by the NSF is \$92 million extra for "out-of-the-box" research ideas. What's that about?

We want our grants to be transformative.



#### PROFILE

"Gentlemanly workaholic" Arden Bement Jr. has been director of the US National Science Foundation since 2004. His career in materials engineering research spans 50 years in academia, government and industry

We're now looking beyond the frontier of knowledge where it's murkier and more difficult to see what is ahead. We want to seek out new paradigms and create new fields of research. We are challenging the community to be less conservative and to think more laterally. We want to take more risks. That's in keeping with the rate of change of science, which is much faster than it was in the past. We have to be more nimble. One of the risks may create the next internet: just think about that.

Interview by Jeremy Webb

## In the polls

72%

of Americans think that scientific research will improve their quality of life, compared with 6 per cent who disagree

Source: Research!America