

**WRITTEN TESTIMONY OF
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**OVERSIGHT HEARING IN ADVANCE OF THE
61ST MEETING OF THE INTERNATIONAL WHALE COMMISSION**

**BEFORE THE COMMITTEE OF NATURAL RESOURCES
HOUSE SUBCOMMITTEE ON INSULAR AFFAIRS, OCEANS AND WILDLIFE
U.S. HOUSE OF REPRESENTATIVES**

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Madam Chairwoman and members of the Subcommittee, thank you for inviting me to testify today regarding the current status and future direction of the International Whaling Commission.

My name is Scott Baker and I am Associate Director of the Marine Mammal Institute and Professor in the Department of Fisheries and Wildlife at Oregon State University, as well as Adjunct Professor of Molecular Ecology and Evolution at the University of Auckland, New Zealand. I have been involved in the study of large whales for more than 30 years, using photo-identification and molecular genetics for the study of abundance, migration and population structure. In 1993, I also became involved in the monitoring of Illegal, Unreported or Unregulated (IUU) exploitation of whales, using molecular genetic methods for identification of protected species sold in ‘whale-meat’ markets in Japan and the Republic of (South) Korea. I have served on the Scientific Committee of the International Whaling Commission since 1994, first as a delegate for New Zealand and, for last three years, as a delegate for the U.S. I am Chair of the Executive Committee of the South Pacific Whale Research Consortium, an organization of independent scientists and conservation managers committed to the non-lethal study of whales and dolphins throughout the South Pacific.

Introduction

In a less than two weeks, I will attend the 61st Annual Meeting of the International Whaling Commission in Madeira, Portugal as a U.S. delegate to the Scientific Committee. Despite more than a year of intensive negotiation over the Future of the IWC, I expect the Commission will once again find itself in a deadlock between a small number of pro-whaling nations and a growing majority of non-whaling and pro-conservation nations.

As the Subcommittee is aware, a Small Working Group, under the direction of the Chair, U.S. Commissioner Bill Hogarth, was established at the 60th meeting of the IWC in Santiago, Chile, to find a way forward on issues that have divided the IWC over the last two decades, particularly Japan’s expanding and open-ended programs of ‘scientific whaling’ in the Antarctic and the North Pacific. Other outstanding issues include the lack of formal acceptance of the Revised Management Procedure (RMP), a robust method developed by the Scientific Committee for calculating sustainable catch limits for commercial whaling, and the suspended negotiation over the Revised Management Scheme (RMS), the wider framework of reporting, observation and enforcement required for the control of whaling.

The final report of the SWG is scheduled for public release on May 18, 2009, and so the current details of the negotiations were not available as I was preparing this testimony. However, recent media reports from Australia confirm what many in the Scientific Committee have suspected – the negotiations of the Small Working Group have themselves come to an impasse. At the heart of the negotiations was an effort by the pro-conservation nations to bring Japan's scientific whaling programs under some kind of international control, and preferably, to halt entirely one or both programs. As part of the negotiations, I understand that Japan was seeking recognition of a 'small-type' coastal whaling program, directed presumably at the 'O' stock of North Pacific minke whale found along the Pacific coast of Japan. This stock of minke whales is also the primary target of the scientific whaling program in the North Pacific, as discussed further below. The IWC has not defined 'coastal whaling' and so, for the purpose of my comments, I will assume Japan's proposal is for a fully mechanized whaling operation that does not involve a factory ship and is therefore limited to operating within approximately 60 nautical miles of a home port.

Although there had been the expectation that Japan would offer a serious reduction of its scientific catch as part of an agreement to exempt 'coastal whaling' from the current moratorium, this has not been forthcoming. Instead, Japan has offered only a modest reduction in its self-established annual quota for Antarctic minke whales (from 985 to 650) and the endangered fin whales (from 50 to 24), and to forgo its proposed hunting of humpback whales in the Antarctic. Meanwhile, frustration with Japan's entrenched position seems to be increasing within the Commission, with the addition of Poland, Estonia and Lithuania to the current membership of 85 nations, strengthening a European Union vote against whaling. I also understand that the Government of Colombia and the Dominican Republic are giving serious consideration to joining the IWC, and will presumably support the pro-conservation direction of the increasingly influential 'Buenos Aires' group of Central and South American countries.

On the expectation that negotiations will continue over the future of the IWC, I will address three topics relevant to the responsibilities of the Scientific Committee: 1) the legitimacy of scientific whaling 2) the threats to Japan's coastal stocks from scientific whaling in the North Pacific (JARPNII) and 'small-type' coastal whaling; and, 3) the emergence of an unregulated form of commercial 'bycatch whaling' along the coasts of Japan and Korea and the genetic identification of products sold in commercial markets. I will then consider the role of science in seeking a way forward on: 1) scientific whaling as an 'abuse of intent'; 2) the application of the RMP for setting quotas in coastal whaling; 3) the role of forensic genetics and market surveys in observation and inspection; and finally, 4) the conservation science of whales – a new direction for the IWC. The views I present in this testimony are based on my professional expertise but do not necessarily represent the position or views of my home institutions, Oregon State University.

Scientific whaling – a cover for commercial whaling

The general facts of scientific whaling are well known - following the 1986 moratorium on commercial whaling, Japan, Iceland and Norway initiated scientific whaling programs of limited or dubious scientific value. Article VIII of the 1946 International Convention for the Regulation of Whaling (ICRW) allows any member nation of the IWC to award itself a Special Permit to kill whales for the purpose of scientific research. While the results of such research must be reported to the IWC, the Commission is powerless to amend or rescind this self-established

quota. Norway ended its scientific whaling program in 1993 and continues commercial whaling under an objection to the moratorium. Iceland withdrew from the IWC and later rejoined with an objection allowing it to initiate both scientific and commercial whaling, although, to dates, these have been of a relatively limited scale.

The Japanese Whale Research programs conducted under Special Permit, referred to as JARPA in the Antarctic and as JARPN in the North Pacific, have been ongoing since 1988 and 1994, respectively. JARPA focused initially on Antarctic minke whales in the Southern Ocean and JARPN focused on the 'O' stock of North Pacific minke whales in the western North Pacific. The two programs are now in a second phase with an accompanying expansion to three species for JARPAII, the Antarctic minke, the fin and the humpback whale, and four species for JARPNII, the North Pacific minke, the pelagic Bryde's, the sei and the sperm whale. The self-established quotas of both programs have also increased, although the JARPAII program has been notably unsuccessful in achieving these targets, particularly for fin whales, a species listed as endangered by the IUCN. The reported annual takes of each program are shown in Table 1.

Japan's prolonged and open-ended scientific whaling program has provoked intense discord both within and outside of the IWC. Article VIII, which provides for scientific whaling, was crafted at a time when there was no viable alternative to lethal sampling. It was assumed that catches under scientific permit would be used to study limited numbers of whales to inform the management of whale stocks. At best, it can be said that past scientific whaling program have produced "useful" rather than necessary information. Now, with the demonstrated power of non-lethal methods for describing whale population parameters, many consider that existing scientific whaling program are simply vehicles for sustaining a commercial market. The second phase of scientific hunting by Japan in the Antarctic (JARPAII) and in the North Pacific (JARPNII) has abandoned even the pretence of research for the purposes of whale management and, instead, is focused on issues of little or no direct relevance to the management of whaling by the IWC.

The primary criticisms of Japan's scientific whaling can be summarized as;

- The overall quality of scientific research in these programs is poor. A 2008 review of the 18-year JARPA program by the IWC concluded that the major objectives had not been achieved, despite nearly two decades of effort by the Institute for Cetacean Research, Tokyo, a large and well-funded research laboratory supported by the sale of the scientific whaling products. The poor quality of the scientific whaling programs is further reflected in the very small number of resulting scientific publications in international peer-reviewed journals.
- The primary scientific objectives of the programs are not required for the effective management of whaling under the IWC's management procedure, the RMP. The second phases of scientific whaling, JARPAII and JARPNII, are now directed at establishing a spurious link between declining fisheries and the recovery of some whale stocks, to justify 'culling' of whales under the guise of ecosystem management.
- The ostensible objectives of the programs would be more efficiently accomplished through well-established non-lethal methods, including photo-identification, genetic analysis of skin biopsy samples and satellite telemetry.
- The commercial sale of products from scientific whaling creates a conflict of interest for the scientists of the Institute for Cetacean Research, the quasi-governmental institute supported in part by the sale of whale-meat products. These scientists attend the IWC as

delegates for Japan, advocating on behalf of their own scientific whaling programs and biasing management advice provided by results of the programs. The magnitude of this conflict of interest is substantial. In 2000, the ICR reportedly had an annual operating budget of US \$73 million. Following the expansion of both JARPAII and JARPNII, the annual operating budget has increased to about US \$172 million in 2009.

- The killing of whales for science raises animal welfare issues, as well as conservation concerns. Current scientific whaling practices are cruel, often involving inefficient secondary killing methods and a prolonged period of time to death even for the relatively small Antarctic minke whales. Japan's scientific whaling program has never been subject to review for ethical animal experimentation protocols by an appropriate independent body, as required by law in many countries, including Japan.

JARPNII and 'small-type' coastal whaling - threats to the depleted J stock minke whales

Stocks of whales along the coast of Japan and Korea are among the most depleted in the world as a result of commercial hunting prior to the moratorium, and continuing high levels of IUU exploitation (see below), including scientific whaling and commercial 'bycatch whaling'. The first phase of Japanese scientific whaling in the North Pacific, JARPN, was restricted to minke whales and hunting was concentrated in the offshore waters of the western North Pacific. The second phase, JARPNII, has increased the quota of North Pacific (NP) minke whales, shifted the distribution of the hunt inshore, and added Bryde's, sei and sperm whales to the list of targeted species. Any proposal for establishing a 'small-type' coastal whaling program must consider the impact of this ongoing scientific whaling, and threats to depleted stocks, particularly the so-called 'J' stock of NP minke whales.

For management purposes, NP minke whales are considered to comprise at least two genetically distinct stocks around Japan: the O stock, found in offshore Pacific waters, and the J stock, found primarily in the East Sea/Sea of Japan and, perhaps, in near-shore waters along the Pacific coast. The O stock is considered to be relatively abundant but the J stock was depleted as the result of intense commercial exploitation by the Korea and Japan between 1962 and 1986. During this 24-year period, 13,734 animals were taken from the J stock. In 1983, the Scientific Committee of the IWC recommended that the J stock should be classified as a 'protection stock'. This classification came into effect in 1986, coinciding with the global moratorium on commercial whaling. JARPN focused initially on O stock minke whales in pelagic waters of the western North Pacific. Genetic analysis of samples in the early years of this program (1994-1998) suggested that more than 95% of whales killed in these offshore waters probably originated from the O stock. Under JARPNII, the distribution of whaling effort has moved closer to the coast and the stock identity of the minke whales killed in these coastal waters has now come into dispute.

Japan's proposal to expand 'small-type' coastal whaling is likely to increase pressure on the depleted J stock minke whales. Japan has long maintained that the J stock is confined to the Sea of Japan/East Sea and is not subject to the impact of scientific whaling in the western North Pacific. New evidence, including genetic analyses of whale-meat products from Japanese and Korea markets (see below) and results from the JARPNII itself, has raised questions about the distribution and structure of stocks in Japan's coastal waters. Although Japanese scientists now concede that 'J' stock whales are found along the Pacific coast, they insist that the distribution is restricted to within 10 nautical miles of the coastline. The biological plausibility of such an arbitrary boundary between two migratory stocks is highly questionable and Japan has yet to

present its evidence for this claim to the Scientific Committee. Consequently, the degree of mixing between the depleted ‘J’ stock and the more abundant ‘O’ stock in the waters off the east coast of Japan is unclear. Independent analysis of genetic data from JARPNII and from the Japanese and Korean bycatch should be a prerequisite for any management advice on a coastal whaling program.

Commercial ‘bycatch whaling’ and molecular monitoring of whale-meat markets

Any negotiation over limits to scientific whaling or quotas for ‘small-type’ coastal whaling must take into account a currently unrecognized and unregulated form of whaling that has emerged in the coastal waters of Japan and Korea – commercial ‘bycatch whaling’. In Japan, the entanglement of whales in nets dates back to at least the 17th century, when it was the basis for an early form of commercial whaling. The history of ‘incidental’ bycatch of whales is less well documented, but ‘official records’ have been included in Japan’s national progress reports to the IWC since 1979. These records show that most whales are killed in coastal set nets or ‘trap nets’; these are fixed fishing structures with a ‘guide’ of net up to 1 km in length, extending from shore to offshore and leading to a large ‘box’ to retain the trapped fish (or whales). In Japan alone, there are about 20,000 trap nets operating in coastal waters. The history of ‘bycatch’ whaling is less well documented in Korea, but the netting of whales is depicted in Neolithic petroglyphs near today’s whaling center, the coastal city of Ulsan.

Although occasional entanglements and deaths of large whales are included in the annual progress reports submitted by other member nations of the IWC, only Japan and Korea report large numbers of these ‘incidental’ takes year after year. For most of the last decade, the combined reported incidental takes of North Pacific minke whales have been in excess of 200 whales/year (see Table 1). Given the reported distribution of bycatch in coastal water of Japan and Korea, it is likely that the majority of minke whales killed belong to the J stock. Other species of large whales reported or detected in our market surveys include humpback whales, fin whales, Bryde’s whales and the critically endangered western gray whales. The entanglement and death of western gray whales is of particular concern given the extremely small size of this critically endangered population (estimated to number only 100 individuals). Perhaps not coincidentally, Japan and Korea are the only two member nations that allow the commercial sale of whales killed as bycatch, and have thriving commercial markets for ‘whale-meat’ or other whale products. In Japan, these products enter into the commercial supply chain that supports the nation-wide distribution of whale and dolphin products, including those from the scientific whaling program. In Korea, there is no program of commercial or scientific whaling. Instead, the sale of bycatch alone supports a lucrative trade in whale-meat at markets in the cities of Busan, Ulsan and Pohang, where the wholesale price of an adult minke whale can reportedly reach US\$ 100,000. Given these substantial financial incentives, it is not surprising that there has been no effort by either Japan or Korea to mitigate the incidents of large-whale bycatch.

Other than the official progress reports submitted to the IWC by Japan and Korea, the only independent monitoring of this commercial ‘bycatch’ whaling has been through our molecular surveys of whale-meat markets. Unlike tradition efforts to document illegal, unreported or unregulated (IUU) exploitation, market surveys and genetic identification of whale-meat products are not dependent on the veracity of source-point reporting by fisherman (or whalers). Instead, these surveys, aided by the tools of forensic genetics, provide a measure of the end-point of the whale-meat supply chain, including products originating from documented sources, such

as scientific whaling and reported bycatch, and undocumented sources, such as directed illegal hunting. Nearly 15 years of these market surveys in both countries have provided direct evidence that this commercial 'bycatch whaling' is even more extensive than represented in official IWC progress reports. Like scientific whaling, bycatch whaling also provides a cover for some level of direct illegal hunting. Using DNA barcodes to identify more than 250 whale-meat products from NP minke whales in Japan, we estimated that more than 46% of these originate from the J stock. Such a large proportion of J stock on the market is not consistent with the low levels of reported bycatch prior to 2001 (Table 1). Instead, the true bycatch and other sources of IUU exploitation of J stock have probably numbered more than 100 whales/year since the early to mid 1990s. Japanese scientist reached a similar conclusion about the true scale of bycatch during the 1980s based on extrapolations from set-net effort. In Korea, we used DNA profiling or fingerprinting of whale-meat products to estimate that more than 820 minke whales were killed during a five-year period from 1999-2004. This estimate is nearly twice the officially reported 'bycatch' of 440 whales. The implication of large-scale illegal whaling in Korean water was subsequently confirmed - in January 2008, Korean police announced an investigation into organized illegal whaling in the port town of Ulsan, seizing 50 tonnes of minke whale meat and questioning more than 70 people, including the operators of 46 whale meat restaurants.

Is there a way forward?

Having, I hope, addressed the primary scientific issues underlying current negotiations over Japan's scientific whaling, small-type coastal whaling and the related issue of commercial bycatch whaling, I would like to conclude with thoughts on a way forward from a scientific perspective.

Scientific whaling – and 'abuse of intent'

The consensus is clear within the scientific community at large in rejecting the need for lethal sampling in providing management advice to the IWC. Consequently, I support negotiations to bring these programs under greater international control, or to end them entirely, but I am skeptical of Japan's sincerity in such negotiations given that the self-established quota for scientific whaling is larger than they would likely be granted under the RMP (except perhaps for Antarctic minke whales).

Modification of Article VIII itself would require a renegotiation of the 1946 ICRW. As an alternative, several NGOs have prepared a case that the scale of Japan's scientific whaling in the Southern Ocean Whale Sanctuary and in the North Pacific, represents an 'abuse of intent'. On the basis of the criticisms I have outlined, there is a compelling argument that, in pursuing the JARPAII and JARPNII programs, Japan is in significant breach of its international treaty obligations under the UN Convention on the Law of the Sea (UNCLOS). In such circumstances, parties to UNCLOS can individually or in combination with other parties seek compulsory resolution of the dispute with the other party by the International Tribunal for the Law of the Sea (ITLOS). Although it is widely agreed that Japan's program is only a thinly disguised cover for a continued commercial whaling industry, it is not clear that the language of Article VIII of the ICRW allows for interpretation of intent at the level sufficient to support a decisive judgment against Japan.

An effective if less dramatic response to scientific whaling is the process of scientific peer review. Based on my experience in the Scientific Committee, it is my view that the quality of

science from these programs has been poor or of marginal value. Given the small number of publications in international journals, this seems also to be the opinion of the anonymous peer-review process. Further, manuscripts submitted to international journals must meet appropriate standards of Ethical Animal Experimentation. As editor in chief of the *Journal of Heredity*, a publication of the American Genetics Association, I am not satisfied that this is the case with JARPAII or JARPNII, and will not publish articles arising primarily from these program without evidence of a proper review. I am aware that editors of other international peer-reviewed journals hold a similar opinion.

An RMP for ‘small-type’ coastal whaling and ‘bycatch whaling’

Negotiations over an exemption for ‘small-type’ coastal whaling must include an agreement for setting catch quotas for the targeted O stock and setting limits for takes of the non-targeted J stock. However, it is not clear whether these limits will be set through some form of political negotiations or through the accepted scientific guidelines of the RMP. The Chair’s report of the Rome negotiations states that,

“An interim quota for “O” stock common minke whales in Japanese coastal waters for a five year period would be implemented, having regard to the unique circumstances that exist for four Japanese coastal communities. This whaling would be managed, consistent with the advice of the Scientific Committee, under a Schedule amendment that would last for 5 years. The Scientific Committee would provide interim advice concerning the total removals of O and J stock common minke whales.”

A request for such interim advice, based on the disputed data now available from Japanese scientists, would, in my view, be a significant step backwards from the accepted scientific method of the RMP for setting conservative and sustainable catches limits.

Application of the RMP to Japan’s proposal for coastal whaling would need to take special account of the high levels of ‘bycatch whaling’ and the potential for a mixing of O and J stock in coastal waters. As a way forward in negotiations over a management procedure, I would suggest the following modification to the conventional ‘single-stock’ application of the RMP:

- Review and revise if necessary existing estimates of abundance for J stock in Japanese waters and set a catch limit for this stock (Catch J), using the RMP’s Catch Limit Algorithm (CLA).
- Review and revise if necessary existing estimates of abundance for the O stock and set a catch limit for this stock (Catch O), using the RMP’s Catch Limit Algorithm (CLA). As the RMP catch limit is understood to cover both direct and indirect catches, limits for both O and J stocks would take into account bycatch.
- Undertake ‘real-time’ DNA profiling of whales taken in coastal whaling and bycatch to genetically assign each whale taken to either the O or the J stock. Such ‘real-time’ stock assignment methods are now routinely applied in the management of ‘mixed-stock’ fisheries of salmon along the US west coast.
- Halt the annual season of coastal whaling, or close fisheries involved in bycatch, when the limits of either Catch J or Catch O are reached (i.e., whichever is reached first). This is similar to the application of the Potential Biological Removals (PBR) for bycatch of cetaceans in US fisheries.

Adherence to the principles of the RMP in negotiations with Japan is also important as precedence for responding to requests from other nations seeking coastal whaling. In Korea, the major daily newspaper Dong-A Ilbo (23 April, 2009) quoted an official of the Food, Agriculture, Forestry and Fisheries Ministry as stating, "Korea bans whaling both for research and whaling in coastal waters, but we'll revise regulations to lift the ban on the two types of whaling. We'll report our stance to the International Whaling Commission in June." I expect that other nations will follow in declaring an interest in 'coastal whaling', perhaps with incentives from Japanese fisheries aide.

Observation and inspection of coastal whaling and 'bycatch whaling'

The RMP was to be the scientific component of a wider scheme, the Revised Management Scheme (RMS), which was to include management elements such as observation, inspection and enforcement. Despite over 14 years of discussions, however, the terms of the RMS have not been agreed by the Commission and negotiations are currently suspended. As a consequence, I assume that the terms for observation and inspection of any coastal whaling program must be part of any ongoing negotiations.

The technology for a verifiable system of observation and inspection of whaling has progressed rapidly in the last decade, while agreement about how to implement these methods lags far behind. Molecular monitoring through forensic genetics now allows the tracking of each product derived from an individual whale, regardless of its source. If genetic samples are collected systematically as part of a regulated hunt or bycatch, individual identification can be used to track the origins of a product in trade and verify its legitimacy. An inclusive register of DNA profiles from regulated hunts can be used to evaluate the legitimacy of any product found in trade. The DNA profiles are stored on an electronic database, forming a searchable register of individuals intended for the market. The DNA profile of a market product can then be compared to the database; a market product that matches an existing profile would be legitimate, while a product that did not have a match in the register would be illegitimate or illegal. For a fully transparent system of track-ability/traceability, all whale-meat products could be labeled with an electronic barcode linked to the DNA register and accessible through the Internet. Both Japan and Norway have committed to the development of *national* DNA registers, but they have not committed to providing this information to a central independent, international authority such as the IWC Secretariat. Without such a commitment, the transparency of the registry and its use in observation and inspection cannot be assured.

Independent molecular surveys of whale-meat markets are also critical to a truly transparent and comprehensive system or scheme for Observation and Inspection. The intent of such surveys would be to provide improved information on total catches over time for inclusion in the RMP. The surveys would not be used for prosecution, as this is a domestic issue. The power of market surveys for detect and estimating IUU whaling would be greatly enhanced by access to the DNA registers from the regulated hunt. Unfortunately, both Japan and Norway have formally objected to the implementation of market surveys as a component of any scheme for monitoring of whaling, claiming that it outside the 'competency' of the IWC. Korea has made efforts to improve the collection of biological samples from bycaught whales, but, to my knowledge, has not committed to developing a formal DNA register.

Conservation science of living whales – a new direction for the IWC

The agenda of the Scientific Committee in recent years has been dominated by the demands of the pro-whaling nations, including the divisive reviews of Japan's scientific whaling programs and proposal for the expansions of these programs. By comparison, much less attention has been given to assessing the status of depleted stocks, some of which have shown only slow rates of increase, or to understanding the ecological role of those stocks that have shown strong signs of recovery. If the IWC is going to be relevant in the future, it must move beyond the reactionary responses to the demands of whaling nations, and take up a more pro-active response to the conservation science of living whales and the changing ecosystem. This will require the commitment of member nations to new programs of research directed primarily at conservation science. I note as examples several recent large-scale studies of living whales:

- SPLASH – the Structure of Populations, Levels of Abundance, and Status of Humpback in the North Pacific, a three-year multi-national collaboration to individually identify and collect genetic samples from humpback whales in all known breeding and feeding grounds of the North Pacific;
- SPWRC – the South Pacific Whale Research Consortium's Comprehensive Assessment of Humpback Whales in the South Pacific, a 10-year coordinated study among independent scientists to assess abundance and trends in the slowly recovering breeding stocks of humpback whales in the South Pacific; and
- SORP – the Southern Ocean Research Partnership, under direction of the newly formed Australian Marine Mammal Center, with a 5-year budget of AUS\$ 32 million (approximately US\$ 26 million) to investigate the role of living whales in the Antarctic ecosystem.

These programs, together with several others that are now complete, have successfully described the abundance and population structure of humpback whales on an oceanic scale using only non-lethal methods, and some have already resulted in a higher quality of science than Japan's scientific whaling program, at a fraction of the costs.

Conclusions

- 1) Japan's scientific whaling has polarized the IWC and negotiations should continue in an effort to bring these programs under international control, or to end them entirely.
- 2) Commercial 'bycatch whaling' and other IUU whaling by Japan and Korea must also be brought under management control, as the true level of this exploitation likely exceeds that of scientific whaling in the North Pacific and is not sustainable.
- 3) Any negotiation over an exemption for 'small-type' coastal whaling in Japan must account for catches taken as 'bycatch whaling' and should consider, first, the accept Revised Management Procedure as a basis for setting catch quotas.
- 4) All forms of whaling, including the current scientific whaling, require an improved scheme for transparent observation and inspection, including molecular monitoring of whale-meat markets with oversight by an independent, third-party organization.
- 5) The U.S. and other pro-conservation member nations of the IWC should lead the way in promoting and funding conservation science of living whales, with a focus on understanding the true role of these species in the marine ecosystem

Thank you for your time with this testimony.

Relevant literature

- Baker CS (2008) A truer measure of the market: the molecular ecology of fisheries and wildlife trade. *Molecular Ecology* **17**, 3985–3998.
- Baker, C.S. and Clapham, P.J. 2004. The ethics of scientific whaling: issues and alternatives in D. Love, Cragg, P., Stafford, K., Sutherland, G. P, ed. Lifting the veil: finding common ground. The Royal Society of New Zealand, Wellington, New Zealand.
- Baker CS, Cooke JG, Lavery S, *et al.* (2007) Estimating the number of whales entering trade using DNA profiling and capture-recapture analysis of market products. *Molecular Ecology* **16**, 2617-2626.
- Baker CS, Lento GM, Cipriano F, Palumbi SR (2000) Predicted decline of protected whales based on molecular genetic monitoring of Japanese and Korean markets. *Proceedings of the Royal Society of London Series B: Biological Sciences* **267**, 1191-1199.
- Baker CS, Lukoschek V, Lavery S, *et al.* (2006) Incomplete reporting of whale, dolphin and porpoise ‘bycatch’ revealed by molecular monitoring of Korean markets. *Animal Conservation* **9**, 474-482.
- Dalebout ML, Lento GM, Cipriano F, Funahashi N, Baker CS (2002) How many protected minke whales are sold in Japan and Korea? A census by DNA profiling. *Animal Conservation* **5**, 143-152.
- Gales N.J., Leaper R, Papastavrou V (2008) Is Japan's whaling humane? *Marine Policy* **32**, 408-412.
- Gales N.J, Kasuya T, Clapham P.J. & Brownell R.L. (2005) Japan’s whaling plan under scrutiny. *Nature* **435**, 883–884.
- IWC (2009) Chair’s Report of the Intersessional Meeting of the Commission on the Future of the IWC. FAO Headquarters, Rome 9-11 March 2009. IWC/61/7. In press.

Table 1: Summary of scientific whaling catches by Japan in the Southern Hemisphere (SH) and the North Pacific (NP) since the 1986 moratorium, and reported coastal 'bycatch' of North Pacific minke whales by Japan and Korea, as reported to the IWC.

Year	Scientific whaling Antarctic			Scientific whaling North Pacific				Bycatch	Bycatch	Infractions	TOTAL
	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Korea	Korea	
	SH fin	humpback	SH minke	NP minke	NP Brydes	NP sei	NP sperm	NP minke	NP minke	NP minke	
1988			273								273
1989			241								241
1990			330								330
1991			327					5			332
1992			288					8			296
1993			330								330
1994			330	21							351
1995			330	100							430
1996			440	77				27	129		673
1997			440	100				27	78		645
1998			438	100				24	45		607
1999			389	100	1			19	56		565
2000			439	40	43		5	29	77	2	635
2001			440	100	50		8	89	160	1	848
2002			440	150	50	39	5	116	83	1	884
2003			441	150	50	50	10	137	87	5	930
2004			443	160	51	100	3	121	69	8	955
2005			441	222	50	100	5	122	107	3	1,050
2006	10		856	197	51	101	6	125	80	2	1,428
2007	3	deferred	508	208	50	100	3	156	80	14	1,122
2008	0	deferred	551	169	50	100	2	n.a.	n.a.	n.a.	872
2009	1	deferred	679	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	680
Totals	14	0	9,394	1,894	446	590	47	992	1,051	36	14,477

NB. Antarctic season is by year on January 1, e.g., 2004/05 catches included in 2005 figures.

n.a. not available until SC61 meeting

Sources

1986-2000, Annual reports of the IWC; 2001-2007, National 'Progress Reports' to the IWC

Catches by Republic of Korea since 2000 reported as 'infractions' in addition to reported bycatch

Bycatch summaries are only for NP minke whales, the most commonly reported species of baleen whale. Other species, including humpback, fin and western gray whales are also reported in lower numbers.

2008, 2009 Catches by Japanese Scientific Whaling are from press releases by Japan Fisheries Agency and or Institute of Cetacean Research