SHARING THE CATCHES OF WHALES IN THE SOUTHERN HEMISPHERE

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1. INTRODUCTION

What historians have labelled *modern whaling* is largely a twentieth century enterprise. Its defining feature is the cannon-fired harpoon with an explosive head, launched from a motorised catcher boat.[1] This system was first devised about 1865 by Svend Foyn, the son of a ship-owner from Tønsberg, in Vestfold, southeast Norway. Foyn believed that "God had let the whale inhabit the waters for the benefit and blessing of mankind, and consequently I considered it my vocation to promote these fisheries". He has been described as "...a man with great singularity of vision, since virtually everything he did ...was dedicated to the profitable killing of whales".

Foyn's system allowed for the first time the systematic hunting and killing of the largest and fastest swimming species of whales, the rorquals, a sub-class of whalebone whales (*Mysticetes* spp.). The basic technology was supplemented by significant developments in cabling, winches and related hardware and in processing. Powered vessels could not only tow the dead rorquals back to land bases quickly and thus in good condition for processing, but could provide ample compressed air to keep them afloat.

Modern whaling could not, however, have become a major industry world-wide, without other technological developments. Other kinds of whales had already been killed in enormous numbers, primarily for their oil, for over a century.[2] In 1905 it was discovered that oil from baleen whales could be hydrogenated and the resulting product could be used in the manufacture of soap and food products. During World War I it was the prime source of glycerine, for production of explosives. Although margarine had been produced since 1869 by a French process, it was not until 1929 that a satisfactory, tasteless product from whale oil became available for this purpose. In the first half of the twentieth century other products included meal (from flesh and bones from which the last drops of oil had been wrung) - called guano in the trade - while in the second half of that century meat for human consumption became dominant. Foyn tried to market whale meat in Norway but it was not palatable to Norwegians, and did not become so until after the 1930s through intensive marketing campaigns. In Japan, on the other hand, eating whale meat had a long tradition, though even there the great expansion into the Antarctic was driven by demand for oil, not protein.

In this study I examine three episodes - and an incipient fourth - in the history of modern whaling in which governments, and the whaling and trading companies legally dependent on them, have sought to reach necessary agreements on total catches or commodity production, on the sharing of those catches and on the "policing" of those agreements. Their dual purposes were to maintain (and enhance) profitability by regulating competition among participants in the industry and to impede entry by others. These efforts were more often than not cloaked in the rhetoric of "conservation", and indeed, to the limited degree that they were successful, they could be seen as a factor in dragging the industry towards sustainability and "saving" the stocks of whales.

I confine the discussion to whaling in the Antarctic (although a similar analysis could be made of whaling in the North Pacific). This was, almost from the beginning of the twentieth century, by far the most important sector of the industry, and by the 1930s the *pelagic-whaling* (using factory-ships to process caught whales and move the products) was by far the biggest part of that sector. In each episode the negotiations had to take some account of the fact that there were other sources of identical products from whaling elsewhere, that each operation took a variety of species of whale and produced a variety of commodities, and that industries other than whaling yielded products that could substitute for products from whales and hence affect the market for those. The first

[1] The explosive head was dispensed with for some years in the 1970-1980s when the "small" minke whale was the prime target; the explosion destroyed the whale's body and also spoilt much of the meat. The "cold grenade" was substituted for the explosive head. This was, however, eventually prohibited by the IWC, on humanitarian grounds. A smaller explosive (penthrite) head is now used.

[2] W*hale oil* (once called *train oil*) is the statistical term for edible oil from *baleen whales*. Inedible *sperm oil* comes from the *sperm whale*, and a similar oil is obtained from other *toothed whales*, particularly several species of *bottlenose whale* (not to be confused with the bottlenose dolphin of Flipper fame). Baleen whales (having baleen plates - "whalebone" - on their palattes rather than teeth in their jaws) include the *gray whale*, the *right whales* and the *rorquals.* This last group is comprised of *blue*, *fin*, *humpback*, *sei*, *Bryde*'s and *minke* whales (in roughly descending order of size); in some of those classes - including the presently important minke - there are now known to be two or more species or sub-species. The statistical category *oil* includes both *whale* and *sperm oil.* Of the baleen whales, right whales' carcasses float, rorquals' sink.

two of the three episodes also occurred in periods of recovery from the World Wars and the economic disruption that followed them. The three episodes were:

i. the 1930s (during and after the global economic depression)
ii. the 1960s (when it was agreed that biological sustainability was a universal management objective)
iii. the decade from about 1976 to 1986 (after Norway, its originator, had dropped out of Antarctic whaling and before the general moratorium on commercial whaling adopted in 1982 came into effect for most countries).

An incipient fourth episode arises from the possibility that some commercial whaling might be legitimised[3] under a Revised Management Scheme (RMS) currently being negotiated by the International Whaling Commission (IWC). This is complicated by the emergence of three new factors: first, world-wide growth of whale-watching as an economic activity which is not entirely compatible with whaling; second, the idea that if the whales "belong" to anyone it is to humanity as a whole and not merely to those who kill them for profit; and third, the slow but steady increase in concern that commercial whaling is intrinsically inhumane, and because it no longer satisfies any human need it should cease. On top of these there remain widespread doubts that commercial whaling can, in the present state of world affairs and the Law of the Sea, be effectively regulated (given especially its history as partially recounted here), and hence it should not be legitimised.

In each episode the negotiations were conditioned by events in the preceding decade, so these are described first. The thrust and flavour of the long, complicated and frustrating negotiations in the 1960s (the second episode) can best be understood from a rather full and detailed chronological account, which is therefore included.

2. PRECURSOR TO THE FIRST EPISODE

Sven Foyn's new whaling system was first deployed in the far north of his country. In 1864 he set up a shore-station, with one catcher-boat, on the east coast of Finnmark (the region north of the Arctic circle) in Varanger Fjord, at Vadsø, giving ready access to the whale-rich Barents Sea. For a decade Foyn was the sole operator, gradually increasing the number of his catcher-boats to four by 1880, taking at first mainly blue whales. But by 1882 the catch was predominantly fin whales, and remained so until 1903. By 1896 19 whaling companies were operating from Finnmark. But catches fell steadily as local whale populations were exterminated, and operations had to move further afield, to Bear Island and Spitsbergen (Svalbard).[4] This shift called for the employment of tugs to tow dead whales much longer distances to shore, an operation made practicable by the cold environment. To facilitate this the shore-stations were moved westward.

This move brought the whalers into the realm of the cod fishers, who considered that whaling was prejudicial to their interests.[5] They prevailed on the Norwegian authorities to prohibit whaling off the north coast, from 1905. This reinforced a further shift to other areas where modern whaling had already begun - to Iceland, Faeroes, Shetlands, Hebrides, Newfoundland, and eventually to the Orient and the coasts of Africa and South America. The expansion was facilitated by the use of *floating factories*. These were mostly converted cargo vessels on which whales could be processed, rather than being dragged up ramps at land-stations. The carcasses could not be taken aboard, but were stripped of blubber and meat on a floating platform next to the moored factory. They made the whaling operations more mobile and also possible in regions with poor or non-existent landing places. They could also be used to transport products in bulk, rather than whale carcasses, to the home bases. But they could not work in the open ocean. The first such factory, *Telegraf*, was used at Spitsbergen in 1903, and was immensely successful. By 1905 a second factory, *Admiralen*, was sent to the Antarctic, where great things were in the offing.

A Norwegian whaler and sealer, Carl Larsen, set up a shore-station on South Georgia, in 1904, established as an Argentine company. Other parts of the Falkland Islands dependencies were less hospitable for shore-bases, but in 1905/06 the *Admiralen* was also able to moor in and work from South Shetland. Three years later there

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[3] Commercial whaling operations now being carried out by two States, members of the IWC - Japan and Norway - are not *illegal*, under the terms of the ICRW 1946, but they are *unregulated.*

[4] The English explorer, William Scoresby, had recorded in 1820 the presence of large numbers of fin whales near Spitsbergen but, apart from the difficulty of catching them noted that they yielded little, and inferior, oil in comparison with what was then the mainstay of whale oil production: the North Atlantic right whale. Blues and fins could also be dangerous so he judged them to be "unworthy of attention". Similarly, the relatively small minke whale, now the mainstay of the residual whaling industry, was judged to be unworthy of attention while the larger species were still abundant.

[5] Some said the whales herded the cod into fjords, making them more accessible to humans in small boats. Others observed that the onshore processing of large whales was extremely noxious, with huge volumes of decomposing waste to be disposed of. This has caused whaling to be unpopular with the other inhabitants even those of traditional whaling towns on the coast of Japan - despite the money it brought in during its heyday.

were Chilean- and Newfoundland-based operations at South Shetland, and later at South Orkney, also serviced by floating factories. By 1908/09 there were already 19 catchers working the waters of the Dependencies and adjacent waters, catching mostly humpbacks but also fin and blue whales, with some right and sei and a few sperm whales. Necessary conditions for the site of a shore-station were not only a safe, ice-free harbour for at least some of the year, but also an abundance of fresh water. This latter condition could be fulfilled, in the case of floating factories, initially by large tanks and later by condensation and the distillation of seawater. For a short time there were also whaling operations on West Falkland, the South Sandwich Islands and by Graham Land (Antarctica)[6].

In 1851 a Norwegian entrepreneur, Christian Salvesen, had set up shop in Leith, Scotland, to trade in whale oil, becoming later the agent for Sven Foyn's products. By the 1900s C. Salvesen & Co. was the world's largest whaling company, one British giant compared with an array of smaller Norwegian companies. Salvesen set up a shore-station on South Georgia in 1909. Until the turn of the century the British Government had regarded the Dependencies as useless real estate, but whaling changed that, because the Government could now charge for operators' licences and mooring fees.[7] Although some other countries operated stations there from time to time (even Japan did so for a few years in the 1960s) the big operators were, and remained for many years, Norwegian and British. A long love-hate relationship began on South Georgia, supplanting their previous simple competition in the North Atlantic. But, though they combined forces for decades to keep other nations out of Antarctic whaling, the relationship was not symmetrical.

Norway now had a near-monopoly of whaling skills, especially the skills of gunners. It long sought to hold onto that monopoly by restricting the rights of Norwegian nationals to work on ships flying other flags. And it correspondingly attempted to restrict the sale of whaling equipment that it manufactured. But in the Antarctic, Britain (and the Empire) had *de facto* sovereignty over the best locations for whaling operations. Further, Britain essentially controlled the world market in whale oil. There was already a certain degree of vertical integration: both Salvesen and the British soap manufacturer, Lever Brothers, were operating whaling companies and trading in fats and oils. Eventually the need for investments in Antarctic whaling led to the merger, in 1929, of Lever with the Dutch Margarine Union, to form the giant conglomerate Unilever.

At the outbreak of World War I two-thirds of all whaling in the world was concentrated in the Falklands Dependencies. Norway had been selling one-third of its whale oil production to Germany-Austria, which was chronically short of fats. Britain stopped this by threatening to refuse to sell coal to Norway, whose young industries were almost totally dependent on fuel imports from Britain. In 1916 Britain went so far as to cancel Norwegian whaling licences. Remarkably, that act resulted in the continuation of Norwegian whaling after its whalers abandoned the Antarctic in the 1970s. Thus the British Administration imposed regulations in the Dependencies that had a profound effect on the evolution of the "modern whaling" industry. The number of licences issued for land-stations and factory moorings was quite severely limited, and the number of catcher-boats allowed to operate at each was specified. No overall catch-limits were set, but the killing of whale calves and their mothers was prohibited. More important were the measures to reduce the enormous scale of wastage. Full utilisation of carcasses became the norm. This was profitable - since up to half the oil was not in the blubber - and it reduced the health and general environmental hazards arising from great quantities of organic debris. The British Authorities also set limits for the beginnings and ends of the whaling-seasons. All regulations were, however, suspended during the War.[8]

Gunners on all catchers were Norwegians, although Salvesen and others also engaged crews of other nationalities. Traditionally a gunner could select the crew of his catcher-boat and naturally these too were mostly

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6 In 1908-11 a Norwegian company operated also from Kerguelen Island (French).

7 The money raised was used mainly to finance research on whales and possible development of new and better products from whales.

8 Norway, being itself short of fats during World War I, had encouraged its whaling companies to re-locate to Norway and, to facilitate that, lifted the 1904 ban. But instead of moving back to the north coast of Finnmark - where few whales were left - they established themselves down the west coast, from the Lofoten Islands to Bergen. In that region there were also fishermen catching bottlenose whales and basking sharks (also for their oil) with harpoons. The combination of circumstances led to the North Atlantic minke whaling industry, which began in about 1930 and which has, since the mid-1970s, been the last foothold of Norwegian whaling. Although fin whale meat was not to the liking of Norwegians at the beginning of the century, that of minke whales was acceptable (and was a staple during World War II), but the whalers would now prefer to sell it - at a much higher price - on the Japanese market. As minke whales became depleted near the Norwegian west coast, whalers needed to go further afield – to the Barents Sea, Spitzbergen, Iceland, Jan Mayen, Greenland and, eventually, Labrador. For this purpose the factory-catcher, with meat freezing facilities aboard, was invented. In the 1970s a Norwegian company tried out such a factory in the Antarctic, but it was a failure. However, the technique was adopted by so-called "pirate whalers" (*i.e.* flying flags of convenience from non-IWC-member countries, but crewed partially by Norwegians) operating especially in the South Atlantic, and by so-called small-type coastal whalers operated by Japan in the Northwest Pacific.

Norwegians. Under UK law the captain of the vessel had to be British. The gunners were paid bonuses according to the species of whale they killed - bigger bonuses for bigger or more productive species. These were not, however, in proportion to the relative oil yields.[9] The overall effect was to encourage, for example, the preferential killing of blue and right whales relative to the in and humpback. Also, some whales were more accessible than others: humpbacks tended to swim closer to shore than the other species, and so were in some areas selectively killed until they were nearly exterminated. The matter of gunners' bonuses was controversial through to the 1970s.

Immediately after World War I regulations were re-imposed, and the British also exacted a tax on every barrel of oil produced in the Dependencies. This money was used to finance research relevant to whales and whaling, and in particular the expeditions of *R.M.S.Discovery* (the explorer Robert Falcon Scott's old ship) to the Antarctic. Vertical integration of production and marketing continued with the purchase by Lever Brothers of the Southern Whaling Company, and attention switched from glycerine production to other uses of whale oil as food.

Modern catcher-vessels proved efficient in capturing whales on the high-seas
(Photo-credit: Greenpeace/Culley)

Norway sought to escape from British hegemony by investing in larger floating factories that could operate far from the Dependencies, in particular in the South Pacific sector at around 170ºW longitude. The Ross Sea Whaling Company bought and converted an old steamer into what was then the largest and best equipped whaling ship, the *Sir James Clark Ross.* With Carl Larsen aboard she arrived in the Antarctic in 1923/24 and entered the Ross Sea.

The voyage was nearly a failure, since the factory could not operate effectively in open water and could not handle blue whales weighing up to 100 tonnes. In 1925 a new vessel, the first purpose-built factory-ship was commissioned.[10] This vessel, the *C. A. Larsen*, had a slipway in the bow, up which whales could be hauled. It was not a success, but another, the *Lancing*, with a stern ramp, was successful; it was tested in tropical waters, and minor modifications were made on its voyage south.[11] Pelagic-whaling had begun.

The Norwegian companies next decided to apply a licensing system to their new operations, primarily in order to strengthen their negotiating position with the British. In the 1920s concern was also beginning to be expressed in both Britain and Norway about the future of the whale stocks, and Britain threatened to withdraw all Dependencies licences from Norwegian companies unless the Norwegians either ceased or restrained their pelagic-whaling. The two countries eventually agreed, in 1928, that licensing would resume and that both shore-based and pelagic-whalingwould be conducted under the same basic rules.

This set the scene for the first episode of the long negotiations over the limitation and sharing of Antarctic whale catches. But before I look at that episode in detail what was happening outside the Norwegian-British relationship must be examined. The arenas were the recently established International Council for the Exploration of the Sea (ICES) and the League of Nations. In 1929 ICES announced, in a statement addressed to the League, among others, that: "...While fully admitting that it is not likely that any definitive results can be derived from the scientific investigations now in progress until a considerable time has elapsed, the [Council's] Committee on Whaling feels strongly that the enormous expansion of the whaling

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9 Right whale: 200NKr, 60-70 barrels of oil; sperm: 100NKr, 60 barrels; blue: 80 NKr, 70-80 barrels; fin: 50NKr, 50 barrels; humpback: 25-35 NKr, 25-35 barrels.

10 She operated in the Weddell Sea. These, and very many later similar, floating-factory operations, far from shore bases, became known as *ice whaling*.

11 The critical technical problem that had to be solved before factory-ships with a stern ramp could transform the whaling industry was not making the hole, but preventing its interference with steering.

industry in recent years constitutes a real menace to the maintenance of the stocks of whales, and that if the expansion continues at the present rate there is a real risk of those stocks being so reduced as to cause serious detriment to the industry. While admitting that until the scientific researches have reached a definite conclusion it will be impossible to devise any measures of protection of a permanent nature, the Committee is of the opinion that the Governments of the countries interested in whaling should, as a matter of urgency, give serious consideration to the question of taking immediately temporary measures for dealing with the situation."

The stern-ramp, typical of modern factory-ships, revolutionized pelagic whaling
(Photo-credit: Greenpeace/Culley)

The statement went on to detail such possible measures. There could hardly have been a clearer enunciation of what we would now call the *precautionary principle*. However, no international instrument existed by which this advice could be given effect. ICES was charged to draft the first inter-governmental agreement on whaling adopted under the auspices of the League of Nations, but that did not authorise governments to take regulatory measures; power rested with the whaling companies, especially those of Norway and the British Empire. It did, however inaugurate the compilation of international statistics about catches, commodity production, ships engaged and their operations.

3. THE FIRST EPISODE - THE 1930s

In the 1927/28 season 17 floating factories operated in the Antarctic, with a total of 61 catcher-boats. They produced nearly one million barrels of oil from 14 000 whales.[12] By the 1930/31 season there were 41 factories operating, with 200 catchers; they produced 3.6 million barrels, from more than 40 000 whales. Of these latter quantities 62% were caught/produced under the Norwegian flag, 30% under the British flag. The Antarctic catches accounted for more than 90% of world whaling, in production terms, and of that more than 80% came from blue whales.

The Norwegian fleets did not operate in the 1931/32 season. This is commonly attributed to the onset of the global economic depression. That is, however, only part of the truth. Whaling by other countries dropped to a trickle, but the British operations, while less than in the peak year of 1930/31, took more than they had in 1929/30. The price of oil on the world market had sharply dropped,[13] mainly because of over-production. Whereas the British expansion had been financed mainly by capital accumulated from the profits of previous whaling, the Norwegian expansion had required large bank-loans for new vessels. With low prices prevailing, and an uncertain market, the Norwegian companies chose not to risk high operating-losses.[14] This explanation is given here as an example of the fact that although the British and the Norwegians dominated the industry throughout the 1930s (and, indeed, in the first decade after the World War II), and inter-acted in several ways, they operated in rather different economic circumstances and with different assumptions about the future.

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12 One long ton = 1.016 tonnes (metric) = 6 barrels.
13 1929/30 - £25/barrel; 1930/31 - £12/barrel.
14 Unilever dominated the market, and advised the Norwegians against sailing, although Unilever's own two expeditions flying UK flags **did** operate!

The 1931/32 season was a watershed for Antarctic whaling. The companies thought that operations could only remain profitable if the oil price was stabilised, which meant keeping production well below the 1930/31 level of 3.6 million barrels. This meant reducing the number of expeditions, which in turn meant encouraging older vessels to move out. Accordingly, the companies agreed to limit the catch and catching effort of *expeditions*[15] by allocating a quota to each of them, with freedom to transfer and trade these quotas between companies. Transferability meant that the older expeditions could be bought out.

As a result of these agreements the production of baleen oil was stabilised at between 2.2 and 2.5 million barrels until 1937, when other nations - principally Germany and Japan - began to operate in the Antarctic on a substantial scale. Thus, in 1937/38, 46 000 whales were killed, yielding 3.3 million barrels of oil. This was not as much as in the peak season of 1930/31, because although the efficiency of oil extraction had improved, by now more than 40% of the whales were fin whales (the blues having been depleted), each of which provided only about half the yield from a blue whale.

There was a dispute about the basis for quotas. The Norwegian companies wanted these to be based on the *tank* capacity of the factory, while the British - particularly the biggest company, Salvesen - wanted the basis to be *processing* capacity, as more relevant to efficiency. The British also insisted on the quota being expressed in terms of numbers of whales, rather than quantities of oil, on the grounds that this would encourage full processing. During the negotiations it was taken that one blue whale would yield about 110 barrels and equivalents were calculated for other species. This was the origin of the measure that prevailed in Antarctic whaling management through to 1972 - the Blue Whale Unit (BWU). [16]

The expedition quotas were negotiated annually, under broad ground rules established by the 1931 Geneva Convention, which had been drawn up on the initiative of the ICES, beginning in 1926 and adopted under the League of Nations. This Convention was derived in large part from the Norwegian *Whaling Act of 1929* (which was strengthened in 1934). Participants in the inter-governmental negotiations were France, Germany, Japan, Norway, Portugal, the UK and the USA. Crucially, this Convention could not come into force before it was ratified by the UK, which was not done until October 1934. The 1931 Convention applied to all whaling, everywhere, both pelagic and from land-stations and by the few remaining floating factories. It gave full protection to the endangered right whale, set minimum sizes of whales that could be legally caught, and protected lactating females and accompanying calves of all species. It required licensing of all operations by the nations whose flags they flew, and the passage of domestic implementing legislation along the lines of the Norwegian law. And it provided for the collection and publication of statistics. It did not, however, give governments power to establish catch-limits. After the entry of other nations to Antarctic pelagic-whaling, Germany ratified the successors to the Geneva Convention, but Japan did not.[17]

An overall Antarctic catch-limit (including landstations) was first negotiated among companies in June 1932, for the 1932/33 season. This limit was 18 584 BWU, being calculated as a barrelage of 2.03 million, equivalent to a blue whale yielding 110 barrels. In fact, that season the catch was 16 985 BWU, but with an actual yield of 116.4 barrels per BWU, the barrelage reached 2.09 million. So, in 1933 a new agreement was negotiated for the 1933/34 season. This was for 17 074 BWU, but calculated at 115 barrels per BWU. These two agreements had the intended effect of bringing catches down by one third from the unregulated high in 1930/31. At the time some people genuinely thought - quite wrongly as it turned out - that such a catch would be sustainable.

But, although the principal motive was the wish to limit production in order to improve the market price of whale oil, Unilever - both a major producer and the market leader - broke ranks from the second agreement, and Norwegian-British cooperation fell apart. Until then these two nations had held a virtual monopoly in Antarctic pelagic-whaling. Consequently the seasons 1934/35 to 1936/37 were chaotic, with failures to reach viable new agreements and with the entry of new nations - Japan and Germany - to the industry and other expeditions from a number of countries making trial operations, some flying flags of convenience.

Table 1 (below) gives an overall view of changes in the Antarctic pelagic fleets and their performance from near the beginning of the quota negotiations, to the period of intensive German and Japanese operations.

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[15] An “expedition” is basically a factory plus its catchers. However, many other craft were also involved: tankers (some as large as, or bigger than, the factory), transports for fuel and products, including - in later years - refrigerated ships, other supply vessels, vessels to transfer products from factory to tanker, scouts, occasionally ship-borne aircraft.

[16] Eventually fixed at: 1 blue = 2 fins = 2.5 humpbacks = 6 sei whales.

[17] The 1931 Geneva Convention provided the template for subsequent inter-governmental agreements during the 1930s - and eventually for the International Convention for the Regulation of Whaling (1946), which established the International Whaling Commission (IWC).

So, although the total production had hardly changed, it had been secured only through increases in the number of expeditions, in the sizes of the factories, in the number of catchers per factory and in the sizes and powers of the catchers.

Table 1
Changes in the Antarctic pelagic fleets

Season	Factory-ships		Catcher-boats					Catch
	No.	Average (tons)	No.	No. per Expedition	Average (tons)	Average (HP)	HP/ton	(BWUs)
1933/34	19	12 559	114	6.0	256	880	3.4	19 861
1938/39	34	13 751	270	7.9	298	1 139	3.8	20 271

Originally the British had effectively controlled Antarctic whaling through their sovereignty over the sub-Antarctic islands, especially South Georgia. When these became secondary, with the growth first of ice whaling then of pelagic-whaling, the Norwegian Government, at the behest of its whalers, sought control over new entries to the industry through the domestic laws which prohibited Norwegians from working on foreign ships. This had limited effect because, if offered enough money, top gunners were willing to flout that law, even when it meant going to live abroad. Furthermore, because much of the Norwegian oil production was sold to Germany, through Unilever, Norway was reluctant to offend the new Nazi Government there and so did not enforce the law very seriously.

Generally the several Norwegian companies acted jointly in selling to Unilever. But their inter-company loyalty was weak. Eventually one company, Lars Christensen, contracted unilaterally to sell to Unilever oil from the 1934/35 and 1935/36 seasons and announced this after that company had recommended a general lay-up of expeditions to improve the price. Negotiations collapsed. Then, in 1936, another Norwegian entrepreneur, Anders Jahre, produced a new proposal to involve the entire Norwegian and British fleets supported by the increasingly powerful Norwegian trade unions and the Government. But it involved a new condition - that only Norwegians would be employed on all whaling vessels - which was obviously not going to be acceptable to the UK. It led to moves by the British companies, and Unilever, to train and employ British crews for all tasks except as gunners and some of their selected comrades on the catchers.

The German entry to Antarctic pelagic-whaling was the consequence of a national policy of self-sufficiency (except that the Germans did not much bother to train their own gunners.). It was achieved by blocking Unilever assets and earnings in Germany and causing them to be used to acquire factories to sail under the German flag. By 1937 there were nine "German" expeditions: one of the Norwegian vessels had been purchased, two more chartered, then a British factory was purchased, two new ones built – the *Unitas* and the *Walter Rau*[18] - and another converted from a cargo vessel. The two new ones were very advanced technically, the *Walter Rau* being the first factory-ship to have provision for freezing meat, producing blood meal, meat extract, canned meat and liver oil.

Japanese enterprises entered the business in 1935 through purchase of an old Norwegian factory-ship, (which engendered complaints from UK) and getting hold of the plans for the newest generation of ships from British builders. By 1939 Japan was operating five expeditions - the original and four new ones. By the time Japan entered the Antarctic it was self-sufficient in skills, no longer dependent on Norwegian gunners.

Around this time a revised Convention, of 1937, introduced a new concept: the prohibition of floating factories and factory-ships operating in warmer waters of all oceans, in particular north of 40ºS in the Southern hemisphere. This measure, though effectively closing breeding grounds to pelagic-whaling, did not have primarily a conservation objective, it was derived from the wish to keep oil-yield high (baleen whales, when they leave the Antarctic - and Arctic - feeding grounds steadily lose much of their oil content by metabolism).

So the first "sharing" episode involved attempted agreements through the 1930s, initially between companies and later involving the governments whose flags their vessels flew. Although even then some scientists and government officials and politicians saw this as a move to conserve whale stocks, the primary purpose was to maintain the price of whale oil in the already global market, and secondarily as one of several instruments by which companies and governments of Norway and UK - at the time the only significant participants in this new industry - sought to maintain a virtual monopoly by hindering the access of other aspiring nationals to the natural resource and to the market for whale products, primarily baleen oil.

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[18] After World War II the *Unitas*, renamed *Empire Victory*, then *Abraham Larsen*, was taken by UK as reparations and sold to South Africa; and the *Walter Rau* was transferred to Norway, being re-named *Kosmos IV*. A third, the *Vikinger*, was transferred to the USSR, re-named *Slava*, and played an important role in the quota negotiations of the 1950s and 1960s (Second Episode).

Parallel with the company-to-company negotiations there was an inter-governmental activity. In 1926 the ICES had charged a committee - *le comité international pour la protection de la baleine* - to draft principles for an international agreement for the regulation of whaling. ICES called upon the League of Nations (LoN) to take over this task. The agreement proposed at the LoN Expert Meeting in Geneva in 1930 was based on the Norwegian *Whaling Act 1929*. It was negotiated among France, Germany, UK, Japan, Norway Portugal and the USA, and signed in September 1931.

The Geneva Convention included, *inter alia*, prohibition of the killing of right whales, of calves and lactating mothers, and of sexually immature animals. It also established that all whaling operations must be licensed by states and that statistical records be kept and submitted to the Bureau of International Whaling Statistics (BIWS). The matter of licensing had a practical importance: while Antarctic whaling was largely shore-based, the UK, which claimed and now vigorously defended sovereignty[19] over the most favourable sub-Antarctic islands, especially South Georgia, could unilaterally set regulations for, and collect rents and licence fees from Norwegian and other land-stations there. The onerous licensing system in itself encouraged the Norwegians and then others to "go pelagic" once the new technology had been perfected (mainly by inclusion of stern slipways on the factories), and so to escape licensing. Naturally, it was this that freed whaling to take place throughout the entire Southern Ocean, there being a virtual absence of possible land-station sites along the entire continental coast.

The Geneva Convention did not come into force until four and a half years after its adoption, because the UK did not ratify it until October 1934.

After four years of chaos yet another whaling conference was convened in June 1937. Prior to this the Norwegian and British Governments had conspired to find a way of preventing Japanese and German expansion. This was to be by offering to meet Germany's own oil requirements for several years at a price determined by the price of oil from vegetable seed and at the same time to deprive Japan of its major customer for whale oil - Germany! This plot did not work; two Norwegian companies sold their expeditions to Germany. More or less simultaneously a company was set up, registered in the USA, using Norwegian catchers and crews, and with American citizens as Fleet Captain and Engineer. This last provision would ensure that the oil could be imported to the USA free of duty. This and another similar operation enraged the American producers of terrestrial animal oils and edible vegetable oils, which in turn led the US authorities to change the domestic law so that only whale-catchers built in the USA and crewed by US citizens could shoot "tax-free whales".

The 1937 Conference, the prime aim of which had been declared to be to restrict catches in order to preserve whale stocks was, in the words of the whaling historians J. N. Tonnessen and A. O. Johnsen, "a total fiasco". Germany and the USA participated, others were Argentina, Australia, Ireland (which provided a flag of convenience for a Scottish/Norwegian company), UK, Norway and South Africa. Japan was invited - even pressurised - but did not participate either as a Delegation or an observer. The 1937/38 catch, and oil production were higher than ever (the increase coming mainly from Japanese and German operations) and there was a huge increase in the number of catchers (but not in factory-ships) engaged. This alone caused a price slump that was exacerbated by the USA becoming, by the beginning of 1938, an exporter instead of an importer of fats and oils, based on huge increases in its production of oleaginous seed, particularly from soya.

These events paved the way for another Preparatory Conference in May 1938 in Oslo. By then, a striking political change had occurred: the Oslo Conference was dominated by Germany, UK and USA, not Norway. The USA proposed what was thought to be a revolutionary change of approach; its delegate was Dr Remington Kellogg who later also represented the USA at the 1946 Conference in Washington DC to negotiate an International Convention for the Regulation of Whaling (ICRW). The US proposals were derived from what were at the time seen as successful international negotiations on sealing and halibut fishing in the North Pacific and Bering Sea. They included dividing the Southern Ocean into sectors, some of which would be closed to whaling and others bound by catch-limits for each sector, which would be enforced through closure of the season. The UK accepted this in principle but favoured a global catch-limit, which would be shared out among the participating nations, who would in turn allocate shares to each of their factories. The USA could not accept, on principle, national or fleet allocations.[20] The ideas of setting total catch-limits by sector and species, and awarding national shares, were both bitterly opposed by Norway.

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[19] In fact the enforcement of the British sovereignty claim derived entirely from the belated realisation in London - following the chance discovery of a Norwegian-Argentine whaling operation already there - that South Georgia was in fact a useful place.

[20] These had been avoided also in the model halibut agreement, which eventually led to the disastrous over-investment in that industry, as in subsequent whaling, as operators increased their effective effort in order to gain bigger shares of a limited - and dwindling - total catch. The USA approach of seeking to model whaling agreements on its experience with regional inter-governmental fisheries agreements was to prove of great importance when, in 1958, negotiations began in earnest on national sharing of overall catch-limits.

The Oslo Preparatory Conference was followed by a Diplomatic Conference in June 1938 that adopted a protocol amending the 1937 agreement. It established most of the provisions subsequently incorporated in the 1946 Convention, except that no BWU limit was agreed, nor any limitation of the number of catchers to be deployed (which was strongly opposed by Japan, Germany and the biggest trader, Unilever). In the hope to secure the adherence of Japan to the basic 1937 agreement, as well as to the new protocol, several regressive concessions were made, particularly a reduction in the minimum size-limits for blue, fin and sperm whales to be taken from land-stations. Proposals to ban the sale of vessels and gear to countries not party to the agreement, and the purchase of oil from such countries, were dropped.

Japan declared that it would abide by the London agreement after one year. Meanwhile it had proven that pelagic-whaling was now practicable without employment of Norwegian expertise. It was also interested more in meat than in oil; hence its oil yield from a given catch was relatively low. The Japanese catch in the 1938/39 season was exceptionally low despite deployment of two large new factories and an extra 18 catchers, even though they operated with no restrictions at all and no open-season limits.[21]

In this situation Germany called for another conference. This was held in London in July 1939 and attended by Germany, UK, Japan, Norway and USA, with Canada, Ireland, New Zealand and South Africa as observers. Again, Japan made promises but did not honour them; its Government, "...with a view to protecting the whale, instructed companies to observe the conditions in line with international agreements and hoped that the companies would comply with this request."

In September the War began in Europe. The Japanese press announced a rise in the oil price on the world market, declaring that because of the War many expeditions would not be operating, so there would be less oil on the European market, a situation that Japanese producers could cash in on.[22] However, the escalation and expansion of the war made it impossible to transport whale oil to Europe by sea. Efforts to transport it by rail from Manchuria also failed.

4. INTERMEZZO - THE WAR YEARS

Some pelagic-whaling continued through World War II, but eventually most factory-ships, and many catchers which had been given over to other duties, were sunk or converted. However, a perceived increased need for fats and oils in the post-war world stimulated further consultations in London in January-February 1944; the minutes of them constituted the 1944 Protocol. This was regarded as amending the 1937 and 1938 London agreements, to apply to the first post-war season, which was already expected to be 1945/46.

The Chairman of the major British company - H. K. Salvesen - had, in 1942, urged the UK government to pull out of the pre-war agreements on the grounds that with only Norway and UK being engaged in the future in pelagic-whaling, no such international accord was necessary. According to Salvesen - and one suspects other interested parties off the record - the overwhelming need would be to produce as much oil as possible in the first season or two, and later introduce conservation measures as these might become necessary. A subsidiary argument advanced at the time was that whale stocks would at least have partially recovered as a consequence of reduced exploitation during wartime.[23] The UK government did not accept these arguments except insofar as to suggest extending the season to seven months and suspending the requirement to fully utilise the carcasses. At the same time it agreed to propose an overall limitation to 20 000 animals (not BWU), which, if it had been put into effect, would have led to an enhanced slaughter of blue whales.

Instead of the British proposal the 1944 Conference agreed to an overall catch-limit of 16 000 BWU, a number that was carried through to the post-war conference in 1946. The participating states this time were Australia, Canada, UK, New Zealand, Norway, South Africa and USA. At this Conference the US announced its intention to convene a comprehensive international whaling conference in Washington DC immediately after the war "with a view to complete regulation of catching in future".

Partly by way of preparation for this the UK convened a conference in London in November 1945.[24] Additional participants were Denmark and France. The Netherlands also asked to be invited as it had advanced plans to start pelagic-whaling; the UK, as host country, agreed without consulting Norway, despite the fact that

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[21] The other whaling countries said at the time that *their* poor results of the previous seasons were due to Japan's unregulated catching, in which size-limits, the ban on humpback catching, and opening and closing dates were all ignored.

[22] Japan was in these years selling whale oil to obtain cash for purchase of mineral (fuel) oil of which it had no domestic source.

[23] Subsequent research failed to confirm that hypothesis.

[24] One might suspect that the UK hoped by this to better steer the forthcoming Washington conference in the direction of its policy and practice rather than that of the USA.

Netherlands had not ratified the 1937 agreement. Norway was displeased, suspecting that a deal had been made through Unilever, which was a British/Dutch multinational corporation.[25]

At the 1945 conference Unilever sought an increase in the overall catch-limit to 20 000 BWU, ostensibly to supply an impoverished post-war world with an additional 80 000 tons of whale oil, the existence of which would bring prices down, but in reality because it was expected that vastly increased demand would lead to much *higher* prices for producers. This last calculation proved to be correct, at least through to 1951.

I conclude this section by looking at the way the 16 000 BWU catch-limit was arrived at. At the 1944 conference it had been said that this quantity could not be taken in the first post-war season (because of an expected lack of factories and catchers) but that the intention was "to prevent the present situation being exploited for unchecked building of new floating factories" and "because there is a desire to create a precedent for total limitation in the future". The first point was expressly directed at Sweden which apparently had plans for new companies, backed by Norwegian and British interests. Sweden was also the only country other than UK in a position to build new factories. All the British, Japanese and German factories had been lost; UK and Norway were anxious to acquire new ones, but because of the threat of the entry of Sweden did not want Sweden to build them.

Norway and UK had in principle agreed that post-war pelagic-whaling would, if possible, be reserved to themselves, but could not agree at the time on how any overall catch-limit should be divided. Norway favoured 60% for itself, 40% for UK; while UK favoured, on the basis of production capacity, 47% for itself, 53% for Norway. What neither apparently took into account was that the US occupation authority in Japan planned, immediately after the end of hostilities, to encourage and assist Japan to resume whaling, in order to relieve the acute protein shortage, at least temporarily.

The catch-limit of 16 000 BWU figure for 1944 (and subsequently 1946) was proposed by Norway, while USA proposed 15 000 and UK 20 000. All agreed that it was more important to establish the principle of a total catch-limit than to settle on a particular figure. The Norwegian delegate justified his number as seeming "to be more reassuring". He subsequently admitted it "is just a bit too much", principally because later increases in whale catches from shore-stations outside the Antarctic had not been foreseen.[26]

The number of 16 000 BWU was the brain child of the senior scientists from the British, Norwegian and USA delegations, but the justification they offered for it would not be regarded now as "scientific": first, it would involve a reduction of 50% in the catch during 1937/38; second, it was presumed to be sustainable provided the season was curtailed, despite ignorance of either the sizes or the states of the stocks; third, it was assumed that stocks had increased somewhat during the war years; fourth, it was important to "spare" the blue whale itself.

The Norwegian scientist admitted that if the guessed "sustainable" number was too high, "whaling will soon be a thing of the past". As Tonnessen and Johnsen comment: "The three men took a chance, and when things went wrong later on it was too easy to say that it was because they had set too high a quota (catch limit). Although it was presupposed that the number could be altered, as things turned out it was very difficult to lower the (catch limit), and every time this was done it was not until it was proved impossible to fill it entirely."

Throughout this period there had been rumours that the Soviet Union was preparing to enter Antarctic whaling, but this did not happen until the 1946/47 season when one factory-ship with 8 catchers began operations. That same season the brand-new Dutch expedition, also with 8 catchers, began operations, as did Japan with two factories - conversions of existing vessels - and a total of 12 catchers.

The nature of the national quota negotiations that began in 1958 cannot be understood without reference to the history of the 1930s and the war years, which set the political and economic stage for most of the subsequent debates and struggles for both profit and industrial survival. Similarly the immediate post-war years determined the detail of the initial negotiating positions.

5. IMMEDIATE PRECURSORS TO THE SECOND EPISODE

The second story told in this study is of the failure of inter-governmental arrangements, in particular through a post-World War II organisation, the International Whaling Commission (IWC), to ensure the conservation of whales and/or the sustainability of a modern whaling industry. Broadly, the IWC, born with high hopes, did not fulfil its two basic charges concerning what was once a major marine living resource: *to*

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[25] This decision had highly disproportionate consequences though the 1950s and 1960s.

[26] Hopes expressed at the time that "in the not too distant future it might be possible to reduce catch limits" were not fulfilled until 1963/64.

provide for the proper conservation of whale stocks, and thereby *to make possible the orderly development of the whaling industry*.

The International Convention for the Regulation of Whaling 1946 (ICRW) had many admirable provisions. For example, it explicitly recognised *the interest of nations in safeguarding natural resources for future generations*, and it applied *to all waters in which whaling is prosecuted* by any means, including Territorial Seas and even - where appropriate - within the baselines from which Territorial Seas were measured. But it also had numerous loopholes and flaws, which hampered the Commission's work. These included:

i. a decision procedure which required an unusually high three-fourths majority of voting Members for making binding decisions, coupled with an "objection" procedure which was used increasingly by whaling states to exempt themselves from otherwise binding decisions - even sometimes ones they had voted for and
ii. a provision for the killing of an unlimited number of whales for "scientific purposes" by unilateral decision of any Member, but which also were required, as far as practicable, to be processed and to yield "proceeds", and so almost inevitably to enter commerce.

The two flaws that concerned the problem taken up here, however, were the lack of provision for amendment of the ICRW (other than of the *Schedule* appended to it) except by preparation of Protocols. This required ratification by every Party before they could come into effect, and the provision that amendments to the Schedule *shall not involve restrictions on the number or nationality of factory ships or land stations, nor allocate specific quotas to any factory or ship or land station, or to any group of factory ships or land stations*, such as those operating under a particular flag or located in a particular nation or geographic region.

The first meeting of the IWC was held in 1949, but until 1971 it regulated only the catches of the four major species of rorquals in Antarctic waters by pelagic expeditions. Whales were harpooned by the catchers and towed for processing aboard each factory-ship. The number of catchers "attached" to a factory-ship varied considerably from nation to nation, from company to company, and from time to time. Thus when whales were abundant more catchers might be added to an expedition, and when catch-limits were reduced the number of catchers per expedition might also be reduced, unless the change was so drastic that one or more expeditions would be withdrawn from a national fleet. Such adjustments were particularly difficult for countries with only one factory-ship.

Starting in 1955/56 all whaling companies except the Soviets had an agreement to restrict the number of catcher boats per factory-ship. In 1956/57, 1957/58 and 1958/59 this number was 12, at least for the large new ships; in that period the one Soviet fleet had twice as many. These variations in catchers per factory could be regarded as *tactical* adjustments. But the *strategic* changes were of another kind. The pre-War trend of increases in the sizes and powers of factory-ships and of catchers was continued in the post-War renewal.

Catch-limits were applied only to the BWU group of baleen species. Two other rorquals were free from regulation: Bryde's (very similar to the sei but living generally in warmer waters) and the smallest, the minke. Catch-limits were set only by *Blue Whale Units* (BWU - see footnote[16] p. 317). These ratios had been agreed among whaling companies in the 1930s on the basis of relative oil production. In fact oil production also depended on the average size of individuals of each species caught, which changed over the years as they became depleted. Furthermore, in the second part of the post-World War II period, meat became the more valuable commodity. Retaining meat for freezing reduced the oil production per whale since some of the oil, which had hitherto been extracted when muscle was reduced to meal as a by-product, remained in the meat produced for human consumption.

It is worth recalling why catch-limits were originally determined in terms of numbers of whales rather than of barrelage. Since the early negotiations were among companies, not states, for allocations of quotas to individual expeditions, it was thought that the BWU-type regulation would encourage maximisation of oil production *per whale* and thus discourage waste. At the same time bonuses to whalers were allocated according to oil production. This was intended to encourage gunners to concentrate on the largest individual whales, giving the highest oil yield per whale. Those were, especially, pregnant female blue whales.

Two other types of baleen whale, in addition to the minke and Bryde's, had originally been important sources of edible oil and/or meat for human consumption: three species of *right* whale and the *gray* whale. This last occurs only in the northern hemisphere, and is a protected species, following hunting to near extinction in the 19th Century; it is therefore not relevant to the present analysis. One of the right whale species (*Eubalaena glacialis*) inhabits the southern hemisphere but it was (and still is) also legally protected from commercial whaling, following its near extermination in the second half of the nineteenth century and the first half of the twentieth. But as will been see it had, at least by the 1960s, sufficiently recovered to become an attractive target for illegal whaling. The minke whale, which has separate populations in each hemisphere (and of which there

are now thought to be two distinct species), was hunted only in small numbers in the Antarctic prior to 1972 after which it became the main target following the near extermination of the larger rorquals.

The four species in the BWU system have different, though overlapping, geographical distributions within their southern summer feeding zones: blue whales tend to feed near the ice edge, fin whales feed there and also further north, sei whales again further north. Humpback whales tend to hug coastlines. As the larger, hence preferred, species became less abundant the centres of pelagic-whaling moved northward, within the Antarctic region generally. The combination of differential species-depletion and latitudinal-shift caused the species composition of catches within BWU catch-limits to change. These changes were compounded by some confusion regarding species identification. Thus, a "pygmy" sub-species of blue whale feeds further to the north than the large type-species; it was sometimes thought that these pygmy animals were simply young blue whales, which was important because minimum size (length) limits were in force. The pygmies were treated equally with the "normal" blue whale in BWU calculations although their oil yield was much lower. Likewise, catch statistics did not distinguish between sei whales and the similar Bryde's whale feeding in warmer waters.

In addition to catching baleen whales for production of edible oils and meat, the pelagic expeditions operating in the Antarctic also caught large numbers of sperm whales, mainly for production of industrial oils. The interest in this species varied from one whaling nation to another and, over time; the USSR was the major exploiter. Catches were not regulated until the 1970s, and could be made both in the Antarctic and in warmer waters during the voyages from northern hemisphere bases to and from the baleen-whaling grounds. The two sexes of the sperm whale are very different in size; the larger males tend to migrate further south to feed. When, eventually, the catching of sperm whales was regulated, catch-limits were set separately for males and females.

Sperm whale catches by pelagic expeditions have been given limited attention by analysts. They provided a substantial part of the total catches, as might be inferred from the total number of animals caught by pelagic expeditions that operated in the Antarctic in the period 1961/62 - 1978/79: sperm: 115 600; blue: 2 200; fin: 89 500; humpback: 600; sei/Bryde's: 118 300. These numbers should be appraised in terms of the relative sizes of the animals, which is about 40 tonnes for a male sperm whale, 20t for a female, compared with about 40t for a fin whale. Sperm oil production per whale has averaged nearly 50 barrels, about the same as the production of whale oil per humpback whale.[27]

The prices of whale oil and sperm oil fluctuated wildly in the period mainly concerned with here - the 1960s and 1970s. For example in the mid-1960s the whale oil price was quoted at £85/long ton. It dropped to UK£49 in 1968 and this price collapse was one of the factors that led Norway eventually to abandon Antarctic whaling. However, the price rose to UK£114 in 1970. After that the price quotations on the world market changed from UK£ to US$. The price rose to a record US$550 in 1974, then fell sharply, then rose again to US$450 in 1977.

The sperm oil price was at an all-time low of UK£60/long ton in 1967. But by 1975 it was being quoted at US$400; at US$780 the following year, and US$850 in 1977. The USSR was the main producer. From November 1960 to November 1972 all Soviet sperm oil production was sold in Europe and earned tens of millions of dollars in hard currency. From 1973 the sperm oil was retained within the Soviet bloc.

This discussion of the prices of oils, and the relation between baleen and sperm, are given here to illustrate one of the economic considerations in quota negotiations and the difficulties that the industry must have had in making its production plans. It should be borne in mind also that the principal aim of the Japanese industry during the 1960s - 1970s was production of meat for human consumption within Japan.

Females of baleen whales are - unusually for mammals - rather larger than the males, but the sexes cannot be distinguished before capture. Since the BWU, although based on bulk quantity, was defined in numerical terms, whalers would - other things being equal - tend to concentrate on where the larger animals of each species, were to be found and hence a higher proportion of females. It is also possible that when a large group (a "pod", in whaling terminology) was found, first attention would be given to the larger individuals. However, as abundances declined, aggregations became smaller and it became rare to refrain from catching an available whale just because it was small.

So, the economy of the post-World War II pelagic-whaling operations rested on two basic commodities from baleen whales, the catching of most of which was regulated, and one commodity from sperm whales, unregulated. These commodities supplied different world markets.

There were other constraints on Antarctic pelagic-whaling operations than overall catch-limits in terms of BWUs. The catching of right whales was prohibited throughout the post-World War II period; they were "protected". Subsequently the IWC's power to declare "protected species" was applied to the blue and humpback whales. Only when the BWU unit was abandoned by decision of the 1971 IWC meeting (effective from 1972/73)

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[27] The notional production used in establishing the BWU was 110 barrels per blue whale, 2.5 humpbacks to one blue whale.

and replaced by catch-limits for each species (or, more generally, for a species in a specified region) could an alternative protection procedure be introduced - the setting of some or all catch-limits to zero.

Commercial whaling was conducted in the Antarctic also from land-stations on sub-Antarctic islands, principally South Georgia. Their catches were not constrained by catch-limits. Their control - such as it was - differed in other respects also from that of pelagic-whaling: minimum size-limits and open-seasons were different and, in particular, they were permitted to take humpbacks in years when pelagic operations were denied this (for example from 1946/47 to 1948/4).

The definition of a "factory ship" had been a matter of great controversy at the ICRW negotiating conference, the question being whether it included a ship stationed in coastal waters, within the Territorial Sea, whether it was moored, and if so "permanently". Basically, a "floating factory" that moved from time to time, or continuously, was deemed to be engaged in pelagic-whaling and so subject to whatever rules applied to that type of operation. For two seasons (1969/70 and 1970/71) a Norwegian vessel - the *Peder Huse* - operated in the Antarctic. It combined catching and processing functions. Such factory-catchers have since been commonly used for pelagic-whaling in the North Atlantic and Northwest Pacific, but this unique Antarctic operation was economically unsuccessful; *Peder Huse*'s catches were included in BWU catch-limits, and the IWC classed it and any others like it as "factory ships" engaged in pelagic-whaling. Other factory-catchers operated from time to time in the Southern Hemisphere under flags of convenience of states not party to the ICRW - the so-called *pirate whalers* - but they never entered Antarctic waters as far as is known. They caught mainly Bryde's whales.[28]

Pelagic expeditions engaged in Antarctic whaling were permitted to operate only in waters south of 40°S latitude. This delimits roughly what is now referred to here as the Southern Ocean, most of which was declared in 1994 to be a whale sanctuary, under the ICRW Article V.1(c). The original *Schedule* also provided that "a factory ship which has been used during a season in any waters south of 40°S latitude for the purpose of treating baleen whales..." was forbidden to operate "in any other area for the same purpose within a period of one year from the termination of that season." This evidently affected the economics of pelagic-whaling world-wide and it was inevitable that later, when whales were much less plentiful, that restriction would be relaxed.[29]

From the 1946/47 season factory-ships were forbidden from operating in the South Pacific sector of the Southern Ocean from 70°W longitude westward as far as 160°W longitude; this continued a prohibition dating from negotiations in 1937. This sector, designated at the time as *The Sanctuary*, was re-opened to pelagic baleen whaling from the 1955/56 season, initially temporarily but eventually for an indefinite period. Originally the *Sanctuary* was thought to provide a haven for whales, but it was at the same time believed that there were few whales to be found in that sector. In fact, those few expeditions that tried operating there, from 1956/57 on, obtained high catch-rates, and in one open-season 40% of the entire Antarctic catch was taken within it. The opening of the *Sanctuary* was decided against scientific advice in the forlorn hope of spreading the whaling effort and thus partially "relieving" the more intensely exploited sectors.

Pelagic baleen whaling in the Southern Ocean was, under the ICRW, permitted initially only from 15 December to the following 1 April. Expeditions were required to send weekly reports of their catches to the Bureau of International Whaling Statistics (BIWS), maintained by the Government of Norway. When it appeared that the total BWU catch-limit might be reached before 1 April the BIWS would estimate the date on which that limit could be expected to be reached, and if this was earlier than 1 April the season would be closed correspondingly early. This procedure occasionally led to catches being under or over the BWU catch-limits, but this did not mean in itself that either whales were too scarce for the whalers to catch in sufficiency, or that the whalers were cheating, as has sometimes been alleged.

However, as the abundances of whales declined so that catch-limits could not always be closely approached within the designated season it was inevitable that there would be pressures to keep the season open after 1 April, to begin it earlier than 15 December, or both. In practice the whaling-season was limited also by seasonal weather conditions in the Antarctic. When the original dates were eventually relaxed they tended to permit an earlier start. Also, dates were applied selectively to the catching of particular species, especially to the extremely depleted humpback whale, but changes in opening dates affected the accessibility of the different species, which tended to arrive on their feeding grounds at slightly different times.

Unlike some later fisheries agreements (and eventually the Law of the Sea as determined by UN Conventions) the ICRW did not set out any general or specific management objectives. This allowed the IWC considerable freedom to evolve. But it meant, for example that although the IWC held its first Annual Meeting in 1949, it was not until 1960 that it formally determined that total allowable catches ("catch limits" in IWC

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[28] When one of them took a fin whale, it capsized and sank with its Norwegian skipper and its crew.

[29] It should be noted that this restriction did not prevent catchers from being transferred from attachment to one factory-ship to another operated in different waters by another company.

terminology) should be set at such levels as to be biologically sustainable, or as to permit recovery of greatly depleted stocks. Another decade was to pass before the IWC sought to go beyond mere sustainability and to "optimise" catch-rates and stocks. It was, however, ahead of its time in introducing and quantifying the idea of *precaution* in situations of scientific uncertainty even though it did this inadequately.

A major flaw, which was common to almost all fishery management agreements at the time, was the absence of provisions for international inspection and enforcement. Some such provisions were eventually and falteringly introduced but, again, inadequately, and far too late to save either the whale resources or the industry.

Another factor in the history of the IWC was the manner in which annual national subscriptions to costs were calculated, which meant that there was a very weak link between what a country took from the sea and what it had to pay. Non-whaling countries had to pay not much less than countries whose companies were making immense profits from whaling, making it difficult or impossible for "developing" and relatively poor small countries to participate in managing the utilization of resources which were global in distribution, mobile, very valuable, and spending much of their lives on the high-seas. The whales were commonly described as a "common heritage" though they never acquired that formal status as did, later, the mineral resources of the deep seabed.

The ICRW provides in Article V.3 that each adopted amendment to the *Schedule* becomes effective for all Parties ninety days after they have been notified by the Secretariat of the decision, except that:

"(a) if any government presents an *objection* to an amendment before the expiry of this ninety-day period, the amendment shall not become effective with respect to any of the governments for an additional ninety days;

(b) thereupon any government may object to the amendment at any time prior to the expiry of of the additional ninety day period, or before the expiry of thirty days from the date of receipt of the last *objection* received during such additional ninety-day period, whichever date shall be later; and

(c) thereafter the amendment shall become effective with respect to all governments which have not objected but shall not become effective with respect to any government which has so objected until such date as the *objection* is withdrawn."

This complex *objection* procedure played a very important role both in decision-making about catch-limits and in the negotiations for national quotas. Article XI provides that any government may withdraw from the ICRW on 30 June of any year by giving notice on or before 1 January of that year. This, too, played a key role in the above decisions and negotiations. It should also be noted that the IWC, under Article VI of the ICRW, is empowered to make, from time to time, recommendations to any or all Contracting Governments on any matters which relate to whales or whaling and to the objectives and purposes of the Convention. Such recommendations, requiring only a simple majority of votes in favour, have frequently been made in the form of non-binding resolutions; those, too, played their part in the national quota issue.

6. LAUNCHING THE IWC

As we have seen, the International Whaling Commission (IWC) inherited the blue-whale unit (BWU) from regulations agreed among whaling companies during the 1930s when edible oil was by far the most valuable commodity provided by whales and gave the basic reason for going whaling anywhere, especially in the Antarctic. Many subsequent attempts by scientists and some governments to convert this into a system of setting limits by species, and also by areas, were foiled until the major crisis of the early 1970s.

In the first twenty years of its existence the IWC put most of its effort into regulating the catching of rorquals by pelagic expeditions, its main tool being the BWU. Other, supplementary, regulatory procedures were also available to the IWC and it used most of them. Although the IWC resisted setting catch-limits by species (and in the case of the sperm whale by sex) it sometimes modulated the application of these by setting different opening and closing times for the whaling-season, and even protected certain species in designated areas, though usually only when they were close to extermination. It could close certain areas for indefinite periods (as *Sanctuaries*) but only did so intermittently, from 1949 to 1955 (baleen whales only), and then after 1979 (all whales). Minimum size-limits were set for most species (but never for minke whales, which eventually came to comprise virtually all the legal catches). Different regulations could be applied to pelagic operations and to land-stations. Standing general regulations theoretically protected calves and accompanying mothers.

Initially expeditions operating in the Antarctic were prohibited from operating also in the Northern Hemisphere during the northern summers. When whales became scarce this was relaxed, which substantially changed the economy of the industry. The resurgence of both pelagic and land-station whaling elsewhere also affected the economy of Antarctic pelagic-whaling. Additionally, the price of whale oil was affected greatly by the changing world market for edible oils and fats, from both animal and vegetable primary sources.

Furthermore, the changing emphasis on oil relative to whale meat products, and the different market locations for these, greatly affected the decisions of companies regarding what they would tell their flag-governments concerning their concrete needs to remain profitable.

Another factor, which affected all subsequent negotiations, was the difference in the dates on which different countries entered Antarctic whaling. The British and Norwegians were the first, and for many years sought by one means or another to discourage the entry of other countries. They had much experience and Norway had for many years a virtual monopoly on skilled crews, especially gunners, which it guarded most jealously through domestic legislation and union rules. Late entrants, post-World War II, especially the USSR, made huge investments and so had strong incentives to maximise their catches and to stay in the business to capitalise on those investments as soon as possible. The USSR also invested in training skilled crews when it was about to embark on a great expansion in the late 1950s. It did this, for example, by adding a large number of extra catchers to the elderly factory-ship *Slava*, the ex-German vessel taken as a prize of war.[30] There was also a constant threat of whaling operations starting under flags of non-members of IWC.

Then there was an incomplete vertical integration of the oil industry, with one huge multinational corporation - Unilever - engaged both in whaling and in marketing oil, including that produced by other companies. On the other hand several of the member states of the IWC were not whaling, yet had votes in management decisions, and this proportion increased as countries, one by one, dropped out of whaling, and also as countries that never had engaged in whaling joined the IWC so as to exert their right to a say in managing the use of a global resource.

In the post-World War II years there was not always harmony between companies and the governments under whose flags their vessels sailed. The use of flags of convenience, both of other Members of the IWC and of some notorious non-Members, was a temptation to which many succumbed.

Last it should be mentioned that there being no international inspection arrangements in force until almost the very end of pelagic-whaling, an enterprise operating one expedition could mislead other governments in negotiations as well as subvert the IWC's deliberations as a whole. Such a situation put a premium on "intelligence" if not industrial espionage.[31]

Antarctic whaling was always linked to questions of both maritime and terrestrial sovereignty. The Antarctic Treaty, which froze territorial claims on that continent, was signed in 1957, within the period discussed here. One of its consequences was that, when extensions of maritime jurisdictions began to multiply, the waters around the continent remained as high-seas. Britain's sovereignty over sub-Antarctic islands as operating bases - especially South Georgia - continued to be of immense value post-World War II, and not only as sites for land-stations sometimes operated by British companies and sometimes by others under lease; they also provided shelter for some catchers during the southern winters (avoiding the long and expensive voyages to and from the northern expedition bases) as well as repair and maintenance facilities, especially freshwater supplies.[32]

The 1946 negotiating conference established a catch-limit of 16 000 BWU for Antarctic pelagic baleen whaling. The origins of this number have been detailed in the previous section; it derived ultimately from the catch-limits negotiated in June 1932 for the 1932/33 season. At that time, the limit agreed among companies (then including the land-stations) was 18 584 BWU, being calculated as a barrelage of 2.03 million, equivalent to a blue whale yielding 110 barrels. In fact, in that season the catch was 16 985 BWU, but with an actual yield of 116.4 barrels per BWU the barrelage reached 2.09 million. In 1933 a new agreement was negotiated, for the 1933/34 season; this was for 17 074 BWU but calculated at 115 barrels per BWU. These two agreements had had the desired effect of bringing catches down, by the outbreak of World War II, by one-third from the unregulated high in 1930/31.

The 1946 Convention was signed by representatives of 15 Governments, several of which had not previously participated in such discussions: Argentina, Australia, Brazil, Canada, Chile, Denmark, France, Netherlands, New Zealand, Norway, Peru, South Africa, USSR and USA. Japan, then under military occupation, was not represented. To come into force the Convention required that at least six signatory Governments should

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[30] The resulting low catches per catcher-days-worked (a classic measure of whaling effort) compared with that of other whaling nations was interpreted by IWC scientists as evidence of Soviet inefficiency, but the matter was in fact more complicated.

[31] A notable case was the operation of the first Soviet expedition. This, and later the newer ones, consistently *under-reported* their catches to the Bureau of International Whaling Statistics (BIWS) after the end of each season. But the ***Slava*** *over-reported* its catches until close to the end of the season, thus causing a premature announcement of closure of the season as the overall total catch-limit was apparently approached. Then, when others had (presumably) ceased operations, the Soviet catchers continued to operate, reputedly unobserved, though in fact the Norwegian operators, at least, had some idea of what was going on.

[32] The dismantling of a South Georgia land-station owned by Salvesen, by Argentine scrap-metal merchants (under contract with the owners), precipitated the Falklands/Malvinas war!

have ratified it, and that these must include Netherlands, Norway, USSR, UK and also the USA - this last being the Host to the Conference and also the Depository Government. So, if all eventually ratified, any agreement on the Antarctic catch-limit would depend on the votes of the non-pelagic states, which were at that time all engaged in whaling only from land-stations. But, at the same time, four out of fifteen could constitute a blocking vote of more than one-quarter, provided there were no abstentions.

The original *Schedule* to the ICRW required that there "...be maintained on each factory ship at least two inspectors of whaling for the purpose of maintaining twenty-four hour inspection". These inspectors were to be appointed and paid for by the Government having jurisdiction over the factory-ship. This put into the inter-governmental arena earlier provisions for inspectors that were followed by many of the companies and required under domestic laws.

7. THE EARLY YEARS OF THE IWC – 1949-1952

The first meeting of the new International Whaling Commission (IWC) was held in London in May 1949. The four essential ratifications specified had been obtained with, in addition, those of Australia, Canada, Denmark and France among the original signatories. Other signatories attended as observers: Argentina, Brazil, Chile, Denmark and New Zealand. Representatives of FAO and of the Supreme Commander of Allied Powers (SCAP - Japan) were also admitted as observers. But some other states that were not signatories originally had meanwhile ratified the Convention: Iceland, Panama, Sweden, South Africa, though Panama did not attend the first meeting.

At this first meeting the catch-limit of 16 000 BWU was retained without question, but the full protection of the humpback whale from pelagic-whaling was relaxed. Up to 1250 humpbacks could be caught in each of the seasons 1949/50 and 1950/51, although of course these catches would be included in the BWU totals (Australia and Netherlands opposed this decision, while Iceland and Canada abstained). In addition, the open-period for the Antarctic pelagic-whaling season was changed by consensus, to December 22 through April 7.

The IWC's second meeting was held in Oslo in July 1950. By then Brazil and Mexico had become member states - and attended the meeting, but New Zealand and Panama were not represented. Argentina, Chile and Denmark again sent observers, but the Commission decided that after its third meeting, scheduled to be held in Cape Town in July 1951, "...countries which had not ratified or adhered to the Convention could not be expected to be invited to future meetings". SCAP was again represented by an observer, as was FAO, but on this occasion ICES - an intergovernmental organisation - attended, and for the first time a non-governmental organisation - the Association of Whaling Companies (AWC). No substantive changes were made to the *Schedule*, although the relaxation of the protection of humpbacks was reconfirmed and the open-season dates for that species were amended to provide that the permitted 1250 whales could be taken only in the last weeks of the season, specifically after 31 January.

By the time of the third meeting (1951) Japan was a full member of the IWC in its own right. Members not attending were Brazil, Iceland, Mexico and New Zealand. Panama attended for the first time. Argentina, Denmark again sent observers; so did Italy and Peru. The only non-government observers were from FAO and ICES.

The IWC strongly regretted that "certain countries who had hitherto, by invitation, attended the Commission's meetings, had not yet seen their way to adhere to or ratify the 1946 Convention". It pointed its finger especially to those who had been signatories in 1946 - Argentina, Chile and Peru, and "viewed with disappointment the continued failure of countries interested in whaling to cooperate in the maintenance of the principles underlying the 1946 Convention, on which the future conservation of the whale stocks of the world so much depends." Fine words!

However, although it was not revealed at the time, Chile and Peru were already beginning to consider, with Ecuador, the establishment of a new body, later identified as the *Comisión Permanente del Pacífico Sur* (CPPS) which, on the initiative of Chile was launched at a conference in Santiago in August 1954. As is now well known the CPPS was the instrument by which the three countries coordinated their several claims for extended jurisdiction over the exploitation of living marine resources, specifically including whales, in a coastal zone of 200 nautical miles. This explains, one may presume, the action of the observer for Chile at the second meeting in explaining that although it had been a signatory "it had been unable to date to ratify the Convention".

The third meeting of the IWC was largely occupied with financial and administrative matters and minor amendments to and clarifications of the *Schedule*. It established for the first time two standing committees - the Technical Committee and the Scientific Committee - the membership of which was formed annually by designations by the national Commissioners. Thus this decision did not - as is still commonly assumed - provide *independent* scientific advice to the decision-making body. At its first meeting the Scientific Committee

recommended that it was unnecessary to set minimum size-limits for minke whales. The Commission accepted this and it also made exemptions for minke whales with respect to open- and closed-seasons. At that time most minke whales were being caught from land-stations, but these decisions began to have consequences for Antarctic pelagic-whaling when the species became dominant in the catches from 1971/72. The limit of 16 000 BWU for the Antarctic was unchanged.

All Member States except Mexico sent representatives to the fourth meeting of the IWC (London, June 1952). Observers were admitted from Argentina, Italy and Peru and, for the first time, Portugal. Observers attended also from FAO, ICES and the AWC. At this meeting the Commission decided to set up a sub-committee comprised of a nominee from each of the five Antarctic pelagic-whaling countries "to consider the question of the 16 000 BWU limit and that of sanctuaries." Meanwhile, the 16 000 limit was retained. The humpback whale exemption was again renewed, but it was decided that catching of that species would be restricted to three days - 1, 2 and 3 February, except that if the permitted 1250 whales had not by then been caught the BIWS was authorised to extend the season for one or more days until they *had* been caught.[33]

At this point we may glance at the course of the Antarctic pelagic operations in these first four seasons of the IWC's existence. First, in each year the 16 000 BWU limit was reached before the statutory closure of the season, which was consequently closed early. In the first three of the four seasons the final totals were 16 059, 16 413 and 16 006 BWU respectively. But in the fourth, 1952/53, only 14 855 BWU had been taken; it appears that the notification and estimation procedure had not worked well that year. Considering what happened subsequently, at the 1953 meeting, it seems likely that in fact the whalers were beginning to find it difficult to attain the catch-limit.

In 1949/50 18 factory-ships had been engaged, with 216 catchers; in 1950/51 19 factories, with 241 catchers; in 1951/52 20 factories, with 270 catchers; in 1952/53 a reduced number - 16 factories, with 232 catchers. However, the older, smaller and less powerful vessels were being gradually withdrawn from Antarctic operations and new bigger and more powerful ones were coming on stream.

8. 1953 - 1957

By the time of the fifth IWC meeting (London, June 1953) no new countries had adhered to the Convention. All Members attended. There were observers from Argentina, Italy, Peru but not Chile; and from FAO, ICES and the AWC. Several important decisions were made, the most significant being a reduction of the catch-limit to 15 500 BWU, adopted without dissent. This was based on the report of a special sub-committee established at the 1952 meeting and chaired by the Norwegian Commissioner. But the IWC rejected the sub-committee's suggestion that catching of blue whales not be permitted before January 15 in each year. A proposal to prohibit the catching of blue whales in a broad sector from the Greenwich meridian to 70°W was also rejected. Other regressive decisions were that minke whales should be exempted from the seasonal date-limits, and instead each government was to be required to set its own dates for catching minke, from both pelagic and land-stations, in a continuous season of not longer than six months in any period of twelve months. A similar provision, but for an eight-month season, was made for pelagic sperm-whaling.

A new Scientific Sub-Committee was established, this one including also nominees from Australia and France in addition to the representatives of the five pelagic countries, with the following terms of reference:

i. to examine progress on research on humpback whales and to study the catches of this species by both pelagic operations and from land-stations
ii. to examine catch figures of blue and fin whales in relation to recommended measures for conservation and
iii. to consider and report upon the increased catches of sperm whales in certain areas in recent years.

In the event, 17 factory-ships, with 206 catchers participated in the 1953/54 season, which was closed on 18 March by which date 15 439 BWU had been taken.

It is perhaps indicative of a power shift that the sixth meeting of IWC was held in July 1954 in Tokyo and the seventh was scheduled for Moscow in July 1955. In Tokyo and Moscow all Members were present except Iceland (in 1954) and Brazil (in 1955), with observers as usual from Argentina and Italy (and also Chile and Portugal in 1954), from FAO and ICES (also from AWC in 1955, now renamed the *International* AWC, IAWC).

The Report of the IWC's 1954 meeting contains the first published substantive report from the Scientific Sub-Committee. This clearly reveals that this committee was playing politics rather than offering objective technical advice; its recommendations were essentially what the scientists thought the Commission would

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[33] These details may seem trivial but they did eventually significantly affect the national quota negotiations.

accept.[34] Thus the Sub-Committee generally thought that Antarctic catch-limits should be set by species and that the limit for blue whales should be very low, but this was opposed by two of the three Norwegian members who thought such an arrangement would be impracticable, so no recommendation was made.

As to the states of the Antarctic stocks it was concluded not only that the blue whale was still declining but also the fin whale. This latter was substantiated by new methods of age determination for whales, from ridges on baleen plates (Norway) and from ovarian analyses indicating the number of previous pregnancies (UK).

The idea was that a catch of about 11-12 000 BWU might be sustainable. However, it was thought that such a reduction from previous years would be unacceptable if made immediately, so a reduction by stages was recommended, with a number of 14 500 for the 1955/56 season. This recommendation was not adopted by the Commission, which merely recorded its opinion that "...it may soon become necessary to restrict more severely the Antarctic catch of blue whales, while guarding at the same time against a corresponding increase in the catch of fin whales (which) alone would involve a reduction in the total permitted catch in the Antarctic." The Commission's opinion continued: "If there should be clear signs of depletion of fin whale stocks also, the Commission believe that a further and very substantial reduction of the total permitted catch should be made at once." It decided to draw these views to the attention of Member governments so they could inform the whaling companies.

Here I note that in this period the Commissioners, though appointed by name by their Governments, were not regarded as fully accredited governmental representatives, and equally, that the representatives of the whaling companies who were close behind their backs, when not actually included in the delegations.

It was at this meeting that there first appeared a rift between the scientist from Netherlands (Dr E. J. Slijper) and the other Scientific Sub-Committee members, especially those from UK and Norway. Slijper said "while not disposed to dissent out of hand (from the 14 500 recommendation) I am not prepared to endorse it wholeheartedly at the moment". He wanted more time to study the matter.[35] The Sub-Committee advised him to come back next year with more analyses. Meanwhile it approached the question of how to keep blue whale catches down without species catch-limits, in the same manner as it had previously dealt with the humpback whale problem - by proposing a later opening of the season for catching this species. This was accepted by the Commission, which agreed to a general opening date of 7 January (with closure not later than 7 April) but a date of 21 January for blue whales. The Commission decided to close the sector 0° to 70°W (the South Atlantic sector, including the Antarctic Peninsula) to humpback catching, for five years.[36]

Last, the scientists reiterated their opinion that "there is no reason for supposing there is danger to the stocks of sperm whales provided the size limit is strictly observed". And the senior Norwegian scientist (Prof. J. Ruud) suggested the convening of a meeting to bring together scientists (including specifically the younger ones) not necessarily connected with the Commission but engaged on research on whales in various parts of the world, to exchange views and ideas.

In the event Antarctic whaling operations were halted on 19 March, the catch being 15 300 BWU. Nineteen factories participated, with 233 catchers. A significant development, noted in the routine report from BIWS, was that an expedition flying the Panamanian flag had operated in the 1954/55 season.

On 11 May 1955 the Norwegian Commissioner had submitted a proposal that the IWC should appoint an observer on each factory-ship, but not of the nationality of the ship on which he is to serve. These IWC observers would report directly to the Commission, their expenses being paid by the Commission but to be refunded by a levy from whaling countries proportional to the number of expeditions operated under each flag. This was overlooked at the Tokyo meeting (owing, it was said, to the absence of the Secretary and his staff at

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[34] Thus the opening of the *Sanctuary* in the Pacific sector was proposed. In doing so it was thought desirable for the Commission to close another sector, but this was not formally proposed because it was judged that the Commission would not accept it. Alone among the scientists the Soviets strongly opposed the opening of the *Sanctuary* since relevant scientific investigation was lacking

[35] In this, and in later years, the harmony between Slijper's views and the negotiating position of the Netherlands delegation and industry led to accusations in the 1990s that he had been dishonest. There is no more than slight circumstantial evidence for this, however; in fact he provided more scientific material to the 1954 meeting than any other member. Slijper pressed hard for the use of strengthened minimum length rules to ensure that older whales were selectively targeted and so the recruitment rate kept high. For further discussion of the question of the integrity of the IWC Scientific Committee (see Schweder 2001 and Holt 2001).

[36] This year also saw the beginning of serious discussion of the growth of pelagic-whaling in the North Pacific, first by Japanese vessels and later by the USSR. This evidently began to alter the virtually total market dominance of the Antarctic production. It also led to a development whereby regulatory decisions came, in effect, to be made on a regional basis only by the coastal states, including the operators (Japan, USSR, USA and Canada), though the recommendations made jointly by their Commissioners after separate closed meetings did still have to be formally endorsed - or, rarely, challenged by the Commission as a whole.

the time), and was brought forward to the Moscow meeting. It was quickly decided that no effective action could be taken and that the proposal was probably out of order, particularly because "the Convention did not allow provisions of the Schedule relating to inspection to be altered." It was suggested that the Convention might be amended by a Protocol providing for the insertion of a new Article V.1 (i) methods of inspection, and the depository government (USA) was asked to investigate this possibility.

The inspection debate was mixed with another question: whether a refrigerated transport-ship that performed any processing on board would fall within the definition of a factory-ship. Amending this definition would also require alteration of the main text of the Convention. The link was that, whatever the definition, it was thought by some to be desirable that refrigerated transports should at least carry national inspectors. Similar questions arose concerning the use and status of helicopters carried aboard factories.

The Commission also faced at its seventh meeting the implications of the recent creation of the *Comissión Permanente del Pacífico Sur* (CPPS) by Chile, Peru and Ecuador. Naturally a heated argument about the rights and wrongs of 200-mile limits ensued. Japan wanted the IWC to bring the whole issue to the notice of the United Nations, even in advance of current work by the International Law Commission, which would report to the General Assembly in 1956[37]. Norway supported Japan, but eventually it was agreed that the IWC did not as such want to bring the UN into this matter.

In Moscow the IWC decided that Professor Ruud's idea for a scientific meeting would cost money, and took no action. It also rejected the renewed suggestion by scientists that catch-limits should be set separately for blue and fin whales. The scientists' suggestion that *the Sanctuary* should be opened for three years and then closed again automatically was adopted, but Japan did not like the second part of that decision. A further advance of the date for opening the catching of blue whales (to 1 February) was agreed but was controversial.[38]

Japan alleged that the expedition flying the Panamanian flag (the *Olympic Challenger*, actually a Greek operation) had been observed catching humpback whales outside the permitted days. The Panamanian Commissioner said the national inspectors were competent and trustworthy officers of the Panamanian Government. It was noted that no report of infractions had been received from Panama, and South Africa raised the question of the effectiveness of Article IX of the Convention, which deals with implementation, enforcement, prosecution and punishment. No action was taken other than to change the layout of the Infractions reporting form.

The main item of discussion was, of course, the BWU catch-limit and its reduction in stages in accordance with the scientists' advice. It was decided to set the limit at 15 000 for 1955/56 and 14 500 for 1956/57 and thereafter, but the decision was controversial (11 in favour, 3 against, with Panama and Netherlands opposing both numbers, the UK opposing the 1955/56 limit, and Japan the 1956/57 limit). It is notable that both here and in later controversies, Japan in particular did not wish to be bound by future commitments.

Other matters of interest were: the IWC backed down from its earlier threat to exclude observers from countries that did not ratify the Convention; a request from the Secretary for advice on how to deal with publicity was met by agreement that post-meeting press releases should be issued, while some delegations considered it inadvisable to reproduce the verbatim reports of plenary sessions.[39] The Commission instructed a Scientific Sub-Committee to function inter-sessionally, setting its own agenda. This must *consist only of scientists* (previous meetings had often been attended by active political and diplomatic members of delegations). This Sub-Committee was to be composed as before with respect to countries, *i.e.* the five pelagic-whaling countries (thus excluding Panama) plus France and Australia. The Sub-Committee did not meet until March 1956, in London, and its report is contained in the Seventh Report of the Commission.

After the 1956 meeting the Netherlands objected to the second part of the decision on BWUs, relating to 1956/57 and subsequent seasons. Most of the other countries then also objected (UK, Panama, South Africa, Norway, Japan, USA, Canada). It is significant however that the USSR (along with nine others) did *not* object, explaining that a decision to reduce the catch-limit had been negotiated and agreed, and countries should stick with that as "a correct and progressive step towards conservation of whale stocks". This declaration should now

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[37] This led, as we now know, to the UN Technical Conference in 1957 and the first UN Law of the Sea Conference in 1958.

[38] Another warm debate concerned the use of whales' bodies as ships' fenders, a procedure which had been followed since the beginning of pelagic-whaling but which was now frowned upon as wasteful. It was agreed that safety at sea must take precedence over the strict letter of the Convention. The USSR Commissioner said they were working on a fender made of porous rubber and would share their results with other countries.

[39] This is of some importance because the IWC does not agree on reports of its meetings; it merely issues Reports of the meetings by the Chairman (who is assisted by the Secretary) so only the verbatim records disclose what happened, and in particular how votes were cast. The question of whether verbatim records should be continued, and whether votes may be secret and under what conditions, had become serious items of debate in the 1990s.

be evaluated in the light of subsequent revelations of the extent and scale of Soviet "adjustments" of the catch statistics it was providing to the BIWS.

Nineteen expeditions (including Panama's) took part in the 1955/56 season; they deployed 257 catchers and took 14 874 BWU before closure on 4 March.

Dutch scientists did not attend the 1956 London meeting of the Scientific Sub-Committee. It considered for the first time what should be the species catch-limits were the IWC to decide later to set such limits. This was not specifically connected with abandonment of the BWU; it was felt that species limits might be set within the overall BWU figure, which could lead to cut off dates equivalent to the (by then) established practice of modifying the seasonal dates for humpback and blue whales. The Sub-Committee recommended 1500 blue whales, 1250 humpbacks and 26 000 fins, with the effective 13 000 BWU of fin whales to include any sei whales taken. Furthermore, if the overall BWU were to be reduced below 13 000, the numbers of humpback and blue whales could be maintained and only those of fin (plus sei) reduced. Furthermore, the Sub-Committee recommended that all quotas should be reviewed annually, well before the following annual meeting.

This Sub-Committee meeting was the first at which the emergent science of population dynamics was seriously applied to the whaling question within the IWC, through a study made by Professor P. Ottestad of Norway. Although there were critical assumptions in Ottestad's analysis, particularly of the original number of fin whales in a stable unexploited population (which was at the time unknown but guessed to have been about 300-350 000) it convinced the other scientists that the current fin whale catches were unsustainable and that the stock was "declining rather sharply".

All Members except Brazil were represented at the eighth IWC meeting (London, July 1956), with observers from Portugal and Italy, and from FAO, ICES and IAWC. No further countries had joined and the members of the CCPS - Chile and Peru - were conspicuously absent. One new item on the Provisional Agenda was "Consideration of a draft by the UN International Law Commission of Provisional Articles concerning the Regime of the High Seas". This item was deleted, but "correspondence which had reached the Commission" was circulated.

The Commission said there were practical difficulties in setting catch-limits by species, and also in routine collection of waxy ear-plugs for age-determination. Norway withdrew its proposal to bring forward the opening date of the Antarctic season. Further action on Norway's proposal regarding international inspectors was postponed pending completion of negotiation for an appropriate Protocol to the Convention. The question of whether a refrigerated transport vessel was a factory-ship was unresolved.

The Scientific Committee (except Slijper) agreed that substantial reduction in the fin whale catch was needed urgently. The Commission responded by setting the catch-limit at 14 500 BWU for the 1956/57 season, but this was embedded in an open-ended decision that the catch-limit would not exceed 15 000 in any one season. This second part of the decision went through without dissent; the Netherlands dissented from the first, immediately operative catch-limit, but did not subsequently object to it.

Twenty pelagic expeditions operated in the 1956/57 season, with a reduced number of 225 catchers, by agreement among companies. The Panamanian expedition had been handed over to Japan, which also operated another new one. It was announced that the South African expedition would be handed over to Japan for the 1957/58 season. These changes apparent stabilised the pelagic nations at five, though this turned out to be transitory.

At the end of the 1956 IWC meeting the observer for FAO broke the usual silence of an observer to warn that the world was watching the Commission, expecting it to get its act together and conservatively regulate the use of whale resources.

The special Scientific Sub-Committee was again authorised to meet inter-sessionally at the discretion of the Chairman of the full Committee. It did so, in London in March 1957.

The 1956/57 season was closed on 16 March, making it an exceptionally prolonged one since the institution of regulations (this was "explained" as due to poor weather conditions towards the season's end or to the reduced number of catchers, but not to a shortage of whales). The final catch was 14 745 BWU, of which 40% was taken in the newly opened *Sanctuary*. This year, as in several previous years, the Commission noted increases in the oil production per BWU. This was commonly ascribed to increases in efficiency of extraction, which there undoubtedly were. However, throughout the post-War years the species composition of an average BWU was changing. It was well known that one fin whale normally yielded *more* than half as much as a blue whale, *i.e.* the ratios embedded in the BWU definition were not exact in relation to modern processing technology, and the steady increase in the numbers of fin whales *vis-à-vis* the blue whales in catches was contributing to the apparent increase in extraction efficiency.

The Eighth Annual Report of the IWC, containing its Chairman's Report of the 1956 meeting, included a detailed review of the attempts to regulate whaling from 1927 onwards, as seen from the IWC. In addition two other issues were raised at this meeting which, while not directly relevant to the later efforts to negotiate national quotas, had important implications for controversial issues raised in later years, especially after 1972. One concerned the taking of 12 baleen whales outside the designated season, authorised by the UK Government under Article VIII of the Convention (which authorises the unilateral award of special permits for scientific purposes). This was said to be for testing an electric harpoon, with the intention of making whaling less inhumane. Norway had objected that this was not a purpose for which Article VIII had been adopted. The UK then suspended the permit in order to allow further study and discussion at the Ninth Meeting. Other nations had also issued such special scientific permits, for undeclared purposes, especially the USSR, which had issued 10, while Japan had issued permits for the taking of protected right whales.

The second issue was raised by the USSR which argued that Pacific gray whales were increasing, and that to meet the needs of the local population of eastern Siberia, catching of this hitherto "Protected Species" should be permitted. This matter had also been raised by Soviet scientists at the previous Scientific Sub-Committee meeting. The Commission agreed that more information was needed about the recent catches "on behalf of aborigines" (as provided for in the original *Schedule* to the Convention), as well as the evidence for the supposed increase. This too would be discussed at the Ninth Meeting.

The March 1957 meeting of the Scientific Sub-Committee had on its agenda - for the first time - consideration of the use of Article VIII. Most of the "scientific whales" taken since the ICRW came into force had been unprotected species taken outside the official season. The Norwegian view, with which the other scientists agreed, was that any whales needed for scientific purposes should when possible be taken within the official season. However, the question then arose as to whether they should be included in the BWU statistics. The Commission was advised to consult Governments on this matter, and also to call upon Governments to issue as few permits as possible.

Norwegian scientists thought that, as a result of the shortened season for killing humpbacks, this stock had possibly increased and that a lengthening of the season could now be recommended, in order to result in a bigger catch.[40] The Sub-Committee concurred, especially since this "would reduce the pressure on fin whales". It suggested a doubling of the season from four to eight days and a doubling of the permitted catch of humpbacks.

Inevitably most of this 1957 scientific meeting was concerned with the state of the Antarctic fin whale stocks, and the discussion was - unusually - reported in considerable detail. It was agreed that age-determination from rings in sectioned ear-plugs, ridges on baleen plates, and ovarian counts corroborated each other.[41] Scientists from France, Japan, Norway and UK thought that "although there is no conclusive proof of a heavy decline of the stock of fin whales, the balance of evidence is sufficient to again justify a warning that the present number of whales taken annually in the Antarctic is dangerously high" and therefore that the 15 000 BWU limit must be further reduced. They offered no alternative number, however.[42]

At the Ninth IWC meeting (London, June 1957), the scientists' suggestions regarding scientific permits were accepted, but without mention of whether they were to be included in the BWU accounts. The Protocol dealing with helicopters, refrigerated transports and with international inspectors/observers on factory-ships had been completed and signed in November 1956 but was not yet in effect as it had not been ratified by Netherlands, Panama or USA, nor by Brazil, Denmark, France or Mexico.

Panama - now out of pelagic-whaling- did not attend this meeting, nor - again - did Chile and Peru send observers. Regarding the question of humpback whales a compromise proposal to extend the open-season for this species to six days failed. Other ways of allowing the humpback catch to be increased but not to exceed the permitted 1250 were discussed, but not acted upon. The BWU catch-limit, which had been set in advance at "not more than 15000" was amended to 14 500 for the 1956/57 season (the two Governments opposed to this did not subsequently object).

It was decided to keep the *Sanctuary* open for another year. Definitions of six sectors (Areas) of the Southern Ocean were made firm. The USSR tabled drawings of its rubber fenders (see footnote[38]). The

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[40] While the studies of the fin and blue whales were coming from the pelagic activities and the scientists from countries operating them, the discussion of the humpback status relevant to the regulation of pelagic-whaling was based in large part on data from the Australian land-stations. Neither Australia nor the USSR was represented at this meeting.

[41] In later years - mid 1960s - the baleen ridge studies and ovarian counts had been abandoned as untrustworthy, and it was also found that the ear plug readings had been under-estimating the ages of fin and blue whales twofold! If this had been known at the time the conclusion that the fin whale was rapidly declining would have been greatly strengthened.

[42] Slijper again dissented, believing that evidence was insufficient to make any recommendation. Instead he pressed for marking experiments on young whales as a means of validating the age-determinations on which the estimates of mortality rates (and hence of stock status) by British and Norwegian scientists had been based.

Commission decided it did not wish to be represented at the forthcoming UN Conference on the Law of the Sea (March 1958), but would remain in contact with FAO and ICES.

Twenty expeditions with 237 catchers from the five nations participated in the 1957/58 season in accordance with a renewed agreement among whaling companies. The Soviet expedition included the unprecedented high number of 25 catchers, including training vessels. The total catch was 14 850 BWU, the season again being closed on 16 March. Attention was for the first time drawn to the fact that the catch per expedition varied greatly, even among factories of similar capacities, ranging from about 500 BWU to the Soviet 1600 BWU.

The Scientific Sub-Committee met again in London, in March 1958. On the vexed question of the humpbacks the Sub-Committee was now floundering despite a long detailed report from Australia. It had been told that Norway would be proposing increasing the catching-days from four to eight (as the Committee had suggested the previous year), and limiting the catch to 1250 with 1 February as the opening date.

The only new data indicated a deterioration of the stock in the eastern Indian Ocean sector. After much humming and hawing the Sub-Committee reported it "is inclined to think that a catch of 1250 in the whole Antarctic is about the right number. [It] realises that it may be difficult to regulate the catch so that it reaches this figure and no more each year but suggested (on a proposal by the Dutch scientist) that if this number is exceeded in any one year it should be correspondingly reduced in the next year so that the average catch is kept to 1250.".[43] This quote gives the flavour of advice from the scientists, which gradually led to the Commission's disillusionment with them, perhaps unfairly since they were attempting an essentially impossible task in the then current state of knowledge and analytical techniques.

Similarly it was noted that the catch of sei whales had increased dramatically, but the "explanations" could be: fleets operating in lower latitudes; the sea becoming unusually warm in higher latitudes; other species being more difficult to find. The scientists suggested that they might be able to clarify this question if they were given access to the catch-data for each factory, but this commercially sensitive information, though existing in the Bureau of International Whaling Statistics (BIWS), was denied them.

New analyses of fin whale data were presented by UK, comparing age compositions in the former Sanctuary and elsewhere. These gave no conclusive evidence but reinforced the majority view of the previous year that "the balance of evidence indicates that the stock is declining and that the present level of catching is too high". Again the Dutch delegates dissented, insisting that there was insufficient evidence on which to base any recommendation to the Commission. The majority did not recommend any particular number.

Regarding the dates for opening of the season, it was understood that there would be a proposal from a Commissioner for an earlier date. The scientists said they would prefer no change but realised that with a reduction in the number of catchers, more time might be needed to reach the catch-limit.

9. 1958: THE CRUCIAL YEAR - QUOTA NEGOTIATIONS BEGIN

At the Tenth Meeting of the IWC (London, June 1958) the UK Commissioner "drew attention to the position resulting from the decline which, in the majority opinion, was taking place in the stock(s) of fin whales (being exploited in Antarctic waters) at the same time as the number of factory ships operating in the Antarctic was increasing... . The UK Delegation therefore wished to suggest that the Antarctic whaling countries should consult together to find a solution to the economic problem, perhaps by an agreement to share the permitted catch between them. Under the terms of the (International) Convention (for the Regulation of Whaling 1946) any such arrangement would have to be made and operated outside the Commission, unless the Commission should recommend amendment of the Convention to widen its scope." [44]

The UK Commissioner's statement is reported under the agenda item "National Quotas - Antarctic Pelagic Whaling", but the Commissioner referred to "permitted catch". The powers given to the IWC by Article V.1 of

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[43] This is the first time that the idea was broached of what were later called "block quotas" and "roll-overs". These were used but were controversial through to the mid-1980s.

[44] This last reference to the fact that the ICRW requires that amendments to its *Schedule* (an attachment which "…forms an integral part…" of the ICRW) "…shall not involve restrictions on the number or nationality of factory ships or land-stations, nor allocate specific quotas to stations…" [Article V.2(c)] This wording was included at the insistence of the US delegation to the 1946 Conference; the British and Norwegian representatives unsuccessfully sought to have allocations to Parties provided for. A consequence was what came to be called "the whaling Olympics", in which countries and companies enormously increased their capacity in order to retain or gain higher shares of catch-limits within a limited season. This in turn added to the pressures to keep catch-limits high in order to keep the new and expanded fleets in operation and profitable.
The *Schedule* may be amended by a three-fourths majority vote of Parties (not counting abstentions) but the ICRW itself contains no provision for its own amendment. Thus changes can be brought into being only by negotiation of *Protocols* that, to come into force, require ratification by all Contracting Parties.

the ICRW include amending "from time to time the provisions of the Schedule by adopting regulations with respect to the conservation and utilization of whale resources (by) fixing *inter alia* (e) time, methods, and intensity of whaling (including the maximum catch of whales to be taken in any one season)." More commonly the maximum permitted catch is referred to as the *Catch Limit*.[45] National *quotas* were allocations of parts of any catch-limit as agreed (outside the IWC) among states participating in a defined whaling operation.[46]

The UK suggestion set in train negotiations that continued through to 1971 concerning the 1971/72 Antarctic whaling-season. The negotiations for a workable system of allocating quotas, which had to be conducted in a formal sense outside the IWC, were tightly closed to all but some members of the national delegations involved. Some of the factors in this process could be deduced by reasonably shrewd observers of this process, some of them were known to some participants (in governments and from whaling companies) and some were revealed in various ways many years afterwards. The negotiations were naturally linked with the process of determining overall catch-limits, and with establishing a system of international monitoring and control. This latter, intended to limit and discover cheating generally, obviously would become much more crucial once quotas were established.

In principle the catch-limits were expected to be set in accordance with scientific advice based on careful analyses (subject to internal peer review), inevitably modified by economic and political considerations, and then the shares would be negotiated. In practice, however these two processes were tightly linked, even to the extent that countries clearly sometimes determined in advance what national quotas they wanted or would accept and then sought to arrange for the overall limit to be set accordingly. It is primarily because of this linkage, continued through time, that the account here must be essentially chronological, both processes, as well as the international observation controversy, being recounted in parallel.

So here one must look at attempts, through the 1960s and early 1970s, to share permitted catches among several participants, which came down to negotiating "fair shares" of a "suite" of four large species of "whalebone" whales killed in Antarctic waters by catcher boats accompanying large factory-ships, an industry in which five nations participated in the early years, but which were reduced to three and then two by the time agreements were reached. The ostensible purpose of this was to ensure that future catches would be sustainable, and to limit over-investment in vessels and equipment resulting from unregulated competition between nations and whaling companies for a restrictive catch-limit. In retrospect it is alternatively understood as an effort, at least by some, to arrange the extinction of the industry in as orderly and profitable way as possible. During this period the product on which the whaling economy mainly depended, changed from whale oil to frozen whale meat, with the market for the latter overwhelmingly concentrated in Japan.

The economic and logistical parameters in the national quota negotiations included consideration of events outside this favoured Antarctic region. The most important were that:

i. pelagic operations also took sperm whales (for a commodity with a completely different market) and including catches by expeditions in ocean areas in which pelagic baleen whaling was forbidden - particularly in the southern hemisphere north of 40°S and
ii. pelagic-whaling was intensive for a few years also in the North Pacific Ocean where at first different fleets operated but where, eventually, for economic reasons, the same fleets were permitted to operate in the same 12-month period in both hemispheres.

Additionally, two other rorqual species - minke and Bryde's - not included in the original suite of four, came to dominate the catches in both hemispheres when stocks of the four had all been greatly depleted, becoming of practical significance for the Antarctic in the late 1960s. But the catching of sperm whales by the same pelagic expeditions was not regulated until much later. Prevailing values of these two groups of animals affected the distribution of whaling effort between them, and the different nations and companies also had relatively different interests in these two basic types of whale.[47] As the pelagic-whaling enterprises were almost all based in the northern hemisphere this meant that sperm-whaling was undertaken during the long voyages to and from the baleen whaling-grounds; the larger, male animals were also taken deep in the Antarctic.

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[45] The "permitted catch" here means the maximum season's catch as determined by the Commission, and qualified with reference to other types of regulations under Article V.1. These include "…fixing (a) protected and unprotected species; (b) open and closed seasons; (c) open and closed waters, including the designation of sanctuary areas; (d) size limits for each species; and (f) types and specifications of gear and apparatus and appliances which may be used…" "Catch limit" is roughly synonymous with *Total Allowable Catch* (TAC) in modern fisheries management.

[46] At various times there were also "company quotas". These were of two kinds: in the period between the First and Second World Wars agreements on catch-limits were reached among companies rather than governments. Later, when national quotas were agreed, any government concerned might decide to allocate shares of its national quota to each of the companies whose vessels flew its flag.

[47] Baleen and sperm oil necessarily had to be stored in separate tanks on factory-ships, and any change of use involved tank-cleaning.

The prevailing view of scientists - and even of fisheries economists - at the time of the post-World War II whaling negotiations, about sustainable use of wild living resources, was that operators/investors had a powerful and potentially over-riding vested interest in such long-term use provided that regulated limitations of either catches or whaling/fishing effort could ensure that animals left alive in the sea by each participant, as a conservation measure, in order to grow or reproduce, would not be prematurely killed by others. When applied to so-called "common property resources" this was hallowed by the writings of Garrett Hardin in the catch-phrase "The Tragedy of the Commons" (see, for example, Hardin and Baden 1977). But by 1975 the mathematician Colin Clark had elegantly demonstrated that this was not plausible if the natural rate of growth/recovery of the living resource was slow in comparison with the prevailing financial discount rate. In such a case, of which whales and hardwood trees are the best exemplars, it would always pay to exploit the resource unsustainably, thus depleting or even exterminating it, and then to invest the profits in another enterprise. This was in stark contrast with the then dominant idea that if only everyone could agree, and not cheat, then they would all *naturally* act so as to ensure a future for their enterprises, and act within that constraint in battling for market share and improved efficiency.

One of Clark's first analyses was in fact of the southern hemisphere blue whale stocks. Indeed it had already been remarked that the Norwegian city of Sandefjord - the home base of Norwegian Antarctic whaling - had been built on the carcasses of whales, which also provided much of the capital subsequently invested in Norway's burgeoning ship-building industry. In further studies Clark showed that the most profitable course is to deplete the resource steadily, but not as fast as might be technically possible, since that would involve inordinately high short-term investments in ships which could have a viable use period of twenty years or more. So, while many thought at the time that the intense debates, over catch-limits, national quotas and international monitoring of catching operations, were directed towards the sustainability of both the natural resources and the industry, in harsh economic reality they were about achieving a controlled, rather than chaotic, depletion of the resources and wind-down of the industry. Commercial whaling was "mining", not "harvesting".

Another myth, at the core of this study, was that the proper sequence of events was, first, to obtain agreement on total allowable catches, based on scientific advice modulated by broad economic and social considerations, and second, to agree on appropriate shares of this among operators, which might be governments or companies. The reality was that negotiations on catch-limits and quotas were, although conducted in separate rooms, completely intertwined, and with them the negotiations about effective monitoring of the resulting international arrangements. All these elements inevitably made deduction of the real factors in essentially secret quota negotiations somewhat speculative.

And, last, it must be said that the ICRW made demands on the scientific process that could not be fulfilled. Certainly great advances were made during the period under consideration, beginning in the early 1960s, though few of the analyses then made would stand up to modern scrutiny. In fact the scientific advice offered was frequently not acted upon, or action was delayed, sometimes for many years. We can never know whether the stocks and the industry would now be in better shape if the advice had been promptly acted upon, even though we see in retrospect that the advice was highly over-optimistic: we now know, for example that the blue, fin and sei whales were depleted to a much greater degree than was imagined at the time when strenuous efforts were being made to save the industry for a few years and the whales for ever.[48]

On the face of it attendance at the 1958 IWC Meeting was much as before. Except for Brazil, Mexico and Panama all Members were represented; and the usual observers were present from Italy and Portugal, FAO, ICES and IAWC. But most delegations were larger than before. The *Protocol* had still not been ratified by Brazil, Mexico and Panama and so was not yet in effect. However, after the meeting it was announced that all had then ratified so it came into force on 4 May 1959.

Although the Commission had decided not to be represented at the UN Conference that year on the Law of the Sea, it accepted the spirit of a resolution passed there which "called upon states to prescribe, by all means available to them, those methods for the capture and killing of marine life, particularly of whales and seals, which would spare them suffering to the greatest extent possible". While this was not directly relevant to the questions of catch-limits and quotas, it was one more signal that the outside world was increasingly paying attention to the Commission, which had hitherto worked in virtual isolation.

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[48] Hence, although this account is the history of a failed enterprise, it may give some guidance for future management of fisheries. Although not dealt with here it is a fact that this very failure, and the near extermination of the most valuable whale resources, led to the declaration in 1982 of a moratorium on all commercial whaling. This released whale scientists from the need to determine catch-limits every year, for every species in every region. They could give their full attention to devising a completely new approach to setting limits (called *the Revised Management Procedure* - RMP).

The Commission voted on a proposal that the *Sanctuary* should remain open for another year, the extended period being about to expire. Six were in favour, six against, with two abstentions. Thus the Sanctuary would again be closed to pelagic baleen whaling in the 1958/59 season.

The Commission accepted the scientists' advice not to alter the opening date of the season. Efforts by Norway and UK to increase the length of the humpback season from 4 to either 6 or 8 days were defeated, and Norway's proposal to fix the humpback catch at 1250 was withdrawn. A Japanese proposal to bring the open dates forward to 20-23 January was also withdrawn. Humpbacks would remain protected in the South Atlantic Sector for a further five years. It was decided that the verbatim records of plenary discussions were to "be regarded as papers for transmission to Contracting Governments not for public distribution and quotation (from them) should not be permitted in a public press or in trade journals".

The superficial tranquillity of these actions was broken by a sharp debate concerning the BWU catch-limit, in the light of the absence of a specific recommendation from the scientists. The Netherlands proposed raising the limit to 16 000 BWU, excluding humpbacks. This was not voted upon, but a motion to retain the 14 500 catch-limit for another year was adopted with the Netherlands dissenting.

After the 1958 meeting the five pelagic-whaling countries all lodged *objections* to this BWU decision. This meant that the effective limit for 1957/58 became 15 000 by default, according to the 1956 decision. But then a series of withdrawals from the Commission began. The first was not Netherlands, as expected, but Norway, on 29 December 1958. It announced that "Should the negotiations for an agreement between the five nations ... on the rational conduct of the whale fisheries have reached a satisfactory conclusion before (the date on which its withdrawal notice would come into effect - 30 June 1959), providing for the proper allocation between them of the annual total catch under the Convention, the notice of withdrawal would be cancelled".

The next withdrawal, by the Netherlands (31 December 1958), simply said that its notice would be cancelled if pending problems could be solved in due time. Japan's withdrawal notice followed (6 February 1959), with no explanation but a promise of cancellation "in the light of circumstances that might arise".

These notices of withdrawal followed the apparently successful conduct of a Whaling Conference held in London in November 1958 to negotiate shares of the catch-limit. There, the representatives of the "Five-Powers" had agreed to recommend to their Governments a sharing scheme for a seven-year period beginning with the 1959/60 season. The substantive elements of this were:

i. The USSR would be allocated 20% of the catch-limit, the remaining 80% to be shared among the other four nations, by negotiation which should be finalised by 1 June 1959 (an inconclusive meeting to that end was held in Tokyo in May; another was planned for June in London. That, too, was inconclusive).
ii. The USSR would not add more than three new expeditions to its existing fleet; but that none of the five shall increase the number of its expeditions "other than by purchase one from another of ships engaged at the time of purchase in Antarctic pelagic-whaling".
iii. None of the ships belonging to any of the five would be transferred to another party to the Convention without at the same time transfer of a proportionate part of the seller's quota and a commitment by the buyer to honour the present agreement; or unless the purchaser guarantees that the ship will not be used as such in Antarctic pelagic-whaling during the 7-year period.
iv. The agreement would become null and void if a factory-ship under any other flag of a country, which is or becomes Party to the Convention, engages in Antarctic pelagic-whaling, unless the above conditions of transfer are met.

The Scientific Sub-Committee met again in London in March 1959 under the cloud of *objections* and withdrawals. It had another disadvantage: that year Easter was at an inconvenient time, so the meeting had to be held early when the catch-data for the previous season were not yet available. In the circumstances the scientists could do no more than chat about methodology and interpretations of past data and reiterate the previous advice, with regrets that the catch-limit had reverted to 15 000 BWU. Dutch scientists once again declared their disagreement with the concerns of the others about the decline of the fin whale stock.

When the operational data did become available they showed that 20 expeditions had operated, with 235 catchers, the USSR being outside the voluntary agreement to limit that number. The catch had reached 15 301 BWU when the season was closed on 16 March. Meanwhile the Norwegian landstation on South Georgia, which had been closed, reopened for the 1958/59 season.

10. THE SECOND EPISODE - THE 1960s

When the IWC held its eleventh meeting (London, June-July 1959), the representatives of the pelagic-whaling countries were meeting in parallel, but without success. This meant that the announced withdrawals of Netherlands and Norway came into effect on the last day of the meeting, but Japan withdrew its notice. There

being no proposal for a new catch-limit, the default number of 15 000 would remain in place for the 1959/60 season. This was of course now largely notional since it would apply only to UK, Japan and USSR. However, the Netherlands announced an assurance by its whaling company that it would take no more than 1200 BWU in each of the next seven years, and would adhere to all the other IWC regulations except the seasonal dates. Norway said it would do likewise, but also abide by the season, and would later announce the quota it would award to its own fleet. The USSR said it would abide by the Convention conditionally on its own interests not being damaged by the activities of non-members, which of course now included especially Norway and the Netherlands. At this point the UK said it would in the circumstances have to reconsider its position, but it did not threaten to withdraw.[49]

Now that the *Protocol* was in force the way was open, if not yet clear, to negotiate an international observer scheme (IOS), the principle of which had at last been accepted. The three remaining pelagic-whaling Members were asked to work out a scheme, and Norway and Netherlands were invited to join them in that task. Specific proposals had been put to the Commission, and these raised questions as to whether the nationalities of international observers should be restricted to the other pelagic countries (favoured by Japan) or could also be from other countries (favoured by Norway), and whether the Commission would be required to consult flag-countries before appointing observers on their factory-ships. The UK invited all five countries to a consultation for this purpose in London in the autumn of 1959, but the USSR declined on the grounds that the scheme would be valueless while any of the five countries remained outside the Commission. This proposed consultation was therefore aborted.

Twenty expeditions took part in the 1959/60 season, but with a reduced number of catchers (217). The total catch, including that by the Netherlands and Norway, was 15 512 BWU. The season had opened for fin whales on 28 December, as agreed, with the blue whale opening as before on 1 February, but British and Norwegian expeditions continued until the authorised closure date of 7 April. Japanese and Soviet whaling ended early, while the Netherlands' operation continued to 15 April, that is beyond the authorised date. There were, moreover, major changes to the compositions of the fleets. The smallest of the Norwegian expeditions (7500 tons factory, with 6 catchers), was withdrawn from service, and a new, second Soviet factory, the *S. Ukraina* (36 000 tons, with 18 catchers) began operations.

At the next meeting of the Scientific Sub-Committee (London, May 1960) Norway was represented by an "observer" with full right of participation. (there was no one from the Netherlands; and New Zealand attended instead of Australia).[50] New analyses indicated that the fin whales were still rapidly declining and the blue whales even more rapidly. The group thought the blue whale should at least have some respite by closure of some sectors and by a later opening date, but wished to recommend total protection for, say, two or three years, after which the situation should be reviewed again. New analyses by British and Norwegian scientists also confirmed the continuing decline of the fin whale. Other important trends were an extremely rapid increase in the catches of sei whales (the reason for this was still unclear, but no recommendations could be made) and continuing high catches of sperm whales, the average size of which was diminishing. It was not clear to what extent this trend was caused by deliberate selection of larger whales when catches were fewer, or because older whales had been largely eliminated. Either way, however, it was thought that this trend indicated whaling was having an effect on the stocks. As to humpbacks, increases had been noticed in certain areas, declines in others - especially in the eastern Indian Ocean and Atlantic sectors - and apparent stability elsewhere. In particular the former should be fully protected for at least two or three years.

Argentina joined the IWC in May 1960 and its twelfth Meeting (London, June 1960) was focused entirely on two suggestions by the UK. One was to suspend the Antarctic catch-limit for at least two seasons in order to clear the way for a quota agreement to be reached and as a device to open the way for a return of Norway and Netherlands to membership of the Commission. The idea was that the UK, USSR and Japan should vote for such action but undertake to object to the decision within the proscribed 90 days if Norway and Netherlands did not rejoin. This proposal acknowledged implicitly that the problem was not to agree on a total and then on how to divide it up, but rather the reverse: to agree on a formula for sharing, and then adopt an overall catch-limit. In practice, of course, the two agreements had to be reached hand-in-hand. For countries such as Norway, with more than one expedition, a "totals first, quotas after" approach was feasible because if the total would be too low it could reduce the number of its many expeditions. But the Netherlands, with only one expedition, had to be

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[49] At this meeting the Commission made some amendments to the regulations. A Japanese proposal to advance the opening date for fin and blue whales from 7 January to 28 December was adopted despite the opposition of the scientists on the grounds that this would lead to more pregnant females being taken. Also, a Japanese proposal to advance the four humpback catching days from beginning on 1 February to 20 January was adopted. The *Sanctuary* was opened to whaling for another three years, on the proposal of Australia.

[50] This group was now called an *Ad Hoc* Scientific Committee.

assured of a specific quota so as to ensure profitability. Therein lay a dilemma that generated fundamental differences in strategy.

Seconded by South Africa (then engaged in coastal whaling on the southern hemisphere baleen and sperm whale stocks), this UK proposal was adopted, but after the meeting *Objections* to suspension of the catch-limit were lodged by Japan and the USSR, which had both voted against it. South Africa then also seconded a non-binding US resolution; this was adopted, its effect being to urge all countries to limit their national catches to a level no greater than that adopted for the 1959/60 season. Another resolution, proposed by UK, again seconded by South Africa, and adopted without dissent, appealed to Norway and the Netherlands to rejoin the Commission and participate in actions for arranging sharing of the total limit and introduction of an international inspection system. Then a *Schedule* amendment proposed by UK to delay beginning of blue whale catching from 1 to 14 February was carried without dissent.

The second major suggestion by the UK at this meeting was appointment of a special 'Committee of Three' scientists in the field of population dynamics, drawn from countries not engaged in pelagic-whaling in the Antarctic, "to assist in the assessment of the condition of the whale stocks there". They would be asked to report within one year on the sustainable yield of these stocks and on any conservation measures that would increase that yield. The three would be appointed by the Commission's Chairman, in consultation with the Vice-Chairman and the Chairman of the Scientific Committee. In doing this, the IWC would declare its intention to bring the catch-limit into line with the scientific findings not later than 31 July 1964. In doing so it would have regard to Article V.2 of the Convention, which mandates, *inter alia*, that *Schedule* amendments must be such as are necessary to provide for the conservation, development, and optimum utilization of the whale resources, and be based on scientific findings.

This suggestion was formulated in a resolution proposed by Canada, seconded by South Africa and adopted without dissent. Japan supported it only in principle however, because it did not specify that the report of the 'Committee of Three' should pass through the Scientific Committee. This omission was, naturally, deliberate, since the idea was that they would work with the Commission's scientists but that their advice would be quite independent and seen to be so. It only became apparent later, however, that the Japanese delegation was unwilling to make a prior commitment "to act on scientific advice which had not yet been formulated".

In this matter the delegation of the USA was very active behind the scenes, and with a clear purpose. The USA had made great efforts to promote the establishment of regional inter-governmental fisheries regulatory commission around the world. Observing the IWC to be on the brink of complete collapse, there were fears of repercussions on this evolving global management structure, a structure that the USA wished to nurture. Also behind the scenes the FAO observer (the Organisation's Assistant Director-General for Fisheries, a Canadian) was active, and it was no accident that the resolution eventually adopted was put forward by the Canadian Commissioner.

After the meeting negotiations began for the composition of the Committee of Three. Appointments were not completed until March 1961; the chosen members were D.G. Chapman (USA), K.R. Allen (New Zealand) and myself (British, but nevertheless politically acceptable, being at the time a staff member of FAO/UN). At the same time the *Ad Hoc* Scientific Committee was instructed to prepare data, review methodology and consider the needs for better data collection and research in the future.

The Committee of Three and the *Ad Hoc* Scientific Committee met jointly for two weeks in Rome (April-May 1961) and put together a plan of action for the coming months. Scientists from Australia, Japan, New Zealand, Norway, UK, USSR and Netherlands participated. At a subsequent meeting of the *Ad Hoc* Committee (London, June 1961) work on the execution of the plan of action began in earnest. It was noted however that pending the completion of the Committee of Three's work the *Ad Hoc* Committee would have to "continue to resort to the rather qualitative indexes they had employed in the past". The preparatory work involved, *inter alia*, putting all existing statistical and relevant biological data onto punch cards for a new-fangled computer analysis, which meant handling and processing more than one million items.

During 1961, the USSR then confirmed its acceptance of a 20% national quota, and representatives of the other four pelagic-whaling countries met three times in failed attempts to agree on division of their 80% of any catch-limit (the USSR participated as an observer in the first of the three meetings). Tentative proposals were in the hands of their Governments but no decision had been made by the time of the thirteenth IWC Meeting, held in London in June 1961.

All member countries participated in this 1961 Meeting. Italy and Portugal were again represented by observers as, this year, were Chile and the Netherlands. Others were FAO and ICES, as usual, joined now by the Committee of Three (represented by Chapman, its Chairman). The UK Commissioner explained to the Commission the status and nature of the quota negotiations, and put to it three questions on behalf of the Netherlands (which now, as an observer, could not itself present them). Agreement was near on allocations of

33% to Japan, 32% to Norway, 9% to UK and 6% to the Netherlands with, in addition, a bonus to the Netherlands depending on the catch of their expedition by a certain date during the season. The three questions were:

i. Could the principle be established of carrying over to the next season the balance of any unused quota allocation?
ii. Could the Antarctic season be lengthened?
iii. Would an IOS be introduced and implemented?

The Commission's answers were:

i. While it was understood that this aspect was of special interest to a nation operating only one expedition, and there would be no harm - and possible some economic benefit - in carry-over if the catch-limit was low enough to be sustainable, it would be harmful to do so if the catch-limit was higher than "optimal". On balance the Commission decided it would oppose any carry-over.
ii. The arguments put forward by scientists against opening the season earlier were ambiguous and the consequences uncertain. Under the circumstances the Commission agreed (by majority vote) to advance the opening from 28 December to 12 December.
iii. That the Commission agreed on the need and that action was urgent, and asked the pelagic-whaling countries, including the Netherlands, to work out details as quickly as possible, with an aim of provisional implementation in the 1961/62 season.

On the matter of the BWU limit the Commission limited itself to reminding the Governments of the five countries of the resolution from the 1960 Meeting.

At this 1961 meeting the Committee of Three presented its First Interim Report. This contained no substantive recommendations but simply described the lines of cooperation that would be followed by the Commission's scientists, warned the Commission that some costs would be incurred, especially in computing, and pressed for a large expansion of the whale marking programme.[51]

The Scientific Committee expressed alarm at the state of humpback stocks in certain sectors. In response the Commission called upon the four member countries to withdraw their *Objections* to the protection status that had been granted at the Twelfth Meeting.

After the 1961 meeting Japan and USSR withdrew their *objections* to the suspension of the catch-limit that had been decided in 1960 (19 December 1961 and 9 April 1962, respectively). With respect to the voluntary national catch-limits the Netherlands announced a limit of 1200 BWU for the 1960/61 season, the same as in 1958/59 and 1959/60. The USSR, which had increased its expeditions from two to four in those years, maintained a limit of 3000 BWU, calculated as 20% of the total permitted by IWC in 1959/60. The UK held itself to 1800 BWU, for two expeditions, the same as in 1960/61 and compared with 2500 BWU for three expeditions in 1959/60. Norway awarded itself 5100 BWU, which was 700 fewer than in the two previous seasons, consequent on sale of one expedition to Japan. Japan correspondingly increased its catch-limit by 700, to 6680, for eight expeditions, as compared with 5980 for 7 expeditions in 1960/61 and 5100 for six expeditions in 1959/60.

The total catch in the 1961/62 season was 15 253 BWU, by 21 expeditions with 261 catchers. Apart from the transfer of one expedition from Norway to Japan, which had withdrawn its smallest factory from service, the USSR increased its fleet from three to four by addition of the 33 000-ton *S. Rossiya*, with 16 catchers. The season had opened on 12 December as decided at the 1961 meeting. All expeditions (except the Japanese) ceased operations on the latest legal date (7 April); four of the Japanese expeditions ceased on 28-29 March. It is notable that with a substantially longer season and bigger total fleet size (by tonnage of factories and number of catchers) the catch was 7% lower than in the previous season.

Within the BWU total the number of sei whales had increased again (by more than 10%). The Scientific Committee had expressed concern, in the belief that "the maximum sustainable sei catch from the Antarctic was being approached or might be already passed." (No real evidence had been offered, however, for this supposition).[52]

The (unregulated) catch of sperm whales also increased. The amendment made at the Twelfth IWC Meeting regarding the opening date for catching blue whales, from 1 February to 14 February, was inoperative because the four pelagic-whaling Member countries had all objected to it.

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[51] The Commission was not yet used to spending any money on securing scientific advice.

[52] A feature of this and recent seasons' catches which drew comment, was that there was an increasing proportion of pygmy blue whales among the blue whale catches. It was not realised at the time but this was linked with the general displacement of whaling operations northward, principally for the taking of sei whales, which brought them into the distribution range of the pygmy blues.

Although the preparation of data undertaken by the Committee of Three and the *Ad Hoc* Scientific Committee went ahead on schedule between the Thirteenth (1961) and Fourteenth (July 1962) meetings of the IWC, the funds needed for a second joint meeting of the two committees (to be assured by the pelagic-whaling countries, the budget being set at UK£8000) were not authorised in time for that meeting to be held before or at the time of the Fourteenth Meeting. The second joint meeting was only eventually held in December 1962 (in Seattle, USA), which meant at least one full year of delay in completion of the study by the Committee of Three.

The plea to the five pelagic-whaling countries to complete an IOS for implementation, at least on a trial basis in the 1961/62 season, was heard but not acted upon; as they could not agree among themselves to negotiate before the Netherlands rejoined the IWC; that happened in May 1962.

In June 1962 the document entitled *Arrangements for the Regulation of Antarctic Pelagic Whaling* was signed by the five Governments concerned. The allocation of 20% to the USSR was confirmed, as also 6% for the Netherlands. However, in the meantime there had been further transfers of factories to Japan: one by Norway, another by UK. This resulted in reallocations: Japan 41%, Norway 28%, UK 5%.

The 1962 meeting of the IWC was attended by all Members except Panama, and by observers from Chile, Italy, FAO[53] and ICES. Representatives of the five pelagic countries met during the meeting, under the Chairmanship of the Commissioner for Australia, to study proposals from the Netherlands, UK and USSR and a detailed text for a *Schedule* amendment provided by Norway. The discussion was inconclusive and was adjourned until August. As a result of the delay in the scientific work there was little discussion about Antarctic regulations. Only New Zealand expressed regret at the delay. The BWU limit remained by default at 15 000.[54] The Commission agreed with the substance and timetable of the scientists' proposals for completing the special assessments of the large baleen whales included in the BWU, but decided that they "should be extended to sperm whales in all regions and eventually to all other species of economic importance".[55]

The total 1962/63 catch was only 11 306 BWU (out of a possible 15 000), taken by 17 expeditions with 201 catchers. Only Japan reached its national quota, despite all (except Japan) continuing operations until 7 April. Although two expeditions had been transferred to Japan together with their quotas, Norway in fact operated three fewer than in 1961/62, while Japan operated the same number - seven. Also all countries except the USSR reduced both the total number of their catchers and the number per factory.

A meeting planned for August 1962 to complete the IOS was not held because the USSR said that further discussion would not be useful until the agreement on quota Arrangements had been ratified by all five signatories. That process was not completed until April 1963. Further meetings on the IOS were held in April-May 1963 (Moscow) and June 1963 (London). The results were to be reported to the Fifteenth Meeting of the IWC.

The Fifteenth IWC Meeting was held in London (July 1963) and had to deal with a large volume of business. The Agreement on the IOS was negotiated outside the ICRW but formulated in such a way that it could not operate unless the Commission was empowered to appoint the observers and receive their reports. This was secured by a consensus to insert in Paragraph 1(a) of the *Schedule* (which required that "There shall be maintained on each factory ship at least two inspectors....") the additional provision: "… and also such observers as the member countries engaged in the Antarctic pelagic whaling may arrange to place on each other's factory ships". The Commission also resolved that: "The operation of the observer arrangements shall be the responsibility of a committee consisting of the Commissioners for the member countries engaged in the Antarctic pelagic whaling".

The essential features of the Agreement on the IOS were as follows:

i. The governments of the five countries would each nominate observers in numbers equivalent to the number of expeditions each government operates. These are each to be appointed to serve in the expeditions of the other four governments.

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53 I represented the Committee of Three as well as FAO.

54 It was not agreed to prolong the season further. It was decided to leave *The Sanctuary* open to pelagic baleen whaling by rendering Paragraph 5 of the *Schedule* "inoperative until the Commission otherwise decides"; and the Commission held off proposals to give additional protection for blue whales until the Committee of Three had reported, despite agreement that "Assessments show that the stock has indeed reached a level at which there is no hope of any appreciable catches ever being taken unless it is given complete protection for a long period".

55 As to the requests for withdrawal of *objections* to the previous decisions concerning season dates for blue and humpback catching most of the five countries replied that they were willing to withdraw if the others all did. With respect to the blue whale there were no withdrawals because Norway declined to consider the matter until the Committee of Three's work was finished. With respect to the humpback only the *objections* by UK and Japan were withdrawn, and those only in February and March 1963 respectively, that is after the opening of the 1962/63 humpback season.

ii. Each of the five governments also had the right to put one observer of its own nationality on every foreign expedition engaged in Antarctic pelagic-whaling.
iii. All observers would be formally appointed by the Commission, would be enabled to verify those activities on the factory-ships which pertained to the provisions of the Convention, including its *Schedule*, and would report to the Secretariat of the Commission.

The IOS agreement was linked to the quota arrangements agreement by a provision that it would only remain in force so long as the latter was also in force. Various other provisions dealt with: payments of costs and stipends (to be split by complex formula between the country of which the observer was a national, the country or company operating the expeditions to which he was assigned, and the Commission itself); language and interpretation; communications between the international observer and the national inspectors; and provision of facilities including especially access to radio communications.

It had also been noticed that the numbers of various species of whales being killed under special scientific permits had been increasing, and some steps had been proposed to discourage this practice, primarily by involving the Scientific Committee in a review process.[56]

Turning to the work of the Committee of Three, a Second Interim Report, dated January 1963, and giving provisional conclusions - and strong warnings of what was to come - had been circulated to Member Governments. Further analyses had been made subsequently, the results of which, with the results of the Seattle meeting, were embodied in a Final Report which was also circulated to Commissioners and other scientists prior to the IWC's 1963 Meeting. Then, in June 1963, the Committee of Three met with the Scientific Committee, from which a Supplementary Report of the Committee of Three was prepared and circulated.

The Commission had before it at its 1963 Meeting all these substantial documents from the Committee of Three and also the Report of its Scientific Committee, which had met at the end of June. The scientific conclusions and recommendations were, in summary:

i. Both the blue and the humpback whales were in danger of extinction and both should be completely protected for many years.
ii. The current sustainable yield of the fin whale was about 5000 whales, *i.e.* 2500 BWU. Catches would need to be substantially below that number if the stock were to be permitted to increase towards a higher number which could eventually sustain a higher level of catch.
iii. If catches were to be unlimited in 1963/64 but zero thereafter, an "optimal" stock level to give a maximum sustainable catch of 20 000 whales would be attained in about 11 years; but if catching continued to exceed 5000 animals the stock would be reduced to near extinction in 10 to 20 years, depending on the catches taken.
iv. No estimates for the sustainable catches of sei or sperm whales could be given.

In spite of strong recommendations from the scientists the Commission was not prepared to abolish the BWU because that "was the only practical method of regulation that could be administered". In these circumstances there were proposals for a catch-limit in 1963/64 of 4000, 10 000 or 12 000 BWU. Eventually the number 10 000, as proposed by Japan and USSR, was adopted. It should be noted that many Commissioners, who in fact supported the lowest number, voted for 10 000 because they presumed that at least three of the whaling countries would lodge *objections* on economic grounds - this was almost certainly correct - and the limit would then revert to the default 15 000 BWU. The Commission decided to suspend humpback catching throughout the southern hemisphere.[57] As to the blue whale, Japan opposed a total ban in the southern hemisphere because it was particularly interested in the pygmy blues in lower latitudes. A compromise offered by UK and Japan resulted in the ban on blue whale being limited to south of 40°S except they could be caught between 40° and 55°S in the sector from 0° to 80°W. This was adopted.[58]

If the scientists' predictions were correct these decisions would ensure a continuing decline of the three large species, and probably of the sei whale also.[59]

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[56] This development presaged a future in which the Special Permit provision in Article VIII, which requires full utilization of the carcasses, would be abused on a large scale to supplement low or even zero catch-limits.

[57] Australia and New Zealand sought but failed to obtain agreement that this ban would apply only south of 40°S, which would have permitted their land-stations to continue operating. During this year the Commission was advised of unprecedented large catches of "scientific whales" by Australia, New Zealand, and also by Canada and the USA.

[58] Norway and the Netherlands again sought, but failed, to have the *Sanctuary* closed again. It was agreed that the opening and closing dates of the season would remain unchanged.

[59] It later turned out that these scientific analyses were still wildly over-optimistic.

Finally, the Commission requested the continuation for one more year of the work of the Scientific Committee with the Committee of Three and asked if FAO would take over this work thereafter.[60] Agreement for continuation of the scientific work did not come easily. Some countries "felt strongly that as the findings and recommendations of the Committee of Three had not been met by appropriate action at this meeting, there was no reason for the continuation of work the results of which were not used". Others, however, recalled the commitment made in 1960 to act positively on the findings. This commitment was reaffirmed on a show of hands. However, after a long discussion of financial implications (estimated at UK£3000, with provision even of that small sum being conditional on actions being taken on the advice to be given) a proposal by UK that the work should be continued in the same way for one more year, and that FAO should be asked to agree to undertake such work in future years, was put to the vote and carried, but only by 6 in favour and 3 against, with 4 abstentions.[61]

A month after the close of this 1963 meeting it was announced that the UK expedition had been sold, with its quota, to Japan. Thus Japan acquired 46% of the catch-limit but it nevertheless sent the same number of expeditions to the Antarctic for 1963/64 as in the previous season. It later transpired that the Government of Japan had intervened with the whaling industry to prevent any increase in the number of Japanese expeditions because this might upset the negotiation of quotas. Thus the total value of an expedition that was sold became reduced practically to the potential value of the quota transferred with it; the vessels and plant were commonly scrapped or put to other uses.

The 1963/64 catch, by 16 expeditions with 190 catchers, totalled only 8429 BWU, despite the season continuing in most cases almost to the IWC's closing date. The Norwegian and Dutch expeditions did not reach their quotas. Whaling resumed at two land-stations on South Georgia.

The IOS was not implemented in the 1963/64 season. Although the Agreement had come into force by 28 October 1963, this was too late: the factories were already on their way to the Antarctic and it was said that ways could not be found to get the international observers in place for the opening of the season, even by their being passengers on supply ships and catchers, since they were travelling separately.

I now move on to June 1964 when both the Scientific Committee and the Committee of Four met, the former in Sandefjord (Norway), the latter in Lowestoft (UK). In its Report to the Commission the latter reviewed submissions from Dutch and Japanese scientists that had been made available during the 1963 meetings. The Dutch scientist had raised some technical questions about the reliability of some of the data used by the Committee of Three/Four that had been answered in the Supplementary Report last year. The Japanese papers gave estimates of current sustainable yield of fin whales much higher than the Committee of Three's estimates. The Committee of Four did not accept these, but nevertheless pointed out that the Japanese scientists' numbers were lower than the agreed BWU catch-limit so the difference did not call for an immediate change in policy decisions.

The 1964 meeting of the IWC was convened in Sandefjord in June 1964.[62] Four Members were absent: Brazil, Mexico, Panama, and Sweden. Observers were from Chile, Italy and Portugal, for the first time the *Comissión Permanente del Pacífico Sur* (CPPS), two members of the Committee of Four, and the International Society for the Protection of Animals (ISPA). Three proposals for future catch-limits were on the table:

i. 4000 BWU in 1964/65, 3000 in 1965/66, 2000 in 1966/67 (USA/Australia)
ii. 6000 in 1964/65 (Norway/Iceland) and
iii. 8500 in 1964/65 (Japan/USSR).

The two members of the Committee of Four were invited to comment on the consequences of adopting any one of these. The reply was in essence: that it was not feasible to predict the consequences when the species composition of the catch is not specified, when it was not known whether proposals concerning humpback and blue whale protection would be accepted, and when the amount of whaling effort directed by some expeditions to hunting baleen whales would in part depend on the amount of hunting for sperm whales, especially by Soviet vessels.

The Norway/Iceland proposal was put to the vote first; and defeated.[63] The Japan/USSR proposal was also defeated. The USA/Australia proposal did not obtain the requisite three-fourths majority, being opposed by the four pelagic-whaling countries. A modification was then put forward by the Netherlands and Norway, for "not

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[60] By now the Committee of Three had transmuted into a Committee of Four by the addition of J.A. Gulland, a British scientist who had joined the FAO staff. Subsequently, FAO agreed to collaborate in future regular analyses and assessments of whale stocks only "...on the understanding that such work is likely to be fruitful in the sense that the Commission's actions on catch restrictions would be in accordance with the scientific findings..."

[61] This was adopted by a simple majority, since it did not involve an amendment to the *Schedule*.

[62] The scientific meetings were held aboard a whaling factory.

[63] 1 in favour, 12 against, 1 abstention. It seems that either Iceland or Norway did not support its own proposal!

more than 8000 BWUs in any one season provided that no lower catch-limit is established". This, too, was defeated.[64]

The IWC's Annual Report for the fiscal year 1964/65 says: "Countries engaged in pelagic whaling could not see their way to accept such a drastic reduction of the catch-limit as the scientific evidence indicated, while the non-whaling countries were unable to vote for any limit substantially higher than warranted by this evidence". So, there was no limit for the 1964/65 season, there being no default value on which to fall back on as in some previous years. Some of the explanations of votes are worth recalling. The USA proposal "was compatible with the scientific advice which the Commission at its meeting in 1960 had undertaken to implement by July 1964". Those who opposed it based their case on Article V of the ICRW which states that regulations with respect to the conservation and utilization of whale resources "shall take into account the interests of consumers of whale products and the whaling industry", and the conditions of some of the opponents' whaling industries could not support the catch restrictions recommended. Later in the meeting the Commissioners from the four pelagic-whaling countries announced that they had agreed on a voluntary catch-limit of 8000 BWU for the 1964/65 season, provided their Governments concurred.

11. PHASE TWO OF THE 1960s CRISIS

Towards the end of the 1963 (sixteenth) IWC meeting the observer for FAO had given Commissioners the FAO Director-General's response to the request made the previous year for continued FAO assistance after the completion of the work of the Committee of Four. This was that "collaboration could not be expected if the Commission permitted the results of the scientific studies to be used merely for the organization of the more efficient destruction of the resource for which it was responsible."

In October 1964 the Dutch factory was sold to Japan and the Netherlands' quota transferred with it. This gave Japan 52% of the proposed voluntary catch-limit, leaving 28% for Norway. Japan and Norway accepted the voluntary overall limit, but the USSR held that the change of circumstances called for revision of the Arrangements, and that such revision was also a prerequisite for its acceptance of the IOS. Norway, UK and Netherlands expressed willingness to meet to review the 1962 Arrangements but Japan would only do so if the USSR first accepted both the IOS and the voluntary catch-limit agreed in Sandefjord. This deadlock was not resolved before the opening of the 1964/65 whaling-season. Nevertheless, Japan reaffirmed its intention to abide by the voluntary quota anyway. In 1964/65 15 expeditions operated with 172 catchers; they took 8429 BWU, while the sperm whale catch decreased substantially. All Norwegian expeditions worked through the legal season to 7 April, but the Japanese expeditions ceased catching sooner, as did the Soviet expeditions. The results were spectacularly different between national fleets: Japan and USSR each took more than 99% of what would have been due to them under the voluntary limit and the 1962 Arrangements, but Norway only succeeded in taking 57% of its share.

The majority of IWC Members agreed on the need to try again to reach agreement and a Special Meeting was convened in London in May 1965. For this purpose the Committee of Four was temporarily reconstituted, and a report on the state of the baleen stocks was provided by a Whales Stock Assessment Working Group, constituted by FAO. [65] The Special Meeting set up a Committee of Six comprised of the Commissioners of the three remaining pelagic-whaling countries, and of Canada and France, and chaired by the USA. It had several proposals before it.

i. First Soviet proposal: 4000 BWU for 1965/66; no increase over this for two consecutive seasons; an immediate cut in the number of expeditions by at least 50%. (During discussions with the scientists it was pointed out that a reduction in the number of expeditions would have no effect if not accompanied by a limitation in the number of catchers deployed, especially as with reduced quotas there would be surplus operating capacity on board the factories.).
ii. Norwegian: 4000, 3000 and 2000 BWU for 1965/66, 1966/67 and 1967/68 respectively, provided quota agreements were made for 1966/67 and 1967/68.
iii. Japanese: 4500, 4000 and 3500 BWU for the three consecutive seasons, provided that both the National Quota Scheme and the IOS were in operation.
iv. United States: 3000, 2000 and 2000 BWU for the three consecutive seasons.
v. Revised Soviet proposal: 4000 BWU in 1965/66. In explanation the USSR insisted that this would be a transitional limit on the basis of incomplete scientific information; the transition would "assist the industries to adjust to the eventual reductions required to begin rebuilding the whale herds." An additional commitment would be to consider favourably further reductions for 1966/67 and 1967/68 in order to bring

[64] 10 in favour, 3 against, 1 abstention. Again a strange anomaly: either Norway or Netherlands did not vote for its own proposal.
[65] Consisting at the time of Holt and Gulland, and a Dutch FAO staff member, L. Boerema.

the latter down to less than the combined sustainable yields of fin and sei whales as determined on the basis of more precise scientific evidence".[66]

It soon became clear that none of these proposals would attract the necessary votes for adoption in the full Commission meeting. There it emerged that Japan would accept the revised Soviet proposal if it were amended to 4500 BWU. Norway and Argentina proposed this amendment, which was adopted unanimously. It was announced that the five Parties to the 1962 Arrangements, and to the IOS, would meet in London in June to discuss both these matters.

The Scientific Committee met in June 1965 in unusual circumstances: its distinguished Chairman, Professor J. Ruud (Norway) had resigned as he said he was not prepared to preside over a committee whose advice was continually ignored by the Commission. No other member was ready to take the chair, and eventually Dr Chapman, ex-Chairman of the Committee of Three/Four, was appointed as Rapporteur to convey the Committee's proceedings to the Commission.

The Scientific Committee was at this meeting ready to give serious attention to sperm whales, as it had been instructed to do. After considering much new data, and beginning to apply stock assessment techniques similar to those applied to the fin and blue whales, this Committee expressed its concern about what was happening to the sperm whale stocks, especially in the Indian Ocean and Atlantic sectors of the Southern Ocean but also in lower latitudes in the eastern South Pacific. The problem was quite different from that faced in the earlier studies. The sperm whale is a polygamous species, the two sexes differ greatly in size and are commonly distinguishable in the sea, and have, in feeding, rather different geographical distributions. As we have seen, the pelagic fleets were not prohibited from taking them in the southern hemisphere in latitudes north of 40°S, and there were numerous land-stations catching them in temperate and tropical waters as well as in the Antarctic.

On this occasion, the Scientific Committee recommended that "there should be no further increase in sperm whale catching effort and that the Commission urge each country to limit its catches by broad oceanic areas in 1965/66 and 1966, to the 1964 level pending further assessments."

It also asked the Commission to appeal to Chile and Peru to adhere to the ICRW, to observe the Commission's minimum size-limits and to supply statistical data to the BIWS. In this connection the Committee provided evidence from the available statistics, that the minimum size-limits fixed by the Commission were not being observed by its Members. This was not really new information, but was the first time it was brought formally to the attention of the Commissioners. That the reported measurements of lengths of baleen whales caught were routinely faked by several, if not all, countries, despite the presence of national inspectors on factories, had long been known; it could be seen from anomalies in the size distributions given in the BIWS data. The phenomenon of "stretched whales" was well known to the scientists, and presumably to the companies, too. It was natural, therefore, to assume that if cheating was occurring regarding size-measurements it was probably also going on with respect to other regulations, including catch-numbers and species.[67] The Scientific Committee recommended that the IOS should be made applicable to all pelagic operations.

Naturally, the Scientific Committee was unhappy about the result of the Special Commission Meeting, but did recognise that if implemented it would represent the first major cut in whaling effort and that meeting's recommendation that governments should support further reductions should be turned into a binding commitment. If it was not, then the catch-limit for 1965/66 should be set at about 2500 BWU, and the *Sanctuary* should be closed again.

The Scientific Committee also pointed out that if further declines in stocks were to be avoided then the catch-limit should include land-station catches, which had not previously been regulated.[68] And, although separate species limits were advocated, they would have no point if the total permitted catches remained above sustainable yields.

Lastly, the Scientific Committee hoped that countries which had objected to the more stringent protection of blue whales adopted by the Commission would withdraw their *objections* and also that the Commission

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66 The USA went along generally with the revised Soviet proposal but wanted editorial changes.

67 Although there were suspicions, the true scale of cheating, at least by one country, was not revealed, documented and officially acknowledged until much later, in the 1990s. As we shall see this evidently has important consequences for our understanding of the quota and IOS negotiations during the 1960s - early 1970s.

68 In this connection reference was made to submissions to by several non-governmental organisations, namely World Wildlife Fund (WWF, now World Wide Fund for Nature), the Fauna Preservation Society (FPS, now Fauna and Flora International) and the International Union for the Conservation of Nature and Natural Resources (IUCN, now the World Conservation Union).

would close the entire southern hemisphere to the catching of blue whales.[69] A final recommendation by the Scientific Committee was that the Commission should consider proposals put forward by three members of the Committee of Four for study of the economic aspects of regulation of whaling in addition to the ongoing work on the biological aspects.

12. CRISIS PASSED - OR DEEPENING?

Attendance at the Seventeenth IWC Meeting (London, June-July 1965) was higher than on any previous occasion. Not only were virtually all Parties represented,[70] mostly by larger delegations, but in addition to the usual observers from Chile, Peru, Portugal and Italy, FAO and ICES, there were observers from CPPS, WWF, FPS, ISPA and the Universities Federation for Animal Welfare (UFAW) - evidence of the growing interest and, eventually, influence of the non-governmental movements for conservation of living resources, for the environment and for animal welfare.

The Commission agreed with the views expressed by Australia and the USSR that the suggestion for economic studies should be considered at the 1966 Meeting. It adopted, without dissent, a proposal by Canada and USA that the blue whale should be fully protected throughout the southern hemisphere for five years beginning 1966 (*i.e.* from the 1965/66 season). This resulted in the countries that had previously maintained *objections* to blue whale protection withdrawing those. A corresponding protection for humpback whales was suggested by Australia and USSR and adopted unanimously. So, henceforth, it appeared, discussion about BWU catch-limits would be effectively about the fin and sei whale only.

As to the sperm whale, the Commission agreed that reduction in BWU limits in the Southern Ocean could lead to more pressure by pelagic expeditions on sperm whales in warmer waters, where it was also known that size-limit regulations were being broken on a large scale. To ameliorate this New Zealand proposed a *Schedule* amendment with the effect of prohibiting pelagic-whalingfor sperm whales between 40°N and 40°S. This was adopted by the requisite three-fourths majority, but after the meeting Japan, Norway and USSR all objected.

With respect to the operations of land-stations some progress was apparently made - though without any binding decisions - it being acknowledged that they were becoming more important "in light of the recent situation of whale stocks in the Antarctic." Other agreements were:

i. A special group of representatives of countries concerned with land-stations situated south of 40°S (*i.e.* including any such as UK with territories from which bases were being operated or had been used and could in future be used) as well as in other areas of the Southern Hemisphere, was set up to "elaborate suggestions to bring into order the catching of whales at such land-stations". It was told to report to the next Meeting.
ii. The BWU catch-limit for pelagic-whaling should be set taking into consideration the land-station catches in the Southern Hemisphere.
iii. Governments concerned "...should take domestic measures on a voluntary basis so that the level of catch from land stations" in the Southern hemisphere "...does not exceed that in the 1964/65 Antarctic season or the average (calculated in BWUs) of the catches over the three seasons 1963, 1964 and 1965, outside the Antarctic as the case may be".
iv. Countries discussing the problems of national quotas should, for the 1966/67 and 1967/68 seasons take into consideration the catches of Antarctic whales from land-stations in the Southern Hemisphere.

All Commissioners assented to these provisions, but the USSR reserved its position on paragraph (iv), contending that this should also apply to the 1965/66 season. The countries concerned had met, both before and during the Seventeenth Meeting, but did not conclude their discussions on this subject.

The Commissioners for Norway and Japan made a formal proposal to the effect that the IOS should be implemented for the 1965/66 season because they feared, considering that the original agreement would expire after that season, the scheme might then never come into existence. All Commissioners voted in favour of this, but the USSR said it had only done so to ensure it had the right to discuss the problems of quota allocation. The USSR also stated that "while they favoured implementing the IOS, in the coming season their assurance must be qualified by the reserve that both the (catch limit) and the IOS should be extended to both factory ships and land

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[69] A new feature of the scientists' report this year was that it advocated counting whales by visual sightings, systematically conducted, this especially as with the protection of species such as humpback and blue going ahead there would otherwise be no way of monitoring their recovery, if any. Such surveys are now almost the sole acceptable means of counting whales but the idea was a novelty at the time. Some sightings were reported from whaling vessels (especially the "scout boats" attached to Japanese expeditions) but the reliability of those for assessment purposes was always doubtful.

[70] Except Brazil and Panama, both of which gave notice after the meeting of their intention to withdraw from the IWC.

stations catching Antarctic whales." A further Soviet reservation was that "it would be necessary to solve on a just basis the problem of re-allocation of national quotas between the countries concerned".

Finally, as to the BWU catch-limit, it was agreed by consensus that the limit would be set at 4500 for 1965/66, with the additional commitment that "There shall be reductions for the years 1966/67 and 1967/68 that will assure that the total catch for 1967/68 will be less than the combined sustainable yields of the fin and sei stocks as determined on the basis of more precise scientific evidence." There were no subsequent *objections* to this decision.

Only ten expeditions operated in 1966/67 (five from Japan, two from Norway, three from USSR), with a total of 128 catchers (hence more catchers per factory). The total pelagic catch was 4089 BWU: 2340 (57%) by Japan, 829 (20%) by Norway and 920 (21%) by the USSR. No international observers were carried. The land-station at Leith Harbour on South Georgia operated and caught the equivalent of 110 BWU.

An increased number of sperm whales (4538 as compared with 4211 the previous season) was caught by Antarctic pelagic expeditions south of 40°S.[71] Neither of the Norwegian factories reached its quota, so they continued to work until 7 April. The Japanese expeditions again finished early; one Soviet expedition finished 25 March, the other continued to 7 April.

While the 1965/66 whaling season was in full swing a Joint IWC/FAO Working Party on Whale Stock assessment met in Seattle (26 January - 2 February).[72] New estimates of the numbers of fin and sei whales were agreed, and a first cut was made at sorting out scientific aspects of the land-station question. The recent catches from southern hemisphere stations amounted to about 30% of the estimate of the combined sustainable yields of blue, fin and sei whales. It was concluded that if these stayed at that level in future, the pelagic catch, to be sustainable, would have to be brought down to 1650 BWU. If, however, the land-station catch were to be reduced in the same proportion as the necessary reduction in the pelagic catch as compared with that in 1964/65, the limits would, for sustainability, need to become less than 2000 BWU for pelagic catches, and less than 300 BWU for land-stations.

In June 1966 there were two simultaneous meetings in London: the Scientific Committee, on the basis of analyses provided by the FAO Assessment Group, estimated the current sustainable yields of fin whales as 4500 and sei whales, with more uncertainty, in the range 4500 to 7500, giving a BWU estimate of 3000-3500. The Scientific Committee pressed the Commission at least to set the catch-limit sufficiently below 3000 so that the fin whales might begin to recover. It pointed out that the evidence showed that eventually the fin whale would be by far the most productive species both in terms of numbers and economic value. The Committee in fact asked the Commission to consider, as suggested by FAO, the complete protection of the fin whale "immediately and for some time in the future" to allow recovery as rapidly as possible. The Committee offered a detailed analysis of the possible consequences of such an action. The Committee also recommended complete protection of the blue whale throughout the Southern Hemisphere.

Whales towed-back for processing at a land-station
(Photo-credit: Greenpeace/Culley)

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[71] The catches of sperm whales by those expeditions *north* of 40°S (not necessarily all in the Southern Hemisphere, however) changed considerably from year to year; they numbered, for example, 4316 in the calendar year 1964 but only 2219 in 1965. Such catches, within a single Antarctic whaling season, appeared in statistics both for the preceding calendar year and the following one. The question of how to deal with this matter was only solved much later, after the phase of Southern Hemisphere pelagic-whaling here being discussed.

[72] Consisting of the original members of the Committee of Four plus Boerema, and chaired by Chapman, now Chairman of the Scientific Committee.

The other meeting was of a 'Special Group Concerned With the Land Stations in the Southern Hemisphere'. It consisted of representatives of the Member States concerned, and had been given the tasks of "elaborating suggestions to bring into order the catching of whales at land stations and to study the possible application of provisions comparable to those of the IOS to these stations." Participants came from Argentina, Australia, New Zealand, South Africa and UK, with observers from Japan, Norway and USA. While the meeting agreed that the aim at bringing the catch of Antarctic baleen whales below the sustainable yield could not be achieved without taking into account land-station catches, Article V.2(c) of the ICRW would not permit the Commission to fix a specific quota for a group of land-stations. This left two possibilities:

i. to fix a combined catch-limit for pelagic expeditions and land-stations, leaving it to countries concerned to agree on allocations amongst themselves or
ii. to seek the voluntary agreement of countries operating from land-stations to a restriction on their catch, and to take this into account when deciding on the pelagic catch-limit.

As regards the first alternative it was recognised that it would make it even more difficult for the pelagic-whaling countries to come to an agreement on allocations among them. As to the second alternative, only the UK and South Africa were, among Commission members at that time taking rorquals in the Southern Hemisphere: one from a sub-Antarctic station located south of 40°S, the other from a temperate water station located north of 40°S. Both had complied with the voluntary agreement recommended at the Seventeenth Meeting and it was accepted that this should, and would, continue. It was, however, subject to changes that the scientists might recommend. At this meeting South Africa announced it was ready to accept the recommendations being made to protect the blue whale throughout the hemisphere.

However, as to catches by non-Members, those by Chile and Peru were now very large. Urgent efforts were pressed - perhaps through the CPPS - to persuade them to cooperate in limiting their catches.

As to international observation, since the IOS for pelagic operations had never operated and had now expired, this Special Group could not see its way to making concrete proposals. If an all-embracing scheme were in future to be adopted, they said, then an equitable cost-sharing deal must be part of it.[73]

At the Eighteenth IWC Meeting (London, 27 June to 1 July, 1966) the same observers were present as in 1965, with the exception of Italy. The resignations of Brazil and Panama were not yet in effect but neither country was represented. The matter of the BWU catch-limit was less controversial than in previous years; it seemed that the whaling countries at last understood that the end was nigh. A *pelagic* limit of 3500 BWU for 196/67 was adopted unanimously and also that the *total* catch in 1967/68 should be less than the estimated sustainable yields of fin and sei whales. There was still no agreement among the three pelagic-whaling nations on quotas; discussions were scheduled to continue in Tokyo. No new actions were taken concerning the sperm whale, but the proposal by the Special Group on Land Stations regarding the voluntary limitation of land-station catches was accepted.[74]

The Chairman of the Commission was instructed to set up a working group to draw up details of a new international observer scheme to cover all (commercial) whaling operations (*i.e.* in both hemispheres), both pelagic and from land-stations. In addition Australia proposed, seconded by Norway and Japan, that the IOS should be implemented even though the original agreement had expired. This was adopted, though opposed by the USSR.

13. END-GAME

A meeting in Tokyo (August 1966) agreed on the following national allocations: Japan - 47%; Norway - 23%; USSR - 30%.

Japan withdrew one of its five expeditions, so only nine in all participated in the 1966/67 pelagic-whaling season, with a total of 128 catchers, signifying again an increase in the average number of catchers per factory, Japan not having reduced its number of catchers proportionately. The pelagic catch was reported as 3511 BWU,

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[73] While all this discussion was going on about the Southern Hemisphere four governments - three of them involved also in southern hemisphere matters, the fourth was Canada - were getting deeper into arguments about the expansion of whaling in the North Pacific, especially pelagic-whaling. They were being helped by a North Pacific Working Group of scientists recently appointed by the Scientific Committee, and comprised largely of individuals already engaged in the southern hemisphere studies, including two members of the ex-Committee of Four. FAO and other observer bodies did not follow the North Pacific discussions, which were restricted to the four coastal states of the region. But this activity certainly influenced those countries with an eye on the markets for meat and oil.

[74] In addition the Commission invited FAO to make a study of the economic effects of whaling regulations and bring a document or a proposal to the 1967 Meeting. It was decided to keep the *Sanctuary* open to pelagic-whaling and to leave the season's dates unchanged. The ban on catching blue whales throughout the southern hemisphere was adopted.

shared exactly in accordance with the Tokyo agreement. There was no whaling from South Georgia. All pelagic operations ceased before the 7 April official closure-date.

When the IWC gathered for its Nineteenth Meeting (London, June 1967) the participation was as in 1966; Brazil's withdrawal was now in effect. The Commission was faced with a bland report from its Scientific Committee, which largely handed on the results of an inter-sessional study by the FAO Assessment Group. This led to marginally higher estimates of current sustainable yields of both fin and sei whales, and a combined yield in the range 3100 to 3600 BWU. The FAO estimates for sei whales had, however, come under sustained attack by Japanese scientists who had come up with their own estimates of sustainable yield in the range 1020 to 1250 BWU, in contrast with FAO's 730 to 1170 BWU. The Committee noted that both estimates indicated that the stock in the south-western Atlantic sector (Area II in the Commission's statistical terminology) appeared to be close to the assumed maximum sustainable yield (MSY) level, and suggested that the Commission should consider closing that Area to the catching of sei whales.[75]

Sei stocks in other sectors, however, appeared to be above the (hypothetical) MSY level - which was at that time assumed to be about 50% of the original population number - and the stocks as a whole would also be above that critical level. Now the Japanese scientists introduced, for the first time, another new concept: that if a stock is thought to be above MSY level then the catch-limit should be set to MSY even though that would lead to a decrease in the stock. Thus they subtly modified, in their proposed recommendations to the Commission, the effective definition of sustainability. The FAO and Japanese *assessments* did not differ remarkably, but the catch-limit *advice* would of course be distinctly different. The debate around this issue led to a tacit decision to present neither the closure of Area II nor the Japanese catch-limit approach to the Commissioners for action.

The Scientific Committee asked FAO to convene a special workshop on sperm whale assessment before May 1968.

This year, 1967, the Commission honoured its commitment to bring the catch-limit down further in the light of scientific analyses, but not without argument over what were by now quite small differences. Argentina/Mexico proposed 3100 BWU as had been agreed by majority vote in the Technical Committee. UK/USA proposed an amendment of this to 3200. Japan/USSR proposed a further amendment to 3300. This last was rejected, though naturally favoured by the three pelagic-whaling countries. The UK/USA proposal was adopted (only Japan and USSR opposed). The UK said there would be no whaling from South Georgia in 1967/68. Peru had informed the Commission that it had ceased catching blue and humpback whales; Chile had reduced its catches; South Africa would retain its voluntary limit as in 1966 and 1967.[76]

There was no reference in 1967 to quota negotiations. The Chairman's working group on observer schemes (which had met 19-23 June, with Australia, UK, South Africa, Japan, Norway and USSR participating) had agreed that there should be a number of distinct regional schemes, but as far as the southern hemisphere was concerned there was no general agreement on the definition of "region". Five countries thought the pelagic operations and the land-station operations should be treated as two separate regions; the USSR thought that within any area pelagic and land-station operations should be included in one scheme. When this came to the Commission a procedural question arose - as to whether it would be in order to amend the *Schedule* without the proposed amendments being included as a specific item on the provisional Agenda. The matter was adjourned until the 1968 meeting, pending legal advice. It was, however, clear that, if the Commission had gone ahead with the majority proposal, and even if it had been adopted (which it most probably would have been), the USSR would surely have objected.

Again, only eight expeditions took part in the 1967/68 Antarctic whaling-season, the Norwegian effort having been reduced to one expedition. In all 97 catchers were deployed (24 fewer than in the previous year), so that the number of catchers per expedition was now diminishing. The three pelagic-whaling countries had agreed, at meetings in Oslo under a British Chairman, on the following allocations: 47% for Japan, 23% Norway, 30% USSR.

The catch was only 2804 BWUs. Of the total, Japan took 53%, Norway 10%, USSR 37%. Evidently the countries were not adjusting the scale of their whaling capacities to the quotas. The pelagic catch of sperm whales south of 40°S was 2568 (compared with 4960 in 1966/67). Pelagic expeditions in 1967 took 1288 sperm whales in the southern hemisphere north of 40°S. Once again the Norwegian operations continued through to 7 April, while the Japanese and Soviet ceased early.

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75 This is the first occasion on which the scientists suggested closure for a reason other than because a species was thought to be endangered, an approach that later was developed in the negotiation of a New Management Procedure (NMP) in 1974.

76 The *Sanctuary* was voted to remain open to whaling. Blue whales were protected in the southern hemisphere. FAO was given the go-ahead to write again to Commissioners for economic information because - unsurprisingly - little had been forthcoming during the previous year; economics was placed on the agenda (without much enthusiasm, it must be said) for 1968.

The proposed workshop on sperm whale assessment (IWC/FAO) was held in Rome in March 1969. Based on its results, the Scientific Committee when it met in Tokyo in June 1969, agreed to advise the Commission "that further expansion of sperm whale catching in the southern hemisphere, not based on scientific evidence, is undesirable".

The IWC's 1969 twentieth meeting convened in Tokyo in June 1969. There was no change in participation from previous years. It did not act on the scientists' advice concerning sperm whales.[77] There was again no reference to quota discussions. As to the IOS and related schemes, amendments were agreed to the *Schedule* to adjust its paragraph dealing with inspection so as to extend the powers of the Commission to cover land-stations as well as pelagic operations.

The Scientific Committee had reviewed its fin whale assessments. Although uncertainties remained, it had agreed that the best estimate of the sustainable yield of fin whales was about 5000 animals.

The sei whale was another matter. Once again one assessment was available from the FAO group, and another, with very different findings, from Japanese scientists. The FAO estimate of current sustainable yield was 3970 animals, excluding Area I (SE Pacific, part of the old Sanctuary sector); the Japanese estimate was 5620 animals for the entire Antarctic. The Scientific Committee agreed that stocks in Areas II, III, and IV (Atlantic and Indian Ocean sectors) had already been reduced to below their MSY levels, but might still be above those levels in Areas V and VI SW Pacific). It was accepted that if catches in future seasons were to be the same as in 1967/68, when they were 5000 animals more than the estimated sustainable yield, then all stocks would in a few years be reduced below the MSY level.

In the circumstances the Commission felt it could do no other than retain the same combined catch-limit for 1968/69, *i.e.* 3200 BWU, and it was so agreed.[78] In July representatives of Japan, Norway and USSR, again under the Chairmanship of the UK, negotiated a quota arrangement which was identical with that agreed in 1967. In the event Norway did not take up its allocation. Also, Japan withdrew one of its 4 expeditions, so only 6 expeditions in all took part in the 1968/69 season, with a total of 85 catchers. The total pelagic catch was 2469 BWU, 60% being taken by Japan, 40% by USSR. There were no land-station operations. Both the Japanese and the Soviet expeditions continued whaling until the official close of the season on 7 April.

The pelagic catch of sperm whales south of 40°S was 2682 (up from 1967/68), while a catch was reported of 1288 sperm whales by pelagic expeditions north of 40°S. in 1968. From this season, the fact that only two countries were left in the southern hemisphere pelagic-whaling, changed the nature of the arguments about quotas and international observers.[79]

The 1969 meeting of the Commission (London, June) had the usual attendance; Panama and Iceland were not represented. FAO announced its withdrawal from its commitment to undertake Antarctic stock assessments for the Commission. The Scientific Committee had agreed that its best estimate of the sustainable yield of sei whales was 830 BWU, but had been unable to agree on a current sustainable yield for fin whales, estimates of which now ranged from 1650 or fewer (agreed by all Committee members except Japanese scientists) and 2450 to 2800 BWU, by Japanese scientists. In the circumstances the Commission agree to reduce the catch-limit to 2700 BWU for the 1969/70 season, pending a reassessment to be made by the Scientific Committee at a Special Meeting scheduled for early 1970. The Commission did not act on the scientists' renewed plea for setting catch-limits by species. The *Sanctuary* was kept open to pelagic baleen whaling and the seasonal dates were unchanged.

In the absence of agreement on the status of southern hemisphere sperm whale stocks it was agreed that a Special Meeting on these should also be convened inter-sessionally. There was no progress with the IOS, and the Commission put off for another year acting on the scientists' repeated request that the Bryde's whale be treated

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[77] FAO reported it was unable to proceed with any economic studies as it had received little information from whaling countries.

[78] Apparently by consensus. The IWC records are unclear about this and I am not now in possession of my own notes.

[79] Before recounting the closing phase of fin and sei whaling in the southern hemisphere it may be useful to indicate events that were not discussed or recorded in the context of the IWC. One of these was a gradual change in processing and marketing arrangements: Japan had always - at least since the end of World War II - given prior attention to meat production. In Europe, on the other hand, there was a very limited market for whale meat. The three remaining pelagic-whaling countries were greatly affected by wild fluctuations in the price of oil, but with a general trend downward, despite the steady reduction in production. This was because whale oil was competing with other sources of edible oils and fats, especially from seeds and fish. Also, the price in any particular year could be wobbled by external events, such as the Cuba missile crisis in the midst of the Cold War, when the price rose. Thus, these countries had an incentive to add value to their catches by making new, and more expensive products than meal from flesh and bone. One such was meat extract for human consumption. In the later years Norway also turned to frozen meat production for export to Japan, the meat being transferred at sea onto Japanese refrigerated-vessels. That was why the question of whether a refrigerated-transport was a factory-ship in IWC terms, required to carry inspectors (and international observers if the IOS should ever come into effect), was so important.

as a distinct species and the *Schedule* be amended accordingly. Economic studies were permanently dropped from the agenda.

Norway, Japan and the USSR had once more agreed among themselves on national allocations: 55%, 9% and 36% respectively. However, again Norway did not take up its quota. Six expeditions participated in the 1969/70 season (3 Japanese, 3 Soviet), with a total of 84 catchers, *i.e.* the same as in the 1968/69 season. But for the first time a Norwegian factory-catcher operated in the Antarctic, its catch was only 6 BWU. The catch by Japan and USSR totalled 2471 BWU, with 60% taken by Japan and 40% by USSR. The pelagic expeditions caught 3039 sperm whales south of 40°S, and 1862 in the southern hemisphere north of 40°S.

In 1970 the Commission was again faced with disagreements between the Japanese scientists and the others on the sustainable yield of the fin whale. The Special Meeting, held in Hawaii in March that year had resulted in lower estimates all round: 1760-2175, and 1350 BWU respectively. There was a tentative agreement on 830 BWU, as before, for the sei whale. The Commission decided to keep the overall catch-limit unchanged at 2700 BWU.

It was agreed that the Norwegian factory-catcher was indeed a factory-ship in terms of the ICRW.

The Scientific Committee had again been unable to estimate the sustainable yield of sperm whales in the southern hemisphere following the Special Meeting on sperm whales held in Hawaii in March.

At this 1970 IWC meeting an important agreement, from the operational and economic point of view, was reached in principle: to remove the prohibition of expeditions that had participated in Antarctic whaling, from operating in the Pacific sector of the northern hemisphere in the same calendar year

The number of whales killed under special permits for scientific purposes continued to escalate, particularly by Canada (40 fin whales and 30 humpbacks) and Norway (20 fin whales), South Africa (15 sperm whales and 12 female minke whales with their calves), and USSR (10 Bryde's, plus some pygmy blues and pygmy right whales).

Country participation in the 1970 Meeting was diminished: Denmark, Mexico, and the Netherlands being absent. One new NGO participating was the International Association of Game, Fish and Conservation Commissioners.

Even though Norway was barely retaining its foothold in Antarctic whaling, the trilateral quota negotiations were resumed, with agreement on 55% for Japan, 9% for Norway and 36% for the USSR. However, in the event, Norway once more did not send an expedition, nor did the factory-catcher operate again. The total catch was 2470 BWU, with 60% by Japan, 40% by the USSR. The same number of expeditions (6) took part as in the previous year, but with two more catchers added to the Japanese fleet and 2745 sperm whales were caught south, and 2499 north, of 40°S.

At the meeting of the Scientific Committee, which preceded the 1971 (twenty-third) IWC meeting in Washington DC, there was still no agreement on the sustainable yield of the fin whale stocks. All scientists except those from Japan and USSR agreed on a best estimate of 1100 BWU, while Japanese scientists estimated it to be in the range 1950-2300 BWU. Soviet scientists thought the Committee should offer advice to the Commission somewhere between these two ranges. Japanese scientists also, for the first time, insisted that the fin whale had been increasing since 1969/70. The estimate for sei whales remained unchanged, and still highly uncertain.

In these circumstances the Commission reduced the catch-limit to 2300 BWU. It also decided at last - at least in principle - to set catch-limits by species as from the following season, but procedural difficulties again impeded change. The decision of principle was based upon the success in making such an arrangement for whaling in the North Pacific.

At the 1971 IWC meeting the very important decision - to remove the long-standing prohibition of the use elsewhere of expeditions which had operated in the Antarctic - was confirmed. This immediately altered the economic parameters of both Antarctic and North Pacific pelagic-whaling.[80]

Agreements on the placing of international observers on both pelagic and land-station operations were reached at long last but they were not implemented for the 1971/72 season; it was expected that the agreement for the Antarctic would be signed in June 1972. An agreement for two of the land-stations in the southern hemisphere, outside the Antarctic (in Australia and South Africa) was already in force.

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[80] Pelagic-whaling had begun its expansion in the North Pacific (including the Bering Sea and Kamtchatka) in 1954. It involved the catching of all the "BWU" species, plus sperm whales.

National quotas were agreed at 59% Japan, 2% Norway and 39% USSR. An additional expedition was deployed by Japan, making a total of seven, with 87 catchers. The Norwegian factory-catcher operated again for a few days, taking only minke and sei whales.

This season saw dramatic changes in the pattern of Southern Hemisphere pelagic-whaling. The new Japanese expedition took only minke whales - more than 3000. The Japanese and Soviet expeditions caught their BWU quotas, but the total limit of 2300 BWU was not reached because Norway took only one 1% of its quota. As to sperm whales, 3366 were taken south of 40°S, almost all by the Soviet expeditions; 2750 were taken north of 40°S on the voyages to the Antarctic (including 860 by Japan and 30 by Norway) and 1219 by Soviet fleets on their way home.

When the Scientific Committee met in London in June 1972 it had confused signals from different groups of scientists about the states of the fin, sei and also minke stocks. Theoretical calculations suggested that the fin whales should be increasing, but observed indices (from the frequency of sightings and from catch-per-unit-effort) indicated continuing decline, both in the Antarctic as a whole, and near the South African land-station at Durban. Thus no change was advised to the previous estimate of sustainable yield at 3200 animals. Similar declines were observed in apparent sei whale abundance, and again, for want of better data, the sustainable yield estimate of 5000 was retained.

The scientists concluded that the previous "provisional" estimate of minke whales (ranging from 150 000 to 200 000) was too low, but no higher number was agreed, so the previous figure of 5000 animals for the current sustainable yield was retained.

At this Scientific Committee meeting a few novelties were on the table. The Committee had been invited to comment on proposals being made for a moratorium on commercial whaling. It opposed such a move, emphasising instead the need for more research, and proposing the institution of a decade of intensified research. What it called (following Japanese terminology) "a blanket moratorium" would be, it said, like the BWU, an "attempt to regulate several stocks as one group whereas prudent management requires regulation of the stocks individually." The Committee also feared that a pause in catching "would make it impossible to obtain certain kinds of information which are essential for continuing assessments."

A second novelty was the presentation of a paper by two of the FAO staff (Gulland and Boerema) who had been responsible for the FAO contribution to the IWC's work after the Committee of Three/Four had been disbanded. This discussed "Scientific Advice on Catch levels", taking into account recent developments in other fisheries management bodies such as the International Commission for the Northwest Atlantic Fisheries (ICNAF, now NAFO).[81] After consideration of the properties of "sustainable yield" in relation to "maximum sustainable yield" the authors examined other quantities emerging from studies of population dynamics. One of these was "replacement yield", defined as "that catch for a given year which, if taken, would leave the abundance of the exploitable part of the population at the end of the year the same as at its beginning." They pointed out that if a stock had been changing, lag effects in the age-distribution could lead to further stock declines even if the estimated sustainable yield was not exceeded (and even, it should be said, if that estimate was correct). These authors also defined the "maintainable yield" as "the largest catch that can be maintained from the population, at whatever level of stock size, over an indefinite period." They concluded by advocating the use of replacement yield in the management of whaling "as the best guide for decisions in situations in which stock sizes have recently been changing."

In subsequent years the IWC commonly made catch-limit decisions on the basis of replacement-yield estimates, especially where, far from knowing the stock had been changing, the scientists really had little or no idea what was going on. If the industry had continued for many more years this policy, too, would have added to disaster, because the replacement-yield of a stock that has been declining itself declines from year to year and ensures a continuing decline, even if at a decelerating rate.

A third innovation at the 1972 Scientific Committee meeting was that, having been noted that large male sperm whales were a favoured target and declining, the restoration of the "balance" should be encouraged by measures designed to concentrate catching more on females, to remove the supposed "excess" of them. One practical consequence was a recommendation that separate catch-limits for this species be set by sex and also that limits should be established for each of nine sectoral *Divisions.*[82]

The 24th meeting of the IWC opened with a flourish in 1972, receiving the request from the immediately preceding UN Conference on the Human Environment, held in Stockholm, that the Commission consider adopting a ten-year moratorium on all commercial whaling. The Commission rejected that idea, as expected, but

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[81] See paper by D. Iles, this volume.

[82] An echo of the idea of "balance" was heard years later when Japanese scientists advocated the intensification of minke whaling in the Antarctic in order to "restore the ecological balance" caused by the near extermination of blue and fin whales.

it did take a number of actions, which over the following years greatly changed the nature of its debates and activities. The BWU was finally discarded, being replaced by catch-limits for each species, including minke and sperm whales, though not yet by separate sectors within the Southern Hemisphere. And it was determined that the IOS would be implemented in the 1972/3 season.

No Norwegian expedition operated in the Antarctic after 1967/68, but as we have seen, Norway continued for a few years to try to retain a toe-hold there, and participated in the national quota negotiations. Its experimental factory-catcher, having caught only three sei whales in 1971/72 was, during 1972, finally converted to fishing. Nevertheless Norway reserved for itself the equivalent of 40 BWU for the 1972/73 season, comprising 40 fin and 120 sei/Bryde's whales. But the sharing of the catch-limit was for practical purposes reduced to decisions by Japan and the USSR.

In 1972/73 Japan took its quota of both "BWU" species. The USSR fell short on both, presumably because its expeditions were also catching minke that season. Each country operated three expeditions for catching fin, sei/Bryde's and sperm whales, with 31 catchers attached to the Japanese and 47 to the Soviet expeditions. Japan again operated a fourth expedition (with 4 catchers) solely for the catching of minke whales.[83] There was no agreement on national quotas for minke whales for the 1972/73 season, or at least none was announced by the whaling countries.

14. THE THIRD EPISODE – 1976-1986

This epoch relates to the late 1970s and the early 1980s when permitted catches had become quite small and were established for each species individually and also by sub-areas loosely identified as places inhabited by distinct biological populations (called for regulatory purposes *management stocks*). In this phase the two remaining pelagic-whaling nations - Japan and USSR - had to negotiate not only between themselves but also with nations still whaling from their shores in the southern hemisphere. However, most of such southern hemisphere, but non-Antarctic, coastal whaling was practiced under the aegis of Japan, which controlled the market for whale meat and also financed (and in some instances supervised or even manned) those enterprises.

The IWC's 1975 decision henceforth to set species catch-limits for the southern hemisphere as a whole, and to allocate these by sectors, applied to all the rorquals as well as to the sperm whale. It derived from an agreement in principle reached at the 1974 meeting that catch-limits would be set individually for each "management stock" of each species, there being a general idea that such stocks would, as far as practicable, relate to putative biologically distinct populations in the southern hemisphere.[84] This meant a transition from a kind of latitudinal zonation, exemplified by the long-standing prohibition of pelagic operations north of 40°S, to a longitudinally-stratified system. The hemispheric catch-limits, which were biologically sensible, made it necessary for quota negotiations to be extended to the coastal operations from all shore-stations north of 40°S but at the same time provided a means of simplifying them since in most cases the two pelagic countries would at most need to reach agreement with only one coastal country for each stock.

The new rules, called the *New Management Procedure* (NMP) were formally adopted in 1975 for implementation from the 1975/76 Antarctic/pelagic season and the 1976 coastal ("winter") season. They were the IWC's response to a series of proposals, launched in 1972, for a ten-year commercial moratorium, and gave rise to zero catch-limits where it could be demonstrated that a stock had been depleted to less than about one half of its pre-exploitation number. Subsequently it was also decided that there would be zero limits for hitherto unexploited stocks about which there was insufficient scientific information. This prevented the intended opening by Japan of an industry focused on Bryde's whales in waters north of 40°S, for which a large "scientific" catch was a precursor, but the execution of which would require overturning the long-standing general ban on pelagic operations in tropical, sub-tropical and temperate zones.

From 1975/76 rorquals and/or sperm whales were being caught from land-stations in South Africa, Australia and Chile as well as from Brazil.[85] Land-stations could in practice only be established at places to which dead whales could be towed within a certain time. This rule had already been established in the early days of "modern whaling" as a quality control measure. The need for quality was, of course, even greater when

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[83] The launching of Antarctic minke whaling was not the first time that Japan had used one fleet for a specific purpose. For example, in the 1951/52 season one factory-ship, with 5 catchers, was engaged only in catching sperm whales.

[84] It is of some historical interest that the enabling Resolution adopted in 1974 provided, as recommended by the Scientific Committee, that at a second stage the object of the regulation would be to maximise sustainable yields by total *weight* rather than by *numbers* of whales, which would have made more economic sense. However, that would have required longer stock-recovery periods and so was rejected by the whaling delegations when they came to implement the proposed system in 1975.

[85] Coastal whaling was also being carried out from Peru, but the matter of whether the Bryde's whales being taken there could properly be attributed to a southern hemisphere stock or belonged to a separate local stock was never satisfactorily resolved. This operation is not further considered here.

the rorquals were increasingly exploited for meat rather than oil. The effective offshore operating distance thus depended in part on the latitude (surface water temperature), and the power and hence speed of the catchers when encumbered with dead whales. Earlier this was commonly in the region of 20 miles, but the Brazilian minke whaling was being carried out on breeding concentrations 60 miles offshore.

The last season of whaling in South Africa was 1975, when fin and sperm whales were caught (previously there had also been small catches of sei and Bryde's whales). These were never subject to negotiation. Australia continued catching sperm whales until 1977, and Brazil until 1979, when the IWC adopted a moratorium on sperm whaling. In 1975 the five southern whaling countries which were members of IWC - USSR, Japan, Australia, Brazil and South Africa - tried and failed to agree on shares of the 1975/76 and 1976 catch-limits for fin, sei, Bryde's and sperm whales. Numbers were specified by majority vote; these were published as "without prejudice to future negotiations" and were approximately honoured. When South Africa subsequently decided to close its land-station, its small quota of 134 minke whales was taken over by Brazil which, however, only actually caught 16 more than its own quota.

That year (1977) the USSR took its quota of 6454 sperm whales (60% of the total catch-limit) but Japan took only 38% of its quota, which had been 14% of the total, the same as South Africa's. Australia, on the other hand, took twice its 11% allocation. Brazil only took 9 animals from an allocation of 67, and the total catch was only three-quarters of the catch-limit.

Evidently, in this closing phase of commercial whaling in the southern hemisphere, arrangements among the IWC Member nations were rather chaotic. Chile, however, was not an IWC member, and yet caught substantial numbers of sei/Bryde's and sperm whales in every year. It took sei/Bryde's until 1979 (when it joined the IWC and accepted the zero catch-limit by then in force) and sperm whales until 1981 when the moratorium was declared on sperm whaling. But as pelagic sperm whaling had ceased from 1980 no quota negotiations with Japan and USSR were called for. However, Peru also joined the IWC in 1979 and therefore had to share the sperm whale catch-limit for its IWC sector (Division 9) with Chile. This was 550 for 1980 and 300 for 1981 (set at the 1979 meeting as zero for 1982 and thereafter). In 1980 the overall catch-limit was exceeded by 74 whales, with Peru taking 78% of the catch and Chile 22%. In 1981 the catch-limit was again exceeded, this time by 28 whales, with Peru again taking the greater share - 80% - of the catch. Whether this similarity represented the result of a quota negotiation or simply reflected the capacities of the two land-stations was not publicly announced.

Regarding "The Last Whale", as the minke has been called, let us retrace the steps to 1972/73 when catch-limits were first set by species. That year shares of minke whales were not negotiated (although shares of the catch-limits for fin and sei/Bryde's were agreed, including a small number for Norway, which it did not take). In the event 5745 minke were killed, more than the 5000 catch-limit (because, it was claimed, of a miscalculation of the closing date of the season). The USSR took 64% of them.

The following season (1973/74) the same (5000) minke catch-limit was set, but Japan and USSR objected, and agreed among themselves to take 4000 each. The USSR did that, but the specialised Japanese minke whaling expedition only managed to take 3700. This put the total more than 50% over the IWC-authorised limit.

An innovation for the 1974/75 season was the assignment by IWC of separate catch-limits for three Antarctic sectors.[86] This arrangement also provided that catches could, within a sector, exceed the agreed limit by a certain percentage, so long as the total did not exceed the designated total. Japan and USSR divided the catch equally between them, but did not report whether they had agreed on shares in each sector, nor did the Bureau of International Whaling Statistics (BIWS) that year report their catches by sector.

A further innovation, from the 1975/76 season, in addition to allocating the total catch-limit to *six* longitudinal sectors, was to declare the catch-limit not for the Antarctic but for the entire Southern Hemisphere. This was in accord with scientific advice, because Brazil had long been catching substantial numbers of minke whales from its near-equatorial land-station. These whales were known to feed in the *southwestern* Atlantic sector of the Antarctic, but also it was known, from marking experiments, that some minke whale that breed off Brazil were feeding in the *southeastern* Atlantic. The resulting tri-lateral negotiation not only divided the overall catch-limit but also involved a decision that the pelagic expeditions would not operate in the southwestern sector. They did operate in the IWC's Area III, which covered the southeast Atlantic and the western Indian Ocean, but the pelagic catches were taken mainly in the Indian Ocean. Further, a pattern became established (though not formally announced) by which the pelagic fleets overlapped their operations only in Area IV (eastern Indian Ocean), and Japanese expeditions avoided the Atlantic sectors. When the other pelagic countries had dropped out of Antarctic whaling, and all species other than the minke had been recognised as severely depleted and so became "protected" by the IWC, then only Japan, USSR and Brazil were left hunting minke whales in the

86 Such a sub-division had already begun for sperm whales in 1973/74.

Southern hemisphere. But the meat, and most of the other products from this activity, ended up in Japan. So although the three countries "negotiated" shares of the hemispheric catch-limits the Japanese delegation naturally dominated the secret discussions.

In fact, the overall minke catch-limit was higher than could be taken by the one remaining Japanese expedition, so it suited the interest of Japanese meat traders to tolerate continued Antarctic whaling by the USSR. Hence the catch-limit was shared between them fairly evenly once a small allocation for Brazil (where the company was Japanese anyway) had been agreed. The USSR was unhappy that some of the profit from southern hemisphere minke whaling would accrue to the Brazilian company instead of to its own, but could do nothing about that. At this time the USSR still had another substantial interest in continuing whaling in the hemisphere: the production of sperm oil, a strategic commodity. In 1979, however, the IWC declared a moratorium on the pelagic catching of all types of whale except minke; then, in 1981 all sperm whale catch-limits were set to zero, and the USSR did not object.

From the 1978/79 season, with the setting to zero of the catch-limit for sei and Bryde's whales throughout the Southern Hemisphere, the negotiations of national quotas were limited to minke whales, and involved only Japan, USSR and Brazil, which continued to host a Japanese land-station on its territory, taking whales on the breeding grounds of the South Atlantic stock or stocks.[87] The Scientific Committee was unable to calculate a sustainable yield, and a hemispheric catch-limit of 6321 was eventually agreed, based on estimates of replacement-yield, but calculated in such a way that a preference by whalers for female animals would be restrained (replacement-yields as the basis for catch-limits do not guarantee that the stock will not decline further in the medium term).

The trilateral negotiations led to Brazil being "awarded" 755 whales (12% of the total, this being approximately the percentage that Brazil's catches had been of the total since Japan and USSR had both been catching minke whales on a large scale), with the remainder being split evenly between the two pelagic countries: 2733 each, which they took. Japan, however, "topped up" its catch with 120 Bryde's taken in the Indian Ocean sector under special scientific permits, while the Soviet expeditions took nearly 4000 sperm whales.

The Brazilian share remained at about 12% through to the 1981/82 season, after which it was reduced to 9%. Through to 1983/84 the total southern hemisphere catch-limit changed in accordance with variations in the scientific advice, but in the range 6000-8000. For the 1984/85 season - the last before all commercial catch-limits were set to zero when the 1982 decision came into effect - the catch-limit was reduced to about 4000 minke whales, but the three countries objected to this, gave themselves the same as the official limit of the previous year, and divided it between them by the same formula.

In addition, for both the 1983/84 and 1984/85 seasons, Japan and the USSR agreed to avoid the western South Atlantic. Both operated in the western Indian Ocean and mid-South Pacific, but while Japan would take its part of the sectoral quota in the eastern Indian Ocean and western South Pacific, the USSR would take its part in the eastern South Pacific.

When, in 1982, the IWC declared an indefinite pause in all commercial whaling (the so-called "moratorium" to come into effect in 1986), Brazil accepted the decision and minke whaling operations from its shores ceased. For a time Japan and USSR continued minke whaling under *objections* to the moratorium. In 1984/85 their combined catch had only reached 4970, with the USSR taking 61% of that. This determined their self-imposed catch-limits for 1985/86 and 1986/87 with the same division of shares. Japan withdrew its *objection* to the "moratorium" in May 1987 and did not undertake commercial minke whaling in the 1987/89 season; instead it prepared to embark on a long period of large-scale minke whaling under special scientific permits. The USSR/Russia maintains its *objection* "on principle" but nevertheless ceased commercial whaling from 1989/90. There was no more need for sharing.

As far as the Antarctic was concerned, the debates in the IWC henceforth concerned the validity of Japan's claim to be conducting necessary science, and the propriety of doing this within the region of the southern hemisphere (coinciding roughly with the region where pelagic-whaling had been permitted), which was designated, as from 1994, as a *Sanctuary*, but to which Japan has objected.

15. QUOTAS AND THE CONTROL OF TRADE

International trade has always been an important element of the economics and politics of commercial whaling, from the time of the Basque excursions throughout the North Atlantic in the 10th Century to 21st Century whaling by Norway and Japan. Modern whaling, from its beginning in the late 19th Century, was

[87] Tagging experiments showed that at least some of the whales whose breeding ground was off the coast of Brazil migrated to feed as far eastward as the Western Indian Ocean sector of the Antarctic.

dependent on the world market for whale oil, though by the last decades of the 20th Century this dependence had shifted largely to the market for frozen meat, focused on Japan

The importance of trade was never limited to the commodities produced. Trade in ships, equipment such as guns and harpoons, processing equipment on factory-ships, the technology, possession of which ensured increases in efficiency and hence continued profit margins despite depletion of the natural resources, were all critical issues. And so was the movement across national boundaries of human resources, particularly the skills of gunners.

In the heyday of "modern" *pelagic-whaling*, that is the 1930s, Norway and UK sought to keep others out of the industry mainly through control of the movement of labour and of the oil market, including the formation of cartels. After World War II attention shifted to attempted bans on the export of equipment and technology and on trade in products with non-Members of the IWC. These all played their parts in negotiations concerning sharing of catches. But the general restriction of international trade as a means of enforcing IWC regulatory measures was, in the end, by far the most important trade-related factor.

The IWC itself has no powers to limit trade, though from time to time it has passed non-binding resolutions on this issue. Most recently, agreement on general prohibition of international trade in products from whales has been suggested as one element in a proposed negotiation[88], which would result in non-zero catch-limits being set for particular identified commercial coastal whaling operations. This could be seen as a partial annulment of the global zero-limits adopted in 1982.

The inter-governmental instrument that does have the power to exert some control over trade is the Convention on International Trade in Endangered Species of Flora and Fauna (CITES) which lists, through its Conferences of Parties (COPs), species in which trade is prohibited (CITES Appendix I) or regulated in some other way (Appendix II). A feature of CITES is that "Introduction from the Sea" - meaning the removal of fish, whales, *etc*, from locations on the legally defined High-Seas - and transported alive or as processed commodities to shore - is to be treated as international trade. Practically all pelagic-whaling using expeditions of factory-ships and associated catchers has been conducted on the High-Seas, especially in the Southern Ocean

CITES was negotiated at a diplomatic conference in Washington DC in March 1973. It came into force in July 1975. The first COP was held in Berne, Switzerland, in 1976. As far as whales are concerned as objects of attention by CITES the position of the IWC has been a determining factor. Thus the three species of right whale (*Eubalaena* and *Balaena*), the humpback (*Megaptera*), the blue whale (*Balaenoptera musculus*) and the grey whale (*Eschrichtius*), which were already classed as Protected Species in the 1946 Convention, were included in CITES Appendix I from the beginning - *i.e.* in 1975. Then, at the Second COP, held in Costa Rica in 1979 all species of cetaceans (whales and dolphins) that were not on Appendix I were added to Appendix II. At a Special COP, held in Geneva in 1977 certain "management stocks", which had been given zero commercial quotas under the IWC's *New Management Procedure* (NMP), were added to Appendix I. These were the sei whale (North Pacific stock, and the southern hemisphere stock between 0 and 70°E); and the fin whale (all stocks except those left in Appendix II, which were - as far as southern hemisphere whaling was concerned - the stock south of 40°S in the sector from 120°W to 60°W, and also the fin whales in the North Atlantic off Iceland and Newfoundland).

CITES decisions are, of course, applicable both to exporting and importing Parties. As in the IWC, Parties can register Reservations (*objections*) to otherwise binding decisions. However, a state newly acceding to the 1946 Convention cannot make *objections* to regulatory decisions made previously, but a government joining CITES may, at the moment of joining, lodge reservations to any previous species listings. But in both organisations the Member governments may - irrevocably - withdraw any or all of their *objections*/reservations at any time. Thus Canada, already in 1975, lodged reservations on the Appendix I listings of the two right whale species in the northern hemisphere, though it withdrew these in 1977. Subsequently several whaling countries that had made reservations on one or more of the 1977 decisions withdrew these in 1979 or in 1981.

At the 3rd COP, held in New Delhi, India in 1981, a number of species and stocks of large whales were "up-listed" from Appendix II to I: these were all stocks of sei, fin and sperm whale not previously so listed. Then at the 4th COP, in Gaborone, Botswana, in 1983, all populations of minke (except that off West Greenland) and Bryde's whale were up-listed to Appendix I, though the change for minke was not to come into force until 1986 when the IWC's decision of 1982 for zero-quotas also would come into force. (At COP IV four species of bottlenose whales were also up-listed, but this had no consequences for the southern hemisphere.)

The changes in 1981 and 1983, and the several reservations made to them, considerably affected the course of commercial baleen and sperm whaling in the southern hemisphere. They influenced decisions by countries about whether or not they would continue whaling and their bargaining about shares of catch-limits. All the

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88 By the Commissioner for Ireland.

countries still engaged in hunting minke whales during the 1980s - Japan, Norway, Brazil, USSR - objected to the minke up-listing, as did another whaling country - Peru - which was not so engaged. Brazil and the USSR subsequently withdrew their reservations when they decided to abide by the 1982 IWC "moratorium" decision, even though the USSR still maintains its *objection* to that decision.

South Africa and the USSR withdrew their reservations concerning sei whale listing, but Japan and Norway maintain theirs. All dissenting states have withdrawn their reservations to fin whale listing on Appendix I, although USSR did not do so until 1995, apparently due to an oversight.[89]

When Norway resumed hunting minke whales commercially in 1993, under *objection* to the 1982 IWC decision, the Government nevertheless acted, to a certain extent at least, in the spirit of international agreements by, among other things, denying its whalers the opportunity to export. However, both Japan and Norway have for the past four years been seeking to down-list some or all minke whale stocks to Appendix II, including by breaking the supportive link between CITES and the IWC. In particular, Norway, having saturated its domestic market for whale meat, and also having stockpiles of specialist products for which it has no domestic market, wishes to increase its minke whale catches substantially, for export to Japan. The two countries have to date conspicuously failed in this endeavour within CITES.

The other species of interest from the point of view of the theme of this paper is the sperm whale. Again, Norway and Japan lodged reservations to the Appendix I listing of this species, in June 1981. However, immediately after that the IWC decided on a moratorium on the catching of sperm whales (which is not limited to *commercial* catching, and is indefinite in duration, with no specified review or renewal period). No *Objections* were made to that decision. This was seen as confirming that the USSR, which was by far the biggest exploiter of this species, had definitively abandoned any expectation of resuming such whaling, after the 1979 ban on all pelagic-whaling except for minke whales.

The reservations from 1 January 1986, by Brazil, Japan and USSR, to the listing of minke in Appendix I meant that they were free to continue minke whaling and the associated trade for some years under *Objections* to the 1982 IWC decision. However, because of that decision the IWC could set no non-zero catch-limits for the 1985/86 season and after. The three countries then determined their own catch-limit, but because of the trade arrangements (Brazil and USSR were selling all their production to Japan and, furthermore had Japanese "international" observers watching their operation) were obliged to negotiate shares.

Advance contracts for provision of types and quantities of commodities from whales, especially into international trade channels have also played their part in the quota negotiations. This is explained in Appendix I.

16. QUOTAS AND CHEATING

In 1993 Russian scientists announced that data on whale catches in the Antarctic - numbers, species, locations - had been systematically falsified for submission to the BIWS/IWC. This was subsequently confirmed by State officials, including some who had participated in whaling expeditions as national inspectors. The correct data, taken from surviving logbooks and the notes of scientists on board the four Soviet expeditions operating in the period 1946/47 to 1971/72, were then published. At the same time the Russian Government decided to support the proposal by France that the Southern Ocean be designated as a *Sanctuary*, and withdrew its reservations to the CITES Appendix I listings for blue, fin, Bryde's and minke whales, as well as for all species of bottlenose whale.

Although it had long been suspected, by scientists and officials elsewhere, that Soviet catch-data were not reliable, the *degree* of falsification revealed was a universal surprise (see Table 2). As a matter of fact, since 1960 at least, scientists in the IWC had noticed clear falsifications, or systematic error of measurements, in data submitted to the Bureau of International Whaling Statistics (BIWS) by several countries.

In 1994 the IWC adopted a resolution congratulating the Russian authorities on their efforts to reveal and document the truth, and calling upon other governments to examine their data from past whaling operations. None have responded to this call, perhaps because any original records are, in other countries, in the possession of companies rather than governmental agencies. However, that same year, Soviet officials revealed that Japanese company officials and at least some government operatives were aware of what had been happening because Japanese ocean-going refrigerated transport-vessels were constantly at work with the Soviet whaling fleets, picking up at sea frozen meat destined for the Japanese home market.

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[89] Interestingly, St Vincent and the Grenadines maintains its reservation on the humpback listing, which it lodged at the time of joining CITES in 1989. This country, a member of IWC, is permitted to hunt this species in limited numbers, but solely for subsistence purposes, which by definition precludes export.

The published data include the true figures and also the data thought to have been *submitted* to the BIWS. There are some unexplained inconsistencies in several years - especially the later years, from 1960/61 - between the latter and the figures *published* by the BIWS (see Table 2).

Table 2
Falsification of Soviet Antarctic catch-data

Season	BWU real	BWU submitted	BWU published
1946/47	535	267	267
1950/51	2 641	1 237	1 239
1957/58	3 624	1 562	1 563
1958/59	4 169	1 600	1 601
1959/60	3 560	2 080	2 789
1960/61	4 469	2 408	2 787
1961/62	4 069	2 734	3 292
1962/63	3 357	2 500	2 816
1963/64	2 770	2 770	3 522
1964/65	2 700	2 773	1 588
1965/66	2 136	1 491	922
1966/67	1 671	1 072	1 071
1967/68	1 785	1 773	1 019
1968/69	1 777	1 334	980
1969/70	1 385	1 616	979
1970/71	1 213	1 235	978
1971/72	964	1 009	906

After the proposal by the UK Commissioner to the 1958 IWC meeting that national quotas should be negotiated, the five pelagic-whaling countries had sought agreement, the basis of which was to be a 20% share of the BWU catch-limit for the USSR, the remaining 80% to be split between the other four countries. At that time the USSR was only operating one expedition, the factory-ship *Slava*. This had increased its *reported* catch from 267 BWU in 1946/47 to 1562 BWU in 1957/58, at least partly by increasing the number of catchers from 8 to 24. In 1957/58 and also in 1958/59 the *Slava* took, according to the BIWS data, about 10% of the total BWU. However, the percentages that the *Slava* actually took of the real total catch were 13 and 15% respectively.

The first of the three new Soviet expeditions, the *Sovetskaya Ukraina*, began operations in 1959/60, followed by the *Yuri Dolgorukiy* in 1960/61 and the *Sovetskaya Rossia* in 1961/62. In that season and the following one the reported Soviet catch stood at 20% of the total reported catch, but it was in fact by then 30% of the real total catch. From 1968/69 to 1971/72 the Soviet declared-catch was never less than 30% of the total reported catch. However, in 1969/70 it reached, in reality, nearly 60% of the total, thereafter declining to a variable 20-30% until the last season of whaling for BWU species (1977/78).

Two additional factors surely played their part in the national quota negotiations in these years as far as the USSR was concerned (and also Japan). First, the "surplus" of real catch over reported catch had three causes: one was that many pygmy blue whales were caught and not reported. Another was that a large number of humpbacks were killed long after this species was supposedly protected from Antarctic pelagic-whaling in 1963/64. A third cause was that nearly 3000 supposedly "protected" right whales were killed between about 1955/56 and 1969/70. It is clear from the revised statistics that in years when particularly high numbers were caught, that the effort directed to catching the BWU species was somewhat reduced, accounting for relatively low reported and "real" BWUs in those years.

The second factor was the effort directed towards the legal capture of non-BWU species. The Soviet expeditions took more sperm whales than all the others together, including a high proportion on the voyages to and from the Antarctic. This alone made the economic structure of the Soviet operations distinctly different from that of the other four. The other important non-BWU species was, of course, the minke. Japan began large-scale minke whaling in 1971/72, using a new, specialised expedition solely for this purpose. The USSR began on a similar scale in 1972/73, but using its existing expeditions; to a certain extent this took effort away from the BWU species. (The Soviet expeditions took substantial numbers of minke whales also in 1967/68 and the following year, which seemed to reduce their effectiveness in hunting BWU species.) From about 1964/65 the sei/Bryde's

whales accounted for 50% or more of the total BWU catch. Minke whales are hunted near to the ice edge, while sei, and also Bryde's were caught mostly just south of the 40°S boundary. Thus, to take both species called for operations during one season in both higher and lower latitudes.

The falsifications of Soviet data involved the under-reporting of catches of BWU-species; the non-reporting of large numbers of protected species; and the misreporting of catches of some non-BWU species. However, there were many subtleties in this. On many occasions numbers caught of some species were over-reported, and the reported locations of catches have little resemblance to the actual cruise tracks. A consequence of the former is that in several cases the actual and reported BWU (and hence presumably oil and meat production) do not differ as much as might be expected. A possible explanation is that the operators and officials of the powerful Ministry of Fisheries were concealing their scam (which had as much to do with money-laundering as with production) from other state authorities concerned with customs and fiscal controls and the like.

The USSR claimed a relatively high quota on the grounds of its huge investment in new expeditions, just coming into service during the quota negotiations, rather than on the grounds of its actual production. If the real catches had been recorded it would, it seems have had an even better case. The other pelagic-whaling countries appeared to make little if any effort to alter the Soviet's 20%. Perhaps this was because they - or some of them - knew first hand, or guessed, that the Soviet catches were higher than were being reported. Obviously the USSR had good reason for dragging its feet over agreement to implement the IOS. But the other countries handed it good excuses by being "difficult" over taking into account land-station catches in the quota negotiations.

The falsification of catch statistics described above, referring to USSR data, is described in some detail because that is the most prolonged and fully documented occurrence as far as the Antarctic is concerned. I would not, however, wish to give the impression that the USSR was alone in large-scale falsification of whaling statistics; this is known now because of the subsequent collapse of the State. More recently similar kinds of falsification of Japanese statistics have been documented, but relating to the coastal whaling activities in the North Pacific. This, too, occurred in the period when international (IWC) observers were assigned to the whaling platforms and, as with the Soviet revelations, have been brought to light by scientists and by official inspectors who were involved at the time. The devices adopted to defy timely detection were similar: species wrongly identified; two or more small whales counted as one large one; inspectors and observers lured away from their posts.

As such information comes at last, into the open, it seems increasingly likely that such falsification was more widespread in the various Antarctic operations – both pelagic and from land-stations – than had been presumed even by cynics.[90]

17. THE INCIPIENT FOURTH EPISODE

The IWC is negotiating a management scheme for baleen whaling which, if it is ever implemented, would not in principle exclude the possibility that vessels of more than one nation might be competing for catches from the same "stock" of whales. However, the prevailing legal regime would appear to make such inter-action very limited in scope. Most so-called "coastal whaling" - which includes operations by factory-catchers (which are legally pelagic operations and so, at present, subject to the ban on all such operations except for the catching of minke whales) - would take place in waters now under national jurisdictions. And as far as the high-seas are concerned the main region of possible interest is still the Antarctic - as it always has been - and that is all within the Southern Ocean *Sanctuary*. The Indian Ocean *Sanctuary* - declared in 1979 - includes the tropical, sub-tropical and temperate high seas zones, as would sanctuaries in the South Pacific and South Atlantic now proposed by Australia and New Zealand, and by Brazil and Argentina respectively.

Japan is the sole survivor of the pelagic-whaling wars, with one expedition continuing to hunt minke whales. The "big five" nations were successful in keeping out further newcomers, but at the price of a great expansion of coastal whaling - including some so-called "pirate whaling" under flags of non-IWC states - mainly for the Japanese market. The Netherlands had to drop out early because, with only one expedition, it could not adjust to reducing catch-limits, while not having the political clout to increase its share of the total. The UK's situation was different - Salvesen in particular came to the conclusion that Antarctic whaling was finished, and adopted a strategy of phasing down and out over about 7 years. Salvesen's profits then went into the road-haulage industry. There was an attempt to convert the "stern-ramp" technology to trawling for demersal fishes (the *Fairtry*); this was a failure for Britain, but was taken up vigorously by the USSR[91] and, eventually, by all countries engaged in factory-trawling worldwide.

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[90] This is important for current negotiations regarding a new International Observer Scheme (IOS) for implementation at such time as the current "moratorium" on commercial whaling might be lifted or modified in order to legitimize a renewal of some such whaling. History shows that while an international scheme can check corrupt practices at the level of national inspection, it cannot - in the forms so far tried - eliminate them.

[91] How this came about is in itself a fascinating story of commercial espionage and international subterfuge whose telling must wait a more appropriate occasion - Ed.

The profits from whaling could no longer provide for the construction of cities and ship-yards, as they had in Norway, and the industry was no longer of global or local strategic interest; this ended with the cessation of sperm whaling and the arrival of natural (jojoba oil) and synthetic substitutes for sperm oil. Norway's attempt to continue minke whaling in the Antarctic, using factory-catchers, and converting entirely to meat production for the Japanese market, was an economic and technical failure, even though it was successful in the North Atlantic for a time, until extensions of the maritime jurisdictions of other nations - Canada (Labrador), Iceland, Denmark (Greenland and Faeroes) - came into effect. Norway continues whaling in the Northeast Atlantic, in its own waters and on the high seas, and claims to operate under *objections* to IWC regulations, but using the agreed - but not yet implemented - *Revised Management Procedure* to calculate its own "quota". However, the RMP, being conservative and precautionary, does not provide the numbers the industry wants, so in the past two years Norway has awarded itself excess (nearly double) quotas by "retuning" the RMP algorithm, which increases the always-present risk of inadvertent depletion of the resource. The profitability of the industry is limited by the Norwegian Government's refusal to allow export of accumulated commodities (from cold storage) to Japan, despite having announced that it would do so and maintaining a reservation to the CITES listing of minke whale on its Appendix I. Both Japan and Norway have sought to have the CITES listing amended, but have so far failed, though by a smaller margin of votes with each try.

The USSR, while having an *objection* to the 1982 decision, ceased Antarctic minke whaling soon after it came into effect. The reason is obscure. Public opinion, and the views of some influential advisers to the Soviet President and authorities, seem to have contributed to the decision; pessimistic cost-benefit calculations probably helped. There was also, perhaps some reluctance by Japanese traders to continue purchases in the prevailing circumstances; the price elasticity of the greatly reduced supplies of whale meat is such that the traders see little benefit in increasing production, particularly by other nations. The remaining Soviet factory-ships were converted to other uses. To add to the industry's troubles, scandals involving money-laundering by fisheries officials and a Minister came to public attention; a significant amount of those funds had been derived from Antarctic and North Pacific whaling.

Japan, while having withdrawn its original *objection* to the 1982 decision, continued Antarctic minke whaling using the loop-hole provided in the ICRW for unlimited unilateral issuance of "scientific permits", a provision which strongly encouraged rather than prohibited the commercialisation of the products. This was made economically possible by a substantial annual subsidy from Government for several years. This subsidy was eventually reduced but profitability was ensured by increases in the market price of what was by now a rare commodity, and by gradually increasing the level of catch. Continuation of the industry was deemed worthwhile because it was expected that the IWC would, in at most a few years, re-open the Antarctic to minke whaling under new regulations. However, after the declaration of the Southern Ocean *Sanctuary* in 1994, continuation became a political act of defiance of world-opinion; by this time many others than the employees and shareholders of whaling companies, and meat traders, had acquired vested interests in it. In fact organs of the Japanese Government - as do those of Norway - spend far more on keeping the industry barely alive, than its economic worth now or in the near future.

With the collapse of all Antarctic activities except a residual Japanese operation (which itself involved the amalgamation of several whaling companies into one) the process of concentration of ownership was completed. Initial hopes by companies, assisted by the governments under whose flags their vessels operated, to stabilise a rapidly declining industry, were bedevilled by inability to agree on national shares and on an effective monitoring regime for compliance with both general regulations and any agreements on shares.[92] The treatment of the value of agreed national shares of the total catch as a commodity linked to the sale of factory-ships certainly affected the concentration process and the pace of running down the industry. Norway in particular benefited from this, first by maintaining its share claim even when not taking it, then selling expeditions - with their share - to Japan at higher prices than would otherwise have been obtainable for what was, increasingly, scrap metal. In the end Japan wanted the shares but not the vessels, so did not deploy them.

A number of new features have, however, appeared in these discussions through the past decade or so. One is the emergence of governments that are opposed to commercial whaling in general, and to whaling using pelagic expeditions in particular.[93] They tend to be supported by their publics especially because whaling is presumed by many to be an inhumane activity. This is manifest mainly in their determination to keep the 1982 decision in effect, but also in other ways. For example, there have from time to time been suggestions that since the whale resources are regarded as "a common heritage", non-whaling countries should be able to claim shares of any

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[92] The refusal of the remaining whaling countries, especially Norway, to agree to an effective international inspection scheme within a broader compliance regime, now bedevils efforts to get broad agreement on a Revised Management scheme which might legitimise commercial minke whaling in the Northeast Atlantic and Northwest Pacific.

[93] The smaller factory-catchers have also been criticised because they are far less efficient in ensuring the full utilisation of the whale carcasses, an aim of the government regulation of the industry since its beginnings in the 1920s.

agreed overall catch-limit, and then not kill those whales. Another suggestion, put forward by J.A Gulland and myself, and published in the 1960s by ICES, was that the United Nations should appropriate the whale resources and charge for their lethal "use", which could have changed drastically the economic basis for the industry, its scale and its mode of operation.

But the greatest challenge to the remaining whalers has been the phenomenal growth of "benign", non-lethal economic use of the resources, through whale watching as an element of eco-tourism. This is now still growing world-wide, and of much greater economic value than present whaling. It is taking place also within pro-whaling countries - Iceland, for example - and affecting decisions about the possible resumption of past whaling activity. Questions have been raised about the compatibility of careful but profitable whale-watching with whaling on the same stocks or co-existing species, and/or in the same area. Some answers could come from research on scientific problems of types not yet addressed. But, additionally, there are questions of perception: for example a majority of tourists to Iceland, visiting to see whales as well as Arctic birds and so on, have said, in response to poll questions, that if Iceland resumes whaling they will not return.

Evidently, the debates about commercial whaling continue, but with new and altered parameters.

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IWC. Reports of the International Whaling Commission.

These containing the Annual Report, the Report of the Chairman on each Annual and Special Meeting, the Reports of the Commission's Scientific Committee (and of its Sub-Committees and Working Groups), plus selected scientific papers presented to and discussed by that Committee. The reports of the Commission's Technical Committee are not published, but are available from the IWC Secretariat, in Cambridge, UK.

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Tønnessen, J.N. and A.O. Johnsen 1982**.** The History of Modern Whaling**.** C. Hurst & Co., London.

This is a much shortened translation, by R.I. Christophersen, of a four volume work, in Norwegian, published in Oslo and Sandefjord in 1959, 1967, 1969 and 1970. The English version, however, carries the history forward to about 1980.

Other technical and scientific papers and articles too numerous to list here have been consulted. I have also drawn upon my own notes and memories from participating in activities of the IWC from 1960 to the present, usually - during the period reviewed here - as observer for the Food and Agriculture Organization of the United Nations (FAO), sometimes for UNEP, but also as a member of the Special Committee of Three (later Four) Scientists set up by the IWC for a few years beginning in 1960.

Appendix I
Species, commodities and contracts

Attempts to regulate modern commercial whaling have always concentrated on three major commodities traded internationally: baleen whale oil ("train oil" in early statistics, "whale oil" in later ones), baleen whale meat and sperm oil. For decades there had been market alternatives to baleen oil, especially from vegetable sources. For sperm oil, with mainly industrial use in the twentieth century (it was designated as a "strategic material" in both USSR and USA), synthetic substitutes began to become available during the period focused on here: - post-World War II - and later a vegetable oil with similar properties derived from the fruit of the jojoba plant, a bush growing wild, then cultivated, in desert climates. There was, on the other hand, no market substitute for baleen whale meat.

The meat from the different baleen species could be distinguished by experts and gourmet consumers but basically served a single market; there are bigger differences between cuts from different parts of a given species (attracting different prices) than between the species. However, of the four BWU species the meat from the sei/Bryde's whale is generally preferred and fetches higher prices.

The scale of "values" of the four species (1:2 1:2:5 1:6) was originally set in rough accordance with the oil content according to the extraction technology of the time (early 1930s), and when sei whales were barely given attention. The scale probably slightly under represented the sei whale "value" in oil, but it considerably under-valued the species as far as meat production was concerned, both with respect to quantity and quality. Although minke whales were never incorporated in the BWU-system, some ratios appear in the industry literature: 1:50 in terms of oil, 1:30 in terms of meat, for example, but these possibly under-value the minke.

It is well known that the species composition of Antarctic baleen catches, especially pelagic catches, changed over the years. It has usually been assumed that this reflected the depletion of the larger species, one by one. This is particularly noticeable for the humpback whale which was nearly exterminated by legal pelagic-whaling, whaling from land-stations both in the Antarctic and in the Southern hemisphere north of 40°S, and by illegal whaling by Soviet fleets and at least one other fleet.

In the early 1930s the blue whale dominated the catches, at 80-90% of the BWU. By the end of the decade blue and fin whales were about par in BWU terms, with humpbacks varying from 1 to 8%. After the Second World War the percentage contributions to the BWU total in resumed whaling had not changed, but from 1951/52 a steady decline began in the blue whale contribution. From 1955/56 to 1962/63 it stabilised in the range 8 - 11%, and then collapsed completely, aided by partial protection being offered late by the IWC.

This final decline in the blue whale contribution coincided with a rapid rise in the sei contribution, which had been negligible until then. The sei dominated the catches (60-70% of the BWU) for three seasons, and then settled back to 40% for four years, up to 1972/73.

In 1970/71 Japan took a large catch of minke whales, deploying a new special expedition for the purpose. But in 1971/72 the USSR also began catching large numbers of minke whales, using its existing expeditions and not specialising among them. Soon after this both fin and sei whales were protected in the Antarctic, but apart from the differential effects of catch-limits the species composition was changed by the shift back to higher latitudes to take minke whales, whereas sei and Bryde's were taken further north, even north of the Antarctic convergence. It is also worthy of note that throughout the 1970s the southern hemisphere catch of sperm whales by the pelagic expeditions was never less than 50% by number of the total catch of large whales, and by weight was more than that.

There were also differences in species composition from one longitudinal sector to another. This meant that whalers could in principle chose to operate, within the BWU catch-limit system, to optimise the species composition of their catches according to national and market preferences. In particular, for countries operating only one or a few expeditions, and for all of them as the industry in general contracted, choices had to be made for logistic reasons - one expedition could not exploit the entire Antarctic in a single season. These choices were influenced also by the specific locations of the base ports, and hence North-South-North steaming-distances, which determined whether expeditions would operate more in one ocean sector than another.

The contribution of sei whales first reached about 50% of the total in 1964/65 in Japanese and Norwegian catches (the UK and the Netherlands were both out of the picture by the time of the sei boom). However, this only happened in the Soviet catches in 1973/74, according to the official statistics. The shift northward of Soviet operations that began then also brought those fleets into the range of the pygmy blue whale, and as we have noted, large numbers of these were taken but not reported. The Southern right whale also inhabits the more northerly waters, hence the great increase then in illegal catches of that nominally "protected" species.

The coincidence in time of the switch in catches by Norwegian and Japanese operators was connected with the contracts for meat sales from Norwegian vessels to Japan. (Similar synchrony appeared with the switch in the early 1970s to minke whaling by Japan and USSR, for the same reason.) In fact trade-deals played a leading role in the efforts to gain acceptance within the IWC for lower, sustainable catch-limits. For instance it has come to light on several occasions that a country or company operating a land-station could not accept a reduced limit or quota because it had signed advance contracts with Japanese buyers to provide specified quantities of meat the following season or, similarly, contracts with buyers of sperm oil on the global market. This matter came to a head when some countries, which were prepared to cease commercial whaling when the 1982 "moratorium" decision was being debated, made it clear that they needed a "phase down" time (eventually three years was conceded) in order to meet contractual obligations to supply particular commodities.

All the factors and considerations mentioned here surely influenced the national BWU-quota negotiations, but it is not possible to evaluate them without access to company accounts and files and to the records of secret governmental discussions.

This report, consisting of 23 studies, describes how the initial allocations of transferable fishing (effort) or fish (catch) quotas have been done by a variety of fisheries management regimes. The studies include two from the European Union (the United Kingdom and the Netherlands), one from Iceland and three descriptions from the Maritimes of Canada. Of the Canadian studies, that for herring provides an historical account of the introduction of quotas in the management procedures of the International Commission for the Northwest Atlantic (ICNAF), the precursor of the Northwest Atlantic Fisheries Organization (NAFO). Three studies are presented for fisheries along the eastern seaboard of the United States, though that for red snapper describes a fishery in which the actual implementation of the programme was thwarted by the imposition of the moratorium on individual transferable quotas (ITQs). The account for South Africa describes a difficult process in transition for a specific fishery. Nine accounts are included from Australia, two of which describe fisheries managed by the Commonwealth Government through the Australian Offshore Constitutional Settlement (the Northern Prawn Fishery and the fishery for southern bluefin tuna). The other six accounts of Australian experiences describe lobster fisheries in Western Australia, South Australia and Tasmania and fisheries for abalone in Western Australia and Tasmania. Two accounts describe more traditional finfish fisheries, that of the Southeast Trawl Fishery and the trap and line fisheries in New South Wales. An omnibus account is given for the allocation process of quotas in New Zealand. In the Western Pacific, accounts are given for the Pacific halibut and sablefish fisheries in Alaska, the variety of fisheries in British Columbia including these last two species and the fishery for Patagonian toothfish in Chile.

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