

DATA FOR WESTERN NORTH PACIFIC BRYDE'S WHALES UNDER PROCEDURE A

(Taken from the Scientific Report in Sorrento: Annex D, Appendix 4, Adjunct 1)

1.1 Data used when previously developing a trial structure (incl. Conditioning)

The aim here was to identify the data previously used (including references [in square brackets] to published or unpublished Scientific Committee papers where those data were analysed, as appropriate), including data format, where held, etc. The list is organised in reverse chronological order of citation/last use, back to 1995 - the year of the comprehensive assessment - and is inclusive, covering data used in the comprehensive assessment, *IST* specification and conditioning and in critiques of these.

1.1.1 Catch (and effort) data

(1) Estimated corrected Bryde's whale catch data for USSR, 1967-1979. Held by Secretariat. [Shigemune *et al.*, 1999; Brownell, R.L., Jr *et al.*, 1999; Brownell, R.L.J., 1999; Ohsumi, 1998, p.139; Brownell, R.L., Jr, 1998, p.143; Kato *et al.*, 1997].

(2) North Pacific Bryde's whale catch data, 1946-1987 (from NP forms: catch, effort, catch at length). Held by Secretariat. [Smith, 1999; IWC, 1996, p.154].

1.1.2 Abundance data (vessel, mode, date, position, species, school size, radial angle, radial distance, Beaufort, visibility, and effort data)

(1) Japanese Scouting Vessel Data (JSV), North Pacific, May-Sep 1972-1981. Held by Japan. [IWC, 2000, p.88].

(2) Japanese dedicated vessel survey data, May-Sep 1982-89. Held by Japan. [IWC, 2000, p.88].

(3) Bryde's whale sightings ($n=383$) and effort, 1988-1996, 0-45°N/130°E-165°W. Held by Japan. [Okamura and Shimada, 1999; Okamura *et al.*, 1998; Kato *et al.*, 1997; Shimada and Miyashita, 1997; Shimada and Nishiwaki, 1997; Shimada and Miyashita, 1996; Shimada and Miyashita, 1995; Miyashita *et al.*, 1996].

(4) Bryde's whale sightings ($n=1$) and effort, Aug-Sep 1995, 0-22°N/167°30'E-165°W. Held by Japan. [Shimada and Goto, 1996].

1.1.3 Data used for discussion of stock identity, e.g. Discovery mark releases and recoveries; genetic data, biological data, ecological data

(1) Allozyme data for 616 sei whales and 2,521 Bryde's whales taken 1974-1984, including date, latitude, longitude, sex, length, alleles. Held by Japan. [Kishiro *et al.*, 2000; Wada, 1996].

(2) Daily reports from Japanese government inspectors in the North Pacific, 1974-1979, including date, noon position, weather, catch, effort, seasonal correction factors. Held by Secretariat? [Miyashita *et al.*, 1999; Smith, 1999].

(3) Mark and recapture data for 52 Bryde's whales, recaptured 1958-1986. Data given in Kishiro, 1998; held by Secretariat through 1978. [Kishiro, 1998; Kishiro, 1996; Miyashita, 1995; IWC, 1996, p.154].

(4) Data from samples collected for genetic analysis of Bryde's whales ($n=154$) from Taiji (19), Ogasawara (53), western North Pacific (59), and eastern Indian Ocean (23), including (for each whale sampled) date, latitude, longitude, sex, mtDNA sequences. Held by Japan. [Pastene *et al.*, 1998; Pastene *et al.*, 1997b].

(5) MtDNA sequences for 27 Bryde's whales, 11 sei whales, one blue whale, and one fin whale (with available data on date, position, sex, length). Held by US (partially in Genbank?). [Dizon *et al.*, 1996].

(6) RFLP data for Bryde's whales ($n=370$) from Taiji, Ogasawara, western central North Pacific, western South Pacific, eastern South Pacific and eastern Indian Ocean, including fragment length distributions by enzyme, date, position and sex. Held by Japan. [Pastene *et al.*, 1995; Ohsumi, 1995; Pastene *et al.*, 1997a].

1.1.4 Other data

'Biological data of whales caught' for Bryde's whales taken in Japanese coastal whaling 1971- 1979, pelagic whaling in North Pacific 1981-1987, land-based whaling in Bonin Islands 1981-1987 and for 'sei whales' taken off Bonin Islands 1948-1952, including date, position, species, sex, length, foetal length, weight of testes, number of corpora (where available), and age (where available). Used for estimation of biological parameters in comprehensive assessment. Held by Japan. [Kato and Yoshioka, 1995].

1.2 Other data relevant to completion of *IST* development

The aim here was to identify other and subsequent data (including references to published or SC papers where those data were analysed, as appropriate), including data format, where held etc.

1.2.1 Catch data

(1) Estimated corrected Bryde's whale catch data for Bonin Islands, 1981-87 (operational summaries). Originally held privately by T. Kondo, Japan and sent to Secretariat in November 2005 [Kasuya and Brownell, 2001].

1.2.2 Abundance data

(1) Bryde's whale and 'like Bryde's whale' sightings ($n=122$) and effort, Aug-Sep 2002 in waters bounded by 180-155°E. Held by Japan. [Shimada, 2003].

(2) Bryde's whale sightings ($n=20$) and effort, Feb-Mar 2002, 6-12°N/160-180°E. Held by Japan. [Shimada, 2003].

(3) JARPEN II Bryde's whale sightings ($n=129$) and effort, 5 Jul - 18 Sep 2002. Held by Japan. [Fujise *et al.*, 2003].

(4) Bryde's whale sightings ($n=86$) and effort, 23 Jul - 20 Aug 2001, 21-39°N/145-175°E and 21-39°N/175-160°W. Held by Japan. [Miyashita *et al.*, 2002].

(5) Bryde's whale sightings ($n=2$) and effort, Aug-Sep 2001, 10-35°N/130-137°30'E. Held by Japan. [Shimada, 2002].

(6) Bryde's whale sightings ($n=7$) and effort, Aug-Sep 2000, 10-43°N/137°30'-145°E. Held by Japan. [Shimada, 2001].

(7) Bryde's whale sightings ($n=67$) and effort, 1999-2001, 5°S-21°N/145-165°E. Held by Japan. [Shimada and Miyashita, 2001].

(8) Bryde's whale sightings ($n=167$) and effort, Aug-Sep 1999, 10-43°N/160-180°E. Held by Japan. [Shimada, 2000].

(9) Bryde's whale sightings ($n=60$) and effort, Aug-Sep 1998, 10-43°N/145-165°E. Held by Japan. [Shimada, 1999].

1.2.3 Data used for discussion of stock identity

(1) Data from samples collected for genetic analysis of Bryde's whales in JARPEN II surveys in 2000 and 2001 ($n=85$), including (for each whale sampled) date, latitude, longitude, sex, mtDNA sequences and microsatellite alleles. Held by Japan. [Appendix 10 to Fujise *et al.*, 2002].

(2) Data from samples collected for genetic analysis of Bryde's whales in JARPEN II surveys in 2002 and 2003 ($n=100$) and from past commercial whaling in Ogasawara/Taiji (103) and central western North Pacific (113), including (for each whale sampled) date, latitude, longitude, sex, mtDNA sequences. Held by Japan.

(3) Data from samples collected for genetic analysis of Bryde's whales in JARPEN II surveys in 2002 and 2003 ($n=100$) and from past commercial whaling in Ogasawara/Taiji (102), central western North Pacific (98), including (for each whale sampled) date, latitude, longitude, sex, microsatellite alleles. Held by Japan.

(4) MtDNA sequences data for 16 Bryde's whales. Biopsies taken in Hawaii (6) and ETP (12) including date, latitude, longitude. Held by the USA [LeDuc and Taylor, 2003].

REFERENCES

- Brownell, R.L.J. 1999. USSR pelagic catches of Bryde's whales in the North Pacific. Paper SC/51/RMP25 presented to the IWC Scientific Committee, May 1999, Grenada, WI (unpublished). 6pp. [Paper available from the Office of this Journal].
- Brownell, R.L., Jr. 1998. Annex D. Report of the Working Group on the RMP. Appendix 7. Possible catches of Bryde's whales by Soviet whaling operations in the North Pacific. *Rep. int. Whal. Commn* 48:143.
- Brownell, R.L., Jr., Yablokov, A.V., Mikhalev, Y.A., Zemsky, V.A. and Tormosov, D.D. 1999. True Soviet pelagic whales statistics for the Southern Hemisphere and North Pacific. Paper SC/51/RMP21 presented to the IWC Scientific Committee, May 1999, Grenada, WI (unpublished). 8pp. [Paper available from the Office of this Journal].
- Dizon, A.E., Lux, C.A., LeDuc, R.G., Urban-R, J., Henshaw, M., Baker, C.S., Cipriano, F. and Brownell Jr, R.L. 1996. Molecular phylogeny of the Bryde's/sei whale complex; separate species status for the pygmy Bryde's form? Paper SC/48/O 27 presented to IWC Scientific Committee, June 1996, Aberdeen (unpublished). 15pp. [Paper available from the Office of this Journal].

- Fujise, Y., Kawahara, S., Pastene, L.A. and Hatanaka, H. 2002. Report of 2000 and 2001 feasibility study of the Japanese whale research program under special permit in the western North Pacific - phase II (JARPN II). Paper SC/54/O17 presented to the IWC Scientific Committee, April 2002, Shimonoseki, Japan (unpublished). 202pp. [Paper available from the Office of this Journal].
- Fujise, Y., Tamura, T., Bando, T., Yasunaga, G., Konishi, K., Murase, H., Yoshida, T., Itoh, S., Ogawa, R., Oka, T., Sasaki, T., Fukutome, K., Isoda, T., Birukawa, N., Horii, N., Zharikov, K.A., Park, K.J., Tohyama, D. and Kawahara, S. 2003. Cruise report of the Japanese Whale Research Program under Special permit in the western North Pacific - Phase II (JARPN II) in 2002 [Part I] - Offshore component. Paper SC/55/O7 presented to the IWC Scientific Committee, May 2003, Berlin. 41pp. [Paper available from the Office of this Journal].
- International Whaling Commission. 1996. Report of the Scientific Committee. Annex G, Appendix 2. North Pacific Bryde's whale data held by the IWC. *Rep. int. Whal. Commn* 46:154-6.
- International Whaling Commission. 2000. Report of the Scientific Committee. Annex D. Report of the Sub-Committee on the Revised Management Procedure. *J. Cetacean Res. Manage. (Suppl.)* 2:79-124.
- Kasuya, T. and Brownell, R.L., Jr. 2001. Illegal Japanese coastal whaling and other manipulation of catch records. Paper SC/53/RMP24 presented to the IWC Scientific Committee, July 2001, London (unpublished). 4pp. [Paper available from the Office of this Journal].
- Kato, H. and Yoshioka, M. 1995. Biological parameters and morphology of Bryde's whales in the western North Pacific, with reference to stock identification. Paper SC/47/NP11 presented to the IWC Scientific Committee, May 1995 (unpublished). 19pp. [Paper available from the Office of this Journal].
- Kato, H., Ohsumi, S. and Hatanaka, H. 1997. Some suggestions of operation parameters for *Implementation Trials* of RMP on the western North Pacific stock of Bryde's whales. Paper SC/49/NP3 presented to the IWC Scientific Committee, September 1997, Bournemouth (unpublished). 7pp. [Paper available from the Office of this Journal].
- Kishiro, T. 1996. Movements of marked Bryde's whales in the western North Pacific. *Rep. int. Whal. Commn* 46:421-8.
- Kishiro, T. 1998. Further analysis of the mark-recapture data of the western North Pacific Bryde's whales by a unit of five degree square latitude-longitude. Paper SC/50/RMP18 presented to the IWC Scientific Committee, April 1998 (unpublished). 13pp. [Paper available from the Office of this Journal].
- Kishiro, T., Miyasita, T., Wada, S. and Shimadzu, Y. 2000. Catches of sei and bryde's whales in the Japanese pelagic operation in 1973 and 1974. Paper SC/52/RMP8 presented to the IWC Scientific Committee, June 2000, in Adelaide, Australia. 13pp. [Paper available from the Office of this Journal].
- LeDuc, R.G. and Taylor, B.L. 2003. Preliminary examination of genetic variation in Bryde's whales in the eastern tropical Pacific. Paper SC/55/SD5 presented to the IWC Scientific Committee, May 2003, Berlin. 2pp. [Paper available from the Office of this Journal].
- Miyashita, T. 1995. Re-estimation of population size of the western North Pacific stock of Bryde's whales using mark-recapture method. Paper SC/47/NP15 presented to the IWC Scientific Committee, May 1995 (unpublished). 8pp. [Paper available from the Office of this Journal].
- Miyashita, T., Kishiro, T., Higashi, N., Sato, F., Mori, K. and Kato, H. 1996. Winter distribution of cetaceans in the western North Pacific inferred from sighting cruises 1993-1995. *Rep. int. Whal. Commn* 46:437-41.
- Miyashita, T., Hatanaka, H. and Ohsumi, S. 1999. Some considerations on within-stock structure hypothesis for the western North Pacific Bryde's stock using CPUE data. Paper SC/51/RMP6 presented to the IWC Scientific Committee, May 1999, Grenada, WI (unpublished). 10pp. [Paper available from the Office of this Journal].
- Miyashita, T., Okamura, H. and Minamikawa, S. 2002. Report of the longitudinal sighting surveys for Bryde's whales in the North Pacific, 2001. Paper SC/54/RMP10 presented to the IWC Scientific Committee, April 2002, Shimonoseki, Japan (unpublished). 6pp. [Paper available from the Office of this Journal].
- Ohsumi, S. 1995. A review of population studies of the North Pacific Bryde's whale stocks (revised). Paper SC/47/NP14 presented to the IWC Scientific Committee, May 1995 (unpublished). 35pp. [Paper available from the Office of this Journal].
- Ohsumi, S. 1998. Annex D. Report of the Working Group on the RMP. Appendix 6. A review of the catch history of Bryde's whales by Soviet whaling in the North Pacific. *Rep. int. Whal. Commn* 48:139-42.
- Okamura, H. and Shimada, H. 1999. Abundance estimation method using multi-year sighting data and the application to the western North Pacific Bryde's whale data. Paper SC/51/RMP18 presented to the IWC Scientific Committee, May 1999, Grenada, WI (unpublished). 13pp. [Paper available from the Office of this Journal].
- Okamura, H., Miyashita, T. and Shimada, H. 1998. The preliminary GLM analysis of past Bryde's whale sighting data in the North Pacific. Paper SC/50/RMP16 presented to the IWC Scientific Committee, April 1998 (unpublished). 10pp. [Paper available from the Office of this Journal].
- Pastene, L.A., Goto, M. and Kato, H. 1995. Preliminary RFLP analysis of the mitochondrial D-loop DNA in the Bryde's whale *Balaenoptera edeni* from the western North Pacific and eastern Indian Ocean. Paper SC/47/NP13 presented to the IWC Scientific Committee, May 1995 (unpublished). 17pp. [Paper available from the Office of this Journal].
- Pastene, L.A., Goto, M., Itoh, S., Wada, S. and Kato, H. 1997a. Intra and interoceanic patterns of mitochondrial DNA variation in the Bryde's whale *Balaenoptera edeni*. *Rep. int. Whal. Commn* 47:569-74.
- Pastene, L.A., Goto, M., Palsboll, P.J. and Kato, H. 1997b. Population structure of the Bryde's whale (*Balaenoptera edeni*) in the North Pacific based on analysis of mitochondrial DNA control region sequences. Paper SC/49/NP5 presented to the IWC Scientific Committee, September 1997, Bournemouth (unpublished). 12pp. [Paper available from the Office of this Journal].
- Pastene, L.A., Yoshida, H., Goto, M., Kato, H. and Palsboll, P.J. 1998. Population structure in the Bryde's whale (*Balaenoptera edeni*) based on analysis of mitochondrial DNA control region sequences. Paper SC/50/RMP9 presented to the IWC Scientific Committee, April 1998 (unpublished). 16pp. [Paper available from the Office of this Journal].

- Shigemune, H., Yamamura, K., Ohsumi, S. and Hatanaka, H. 1999. The plausibility of catch records of Bryde's whales reported by the former USSR Government. Paper SC/51/RMP2 presented to the IWC Scientific Committee, May 1999, Grenada, WI (unpublished). 27pp. [Paper available from the Office of this Journal].
- Shimada, H. 1999. Report of the western North Pacific Bryde's whale sighting survey in summer, 1998. Paper SC/51/RMP4 presented to the IWC Scientific Committee, May 1999, Grenada, WI (unpublished). 11pp. [Paper available from the Office of this Journal].
- Shimada, H. 2000. Report of a sighting survey in western North Pacific Bryde's whale conducted in August-September 1999. Paper SC/52/RMP9 presented to the IWC Scientific Committee, June 2000, in Adelaide, Australia (unpublished). 15pp. [Paper available from the Office of this Journal].
- Shimada, H. 2001. Report of a sighting survey on western North Pacific Bryde's whale conducted in August-September 2000. Paper SC/53/RMP8 presented to the IWC Scientific Committee, July 2001, London (unpublished). 8pp [Paper available from the Office of this Journal].
- Shimada, H. 2002. Report of a sighting survey on western North Pacific Bryde's whale conducted in August-September 2001. Paper SC/54/RMP13 presented to the IWC Scientific Committee, April 2002, Shimonoseki, Japan (unpublished). 4pp. [Paper available from the Office of this Journal].
- Shimada, H. 2003. Report of a sighting survey of winter distribution of western North Pacific Bryde's whale off the Marshall Islands conducted in January-March 2002. Paper SC/55/RMP2 presented to the IWC Scientific Committee, May 2003, Berlin (unpublished). 5pp. [Paper available from the Office of this Journal].
- Shimada, H. and Goto, M. 1996. Cruise report for the cetaceans sighting survey in low latitudes of the North Pacific, 1995. Paper SC/48/NP23 presented to IWC Scientific Committee, June 1996, Aberdeen (unpublished). 7pp. [Paper available from the Office of this Journal].
- Shimada, H. and Miyashita, T. 1995. Estimation of current population size of the western North Pacific Bryde's whale using sightings data from 1988 to 1994. Paper SC/47/NP9 presented to the IWC Scientific Committee, May 1995 (unpublished). 9pp. [Paper available from the Office of this Journal].
- Shimada, H. and Miyashita, T. 1996. Further estimation of Bryde's whale abundance in the western North Pacific incorporating sighting data in 1995 survey. Paper SC/48/NP17 presented to IWC Scientific Committee, June 1996, Aberdeen (unpublished). 8pp. [Paper available from the Office of this Journal].
- Shimada, H. and Miyashita, T. 1997. Population abundance of the western North Pacific Bryde's whale estimated from the sighting data collected from 1988 and 1996. Paper SC/49/NP4 presented to the IWC Scientific Committee, September 1997, Bournemouth (unpublished). 7pp. [Paper available from the Office of this Journal].
- Shimada, H. and Miyashita, T. 2001. Report of the sightings surveys for winter distribution of large cetaceans in the low latitudinal waters of the western North Pacific, 1999-2001. Paper SC/53/RMP10 presented to the IWC Scientific Committee, July 2001, London (unpublished). 7pp. [Paper available from the Office of this Journal].
- Shimada, H. and Nishiwaki, S. 1997. Cruise report of the cetacean sighting survey in low latitudes of the North Pacific, in summer 1996. Paper SC/49/NP15 presented to the IWC Scientific Committee, September 1997, Bournemouth (unpublished). 13pp. [Paper available from the Office of this Journal].
- Smith, T. 1999. On the definition of areas for the implementation of the RMP for Western North Pacific Bryde's whales. Paper SC/51/RMP14 presented to the IWC Scientific Committee, May 1999, Grenada, WI (unpublished). 21pp. [Paper available from the Office of this Journal].
- Wada, S. 1996. The stability of *Got-If* frequencies of the western North Pacific stock of Bryde's whales. *Rep. int. Whal. Commn* 46:459-60.