

Whale numbers in dispute

SIR — Dr Sidney J. Holt of the International Fund for Animal Welfare cites me¹ as sharing the view attributed to Professor A. S. Blix² that “any resource that can be harvested on a sustainable basis . . . should be harvested . . . Not doing so is a waste of resources”, and then goes on to ridicule this view. But, emphatically, I do not share this view, nor did I express any such view during the meeting in Stockholm on 7 December to which Holt refers.

That meeting was arranged by Greenpeace Sweden. Holt and I both have copies of the written verbatim report of the invited contributions. One of the subjects debated was “Is the Antarctic Whale Sanctuary Necessary?”, which referred to a proposal for a whale sanctuary in the Southern Hemisphere put forward by the government of France to the International Whaling Commission (IWC).

At the meeting, I argued against this particular proposal, but not against sanctuaries in general. On the contrary, I emphasized that “sanctuaries could be of value for research and as a management tool”. Last year, I expressed similar views to the IWC Scientific Committee, and Norway took a similar stand at the IWC’s annual meeting: “We are not in principle against sanctuaries, but in this case . . .”³.

Holt was present at both meetings. It is possible that his political interests are furthered by vilifying Norwegian scientists, for instance by deliberately misrepresenting my opinions, but that is hardly of benefit to the scientific debate.

Holt also misleads your readers by writing: “The present difficulty arises from the fact that the IWC Scientific Committee has agreed, unanimously, that these whales declined in number continuously from at least 1953 to 1983 (the last year for which there are appropriate data).” Holt is citing some words from the committee’s report⁴, but has added the word “continuously”, suggesting a steady decline towards serious depletion. But the data presented to the committee indicated that there was a “rapid reduction in stock size following the beginning of whaling”, and that the stock size was either constant or perhaps even increasing after about 1960. The committee eventually agreed “that there has been a statistically significant decline” between the early 1950s and the early 1980s, but did not express an agreed view about the size of the decline or the trends during that period.

Last year, the IWC Scientific Committee unanimously agreed to adopt 86,736 as the best estimate of the size of the Northeast Atlantic minke whale stock.

The 95 per cent confidence interval for this estimate ranges from 61,000 to 117,000⁵. The estimate is based on line transect methodology and sighting surveys and other field investigations carried out between 1987 and 1991.

Earlier estimates were based on mark-recapture observations of minke whales marked in the years 1974–78 and recaptured in 1975–82. Because the number of whales marked was small (333), the estimates were uncertain and were recognized as such at the IWC meetings from 1979 to 1984⁶. The estimates submitted to the Scientific Committee by Norwegian scientists for these years varied from 48,000 to 121,000, all with very wide confidence limits.

Vassili Papastavrou is thus mistaken in claiming⁷ that “[f]or several years, Norwegian scientists insisted on a figure of 113,000 obtained from marking experiments” and that “[t]here has never been a ‘previous estimate’ as low as 18,000”. (The figure I quoted to *Nature* was 19,000.) But in 1988, the IWC Scientific Committee discussed the results of the first sighting survey experiment in the North Atlantic (a pilot experiment in 1987) and agreed “a provisional estimate” of 19,112 (CV = 0.163) animals⁸. Although only a “provisional” estimate, this was much used by opponents of whaling as a good estimate of the total Northeast Atlantic minke whale stock in public debate even when better (and higher) estimates became available.

There is reason to believe that the current best estimate of 87,000 animals is biased downwards⁵. The seas off the west coast of Scotland (where they are being studied by Papastavrou), to the west of Ireland and in the Irish Sea, for example, are not included in the area of the 1989 sighting survey. Yet, as Papastavrou rightly remarks, these whales probably belong to the same genetic stock. Norwegian whalers formerly took substantial catches in these waters.

Papastavrou further claims that “estimates of depletion are more robust than estimates of stock number”. This is true only for a short time period; over longer periods, uncertainties in birth and death rates and their density dependence will strongly influence the estimates of depletion, as the IWC Scientific Committee acknowledged in its discussion in 1991⁴. Papastavrou then refers to “improved calculations presented to the IWC Scientific Committee in 1992” which in his opinion “strongly confirm that the catch limit should remain at zero”. These calculations were not presented to the committee as a full scientific paper and were “neither discussed nor reviewed by the

committee”⁵. Our own calculations, using the extremely cautious catch limit algorithm recommended by the Scientific Committee and accepted by the commission in 1992, result in quotas substantially larger than zero for the Northeast Atlantic minke whale stock.

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1. *Nature* **361**, 391 (1993).
2. *Nature* **360**, 523 (1992).
3. Verbatim Record, p.67, 1992 Annual Meeting, IWC.
4. *Rep. int. Whal. Commn* **42**, 68–69 (1992).
5. *Rep. int. Whal. Commn* **43** (in the press).
6. *Rep. int. Whal. Commn* **30** (1980) – **35** (1985).
7. *Nature* **361**, 391 (1993).
8. *Rep. int. Whal. Commn* **39**, 45 (1989).

Save the amber

SIR — Paul Whalley in his review of George Poinar’s *Life in Amber* (*Nature* **360**, 714; 1992) notes that DNA can now be extracted from insects encapsulated in amber, but does not say that extracting DNA from insects in amber requires that the specimen be pulverized. I suspect there will soon be a rush to crush even more amber insects into powder so their DNA can be sequenced.

This may not be a serious problem for common specimens, such as certain wasps and stingless bees in Dominican Republic amber. But what fate awaits rarer specimens? Will some of them also be pulverized so that their DNA can be checked?

DNA sequencing is a vital tool for investigating past life, but it is important that a system of peer review and approval be established to control the destruction of rare biological specimens, fossil and otherwise, for the purpose of DNA sequencing.

Meanwhile, scientists carrying out such work should carefully classify, document and photograph any specimen in amber before it is crushed. The venation of insect wings should be carefully recorded. It is especially important to document specialized external organs such as the spinnerettes of spiders.

Classifying amber inclusions can be difficult. Many have yet to be completely classified, so that researchers should perhaps concentrate on classifying what has been found in amber before destroying the specimens. They should also be aware of laws and regulations governing the destruction of fossils, especially those removed from museum collections.

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