Attn: [redacted]
Department of Conservation
Wellington, New Zealand
21 September 2018

Genetic Report: DOC incident ID: H267 | W18-01Ch (NZCTA reference Chem18NZ001)
Title: Subspecies and individual identification of a Māui dolphin found dead on Sunset Beach, Port Waikato, with evidence of shark attack

[redacted]
[1]Oregon State University and [2]University of Auckland

A dolphin found dead on Sunset Beach, Port Waikato, was recovered by [redacted], Department of Conservation, and sent to Massey University on 24 January 2018 (DOC incident ID: H267 | W18-01Ch). The carcass was visually identified as either a male Hector's or Māui dolphin, with evidence of shark attack. A subsequent necropsy by pathologist, [redacted], confirmed that the individual had died from the bite wounds (School of Veterinary Science, Pathology Report, Accession No.: 55411).

A small skin sample was collected from the dolphin and forwarded to [redacted], University of Auckland for archiving in the New Zealand Cetacean Tissue Archive (NZCeTA), and a subsample was forwarded to [redacted], Oregon State University, for genetic analyses. Previous research has shown that Māui and Hector's are genetically distinct, differing at both maternally inherited mitochondrial (mt) DNA haplotypes and at biparentally inherited microsatellite genotypes (Hamner *et al.* 2012, Hamner *et al.* 2014). Together, a standard set of markers for sex, mtDNA and up to 25 microsatellites provide a 'DNA profiles' for subspecies and individual identification. The DNA profiles and sampling histories of n = 115 individual Māui dolphins, sampled dead or alive since 2001, are maintained in a 'DNA register' by OSU and University of Auckland, (Baker et al. 2016)

The DNA profile of H267 confirmed that the individual was a male. Sequencing of mtDNA control region also identified the maternal lineage as haplotype 'G', considered to be diagnostic of Māui dolphins. This subspecies identification was confirmed by a multi-locus genotype assignment procedure implemented in the program *GeneClass* based on a overlapping set of 16 microsatellite loci genotypes for 147 individuals from Cloudy Bay, along the northeast coast of the south island (Hamner *et al.* 2017) and 51 individuals sampled off the west coast of the North Island in 2015-16, including two individuals genetically identified as Hector's dolphins (Baker et al. 2016). The assignment coefficients of H267 and the individuals represented in the reference dataset are shown in Figure 1.

A search of the 115 genotypes of Māui dolphins in the DNA register confirmed that H267 was sampled previously with a biopsy dart as part of research programmes in 2001, 2003 and 2004 (Table 1).

Summary: The beachcast specimen H267 is a Māui dolphin first sampled in 2001 as a non-calf, and thus was a minimum age of 17 +1 years at the time of death.

Table 1: Sampling history of Māui dolphin H267, found dead on Sunset Beach on 24 January, 2018, based on DNA profiling and matching to the DNA register of Māui dolphins sampled from 2001-2016.

Sample codes for H267	Date sampled
NI54	2nd Mar 2001
NI72	1st Jan 2003
NI80	22nd Mar 2003
NI81	22nd Mar 2003
NI99	7th Feb 2004
Chem18NZ001(U18-004)	24th Jan 2018

Literature Cited

Baker, C.S., D. Steel, R.M. Hamner, G. Hickman, L. Boren, W. Arlidge and R. Constantine. 2016. Estimating the abundance and effective population size of Māui dolphins using microsatellite genotypes in 2015–16, with retrospective matching to 2001–16. Department of Conservation, Auckland, http://www.doc.govt.nz/pagefiles/49075/maui-dolphin-abundance-2016.pdf.

Hamner, R. M., R. Constantine, M. Oremus, M. Stanley, P. Brown and C. S. Baker. 2014. Long range movement by Hector's dolphins provides potential genetic enhancement for critically endangered Maui's dolphin. Marine Mammal Science**:** DOI: 10.1111/mms.12026.

Hamner, R. M., F. B. Pichler, D. Heimeier, R. Constantine and C. S. Baker. 2012. Genetic differentiation and limited gene flow among fragmented populations of New Zealand endemic Hector's and Maui's dolphins. Conservation Genetics 13**:** 987-1002.

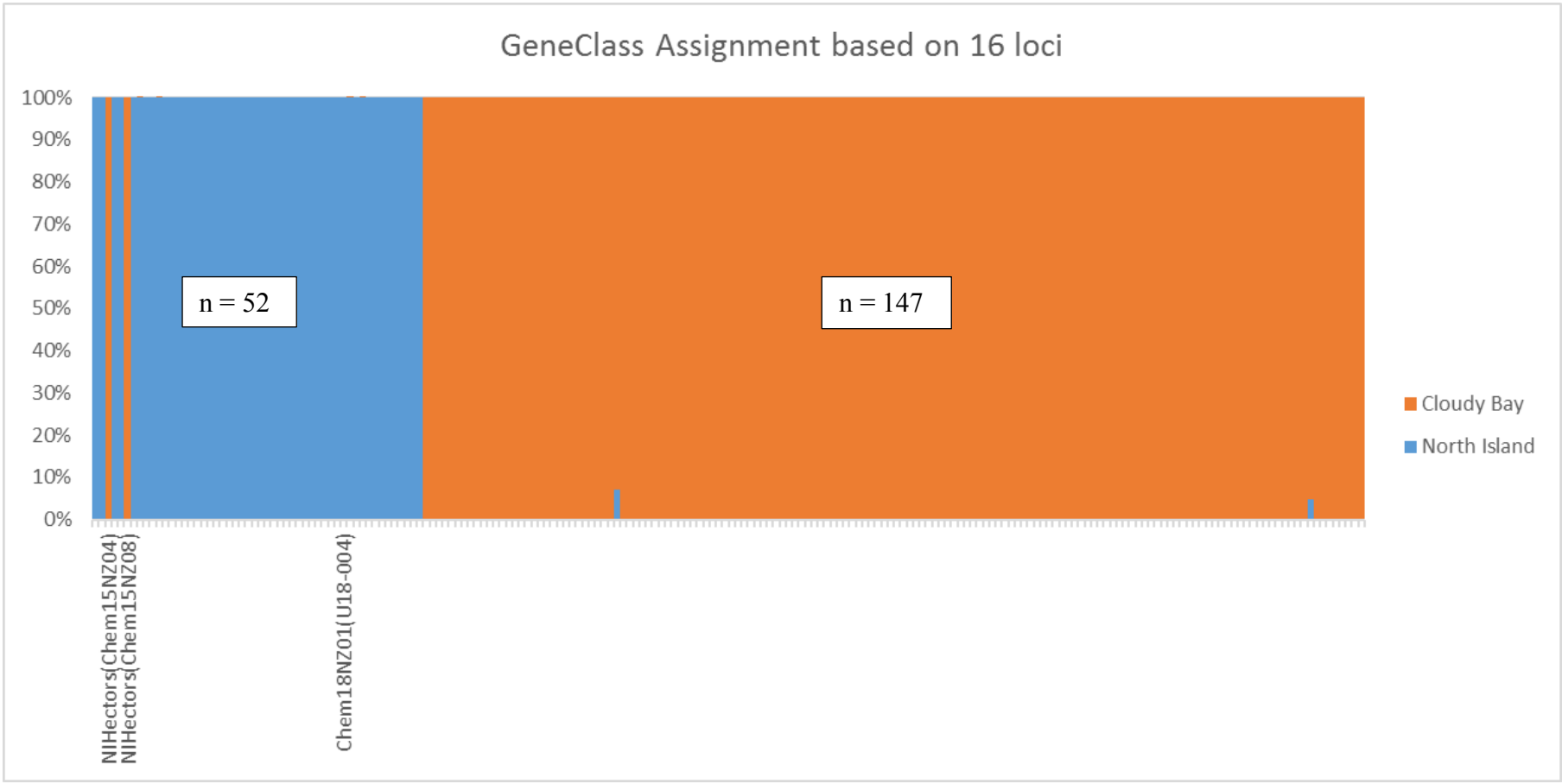

Figure 1: Subspecies assignment of DOC incident H267 (NZCeTA reference code Chem18NZ01) based on 16 microsatellite loci using the program *GeneClass* and a reference dataset of 147 individual Hector's dolphins sampled in Cloudy Bay 2010-11 and 51 individuals sampled off the west coast of the North Island during the 2015-16 biopsy surveys (Baker et al. 2016). The North Island dataset includes 49 individuals previously identified as Māui dolphins and two individuals previously identified as Hector's dolphins, sampled live in the current range of the Māui dolphins (labeled in chart) as described in Baker et al. 2016. Each vertical bar (separated by tick marks) represents the assignment index of an individual dolphin, with orange indicating a Hector's dolphins and blue indicating a Māui dolphin.