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Whaling dispute continues

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Whaling dispute continues

SIR — Apparently alarmed that an advertisement in *Nature* referencing the study of Baker and Palumbi (*Science* 265, 1538; 1994) might lend undeserved credence to the notion that illegal whale products find their way into Japanese markets, Milton Freeman (*Nature* 376, 11; 1995) reiterates the arguments of the Fisheries Agency of Japan (FAJ) that the study is fundamentally flawed. As Freeman's letter contains several serious errors, we feel obliged to comment.

First, Freeman states that "the meat of all species referred to by Baker and Palumbi could be legally imported into Japan until 1991". That is not true. The humpback whale was fully protected worldwide in 1966. To be legal, the humpback meat would have to have been stored for 30 years. At the meeting, one of us (R.L.B.) suggested an alternative explanation; the humpback meat came from a Japanese stranding or an incidental fishery kill that was processed because of the high value of whale meat.

Second, Freeman says that Baker and Palumbi were "seriously questioned" at a recent international symposium on marine mammal genetics; Freeman himself was not there. Two of us (A.E.D. & W.F.P.) convened that symposium and Freeman is correct. The paper was seriously questioned — but only by N. Yagi of the FAJ. But the balance of the meeting participants accepted the methodology and results.

Third, Freeman misunderstands genetic methodology. Baker and Palumbi did not claim to find, as Freeman states, "an mtDNA sequence midway between a minke and a humpback".

Rather, two sequences were derived from amplification of two pieces of marinated meat from a single package; nothing was "midway". The authors' suggestion, that the product contained meat from two different sources, is entirely plausible. Freeman goes on to attribute, using quotation marks, the words "intermediate between a sperm whale and a harbour porpoise" to Baker and Palumbi, although this phrase does not appear in their paper. We trust this was a typographical error by Freeman and not an attempt to bolster his poor argument by incorrectly attributing a faintly absurd statement to the authors.

Our laboratory possesses a type sequence catalogue of all but 22 of the 80 or so extant cetacean species and we have extensive experience with intraspecific sequence variation in large datasets. Given a sequence of reasonable length, and ignoring rare interspecific hybridization in the wild of closely related species, we find (as do others) that identification to species of an unknown sample is a high-

ly practicable undertaking. With or without a complete collection of type specimens, mitochondrial DNA control region sequences easily discriminate between baleen and toothed whale samples. Sequences from different species do not "converge" upon one another. Thus Freeman's implication that the lack of type sequences for the toothed whales sold in Japanese markets could result in the incorrect identification of some baleen samples is entirely without foundation.

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