

# PACIANO II

Paciano II

A Conversation About Whaling and Science  
1 – 3 March 2008

by

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in consultation and with the approval  
of the participants

Global Ocean and Third Millennium Foundation, London and Paciano, June 2008

Foreword

In 2006 the UK-based charity, Global Ocean, with local support from the Third Millennium Foundation, convened a Conversation among specialists about the problems facing the conservation of whales. Called "A consultation on whaling", this gathering was held in the ancient village of Paciano, in Umbria near the border with Tuscany, 15 – 17 October 2006. There were 15 participants from 11 countries. Dr Kees Lankester served as moderator. The outcome was an Aide Memoire which served to guide the participants in the run-up to the 2007 meeting of the International Whaling Commission (IWC), held in Anchorage, Alaska, in June.

One point of agreement was that a second consultation should be held in the months following the Anchorage meeting, involving some but not necessarily all of the participants in the first, but concentrating this time on scientific issues – especially those encountered in the Scientific Committee of the IWC –with particular attention to informing a wider public about those scientific activities in relation to the problems confronting the IWC and the views of scientists about them.

This document is the report of that Conversation, referred to as Paciano II. The moderator was Dr Giuseppe Notarbartolo di Sciara and the Report was written by Kieran Mulvaney in consultation with all participants, and with reference to an Aide Memoire prepared by the Rapporteur, Dr Russell Leaper.

The sponsor and organisers have agreed with the general sentiment expressed by participants in Paciano II that further such conversations should be held at roughly yearly intervals and they will try to satisfy that desire. Although these future gatherings would be concerned with the living ocean they would not necessarily be restricted in future to consideration of whales and whaling. Discussions are on-going for selection of a theme which is of both scientific interest and practical concern for conservation of marine life and management of the uses of ocean space.

Leslie Busby

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Melanie Salmon

Paciano, 1 June 2008

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PACIANO

A Conversation About Whaling and Science

From March 1-3, 2008, 25 scientists and others gathered in the medieval Umbrian village of Paciano for a conversation on scientific issues relating to whales, particularly in the context of the Scientific Committee of the International Whaling Commission (IWC). Attendees came from Australia, Canada, Germany, Italy, Japan, the Netherlands, New Zealand, the United Kingdom, and the United States. Between them, participants had accumulated almost 350 years of attendance at IWC meetings, and had authored or co-authored approximately 940 refereed publications. One of those attending was a former Chair of the Scientific Committee; one was a former IWC Commissioner; three were current or former Alternate Commissioners. Experience and familiarity with the IWC ranged from participants or observers who had never been to a Commission meeting, to one who first attended in 1960.

A principal purpose of the meeting was to enable scientists to gather in one place and engage in a free exchange of ideas and opinions outside the agenda and time constraints of a Scientific Committee meeting. As such, although there was a formal agenda, conversation was encouraged to flow freely in whatever direction it needed to go. In the process, it touched on a variety of topics, from the ethology of whales to the possible effects on cetaceans of climate change and other environmental factors; from the Revised Management Procedure to the status of the Comprehensive Assessment of Whale Stocks; from counting whales to rates of population increase.

However, one overarching theme soon emerged, and remained the consistent underlying element of the three days of discussions. Those assembled in Paciano repeatedly stressed their concern that science and the scientific method were being grossly abused and misused by pro-whaling interests within and outside the International Whaling Commission. Beyond issues of disagreement with data and opinions, there were fundamental problems with the nature of some of the research itself. Furthermore, there was concern that the extent of the problems with this research was not being communicated adequately to the public or to policy makers, either inside or outside the whaling nations.

The key areas of concern are laid out in brief in this report, as well as additional areas of interest and a general vision for a way forward.

A list of participants is appended. However, although this report has been endorsed as an accurate summary of the conversation that took place in Paciano, it should not be assumed that all points are supported by all participants; nor does this report constitute in any way a position statement, and the participants in the conversation are

not co-authors of, or signatories to, the summary that follows.

### Introduction: The Path Leading To, and Beyond, the “Moratorium”

In 1982 the International Whaling Commission (IWC) voted to declare zero catch limits for commercial whaling on all whale populations for an indefinite period, a decision that is frequently (but inaccurately) referred to as the commercial whaling moratorium. The decision was taken to allow depleted stocks, and the Antarctic marine ecosystem, to recover from a century of over-exploitation from “modern whaling,” and to provide time for the development of an alternative to the New Management Procedure (NMP). Introduced in 1974, the NMP was a substantial improvement on the Blue Whale Unit which it replaced, and it proved immediately effective in providing protection for depleted stocks; it was not, however, able to prevent stocks that were not depleted from becoming so.

Almost immediately, the pro-whaling lobby questioned the scientific, and even the legal, validity of the zero catch limit decision, and they have continued to do so repeatedly in the years since. For example, in a letter published in several New Zealand newspapers in January 2008, Japan’s IWC Commissioner Minoru Morimoto claimed that the IWC made the decision “without any scientific justification and recommendation by its scientific committee.” This language reflects the so-called “St. Kitts and Nevis Declaration”, a text signed on to by the delegations of Japan and other Members of the Commission during the 2006 IWC meeting. The relevant paragraph of that document proclaims that “the IWC adopted a moratorium on commercial whaling ... without advice from the Commission’s Scientific Committee that such a measure was required for conservation purposes.”

Such an assertion is, however, demonstrably false. The Commission did seek the advice of the Scientific Committee, for all five of the moratorium proposals—one each from the Seychelles, Australia, France, the United Kingdom, and the United States—that were initially tabled at that meeting. It had done the same over the preceding few years for earlier proposals, including those resulting in the adoption of the Indian Ocean Sanctuary, a ban on pelagic whaling for all species except the minke whale, and all commercial hunting of sperm whales.

It is true that the Scientific Committee did not offer a unified appraisal of the moratoria proposals, but then it should not have been expected to. The Committee is not a body of neutral individuals, but is composed of scientists nominated by Member governments, some of which—notably Japan—exercise tight control over their delegations. This was reflected in the three differing opinions which the Committee's members did offer on the moratoria proposals.

One, which was published as an annex to the Committee report, was written by Japan's Dr. Fukuzo Nagasaki (later the director of the Institute of Cetacean Research (ICR), the government-funded institute which is the permit holder for all Japanese research whaling activities). It recommended a continuation of setting catch limits species by species and stock by stock. Its principal argument was that a pause in whaling, especially in the Antarctic, would stop the flow of data from commercial operations and would make the continuation of sightings surveys difficult or even impossible.

The second annex, which had nine co-authors (most from whaling countries other than Japan), expressed similar reservations.

A third, signed by four scientists (one each from Australia, France, the Seychelles, and the United Kingdom), began its conclusion by saying that, "The assessments made at this meeting have again shown, without exception, that with respect to whale stocks currently being exploited, either (1) they are in a worse condition than the Scientific Committee previously thought—in some cases much worse—or (2) there is still no sound scientific basis for their classification (under the NMP) and the determination of catch limits."

It continued: "Thus an objective view of our ability—or lack of ability—to provide advice with sufficient accuracy and needed caution leads to the conclusion that a negotiated (interim) cessation of commercial whaling, until such time as improvements have been made to methods of assessment, is a reasonable alternative to the other methods that have been tried, to ensure the productivity of whale resources."

Clearly, contrary to the assertions of Japan and others, not only was the Scientific Committee consulted in 1982, but the opinions of at least some of its members were clearly and publicly supportive of a moratorium or similar measure.

Interestingly, the aforementioned St. Kitts and Nevis Declaration notes “that the moratorium which was clearly intended as a temporary measure is no longer necessary.” For one thing, that implies that it was indeed necessary at least at one point in time. Secondly, it assumes that the rationale for its adoption in 1982 no longer applies, which again is simply not true.

As stated earlier, one of the principal purposes of the zero catch limit decision was to enable the Scientific Committee to develop an alternative to the NMP. In 1991, the Committee recommended such a procedure—the Revised Management Procedure (RMP)—to the Commission, which accepted it through a resolution. However, it has not been possible for the Commission to reach agreement on the system of observation and inspection (the Revised Management System, or RMS) to ensure that any whaling conducted under the RMP complies strictly with the rules. A significant part of the reason for this is the fact that the remaining whaling nations have continually placed obstacles in the path of developing compliance procedures consistent with international practice (e.g. in fisheries agreements). Chief among these is a refusal to incorporate truly independent, third-party oversight of all whaling operations, from catch to market.

There is a second rationale for the 1982 decision, which also remains unfulfilled. It is detailed in paragraph 10(e) of the Schedule to the International Convention for the Regulation of Whaling (ICRW), which states that, “... by 1990 at the latest the Commission will undertake a comprehensive assessment of the effects of this decision on whale stocks ...”

Eighteen years later, such an assessment has not yet been completed. Nor, indeed, has one been possible, given that whaling has continued in the Antarctic, as well as the North Atlantic and North Pacific, since the zero catch limit decision became effective in the 1985-86 Southern Hemisphere pelagic whaling season, both under objection to paragraph 10(e) and in the form of whaling conducted under Article VIII of the ICRW, the so-called “scientific whaling” clause. Further, the Scientific Committee observed in 1990 that the inability to assess whale populations with sufficient precision to recognize population changes over such a short period of time precluded an assessment of the effects of the 1982 decision.

Additionally, the Commission accepted in 1982 a proposal by Japan that the Scientific Committee should conduct “comprehensive assessments” of all whale stocks, not just the few—minke and Bryde’s whales worldwide, and fin and sei whales in the North Atlantic—that had theoretically been affected by the zero catch limit decision because they were the targets of commercial whaling

operations. The pro-whaling lobby has continually sought to conflate these two assessments and to suggest that the decision was made only on condition that a comprehensive assessment of all whale stocks be conducted by 1990, and that the absence of such an assessment somehow invalidates that 1982 vote.

In the event, much of the research that has been conducted on whale stocks in the past quarter-century (at least within the context of the IWC Scientific Committee) has been on those few populations of most interest to the whaling industry, and with the goal of demonstrating that those populations could withstand further commercial whaling.

To this end, pro-whaling governments and the scientists in their employ have made a number of assertions on a regular basis. Specifically, they insist that whale populations are (a) numerous and (b) increasing, and that as a result, (c) whales are in competition with humans for fisheries resources and are, in fact, to a large extent responsible for marked declines in those resources.

In many cases, the evidence advanced in support of these claims is at best flimsy and at worst fraudulent. Frequently, and seemingly intentionally, ignored is a plethora of peer-reviewed science which demonstrates conclusively that issues of competition and ecosystem dynamics are in fact a great deal more complicated than the typically facile manner in which they are presented by whaling apologists.

## Counting Whales

Many pro-whaling nations, scientists, and officials continue to cite whale population estimates which they claim demonstrate robust whale numbers, even when the surveys which yield those estimates involve highly suspect methodology, and even when those estimates have been discredited by the IWC Scientific Committee.

Perhaps the most significant example is that of Southern Ocean minke whales; on repeated occasions Japanese officials, including members of the Scientific Committee, have continued to cite an abundance estimate of 760,000 minke whales for the Southern Hemisphere. This is despite the fact that, at its annual meeting in 2000, the Committee stated explicitly that it no longer had faith in that estimate and in fact had no reliable estimate of the numbers of minkes in the Southern Ocean. At that meeting, the Commission declared that the 760,000 figure was no longer valid.

However, the issue extends beyond the misrepresentation of science in the public realm by individuals and entities with a clear agenda. It also points to the fact that, eight years after the IWC Scientific Committee stated that it no longer had faith in an existing estimate, it still does not have an agreed figure for a population for which a huge sum of IWC time and money has been expended on annual surveys since the enactment of the zero catch limit in 1986.

Data on Southern Hemisphere minke whale numbers derive primarily from three sources:

The IDCR/SOWER (International Decade of Cetacean Research/ Southern Ocean Whale and Ecosystem Research) cruises, which are surveys conducted annually from Japanese vessels under the auspices of the IWC. A different sector of the Southern Ocean is surveyed each year with currently three complete sets of circumpolar data;

the sightings survey component of JARPA and JARPA II, Japan's "special permit whaling" program; and

Historical Japanese scouting vessel (JSV) data.

It is probably as well at this stage to completely disregard c), as in almost all cases we are unaware of the circumstances of their collection; indeed, the SC has repeatedly stated that JSV data in both the Antarctic and North Pacific are inappropriate for use in abundance estimation. The data collected under b) are of minimal to no use, as Japanese scientists consistently refuse to make the raw data available for review and instead present only their own summaries of their research. The Scientific Committee has also noted concerns with the design of the JARPA operations which make estimating abundance difficult and potentially seriously compromised by bias.

Which leaves us with a).

The initial figure of 760,000 was derived from sightings surveys conducted during the first decade-long IDCR cruises, and was compiled from a series of separate surveys. Added together, the numbers from these surveys came to 760,000, which at the time was used as the "best available" figure in the absence of any alternative. However, subsequent cruises and analyses from the second and third decades of

surveys have cast serious doubt on a figure which already had a wide range of confidence limits, and suggested a greatly reduced number of minke whales, perhaps as few as 268,000.

The marked difference between the figures suggests one of two things: 1) that there has been a genuine and dramatic decrease in minke whale numbers in the Southern Ocean; or 2) that the data from which the estimates were derived are fundamentally flawed. While the possibility of an actual change in minke numbers cannot be ruled out, there are undeniably profound methodological difficulties with IDCR/SOWER cruises.

Such problems include poor methods for estimating sighting distances, and poor data recording systems. The distance and bearing from the survey vessel to each sighting are critical data items used for estimating the size of the surveyed strip of ocean on each side of the track of the ship. However, the methods used for estimating these data are primitive. One member of the Scientific Committee commented that he knew of no other scientific endeavor where the key data items were essentially guesses.

In the absence of an entirely new sightings survey, an accurate estimate of the population almost certainly requires changes in the IDCR/SOWER surveys. Solutions to some of the problems noted above are entirely possible, such as through the use of video to measure ranges and record sightings, but Japanese scientists have resisted changes on the grounds that alterations in methods on future surveys would make the results incompatible with previously-gathered data. In other words, they argue that the surveys should continue to collect inaccurate data so that they can continue to be compared with previous inaccurate data.

However, the fact is that they are already largely incompatible as a result of changes in personnel, an inevitable problem in a system that essentially institutionalizes human error and bias. In addition to the problems noted above, it is essentially impossible to retroactively assess the accuracy of each observer's sightings, and no system has ever been instituted to test this.

In the Northeast Atlantic, recent joint European surveys (such as SCANS-II in 2005 and CODA in 2007) have used systems to measure ranges and bearings. This has been a major step toward more accurate abundance estimates. In contrast, for all that the Government of Japan may protest that it has been the only nation to invest consistently in sightings surveys in the Southern Ocean, the fact is those surveys have used less reliable methods to produce unreliable data that yield

unusable estimates. Surveys by Norway as a basis for setting their self-allocated catch limits for minke whales in the Northeast Atlantic are even more prone to errors in distance estimation.

However, it is also worth underlining one very important fact. While it is certainly interesting and desirable to derive abundance estimates of whale populations, they are of interest only in terms of management—specifically, for calculating catch limits. Of far greater import for assessing overall ecosystem health is an understanding of the populations' rate of change over time.

### Rates of Increase, Recovery, and Management

It is worth emphasizing the point made earlier: That the original intent of what has become known as the commercial whaling moratorium was to ascertain the effects on whale populations of calling a halt to whaling. Instead, as a result of constant pressure from pro-whaling nations, the Scientific Committee has focused an inordinate amount of attention on surveys of those whale populations which whalers are interested in hunting. Not only has this failed, as noted above, in many cases to provide accurate estimates of the sizes of the relevant whale populations, it has also diverted attention from important tasks, such as determining rates of recovery of many other depleted populations.

Nonetheless, this has not prevented pro-whaling governments and scientists from making a number of assertions regarding the recovery of whale populations, which not only are unsupported by evidence but are also biologically impossible.

For example, the Government of Japan has repeatedly stated that humpback whale numbers have increased by more than 100% (from 16,211 to 33,010) in one area of the Antarctic, a claim that is used to support Japanese arguments that increasing humpbacks are “out-competing” minke whales for their shared prey, krill (euphausiids). The purported explanation for this increase is “distributional shifts,” although as a paper co-authored by, among others, four of the attendees in Paciano noted, “There are no data from the Antarctic or anywhere else to support the occurrence of such a vast and unprecedented change in habitat use by so many whales over any time period, let alone two years.” Additionally, the ICR has repeatedly asserted on its website that populations of humpback and fin whales are increasing at rates between 14 and 16%, without mentioning that the Scientific Committee has agreed that such rates are in fact not possible.

In 2006, Clapham et al. calculated both the average and maximum possible theoretical rates of increase for humpback whales – respectively 4.7 and 10.6 percent per annum. In other words, even assuming the most extreme values reported for any population, the level of increase cited by the ICR is biologically implausible for humpback whales. The levels for other rorquals are almost certainly in the same range, while those for balaenids (right and bowhead whales) are presumably lower, given those species' longer inter-birth intervals and much later age at first parturition.

It is remotely possible that small populations could increase for short periods at rates in excess of these maximum values in the initial period of recovery. It certainly does not follow that this is so in these particular cases, however. Any raw data to support the claims of the ICR regarding humpback and fin whale increases should be examined by the Scientific Committee to determine whether they are of any merit or, more probably, are the result of flawed methodology. Unfortunately, such data have not been made available.

There are other important elements to consider with the issue of recovery. Analysis of the genetic variation in some whale populations suggests that pre-exploitation numbers were far greater than has been generally accepted, and that therefore so too was the level of depletion by whaling. Although this finding has been very controversial, this work points to inconsistencies with, and potentially inaccuracies in, historical whaling data. It also suggests that, even when populations do show signs of recovery, any preconceived notions about the extent of that recovery need to be completely reassessed in light of historical and contemporary evidence of abundance and trends.

Finally, not all recovery is equal. Eastern Pacific gray whales are recovering well, while western Pacific gray whales are critically endangered. Some populations of southern right whales and humpbacks have shown greater recovery than others. Our concept of population recovery, and thus of management, may also depend on the spatial definitions of population size. There is some evidence—for example, right whales in the Bay of Biscay—that once whales have been extirpated from a particular area, they do not return. Management calculations that are based on larger spatial areas do not take into account such regional fluctuations, depletions, and extirpations.

For example, a 2008 paper by Clapham et al. identified 11 sub-populations of five species: humpback whales (South Georgia, New Zealand, eastern Caribbean); blue whales (South Georgia, Japan); fin

whales (Straits of Gibraltar); bowhead whales (Spitsbergen); and right whales (several locations in the North Atlantic). The authors found that these subpopulations were all severely reduced or extirpated by commercial whaling, and that little or no recovery had occurred since, despite (in some cases) the apparent abundance of prey in the area concerned and the fact that, at its most extreme, “commercial extinction” had taken place four centuries previously. The paper’s authors proposed that the populations did not recover because (a) cultural memory of the habitat has been lost; (b) because widespread whaling among adjacent stocks eliminated these as sources of repopulation; and/or (c) segregation following exploitation produced the abandonment of certain areas.

This evidence suggests that, when discussing issues of “recovery” and management, it is important to focus on relatively short time scales—decadal, rather than a century or more—and smaller areas. This of course is diametrically the opposite of what, for example, Norwegian scientists are striving to do by revising the RMP so that it covers a wider population area, and by running population models for 300 years, allowing higher catches for the first 100 years and lower catches for the subsequent 200. The spurious principle behind this is that high catches now can be compensated for by population growth in the distant future, with management thereby conveniently becoming the responsibility of later generations.

#### Adjusting the Revised Management Procedure, Arbitrary Catch Limits, and “Sustainable” Whaling

There are reasons beyond propaganda for pro-whalers to promote claims of large populations of whales undergoing remarkably high rates of increase. Inputs of both population size and rate of change are essential components to determining catch limits under the Revised Management Procedure (RMP); because the RMP has yet to be formally incorporated into the IWC Schedule, pro-whaling elements have continued to tinker with these inputs in an attempt to create answers that they find satisfactory. This is particularly the case with Norway’s commercial whaling, which is conducted under objection to the 1982 decision.

Norway has sought to take steady but incremental steps toward increasing catches, through a variety of measures that primarily involve reconfiguring elements of the RMP. As noted above, Norwegian scientists, dissatisfied with the likely catch limits that might be granted by the procedure, have been working steadily to adjust the RMP so that it could produce the results that Norway wants. This effort includes, as noted, extending the time-frame for running models to 300 years, thus endangering whale populations in the short term, and also lowering the tuning level—i.e. changing the level, relative to its initial abundance, below which the RMP would prevent a stock falling as a result of whaling. Norway is additionally questioning assumptions

concerning MSYR—Maximum Sustainable Yield Rate, the natural rate of increase when a population is at its MSY level. (This is the level at which a population is theoretically most productive, and thus able to yield its highest catch; a convenient theoretical concept, but perhaps too simplistic to have any real significance).

The lower the MSYR, the smaller the catches that could be permitted without putting the population at risk of depletion. The RMP assumes a range of values for MSYR of between 1 and 4% and, being an inherently conservative procedure, calculates catch limits based on the assumption that MSYR is at the lower end of this range—i.e. 1%. Norwegian scientists and allies are pushing for an increase in the lower end of MSYR, a move that would lead to a substantial increase in catch limits under the RMP.

On occasion, it is not enough for whalers to alter the RMP; instead, they seek to bypass it altogether. In 2007, for example, Japan requested that the Scientific Committee provide advice on the effects of short-term coastal catches of minke whales, using arbitrary catch limits. The response from many members of the Committee was that such a request was inappropriate and that any consideration of the effects of catches should take place within the context of implementation of the RMP. The importance of remaining within the RMP context is highlighted by the fact that the RMP also takes into account other sources of human-induced mortality, such as catches in fishing gear, when setting catch limits; in the case of Japanese coastal minke whales, such incidental takes alone may exceed any potential allowable catch limit.

Indeed, genetic analyses of market samples in both Japan and Korea have revealed much higher levels of take in both countries than have been officially reported. It has taken some time to uncover the true extent of the problem, with little cooperation from either Japanese or Korean authorities. Furthermore, not all such unreported catches are incidental; in addition to net entanglement, some catches almost certainly involve whales killed by harpoons; and some nets are probably set in ways and locations that have a high probability of catching minke whales. This latter tactic also affects other species: for example, four females from the critically endangered western gray whale population are known to have been killed off the coast in Japan in recent years, and at least one of these was sold in commercial markets.

Despite this, Japan continues to push for the allocation of coastal catch limits for minke whales as part of what it calls “small-type coastal whaling,” even though the Schedule recognizes no such category. It seeks to assuage criticisms and concerns over the notion of assigning catch limits outside the agreed management process for a category of whaling that does not exist by arguing that the catches are inherently unobjectionable as they would be “sustainable.”

This is despite the fact that (a) there is no certainty that they would in fact be sustainable, particularly given the high levels of incidental and illegal take; and (b) achieving “sustainable” catches, while laudable and certainly preferable to unsustainable ones, is not and has never been the primary goal of the IWC. Sustainable catches could, in theory, be taken from depleted or endangered populations. But the IWC agreed long ago that its policy objective was not merely to protect whales from extermination, but to allow recovery of depleted stocks and maintain abundance at high, productive levels. Hence, management considerations need to be inherently conservative and precautionary, giving the benefit of the doubt to the whales and not to the whalers.

#### The Japanese Research Program In The Antarctic (JARPA and JARPA II)

Since 1987, Japan has killed more than 10,000 whales under Article VIII of the International Convention for the Regulation of Whaling (ICRW). As is well known, this Article states that, “Notwithstanding anything contained in this Convention, any Contracting Government may grant any of its nationals a special permit authorizing that national to kill, take and treat whales for purposes of scientific research subject to such restrictions as to number and subject to such other conditions as the Contracting Government thinks fit, and the killing, taking, and treating of whales in accordance with the provisions of this Article shall be exempt from the operations of this Convention.”

The Government of Japan is by no means the only country to make use of the Article VIII provision; however, the scale of its use dwarfs that of any other nation. Between 1952 and 1986, all nations combined (including Japan) took a total of approximately 2,100 whales for “research” purposes; Japan presently takes more than half that many each year.

The Government of Japan defends the size of its catches by arguing that they are driven by considerations of sample size and statistical robustness. There are, however, two fundamental problems with this argument.

The first is that the intention behind Article VIII was almost certainly never to allow such large catches, a fact that was pointed out by Norwegian scientist Lars Walloe in a 2007 article in *Science*.

Walloe was quoted as saying that the article's originator, Birger Bergersen, the first chair of the IWC, "was thinking that the number of whales a country could take for science was less than 10; he didn't intend for hundreds to be killed for this purpose ... he had in mind, for instance, the possibility of finding a new animal and thus needing to take some in order to describe them scientifically." A review of the verbatim record of the 1946 conference at which the ICRW was agreed shows that that was also the view of the scientists and experts on the delegations that negotiated the convention.

The second problem is that, notwithstanding Japanese claims to the contrary, its "research" program has yet to provide viable results, no matter how large the sample size. Assertions by Japan that the research has resulted in numerous scientific papers fail to mention that such papers are heavily represented by arcane and irrelevant research reported in obscure journals - for example, the work of Professor Yutaka Fukui, whose refereed publications detail, inter alia, his attempts to use bovine or other mammalian semen to inseminate minke whale ova. If one removes such ethically and scientifically questionable studies, and also removes non-refereed papers submitted to the Scientific Committee or published in Japanese-language journals and opinion pieces defending special permit whaling, then the number of papers published as a result of the special permit programs in either Antarctic or North Pacific is extremely small and represents a very poor return for the money invested and the huge sample of whales killed.

Japan repeatedly claims that its research shows, among other things, that minke whale numbers are increasing in the Antarctic, that minke whales are out-competing other species, and/or that whales need to be "culled" in order to limit their impacts on fish stocks. In fact, its research shows none of these things—and in the case of Antarctic minke whales, could not possibly show the third, no matter how hard it tried, as orquals in the Southern Ocean eat krill, not fish.

Indeed, independent scientists have pointed out since the inception of Japan's first research program that it could not hope to achieve its stated goals. Bill de la Mare, an Australian member of the Scientific Committee, wrote in 1989 that the stated goal of determining natural mortality rates in Southern Hemisphere minke whales would provide values of such uncertainty as to be useless. De La Mare's predictions—and the repeated observations by scientists not associated with whaling nations that the quality of the underlying research was inherently abysmal—were borne out by a 2006 Scientific Committee Workshop to review the eighteen years of JARPA. The review found that the program had failed to achieve any of its stated objectives.

For example, of JARPA's intention to address population trends in Antarctic minke whales, the Workshop's report noted that it "has not developed any agreed estimates of abundance and trend ... The Workshop

noted that the current confidence intervals for the estimates of trend are relatively wide. These results are, therefore, consistent with a substantial decline, a substantial increase, or approximate stability in minke whale abundance in these geographic areas over the period of JARPA ...” In other words, according to the findings of JARPA, minke whales in the Antarctic may be increasing or decreasing significantly in numbers. Or they may not. In short, despite two decades of Japanese research, we have no clue what is actually happening to the population.

Similarly, efforts to estimate natural mortality had, as predicted by De La Mare, produced results of such low precision “that the natural mortality rate had, for practical purposes, not been determined. In particular, even a zero value was not excluded by the analysis.” In other words, despite all of Japan’s efforts, they could not exclude even the possibility that minke whales are immortal.

And efforts to elucidate the role of whales in the Antarctic marine ecosystem had led to “relatively little progress, even allowing for the complexities of the subject.”

As one of the participants in Paciano noted: “Not exactly a ringing endorsement of 18 years of work and several thousand dead whales.”

#### Toward a Broader IWC Approach to Whale Science

When the ICR talks about whales in an ecosystem context, it does so in terms of minke whales increasing in numbers and “out-competing” blue and fin whales, only to find themselves conveniently out-competed by recovering humpbacks when the evidence shows minke numbers to be smaller than previously believed and when the Government of Japan decides it needs justification for a proposed “special permit” hunt of humpbacks. Or it provides photographs of a whale’s stomach full of fish and cites it as evidence that recovering whale numbers are causing severe declines in fish stocks, and that the whales must therefore be appropriately “managed” to return some kind of equilibrium to the marine ecosystem.

This propaganda conveniently ignores such facts as that the majority of baleen whales live in the Southern Hemisphere, where they mainly consume krill (and, in the case of sei whales, copepods), not fish; the sizes of many whale populations remain at a fraction of their

pre-exploitation levels, when commercial fish populations were far larger than today; or that the primary consumers of fish are in fact other fish, not marine mammals. The ICR publications on fish consumption by whales also provide perhaps the best example of fraudulent presentation of selective facts. In the 1970's, hundreds of Bryde's whales were killed under Special Permits by the Japanese pelagic fleets, near Madagascar, Indonesia, and the Solomon Islands. All their stomachs were examined and not a single fish was found in any of them. Yet the ICR documents assert that Bryde's whales in the Indian and South Pacific Oceans eat three-quarters of the fish supposedly consumed by baleen whales in the Southern Hemisphere.

Conversely, the ICR refuses to cooperate with large-scale ecosystem research programs in the Antarctic and North Pacific, presumably because doing so would subject the quality of their own research to fatal scrutiny, and would yield results that would undercut their scenarios. In fact, having pushed the issue of whales and fisheries into the public domain and onto the agenda of IWC, no Japanese scientists participated in the IWC Scientific Committee's workshop on interactions between whales and fisheries in 2002. This is unfortunate, because cetacean research which leads to greater elucidation of ecosystem processes is of paramount importance, particularly at a time when the marine ecosystem is experiencing large-scale anthropogenic change as a result of a variety of factors, including contaminants, climate change, and over-fishing. Nevertheless, contrary to frequent claims by Japan that whales are competing with fisheries, Japanese scientists could not argue with the conclusion of the Scientific Committee's conclusion in 2003 that "for no system at present are we in the position, in terms of data availability and model development, to provide quantitative management advice on the impact of cetaceans on fisheries, or of fisheries on cetaceans."

In 1993, the Commission stated that the Scientific Committee "should give priority to research on the effects of environmental changes on cetaceans in order to provide the best scientific advice for the Commission to determine appropriate response strategies to these new challenges." The Committee has responded by convening, for example, a Chemical Pollution workshop in 1995, a Climate Change workshop in 1996, the aforementioned workshop on cetacean-fishery interactions in 2002, and in 2004 a symposium on Noise and a workshop on Habitat Degradation. In 1997, the Scientific Committee held the first meeting of the Standing Working Group on Environmental Concerns, which has met every year since. In 2000, the Standing Group established SOCER (the State of the Cetacean Environment Annual Report) which is now published as an annual review. A new workshop on climate change is being launched; a scoping meeting was held in San Diego in 2008.

However, such vital work is forced to compete for time in an already crowded Scientific Committee agenda, and is frequently forced to take a backseat to dissection of, and argument over, issues such as special permit whaling. The Commission as presently constituted is institutionally not well structured to address some of these broader issues.

As was noted in a paper released by the Government of Australia at the March 2008 Heathrow meeting on the Future of the IWC:

AWMPs [Aboriginal Management Whaling Programmes] and the RMP consider causes of human-related mortality beyond whaling and are designed to discount these from total quotas. However, it remains the case that the objective of these procedures is to maximise the number of whales killed against a set of pre-specified conservation rules. The AWMPs and RMPs therefore do not facilitate management based on non-consumptive objectives. They do not address non-whaling threats to whale populations, nor are they designed to apply to substantially depleted populations. As such, the existing management tools alone are not sufficient to address contemporary threats to whales.

At present, whale management through the IWC is limited to setting commercial catch quotas to zero (the moratorium and sanctuaries) or to those populations subjected to aboriginal subsistence whaling ... These tools do not include conservation and management options to achieve outcomes such as:

- the reduction of bycatch;
- the regulation of whale watching;
- the recovery of whale populations; and
- the establishment of effective sanctuaries.

These outcomes should drive the development through the IWC of an expanded set of management and conservation options that can be tailored to particular populations and threats.

The Australian paper proposes a number of steps that would enable the IWC to adjust and broaden its focus, moving it away from the annual bickering over the pseudoscientific agenda of a minority and toward a genuinely proactive conservation and management approach for cetaceans. Such steps include:

- \* developing internationally-agreed, cooperative conservation management plans, taking into account all whale-related issues and threats;

- launching regional, non-lethal, collaborative research programs to improve management and conservation outcomes for cetaceans; and

- reforming the management of science conducted under ICRW and IWC auspices, including agreed priorities and criteria for research, and an end to unilateral 'special permit' scientific whaling.

There is at present much discussion within the Commission about "The Future of the IWC." Although such discussion has been initiated by those who consider the IWC's continued adherence to the zero quota decision as somehow obstructive and irrational, it is a discussion worth having. The IWC has achieved a great deal during its 60 years of existence, something that is frequently forgotten amid the criticism that is directed at it from all sides. But it is presently creaking under the pressure of a structure and a philosophy that are six decades old.

The Commission, and particularly the Scientific Committee, are unique resources for improving understanding of whale biology, ecology, and conservation. Much useful and interesting research remains to be done. The Commission and the Committee deserve to be free to concentrate on doing it.

## Conclusion

There is much exciting, innovative, and illuminating scientific research on whales being conducted around the world, much of it by researchers who are members of the Scientific Committee. Committee meetings provide a unique annual gathering for the exchange of ideas and information on such research, an opportunity of which most Committee members are keen to take advantage. Unfortunately, the desire to focus on some of the broader issues surrounding the conservation of cetaceans must all too often take a back seat to the grinding work of having to assess and, frequently, rebut the scientific arguments of a small number of nations pursuing an agenda of reversing conservation gains within the International Whaling Commission and forcing a resumption of openly commercial whaling.

Although this dynamic is frequently portrayed in media accounts as a legitimate debate between two competing scientific viewpoints, the pro-whaling science is frequently not only sub-standard in its execution but disingenuous in its conception: devised not to find answers to scientific questions but to find evidence in support of a predetermined answer. That it is so demonstrably unable even to succeed in that goal is testament to the poverty of its approach.

For scientists, such a situation is dismaying. It is dismaying to see suspect, ostensibly scientific, claims being repeated until they gain traction, even in the face of continued rebuttals. It is dismaying to see them being held up as valid conclusions from legitimate research. It is dismaying that the time taken to counter them is time that could well be spent on more pressing research needs.

Those of us who gathered in Paciano do not claim to have the answers to the situation, but we do hope that by shining a spotlight on inherent falsehoods, we can help prevent truth from slipping into the shadows. It is essential that all concerned scientists, not just those who took part in the conversazione, do likewise. If we all do so, then hopefully in the near future we will be able to concentrate attention on answering questions that are genuinely relevant to the conservation of cetaceans and of the marine environment upon which they, and we, depend.

## List of Participants

\* Denotes Present or Former Member of IWC Scientific Committee.

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