

# Catches of Humpback Whales, *Megaptera novaeangliae*, by the Soviet Union and Other Nations in the Southern Ocean, 1947–1973

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## Introduction

The great whales of the Southern Ocean were extensively exploited by modern whaling methods, with the first catches made in the Falkland Islands Dependencies region of IWC Management Area II in 1904 (Tønnesson and Johnsen, 1982; Hart, 2006). Exploitation went through several phases. Populations of humpback whales, *Megaptera novaeangliae*, and blue whales, *Balaenoptera musculus*, around South Georgia crashed around the time of World War I, and further exploitation occurred in other regions into the 1930's. There was a hiatus in whaling during World War II, but large-scale catches resumed in Antarctic waters after 1945.

As is now well known, between 1947 and 1973 the Soviet Union conducted large-scale illegal whaling throughout much of the North Pacific, Indian, South Atlantic, and Southern Oceans

(Yablokov, 1994, 1995; Yablokov et al., 1998; Ivashchenko et al., 2007; Berzin, 2008; Clapham and Ivashchenko, 2009). This campaign involved the killing of animals of all ages and species, irrespective of quotas, regulations, and protected status established at the time by the International Whaling Commission (IWC). Much of the true catch data have now been made available through the efforts of former Soviet biologists working aboard the various factory ships involved; these data involve the number of animals taken, and sometimes additional details such as location of catch and biological characteristics of the whales.

In the Southern Hemisphere alone, almost 100,000 whales were secretly killed by the U.S.S.R. and not reported to the IWC (Yablokov et al., 1998; Clapham and Baker, 2002). Of this total, some 46,000 were humpback whales. Although the locations (general or spe-

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**ABSTRACT**—From 1947 to 1973, the U.S.S.R. conducted a huge campaign of illegal whaling worldwide. We review Soviet catches of humpback whales, *Megaptera novaeangliae*, in the Southern Ocean during this period, with an emphasis on the International Whaling Commission's Antarctic Management Areas IV, V, and VI (the principal regions of illegal Soviet whaling on this species, south of Australia and western Oceania). Where possible, we summarize legal and illegal Soviet catches by year, Management Area, and factory fleet, and also include information on takes by other nations. Soviet

humpback catches between 1947 and 1973 totaled 48,702 and break down as follows: 649 (Area I), 1,412 (Area II), 921 (Area III), 8,779 (Area IV), 22,569 (Area V), and 7,195 (Area VI), with 7,177 catches not currently assignable to area.

In all, at least 72,542 humpback whales were killed by all operations (Soviet plus other nations) after World War II in Areas IV (27,201), V (38,146), and VI (7,195). More than one-third of these (25,474 whales, of which 25,192 came from Areas V and VI) were taken in just two seasons, 1959–60 and 1960–61. The impact of these takes, and of those from Area IV in

the late 1950's, is evident in the sometimes dramatic declines in catches at shore stations in Australia, New Zealand, and at Norfolk Island.

When compared to recent estimates of abundance and initial population size, the large removals from Areas IV and V indicate that the populations in these regions remain well below pre-exploitation levels despite reported strong growth rates off eastern and western Australia. Populations in many areas of Oceania continue to be small, indicating that the catches from Area VI and eastern Area V had long-term impacts on recovery.

## Southern Hemisphere Stock Divisions (excluding Bryde's whales)

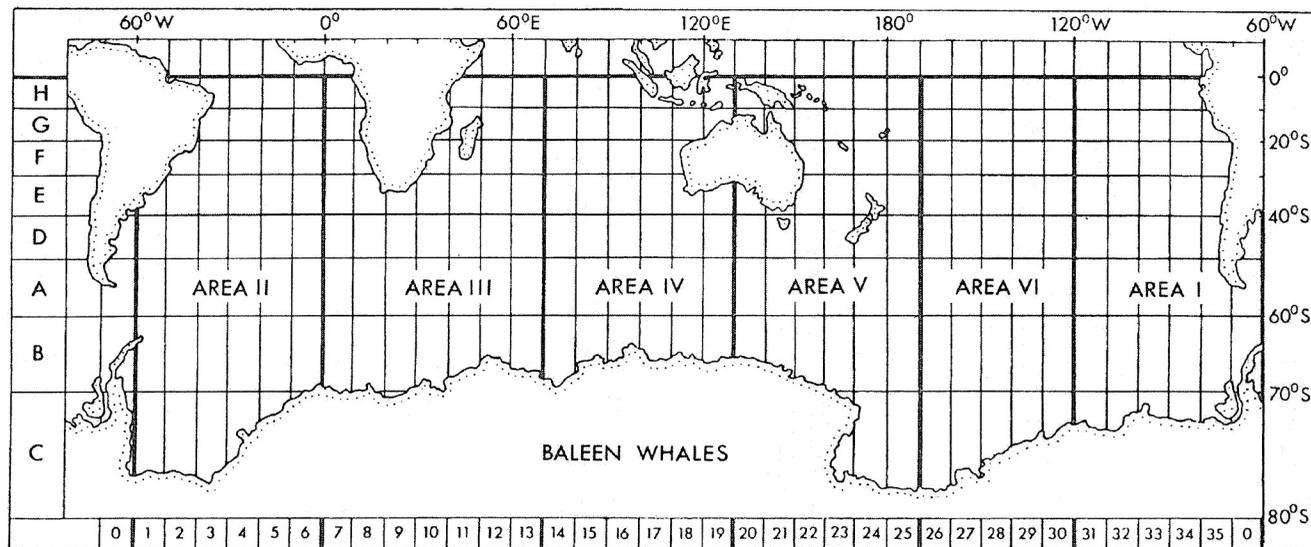


Figure 1.— Southern Hemisphere baleen whale management areas. Source: IWC, 1980: p. 582.

cific) of most of these catches have been revealed, many discrepancies and gaps have remained which have complicated efforts to determine the potential impact of these takes on the stocks concerned. Here, we detail illegal Soviet catches of humpback whales in the Antarctic region during 1947–73, and we attempt to assign these catches to each of the six management areas (termed Areas I–VI) defined by the IWC (IWC, 1980 and Fig. 1). We also provide data on humpback whale catches by factory fleet, as well as total catches (by the U.S.S.R. and other nations) for Areas IV, V, and VI.

### Data Sources

From 1947 to 1973, Soviet catches of humpback whales were made by four floating factory fleets, which operated at various times during the period: *Slava* (1946–66), *Sovetskaya Ukraina* (1959–73), *Yuri Dolgorukiy* (1960–1973), and *Sovetskaya Rossiya* (1961–73). The total catch during the entire period was 48,702 humpbacks; only 2,710 of these catches were reported to the IWC.

Here and previously, the first source for these catch records was *Soviet Antarctic Whaling Data (1947–1972)* (Yablokov, 1995, commonly referred to by the color of its cover as “the green

volume”). This provides details of reported vs. true catch data for each of the four floating factory fleets; in many but not all cases these catches are broken down by Area. However, there are two inconsistencies in this record:

- 1) If Area totals for each whaling season and factory ship are summed from the individual tables, they sometimes do not agree with the summary totals given for each factory ship for the entire period of operation. Sometimes this is because catches which were not assigned to Area are omitted from the summary table’s totals; sometimes it appears to be a simple mathematical error.
- 2) Some data shown in catch summaries provided by Zemsky et al. (1995, 1996) are not included in the green volume, and (less often) the other way around.

The tables presented in this paper make the assumption that the data given in Zemsky et al. (1995, 1996) are more complete than those in the green volume, and therefore they represent a more accurate record; the only exceptions are a few places where Zemsky et al. (1995, 1996) have gaps that the green volume fills (e.g. the 1967–68 season for *S.*

*Ukraina*). Thus, the tables represent a combination of information derived from both sources.

The data derived from the green volume for the *Slava* and *Yuri Dolgorukiy* needed no correction (i.e. the numbers were consistent between the Zemsky papers and the green volume). The *S. Ukraina* green volume data required some minor adjustments. The *S. Rossiya* data in the green volume were the most problematic. Data for non Soviet whaling operations were taken from summaries in various published sources, primarily Chittleborough (1965).

### The 1959–60 and 1960–61 Antarctic Seasons

Of the 48,702 humpback whales caught by the U.S.S.R., more than half were killed in two Antarctic whaling seasons: 1959–60 and 1960–61. The Area breakdowns for *Slava* and *S. Ukraina* in 1959–60 were based upon original catch records and knowledge of where the fleets were operating (reported in less detail by Mikhalev, 2000). Operations in that season occurred between December and March in Area V, with an incursion into Area VI in the second half of March; because the exact number of whales taken in Area VI is

not known, March catch totals for both fleets have been divided evenly between V and VI.

The Area breakdowns for *Slava* and *S. Ukraina* for 1960–61 were taken from Mikhalev (2004) and Zemsky et al. (1996), which together provide information on where the two fleets (notably the latter) were operating each month, together with catch totals for each month. In general terms, the fleets were in Area IV in November, Area V in December–January, and Area VI in February–March; but because there were a few days that did not quite fit this pattern, some catches (though not a lot) may have been assigned by us to the wrong Area.

### Catch Summary

True Soviet whaling catches are reported by factory ship, year, and Area in a series of tables below, as follows: *Slava* (Table 1), *Sovetskaya Ukraina* (Table 2), *Yuri Dolgorukiy* (Table 3), *Sovetskaya Rossiya* (Table 4), all fleets combined, by Area (Table 5), by season and factory fleet (Table 6). Non Soviet catches of humpback whales in the same period came primarily from Areas IV and V; these are summarized in Tables 7 and 8, respectively.

Table 9 gives total catches for the entire period: 27,201 (Area IV), 38,146 (Area V), and 7,195 (Area VI), with 7,177 catches not assignable to an area. Including both Soviet and non Soviet catches, at least 72,542 humpback whales were killed in Areas IV, V, and VI during the post-war period.

### Discussion

Following World War II, almost half the total of illegal whaling in the Southern Hemisphere by the U.S.S.R. were of humpback whales, which was probably the most abundant species in the areas in which the Soviet fleets were working, and thus provided the fastest way to meet the production targets in the industrial plan that governed everything. However, blue whales, sperm whales, sei whales, Bryde's whales, minke whales, and right whales were also killed in large numbers

**Table 1.—Number of humpback whales killed by the *Slava*, by area and season, from 1946–47 to 1965–66. All catches from 1957–58 and 1958–59 have been assigned to Area IV, although it is likely that up to about 300 of these animals were taken in locations to the west of this region while in transit (Mikhalev, personal recollection). The 1959–60 catches are known to have come largely from Area V, with some others from western Area VI (Mikhalev, 2000); therefore, while the exact numbers per Area are not known, the total has been apportioned on this basis. The Area totals for 1960–61 (when *Slava* and *Sovetskaya Ukraina* were operating generally together) are estimated from information about fleet movements given in Mikhalev (2004); while those figures are not entirely accurate because of the grouping of some catches across the boundary of Areas V and VI, they are unlikely to be significantly in error.**

Year	Area I	Area II	Area III	Area IV	Area V	Area VI	Unknown	Total
1946–47 to 1956–57							3,564	3,564
1957–58				2,235				2,235
1958–59				4,039				4,039
1959–60					4,930	495		5,425
1960–61				19	2,415	1,612		4,046
1961–62	6		9	259	216	1,156		1,646
1962–63	6		16	453	168	103		746
1963–64							97	97
1964–65								0
1965–66			13	61	7			81
Total	12	0	38	7,066	7,736	3,366	3,661	21,879

**Table 2.—Number of humpback whales killed by the *Sovetskaya Ukraina*, by area and season, 1959–60 to 1967–68.**

Year	Area I	Area II	Area III	Area IV	Area V	Area VI	Unknown	Total
1959–60					6,848	672		7,520
1960–61				42	3,941	1,590		5,573
1961–62							1,078	1,078
1962–63							667	667
1963–64		4	11	24	260			299
1964–65							3	3
1965–66							710	710
1966–67	238			51	18	180		487
1967–68							181	181
1968–69								0
1969–70								0
1970–71								0
1971–72								0
1972–73							1	1
Total	238	4	11	117	11,067	2,442	2,640	16,519

**Table 3.—Number of humpback whales killed by the *Yuri Dolgorukiy*, by area and season, from 1960–61 to 1972–73.**

Year	Area I	Area II	Area III	Area IV	Area V	Area VI	Unknown	Total
1960–61	2	5	33	181	2,274	415		2,910
1961–62	191		17	108	267	512		1,095
1962–63		2	75	868				945
1963–64			27	118				145
1964–65			67	18				85
1965–66		774	265					1,039
1966–67		90	266	4				360
1967–68		535	84	4				623
1968–69								0
1969–70								0
1970–71								0
1971–72	3							3
1972–73		2						2
Total	196	1,408	834	1,301	2,541	927	0	7,207

Although the true catch figures have been known for some time, assigning these catches to Management Area has in many cases proved difficult. Contradictions in published information and lack of availability of detailed catch positions has introduced uncertainty

into efforts to assess the impact of these catches on the various stocks concerned. Although more detailed information may become available from previously unsearched archives in the former Soviet Union, the summaries given here are the most accurate

**Table 4.**—Number of humpback whales killed by the *Sovetskaya Rossiya*, by area and season, from 1961–62 to 1972–73. The difference between the data given in the green volume and the total number reported by Zemsky et al. (1996) are assigned to unknown area. The overall total of 3,097 agrees with that in Zemsky et al. (1996).

Year	Area I	Area II	Area III	Area IV	Area V	Area VI	Unknown	Total
1961–62	203		3	9	1,069	404		1,688
1962–63							573	573
1963–64			34	85	4		27	150
1964–65				56	61		29	146
1965–66							223	223
1966–67				103	85			188
1967–68			1	42	6	56	20	125
1968–69							2	2
1969–70								0
1970–71								0
1971–72								0
1972–73							2	2
Total	203	0	38	295	1,225	460	876	3,097

**Table 5.**—Combined humpback whale catch totals by area and year for all four Soviet factory fleets, 1946–73. The 3,564 unassigned catches from 1946–47 to 1956–57 seasons were all taken by the *Slava*.

Year	Area I	Area II	Area III	Area IV	Area V	Area VI	Unknown	Total
1946–47 to 1956–57							3,564	3,564
1957–58				2,235				2,235
1958–59				4,039				4,039
1959–60					11,778	1,167		12,945
1960–61		5	33	242	8,630	3,617		12,529
1961–62	400		29	376	1,552	2,072	1,078	5,507
1962–63	6	2	91	1,321	168	103	1,240	2,931
1963–64		4	72	227	264		124	691
1964–65			67	74	61		32	234
1965–66		774	278	61	7		933	2,053
1966–67	238	90	266	158	103	180		1,035
1967–68		535	85	46	6	56	201	929
1968–69							2	2
1969–70								0
1970–71								0
1971–72	3							3
1972–73		2						5
Total	649	1,412	921	8,779	22,569	7,195	7,177	48,702

**Table 6.**—Southern Hemisphere humpback whale catches for all four Soviet floating factories, 1946–73. Source: Zemsky et al. (1995, 1996), except for 1967–68 *S. Ukraina* data, which come from the green volume.

Season	<i>Slava</i>	<i>S. Ukraina</i>	<i>Yuri D.</i>	<i>S. Rossiya</i>	Total
46–47	1				1
47–48					0
48–49					112
49–50	112				112
50–51	511				511
51–52	945				945
52–53	599				599
53–54	311				311
54–55	213				213
55–56	361				361
56–57	236				236
57–58	275				275
58–59	2,235				2,235
59–60	4,039				4,039
60–61	5,425	7,520			12,945
61–62	4,046	5,573	2,910		12,529
62–63	1,646	1,078	1,095	1,688	5,507
63–64	746	667	945	573	2,931
64–65	97	299	145	150	691
65–66		3	85	146	234
66–67	81	710	1,039	223	2,053
67–68		487	360	188	1,035
68–69		181	623	125	929
69–70				2	2
70–71					0
71–72			3		3
72–73		1	2	2	5
Total	21,879	16,519	7,207	3,097	48,702

accounting available to date, and the reported totals are unlikely to be significantly in error.

The large number of humpbacks killed by the U.S.S.R. in Areas IV and V from about 1957 to 1961 precipitated major declines in catches at shore stations in Australia and New Zealand, notably those reliant on whales from Area V. More than 6,000 whales were removed from Area IV in 1957–58 and 1958–59 by the *Slava* fleet, and this was followed by a notable decline in catches at the two western Australian stations of Carnarvon and Albany, which in 1959 took only 700 humpbacks from an assigned quota of 1,175 (Table 7).

More dramatic was the situation in Area V following the huge Soviet catches in 1959–60 and 1960–61 (a total of 25,474 whales, of which about 20,630 came from Area V). In 1961,

the eastern Australian stations of Tangalooma and Byron Bay failed for the first time to reach their catch quota, and the fishery collapsed the following year (Table 8). The decline was even more apparent to the east at the stations in New Zealand, where the catch dropped from 361 whales in 1960 to 80 (1961) and then 32 (1962). Similarly, in 1962 the station at Norfolk Island caught only 4 whales from a quota of 170.

The total post-war catches by all nations from Areas IV and V (27,201 and 38,146 humpbacks, respectively) were very large. If one compares these figures to current estimates of abundance and initial population size (IWC, 2006), it is apparent that the current sizes of these populations remain well below their pre-exploitation levels despite reported strong growth rates in some areas. Jackson et al. (2008) explored this issue using a two-stock Bayesian density-dependent logistic population model. Their median posterior estimate of carrying capacity for eastern Australia (broadly equivalent to Area V) was 26,383–31,400, with a median recovery estimate in 2008 of 27–31% of initial population size.

The situation with Area VI (total known catch 7,195 whales) is less clear than for Areas IV and V. Median posterior estimate of carrying capacity for Oceania of Jackson et al. (2008) was 16,022–22,957, with a median recovery estimate of 20–25% of initial population size. This estimate, together with the relatively low abundance of humpback whales observed in many parts of this region today (New Zealand, New Caledonia, the Cook Islands, Fiji, Tonga, American Samoa, and French Polynesia) suggests a slow recovery from the large-scale overexploitation perpetrated by the U.S.S.R. This situation has prompted recent concern over the status of humpback whales in Oceania, and has led to that sub-population being categorized as “endangered” by the IUCN (Childerhouse et al., 2008).

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## Literature Cited

- Berzin, A. A. 2008. The truth about Soviet whaling. In Y. V. Ivashchenko, P. J. Clapham, and R. L. Brownell, Jr. (Editors), *The truth about Soviet whaling: a memoir*, p. 1–59 [transl. by Y. V. Ivashchenko]. *Mar. Fish. Rev.* 70(2).
- Childerhouse, S., J. Jackson, C. S. Baker, N. Gales, P. J. Clapham, and R. L. Brownell, Jr. 2008. *Megaptera novaeangliae*, Oceania subpopulation. IUCN Red List of Threatened Species (<http://www.iucnredlist.org/details/132832>).
- Chittleborough, R. G. 1965. Dynamics of two populations of the humpback whale, *Megaptera novaeangliae* (Borowski). *Aust. J. Mar. Freshw. Res.* 16:33–128.
- Clapham, P., and C. S. Baker. 2002. Modern whaling. In W. F. Perrin, B. Würsig, and J. G. M. Thewissen (Editors), *Encyclopedia of marine mammals*, p. 1,328–1,332. Acad. Press, San Diego, Calif.
- \_\_\_\_\_ and Y. Ivashchenko. 2009. A whale of a deception. *Mar. Fish. Rev.* 71(1):44–52.
- Hart, I. B. 2006. Whaling in the Falkland Islands Dependencies, 1904–1931. Pequena Press, Newton St. Margarets, U.K., 365 p.
- Ivashchenko, Y. V., P. J. Clapham, and R. L. Brownell, Jr. (Editors). 2007. Scientific reports of Soviet whaling expeditions in the North Pacific, 1955–1978. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-175, 36 p. [transl. by Y. V. Ivashchenko].
- IWC. 1980. Southern Hemisphere stock divisions. *Rep. Int. Whal. Comm.* 32:582.
- \_\_\_\_\_. In press. Report of the workshop on the Comprehensive Assessment of Southern Hemisphere humpback whales. *J. Cetacean Res. Manage.*
- Jackson, J. A., A. Zerbini, P. Clapham, R. Constantine, C. Garrigue, N. Hauser, M. M. Poole, and C. S. Baker. 2008. Progress on a two-stock catch allocation model for reconstructing population histories of east Australia and Oceania. *Int. Whaling Comm., The Red House, Sta. Rd., Impington, Camb., U.K., Pap. SC/60/SH14*, 12 p.
- Mikhalev, Y. A. 2000. Biological characteristics of humpback whales taken in Antarctic Area V by the whaling fleets *Slava* and *Sovietskaya Ukraina*. *Int. Whaling Comm., The Red House, Sta. Rd., Impington, Camb., U.K., Pap. SC/52/IA12*, 18 p.
- \_\_\_\_\_. 2004. Trade and the biological characteristic of humpback whales, caught by Soviet Antarctic flotillas into the season 1960–61. *Int. Whaling Comm., The Red House, Sta. Rd., Impington, Camb., U.K., Pap. SC/56/SH9*, 12 p.
- Tønnessen, J. N., and A. O. Johnsen. 1982. *The history of modern whaling*. Univ. Calif. Press, Berkeley, 798 p.
- Yablokov, A. V. 1994. Validity of whaling data. *Nature* 367:108.
- \_\_\_\_\_. 1995. Soviet Antarctic whaling data (1947–1972). *Cent. Russ. Environ. Pol., Moscow*, 320 p. [In Engl. and Russ.]
- \_\_\_\_\_, V. A. Zemsky, Y. A. Mikhalev, D. D.

**Table 7.—Other (non Soviet) catches of humpback whales from Area IV, 1949–62. Point Cloates, Carnarvon, and Albany are all on the west coast of Australia. Source: Chittleborough (1965: Table 1).**

Year	Point Cloates		Carnarvon		Albany		Antarctic (pelagic)	Total	
	Quota	Catch	Quota	Catch	Quota	Catch			
1949	600	190					0	190	
1950	600	348	600	40			779	1,167	
1951	600	574	650	650			1,112	2,336	
1952	600	536	600	600	50	51	1,127	2,314	
1953	603	603	600	600	100	100	193	1,496	
1954	600	600	600	600	120	120	258	1,578	
1955	500	500	500	500	126	126	28	1,154	
1956	Transferred <sup>1</sup>		1,000	1,000	120	119	832	1,951	
1957			1,000	1,018	120	102	0	1,120	
1958			1,000	885	120	82	0	967	
1959			1,000	541	175	159	1,413	2,113	
1960			750	440	120	105	66	611	
1961			475	475	105	105	4	584	
1962			540	503	100	40	56	599	
Total	West coast of Australia: 12,312							5,868	18,180

<sup>1</sup>Quotas and catches transferred to Carnarvon.

**Table 8.—Other (non Soviet) catches of humpback whales from Area V, 1949–62. Tangalooma (Queensland), and Byron Bay (New South Wales) are both in eastern Australia. Source: Chittleborough (1965: Table 2).**

Year	Tangalooma		Byron Bay		Norfolk Island		New Zealand	Antarctic (pelagic)	Total	
	Quota	Catch	Quota	Catch	Quota	Catch				
1949							141	0	141	
1950							79	903	982	
1951							111	162	273	
1952	600	600					122	146	868	
1953	700	700					109	504	1,313	
1954	600	598	120	120			180	0	898	
1955	600	600	120	120			112	1,097	1,929	
1956	600	600	120	120	150	150	143	194	1,207	
1957	600	600	121	121	120	120	184	0	1,025	
1958	600	600	120	120	120	120	183	0	1,023	
1959	660	660	150	150	150	150	318	885	2,163	
1960	660	660	150	150	170	170	361	931	2,272	
1961	660	591	150	140	170	170	80	293	1,274	
1962	600	68	150	105	170	4	32	0	209	
Total	Eastern Australia: 8,307							2,155	5,115	15,577

**Table 9.—Known total post-war catches (U.S.S.R. and other nations) of humpback whales from Areas IV, V, and VI, and migratory corridors directly north of these areas (e.g. Australia and New Zealand). There were an additional 7,177 Soviet catches that were not assignable to an Area.**

Year/Source	Area IV	Area V	Area VI	Total
U.S.S.R., 1959–60		11,778	1,167	12,945
U.S.S.R., 1960–61	242	8,630	3,617	12,489
Other U.S.S.R., 1949–73	8,779	2,161	2,411	13,351
Australia–NZ, 1949–62	18,180	15,577		33,757
Total	27,201	38,146	7,195	72,542

- Tormosov, and A. A. Berzin. 1998. Data on Soviet whaling in the Antarctic in 1947–1972 (population aspects). *Russ. J. Ecol.* 29:38–42.
- Zemsky, V. A., A. A. Berzin, Y. A. Mikhalev, and D. D. Tormosov. 1995. Soviet Antarctic pelagic whaling after WWII: review of actual

catch data. *Rep. Int. Whal. Comm.* 45:131–135.

\_\_\_\_\_, Y. Mikhalev, and A. A. Berzin. 1996. Supplementary information about Soviet whaling in the Southern Hemisphere. *Rep. Int. Whal. Comm.* 46:131–138.