# Report of the Scientific Committee

**Virtual Meetings, 27 April-14 May 2021**

# Annex F: Status of DNA Registers

**This report is presented as it was at SC/68C.**
**There may be further editorial changes (e.g. updated references, tables, figures) made before publication.**

**International Whaling Commission**
**Cambridge, UK, 2021**

# Annex F

# Status of DNA Registers

**ANNEX F1**

**STATUS OF THE ICELANDIC WHALE DNA REGISTER**

Christophe Pampoulie and Gisli A. Víkingsson

Practical arrangements regarding the establishment of the Icelandic DNA register were concluded in (2007). The Marine and Freshwater Research Institute, Reykjavik, is responsible for the establishment and maintenance of the registry that is of the same format as the Norwegian DNA registry. An ORACLE database has now been created and contains all genotyped individuals information as well as tissue collected ID of individuals collected but not genotyped. In parallel, a DNA tissue bank has been achieved and is now fully functional.

Table 1 gives the present status of the registry. Samples from all the common minke whales landed as a part of the Icelandic research program (2003-2007) and recent commercial catches (2008-2017), as well as from commercial NA fin whale catches have been genotyped and information stored in the database (note that two blue-fin hybrids were caught in 2018, one of which was confirmed to be a second-generation hybrid-see Pampoulie *et al.* 2021).

| footnote # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Species/Year | type | # whales | # duplicate | # missing | # lab problem | #mtDNA | %mtDNA | #msat | %msat | sex analyzed | % sexed | Note |
| NA minke whale | | | | | | | | | | | | |
| 2003-2007 | SP | 189 | 0 | 0 | 0 | 189 | 100 | 189 | 100 | 189 | 100 | |
| 2008-2017 | C | 437 | 0 | 0 | 0 | 379 | 89 | 382 | 88 | 382 | 89 | |
| NA fin whale | | | | | | | | | | | | |
| 2006-2018 | C | 834 | 0 | 0 | 0 | 834 | 100 | 834 | 98 | 834 | 100 | |

[1] key to sample types: SP=special permit catch, C=commercial catch, BC=bycatch, ST=stranding
[2] number of whales that potentially entered by the previous years and enters (new year) the markets
[3] number of occurrences (tissues) sample switching on board the vessels as detected by comparison of genetic profiles
[4] number of individuals for which tissue samples are missing for reasons other than sample switching
[5] genetic laboratory not able to obtain microsatellite profiles mtDNA haplotypes from tissue samples
[6] number of samples analysed for mitochondrial control region
[7] % of total samples analysed for mitochondrial control region
[8] number of samples analysed for microsatellites
[9] % of total samples analysed for microsatellites
[10] number of samples analysed for sex
[11] % of samples analysed for sex
[12] other problems or information

**ANNEX F2**

**AN UPDATE OF THE NORWEGIAN MINKE WHALE DNA REGISTER (APRIL 2021)**

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| footnote # | 1 | 2 | 3 | 4 | 5 | 6,13 | 7 | 8 | 9 | 10 | 11 | 14 | | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Species/Year | type | # whales | # duplicate | # missing | # lab problem | #mtDNA | %mtDNA | #msat | %msat | sex analyzed | % sexed | SNP | % SNP | note |
| NA minke whale | | | | | | | | | | | | | | |
| 1997-2019 | C | 13120 | 118 | 82 | 3 | 10652 | 87 | 13035 | 299 | 13035 | 299 | 2383 | 212 | |
| 2020 | C | 501 | 1 | 0 | 0 | 0 | 0 | 501 | 100 | 501 | 100 | 501 | 100 | |

1 key to sample types: SP=special permit catch, C=commercial catch, BC=bycatch, ST=stranding.
2 number of whales that potentially entered by the previous years and enters (new year) the markets
3 number of occurrences (tissues) sample switching on board the vessels as detected by comparisonof genetic profiles.
4 number of individuals for which tissue samples are missing for other reasons than sample switching
5 genetic laboratory not able to obtain microsatellite profiles mtDNA haplotypes from tissue samples
6 number of samples analyzed for mitochondrial control region
7 % of total samples analyzed for mitochondrial control region
8 number of samples analyzed for microsatellites
9 % of total samples analyzed for microsatellites
10 number of samples analyzed for sex
11 % of total samples analyzed for sex
12 other problems or information
13 Discontinued starting from 2016
14 Started in 2016

**ANNEX F3**

**AN UPDATE OF THE JAPANESE DNA REGISTER FOR LARGE WHALES**

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INTRODUCTION

The technical specifications and the status of the Japanese DNA register for large whales was presented and discussed during the 2005 International Whaling Commission (IWC SC) meeting (IWC, 2006). Since then, the number of genetic samples and the number of individuals analyzed and registered have been reported to the IWC Scientific Committee annual meetings. The annual reports have included information of whales taken by special scientific permits in the North Pacific (JARPN/JARPNII and NEWREP-NP) and Antarctic (JARPA/JARPAII and NEWREP-A), the commercial whaling in the North Pacific, and bycatches.

It should be noted that the special scientific permit takes under NEWREP-A and NEWREP-NP programs were terminated in June 2019 as an effect of the withdrawal of Japan from the International Convention for the Regulation of Whaling (ICRW) on 30 June 2019. From 1 July 2019, commercial whaling within Japan's Exclusive Economic Zone (EEZ) was started, and samples taken have been registered in the Japanese DNA register. The Japanese regulation on bycatches of large whales (established from 1 July 2001) requires that all animals should be registered with a DNA profile beforeany products derived from a bycaught animal are sold in the market.

The most recent full description of the protocol used by the Institute of Cetacean Research for the genetic analyses in the context of the IWC guidelines was presented by Kanda *et al*. (2014).

The update of the Japanese DNA register for large whales till 2020 is shown in Table 1.

Table 1. The update of the Japanese DNA register for large whales till 2020.

| footnote # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | **12** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Species/Year | type | # whales | # duplicate | # missing | # lab problem | #mtDNA | %mtDNA | #msat | %msat | sex analyzed | % sexed | note |
| NP minke whale | | | | | | | | | | | | |
| 1994-2019 | SP | 3057 | 0 | 0 | 8 | 3049 | 99.7 | 3049 | 99.7 | 3057 | 100 | |
| 2019 | CW | 44 | 0 | 0 | 0 | 44 | 100 | 44 | 100 | 44 | 100 | |
| 2020 | CW | 95 | 0 | 0 | 0 | 95 | 100 | 95 | 100 | 95 | 100 | |
| 2001-2019 | BC | 2363 | 0 | 26 | 2 | 2363 | 100 | 2335 | 98.8 | 2333 | 98.7 | |
| 2020 | BC | 71 | 0 | 0 | 0 | 71 | 100 | 71 | 100 | 71 | 100 | |
| NP sei whale | | | | | | | | | | | | |
| 2002-2018 | SP | 1622 | 0 | 0 | 4 | 1618 | 99.8 | 1622 | 100 | 1622 | 100 | |
| 2019 | CW | 25 | 0 | 0 | 0 | 25 | 100 | 25 | 100 | 25 | 100 | |
| 2020 | CW | 25 | 0 | 0 | 0 | 25 | 100 | 25 | 100 | 25 | 100 | |
| 2001-2019 | BC | 1 | 0 | 0 | 0 | 1 | 100 | 1 | 100 | 1 | 100 | |
| 2020 | BC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | No BC. |
| NP Bryde's whale | | | | | | | | | | | | |
| 2000-2017 | SP | 730 | 0 | 0 | 3 | 727 | 99.6 | 730 | 100 | 730 | 100 | |
| 2019 | CW | 187 | 0 | 0 | 0 | 187 | 100 | 187 | 100 | 187 | 100 | |
| 2020 | CW | 187 | 0 | 0 | 0 | 187 | 100 | 187 | 100 | 187 | 100 | |
| 2001-2019 | BC | 5 | 0 | 0 | 0 | 5 | 100 | 4 | 80 | 4 | 80 | Include three Omura's whale and one from the East China Sea stock |
| 2020 | BC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | No BC. |
| NP humpback whale | | | | | | | | | | | | |
| 2001-2019 | BC | 72 | 0 | 0 | 0 | 72 | 100 | 72 | 100 | 72 | 100 | |
| 2020 | BC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | No BC. |
| NP right whale | | | | | | | | | | | | |
| 2001-2019 | BC | 4 | 0 | 1 | 0 | 4 | 100 | 3 | 75 | 3 | 75 | One is missing by the 2011 tsunami, no microsats. |
| 2020 | BC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | No BC. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NP fin whale | | | | | | | | | | | | |
| 2001-2019 | BC | 11 | 0 | 0 | 0 | 11 | 100 | 11 | 100 | 11 | 100 | |
| 2020 | BC | 1 | 0 | 0 | 0 | 1 | 100 | 1 | 100 | 1 | 100 | |
| NP sperm whale | | | | | | | | | | | | |
| 2000-2017 | SP | 56 | 0 | 0 | 0 | 56 | 100 | 56 | 100 | 56 | 100 | |
| 2001-2019 | BC | 2 | 0 | 0 | 0 | 2 | 100 | 2 | 100 | 2 | 100 | |
| 2020 | BC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | No BC. |
| Ant. minke whale | | | | | | | | | | | | |
| 1987/88-2004/05 | SP | 6794 | 0 | 10 | 0 | 1118 | 16.5 | 6271 | 92.3 | 6794 | 100 | Incl. dwarf; 87/88-88/89. no microsats. |
| 2005/06-2018/19 | SP | 5216 | 0 | 549 | 162 | 3977 | 76 | 4505 | 86 | 5216 | 100 | Some missing by the 3/11 tsunami in 2011. |
| Ant. fin whale | | | | | | | | | | | | |
| 2005/06-2011/12 | SP | 18 | 0 | 0 | 0 | 18 | 100 | 18 | 100 | 18 | 100 | |

1. key to sample types: SP=special permit catch, CW=commercial catch, BC=bycatch.
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9. % of total samples analyzed for microsatellites
10. number of samples analyzed for sex
11. % of total samples analyzed for sex
12. other problems or information

## REFERENCES


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