

Supporting Information

Figure S1 Sex ratio by month. Sex ratio among humpback whales (*Megaptera novaeangliae*) sampled in the Barents Sea and northern Norway.

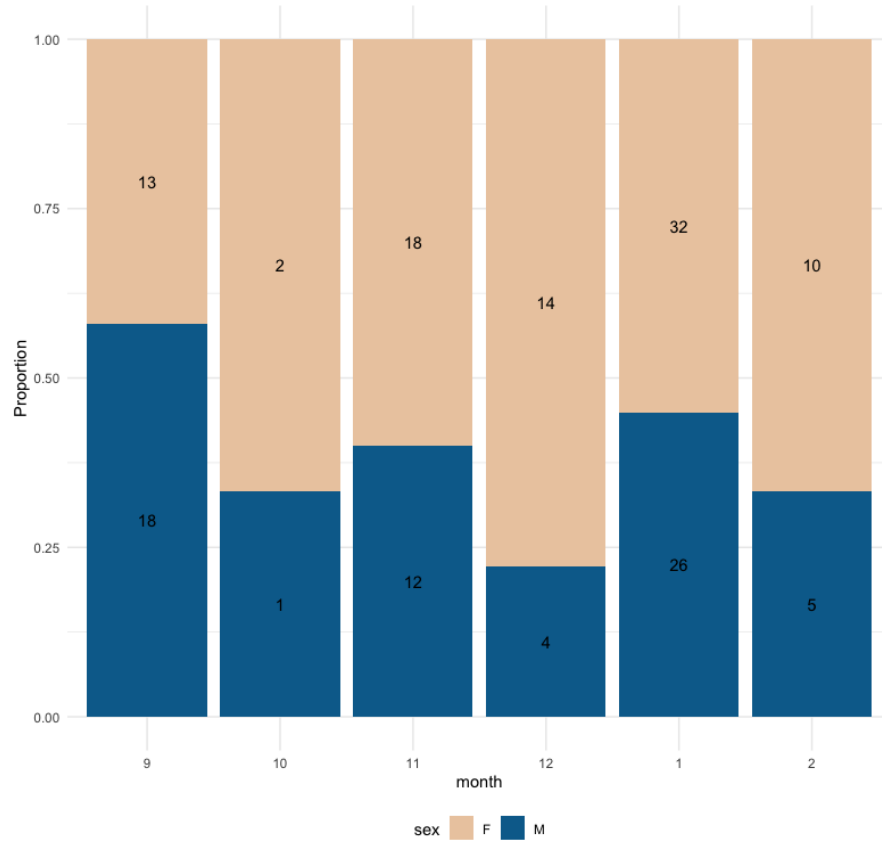


Table S1 Overview of photographic identification for each winter season in coastal Norway. Individuals identified, cumulative identifications, new individuals, re-sighted individuals, annual return rate and within-season re-sightings.

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Total no. of identified individuals/year	6	13	194	325	394	408	143	111	146
Cumulative identifications	6	19	210	448	613	768	794	817	856
No. of new individuals/year	6	13	191	238	165	155	26	23	39
No. of re-sighted individuals/year	0	0	3	87	229	253	117	88	107
Annual return (%)	0	0	2	27	58	62	82	79	73
No. of within-season re-sights	0	0	51	117	192	180	71	45	83

Table S2 Re-sighted individuals between the Barents Sea and northern Norway.

Sightings-ID, sighting locations and dates for individuals sighted both in the Barents Sea and Norway.

ID	summer feeding location	summer sighting date (m/d/y)	winter feeding location	winter first sighting	winter last sighting
NNHWC-117	NE-Svalbard	7/19/12	Kvaløya	12/9/12	1/2/13
NNHWC-138	NE-Svalbard	8/25/12	Kvaøya	12/24/12	12/4/12
NNHWC-139	NE-Svalbard	8/25/12	Kvaøya	11/27/12	
NNHWC-156	NE-Svalbard	9/8/18	Skjervøy	10/28/18	12/19/18
NNHWC-193	Hinlopen Strait	7/12/13	Kvaløya	12/2/13	
NNHWC-286	NE-Svalbard	9/8/18	Skjervøy	11/13/18	1/4/19
NNHWC-286	Border to Russia	8/8/15	Kvaløya	11/17/15	
NNHWC-295	Hinlopen Strait	7/7/14	Kvaløya	11/16/14	01.12.1014
NNHWC-344	NE-Svalbard	9/5/18	Skjervøy	12/17/18	
NNHWC-387	Hinlopen Strait	7/7/14	Kvaløya	12/21/14	
NNHWC-471	Hornsund	8/28/18	Skjervøy	1/9/19	
NNHWC-567	Border to Russia	8/8/15	Kvaløya	11/30/15	12/2/15
NNHWC-609	NE-Svalbard	9/5/18	Skjervøy	12/18/18	1/9/19
NNHWC-698	NE-Svalbard	9/3/18	Skjervøy	11/16/18	12/11/18
T2-73	NE-Svalbard	9/5/18	Skjervøy	11/14/18	11/15/18
T3-18	NE-Svalbard	9/4/18	Skjervøy	12/21/18	
TT2-29	NE-Svalbard	9/9/18	Skjervøy	12/31/18	

Table S3 All progesterone values and model results. Model results and progesterone levels for all samples run, including results of the subset of samples extracted with both methods for comparison.

Table_S3

Sample	Extraction	Year	Date	P4	log(P4)	Preg	Pregnant	Month	Season	Notes	Probabil	Hi	Hi Correct	Low	Low Correct	Control (Male)	Re-extract
Mnova16002	2016.01.024	2016	1/13/2016	0.956803476	-0.019177256	0	No	1	15/16	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2016.01.019		2016	2/6/2016	1.311666243	0.117823342	0	No	2	15/16	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
Mnova16003	2016.01.008	2016	2/1/2016	0.557348336	-0.253873291	0	No	2	15/16	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
Mnova16006	2016.01.011	2016	2/1/2016	0.593032505	-0.226921502	0	No	2	15/16	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
Mnova16010	2016.01.015	2016	2/6/2016	198.8373512	2.298497969	1	Yes	2	15/16	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
Mnova16012	2016.01.017	2016	2/6/2016	0.622019928	-0.206195702	0	No	2	15/16	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
Mnova16014	2016.01.019	2016	2/6/2016	0.652813886	-0.185210617	0	No	2	15/16	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
Mnova16016	2016.01.021	2016	2/20/2016	0.69174374	-0.160054762	0	No	2	15/16	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2016.01.006		2016	11/7/2016	102.6236327	2.011247384	1	Yes	11	16/17	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
2016.01.001		2016	12/31/2016	127.6640883	2.106068748	1	Yes	12	16/17	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
2017.01.007		2017	1/4/2017	1.10359132	0.042808276	0	No	1	16/17	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00	1	
2017.01.008		2017	1/4/2017	1.315398485	0.119057337	0	No	1	16/17	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2017.01.010		2017	1/15/2017	164.7148019	2.216732628	1	Yes	1	16/17	Coastal Norway	1.00E+00	1.00E+00	0.00E+00	1.00E+00	0.00E+00		
2017.01.011		2017	1/13/2017	1.201915112	0.079873796	0	No	1	16/17	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00	1	
2017.01.012		2017	1/13/2017	0.578473709	-0.237716375	0	No	1	16/17	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2017.01.015		2017	1/11/2017	6.773915265	0.83083976	0	No	1	16/17	Coastal Norway	2.47E-15	1.81E-06	1.81E-06	2.22E-16	2.25E-15		
2017.01.001		2017	11/14/2017	0.706203896	-0.151069891	0	No	11	17/18	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00	1	
2017.01.005		2017	11/14/2017	0.417354288	-0.379495121	0	No	11	17/18	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2017.01.006		2017	11/14/2017	0.843229911	-0.074053997	0	No	11	17/18	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00	1	
2018.01.001		2018	9/4/2018	0.718404075	-0.143631213	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.002		2018	9/4/2018	1.109227287	0.045020544	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.003		2018	9/4/2018	303.7914581	2.482575558	1	Yes	9	18	Barents Sea	1	1	0.00E+00	1	0.00E+00		
2018.01.004		2018	9/4/2018	194.7449783	2.289466268	1	Yes	9	18	Barents Sea	1	1	0.00E+00	1	0.00E+00		
2018.01.005		2018	9/4/2018	0.882724529	-0.054174805	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00	1	
2018.01.009		2018	9/7/2018	0.312042263	-0.505786581	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.015		2018	9/7/2018	0.372677288	-0.428667073	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00	1	
2018.01.016		2018	9/7/2018	0.486273738	-0.313119185	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00	1	
2018.01.017		2018	9/8/2018	0.437398231	-0.359122978	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.018		2018	9/8/2018	0.482736622	-0.316289753	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.020		2018	9/8/2018	0.323061122	-0.490715171	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00	1	
2018.01.022		2018	9/9/2018	0.324596969	-0.48865554	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.023		2018	9/9/2018	0.168455488	-0.773514836	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00	1	
2018.01.026		2018	9/9/2018	0.20848949	-0.680915833	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.028		2018	9/9/2018	0.567278686	-0.246203534	0	No	9	18	Barents Sea	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.032		2018	10/26/2018	0.520011923	-0.283986699	0	No	10	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.033		2018	10/26/2018	0.609093895	-0.215315753	0	No	10	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.038		2018	11/6/2018	347.9784932	2.541552403	1	Yes	11	18/19	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
2018.01.039	Mnova18059	2018	11/6/2018	0.91413743	-0.038988508	0	No	11	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.040	Mnova18060	2018	11/6/2018	0.456686488	-0.340381838	0	No	11	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.041		2018	11/6/2018	0.510225088	-0.292238191	0	No	11	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.043	Mnova18063	2018	11/7/2018	1.843337596	0.265604881	0	No	11	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00	1	
2018.01.044	Mnova18064	2018	11/7/2018	79.58533376	1.900833042	1	Yes	11	18/19	Coastal Norway	1.00E+00	1.00E+00	0.00E+00	1.00E+00	0.00E+00		
2018.01.045		2018	11/7/2018	153.6396624	2.186503344	1	Yes	11	18/19	Coastal Norway	1.00E+00	1.00E+00	0.00E+00	1.00E+00	0.00E+00		
2018.01.046		2018	11/7/2018	1.933410686	0.286324115	0	No	11	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00	1	
2018.01.047		2018	11/7/2018	261.1418481	2.416876473	1	Yes	11	18/19	Coastal Norway	1.00E+00	1.00E+00	0.00E+00	1.00E+00	0.00E+00		
2018.01.048		2018	11/13/2018	0.655320773	-0.183546065	0	No	11	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.049		2018	11/13/2018	0.383548177	-0.416180077	0	No	11	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.051		2018	11/15/2018	872.4925177	2.940761711	1	Yes	11	18/19	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
2018.01.053	Mnova18072	2018	12/2/2018	190.3375529	2.279524482	1	Yes	12	18/19	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
2018.01.054	Mnova18073	2018	12/2/2018	0.811878619	-0.090508896	0	No	12	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.057		2018	12/4/2018	136.0270604	2.133625313	1	Yes	12	18/19	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
2018.01.058		2018	12/4/2018	106.6856462	2.028105992	1	Yes	12	18/19	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
2018.01.059		2018	12/4/2018	0.925390389	-0.033675016	0	No	12	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.060		2018	12/4/2018	84.05189925	1.924547531	1	Yes	12	18/19	Coastal Norway	1	1	0.00E+00	1	0.00E+00		

Table_S3

2018.01.061		2018	12/4/2018	0.259553442	-0.585773208	0	No	12	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2018.01.063		2018	12/4/2018	287.296901	2.458330941	1	Yes	12	18/19	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
2019.01.001		2019	1/8/2019	196.0461137	2.292358237	1	Yes	1	18/19	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
2019.01.002		2019	1/8/2019	97.59533626	1.989429065	1	Yes	1	18/19	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
2019.01.003		2019	1/8/2019	0.317329908	-0.498488995	0	No	1	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2019.01.004		2019	1/9/2019	0.844003815	-0.07365559	0	No	1	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2019.01.005		2019	1/9/2019	322.5546217	2.508603269	1	Yes	1	18/19	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
2019.01.008		2019	1/9/2019	1.582404165	0.199317417	0	No	1	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00	1	
2019.01.009		2019	1/19/2019	260.4045613	2.415648587	1	Yes	1	18/19	Coastal Norway	1	1	0.00E+00	1	0.00E+00		
2019.01.014		2019	1/19/2019	0.961315948	-0.017133853	0	No	1	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2019.01.016		2019	1/23/2019	0.503806297	-0.297736409	0	No	1	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2019.01.017		2019	1/24/2019	0.372110462	-0.42932812	0	No	1	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
2019.01.019	Mnova18050	2019	1/24/2019	0.545209432	-0.263436639	0	No	1	18/19	Coastal Norway	2.22E-16	2.22E-16	0.00E+00	2.22E-16	0.00E+00		
o135		2011	6/6/11	30.78			Yes			Coastal Norway							extracted in Scotland
o335		2011	6/15/11	3.64			No			Coastal Norway							extracted in Scotland
o335		2012	1/21/12	3.42			No			Coastal Norway						1	extracted in Scotland
o435		2012	1/21/12	3.27			No			Coastal Norway						1	extracted in Scotland
o335		2012	6/13/12	3.49			No			Coastal Norway							extracted in Scotland
o435		2012	6/13/12	3.23			No			Coastal Norway							extracted in Scotland
o735		2012	6/18/12	3.42			No			Coastal Norway							extracted in Scotland
o635		2012	6/18/12	15.67			Yes			Coastal Norway							extracted in Scotland
o935		2012	6/25/12	3.63			No			Coastal Norway							extracted in Scotland
1035		2012	6/25/12	6.67			Uncertain			Coastal Norway							extracted in Scotland
1235		2012	6/29/12	3.49			No			Coastal Norway							extracted in Scotland
1135		2012	6/29/12	4.93			No			Coastal Norway							extracted in Scotland
o135		2013	11/29/13	3.53			No			Coastal Norway							extracted in Scotland
o735		2013	12/6/13	10.46			Yes			Coastal Norway							extracted in Scotland
1035		2013	12/7/13	12.31			Yes			Coastal Norway							extracted in Scotland
o135		2014	1/26/14	3.6			No			Coastal Norway							extracted in Scotland
o235		2014	1/26/14	3.52			No			Coastal Norway							extracted in Scotland
o635		2014	1/31/14	3.47			No			Coastal Norway							extracted in Scotland
o735		2014	1/31/14	3.39			No			Coastal Norway							extracted in Scotland
LK-Mn-04		2016	1/20/16	3.42			No			Coastal Norway							extracted in Scotland
CH-Mn-05		2016	1/21/16	2.56			No			Coastal Norway							extracted in Scotland
LK-Mn-07		2016	1/24/16	2.6			No			Coastal Norway							extracted in Scotland
LK-Mn-09		2016	1/25/16	2.65			No			Coastal Norway							extracted in Scotland
CH-Mn-10		2016	1/26/16	2.72			No			Coastal Norway							extracted in Scotland
MW-Mn-05		2017	1/22/17	8.64			Uncertain			Coastal Norway							extracted in Scotland
LK-Mn-04		2017	1/22/17	30.76			Yes			Coastal Norway							extracted in Scotland
LK-Mn-03		2017	1/22/17	2.84			No			Coastal Norway							extracted in Scotland
MB-Mn-07		2017	1/26/17	23.77			Yes			Coastal Norway							extracted in Scotland
1035		2013	12.07.2013	39.48	1.64	1	Yes	7	2013	Coastal Norway	1	1	0	1	0		sample from Scotland, re-extracted in Tromsø
o135		2011	06.06.2011	240.22	2.38	1	Yes	6	2011	Coastal Norway	1	1	0	1	0		sample from Scotland, re-extracted in Tromsø
o135		2011	06.06.2011	124.98	2.1	1	Yes	6	2011	Coastal Norway	1	1	0	1	0		sample from Scotland, re-extracted in Tromsø
LK-Mn-04		2017	22.01.2017	111.66	2.05	1	Yes	1	2016/17	Coastal Norway	1	1	0	1	0		sample from Scotland, re-extracted in Tromsø
LK-Mn-04		2017	22.01.2017	53.78	1.73	1	Yes	1	2016/17	Coastal Norway	1	1	0	1	0		sample from Scotland, re-extracted in Tromsø
MB-Mn-07		2017	26.01.2017	162.44	2.21	1	Yes	1	2016/17	Coastal Norway	1	1	0	1	0		sample from Scotland, re-extracted in Tromsø
MB-Mn-07		2017	26.01.2017	188.58	2.28	1	Yes	1	2016/17	Coastal Norway	1	1	0	1	0		sample from Scotland, re-extracted in Tromsø
o135		2014	26.01.2014	4.32	0.64	0	No	1	2013/14	Coastal Norway	2.22E-16	1.33E-14	0	2.22E-16	0.00E+00		sample from Scotland, re-extracted in Tromsø
o335		2012	13.06.2012	4.97	0.7	0	No	6	2012	Coastal Norway	2.22E-16	5.03E-12	0	2.22E-16	0.00E+00		sample from Scotland, re-extracted in Tromsø
o735		2012	18.06.2012	2.42	0.38	0	No	6	2012	Coastal Norway	2.22E-16	2.22E-16	0	2.22E-16	0.00E+00		sample from Scotland, re-extracted in Tromsø
o635		2012	18.06.2012	94.09	1.97	1	Yes	6	2012	Coastal Norway	1	1	0	1	0.00E+00		sample from Scotland, re-extracted in Tromsø
o935		2012	25.06.2012	1.89	0.28	0	No	6	2012	Coastal Norway	2.22E-16	2.22E-16	0	2.22E-16	0.00E+00		sample from Scotland, re-extracted in Tromsø
1235		2012	29.06.2012	16.96	1.23	NA	Undetermined	6	2012	Coastal Norway	0.999991739	1	8.26E-06	0.665298176	0.334693563		sample from Scotland, re-extracted in Tromsø
o235		2014	26.01.2014	1.67	0.22	0	No	1	2013/14	Coastal Norway	2.22E-16	2.22E-16	0	2.22E-16	0.00E+00		sample from Scotland, re-extracted in Tromsø

Text S1 Details and comparison of extraction methods. Details on the methods and differences between the two different extractions used for progesterone analysis.

We thawed frozen blubber samples at room temperature and homogenized them seven times for 40 sec at 5000 rpm, using a Precellys 24 tissue homogenizer, and cooled samples on ice between intervals. We rinsed the resulting homogenates using a series of solvent washes, removed tissue debris, collected the supernatants, and evaporated the samples using pressurized air. We stopped evaporation when a thin solvent coating was left to prevent complete desiccation and potential oxidation of the residue. A subset of samples was homogenized manually before the same tissue debris removal, and solvent washes and extracts were dried down under nitrogen.

We pooled results from two slightly different extraction and quantification methods, so we confirmed that the results were comparable by repeating extraction and pregnancy assignment of a subset of samples (N = 13) using both methods. While progesterone levels differed, the same pregnancy status was assigned for all 13 of these individuals, and therefore we included all samples in the pregnancy rate analyses. We repeated the extraction and measurements for a subset of the blubber samples, in which case we report the averaged resulting progesterone level, and ran multiple samples at several dilutions.

The mean progesterone concentration for pregnant individuals was 224.4 ± 173.6 nanogram per gram of blubber (ng g^{-1} P4) (NO 221.7 ± 182.2 ; BS 194.7 ± 7), ranging between 79.6 (194.7 BS) and 872.5 (303.8 BS). Using the other method (marked as “Scotland” in Table S3), pregnant female concentrations were 20.6 on average and ranged from 10.5-30.8. The mean concentration for non-pregnant females was $0.7 \pm 0.3 \text{ ng.g}^{-1}$ (NO 0.7 ± 0.3 ; BS 0.52 ± 0.3), ranging between 0.3 and 6.8 (0.2 - 1.1 BS); and 3.3 on average with a range from 2.6-4.9.

Text S2 Relatedness methods. Detailed methods for within-season re-sampling assessment using r_{xy}

To look for potential re-sampling individuals within sampling season, 107 genomes were sequenced at low coverage using an Illumina HiSeq4000 platform (Novogene, Hong Kong). The 1,781,057,402 paired-end reads obtained were mapped to the available humpback whale reference genome (GenBank assembly accession: GCA_004329385.1). NGSRelate v2 which allows to calculate pairwise relatedness (r) between two individuals x and y using identity by descent have been used. As input for NGSrelate, genotype likelihoods (GL) of the dataset were calculated from the mapped bam files using ANGSD v0.935-53-gf475f10. The following filtering options were used: minimum mapping and base quality of 15 (-minmapQ and -minQ 15);

calculate genotype likelihoods using model from SAMtools (-GL 1); output binary genotype likelihoods (-doGlf 3); infer major and minor alleles using GL (-doMajorMinor 1); calculate per site frequencies using a fixed major and minor allele (-doMaf 1); only include SNPs with a p-value less than 1×10^{-6} (-SNP_pval 1e-6), and a minimum minor allele frequency of 0.01 (-minmaf 0.01). The number of sites used between pairwise comparisons to calculate relatedness (r_{xy}) ranged from 14829 to 28014.

Table S4: Pairwise coefficients of relatedness matrix Resulting pairwise relatedness coefficients for a subset of individuals.

2015/2016																										
M16004	M16006	M16007	M16008	M16009	M16010	M16011	M16013	M16014	M16015	M16016	M16017	M16018	M16019	M16020												
M16021	M16022	M16023	0.413	0.311	0.263	0.442	0.382	0.423	0.447	0.374	0.434	0.433	0.423	0.326	0.436	0.398	0.456	0.458	0.436	0.425						
M16003	0.331	0.292	0.383	0.367	0.361	0.328	0.389	0.342	0.365	0.326	0.318	0.360	0.331	0.389	0.383	0.360	0.345	M16004	0.375	0.338	0.331					
0.344	0.313	0.311	0.292	0.300	0.295	0.363	0.291	0.293	0.278	0.303	0.270	0.284	M16006	0.296	0.312	0.312	0.194	0.191	0.199	0.252	0.225					
0.364	0.211	0.241	0.247	0.229	0.221	0.184	M16007	0.410	0.397	0.413	0.336	0.399	0.414	0.407	0.341	0.404	0.361	0.390	0.418	0.401	0.402					
							M16008	0.417	0.385	0.348	0.380	0.386	0.390	0.349	0.379	0.364	0.363	0.367	0.355	0.373	M16009					
								0.431	0.346	0.388	0.376	0.392	0.360	0.408	0.375	0.384	0.395	0.377	0.383	M16010						
									0.393	0.470	0.423	0.496	0.295	0.472	0.419	0.463	0.493	0.451	0.464	M16011						
										0.401	0.364	0.385	0.282	0.393	0.341	0.364	0.398	0.371	0.391	M16013						
											0.458	0.500	0.311	0.441	0.442	0.443	0.463	0.444	0.458	M16014						
												0.468	0.331	0.397	0.434	0.447	0.455	0.444	0.424	M16015						
													0.287	0.444	0.423	0.457	0.460	0.459	0.468	M16016						
														0.265	0.292	0.279	0.285	0.269	0.288	M16017						
															0.429	0.460	0.447	0.459	0.460	M16018						
																0.455	0.420	0.430	0.427	M16019						
																	0.464	0.497	0.464	M16020						
																		0.482	0.450	M16021						
																			0.544	M16022						
2016/2017																										
M16002	M16024	M16025	M16026	M16027	M16028	M16029	M17007	M17008	M17010	M17011	M17012															
M17013	M17014	M17015	0.431	0.278	0.385	0.407	0.379	0.372	0.331	0.380	0.413	0.416	0.332	0.374	0.304	0.359										
0.381	M16001	0.232	0.434	0.445	0.454	0.374	0.305	0.422	0.423	0.437	0.301	0.364	0.270	0.376	0.436	M16002										
0.161	0.156	0.167	0.336	0.391	0.148	0.177	0.149	0.391	0.217	0.398	0.138	0.149	M16024	0.471	0.487	0.303	0.257									
0.489	0.476	0.499	0.210	0.368	0.179	0.437	0.525	M16025	0.435	0.314	0.256	0.469	0.482	0.461	0.236	0.372	0.194									
															0.409	0.478	M16026									
																0.311	0.254	0.461	0.490	0.442	0.217	0.382	0.208	0.430	0.478	M16027
																	0.362	0.302	0.318	0.305	0.367	0.326	0.332	0.266	0.301	M16028
																		0.253	0.274	0.268	0.364	0.306	0.387	0.251	0.262	M16029

0.450 0.439 0.265 0.395 0.234 0.454 0.474 **M17007**

0.449 0.250 0.372 0.216 0.445 0.486 **M17008**

0.241 0.383 0.191 0.415 0.461 **M17010**

0.274 0.386 0.226 0.226 **M17011**

0.283 0.369 0.400 **M17012**

0.219 0.196 **M17013**

0.481 **M17014**

2017/2018

M17002 M17004 M17005 M17006 M17009

0.466 0.469 0.485 0.465 0.442 **M17001**

0.452 0.489 0.475 0.426 **M17002**

0.422 0.418 0.442 **M17004**

0.475 0.388 **M17005**

0.419 **M17006**

2018/2019

M18033 M18034 M18035 M18036 M18037 M18038 M18039 M18040 M18041 M18042 M18043 M18044 M18045 M18046 M18047 M18048 M18049 M18051 M18052 M18053 M18054 M18055 M18056 M18058 M18061 M18065 M18066 M18067 M18068 M18069 M18070 M18071 M18074 M18075 M18076 M18077
M18078 M18079 M18080 M18081 M18082 0.221 0.484 0.485 0.504 0.489 0.386 0.487 0.532 0.474 0.475 0.463 0.332 0.398 0.477 0.497 0.210 0.467 0.490 0.217 0.259 0.487 0.243 0.125 0.140 0.235 0.544 0.317 0.398 0.389 0.352 0.404 0.477 0.322 0.278 0.495 0.434 0.474 0.428 0.468 0.394 0.463 **M18001** 0.253 0.243 0.261
0.250 0.269 0.234 0.244 0.233 0.257 0.241 0.340 0.294 0.178 0.247 0.400 0.257 0.253 0.402 0.413 0.217 0.384 0.368 0.356 0.379 0.221 0.356 0.322 0.306 0.403 0.317 0.233 0.382 0.434 0.290 0.308 0.290 0.299 0.266 0.315 0.252 **M18033** 0.635 0.505 0.491 0.384 0.463 0.489 0.466 0.460 0.454 0.373 0.424 0.449 0.499 0.244 0.450
0.476 0.243 0.264 0.442 0.264 0.136 0.157 0.250 0.505 0.341 0.424 0.404 0.340 0.419 0.440 0.321 0.285 0.479 0.413 0.443 0.415 0.465 0.431 0.495 **M18034** 0.509 0.493 0.393 0.470 0.505 0.463 0.457 0.452 0.361 0.421 0.473 0.520 0.234 0.451 0.485 0.240 0.256 0.452 0.248 0.126 0.157 0.238 0.524 0.312 0.426 0.387 0.342 0.420
0.455 0.318 0.292 0.484 0.394 0.449 0.413 0.465 0.427 0.504 **M18035** 0.477 0.376 0.473 0.525 0.476 0.506 0.467 0.372 0.421 0.458 0.523 0.255 0.475 0.514 0.256 0.264 0.457 0.256 0.132 0.142 0.254 0.527 0.319 0.429 0.413 0.371 0.423 0.476 0.345 0.296 0.480 0.407 0.451 0.438 0.457 0.409 0.473 **M18036** 0.370 0.484 0.502
0.464 0.449 0.471 0.351 0.457 0.461 0.498 0.212 0.448 0.493 0.232 0.258 0.443 0.247 0.152 0.140 0.233 0.513 0.324 0.419 0.391 0.352 0.388 0.481 0.326 0.273 0.481 0.449 0.447 0.440 0.463 0.406 0.475 **M18037** 0.393 0.393 0.381 0.391 0.382 0.341 0.374 0.372 0.359 0.273 0.376 0.410 0.272 0.298 0.360 0.301 0.202 0.218 0.284
0.390 0.316 0.353 0.367 0.310 0.329 0.374 0.335 0.316 0.367 0.361 0.368 0.350 0.347 0.349 0.383 **M18038** 0.478 0.493 0.500 0.497 0.379 0.422 0.467 0.499 0.204 0.463 0.481 0.213 0.261 0.464 0.284 0.127 0.126 0.237 0.473 0.343 0.399 0.407 0.322 0.381 0.489 0.326 0.270 0.482 0.391 0.430 0.424 0.431 0.384 0.460 **M18039**
0.496 0.484 0.474 0.356 0.423 0.465 0.514 0.219 0.484 0.527 0.214 0.262 0.455 0.251 0.147 0.162 0.256 0.515 0.321 0.420 0.410 0.352 0.421 0.496 0.351 0.285 0.499 0.431 0.454 0.422 0.480 0.422 0.498 **M18040** 0.493 0.482 0.372 0.409 0.506 0.488 0.218 0.497 0.480 0.219 0.250 0.473 0.265 0.131 0.125 0.239 0.478 0.321 0.412
0.389 0.336 0.395 0.505 0.341 0.287 0.500 0.411 0.435 0.410 0.454 0.395 0.450 **M18041** 0.468 0.388 0.425 0.450 0.481 0.231 0.473 0.486 0.233 0.245 0.464 0.275 0.150 0.136 0.233 0.467 0.352 0.411 0.390 0.356 0.401 0.477 0.336 0.308 0.462 0.395 0.442 0.413 0.439 0.400 0.459 **M18042** 0.360 0.423 0.454 0.488 0.204 0.475
0.495 0.215 0.238 0.461 0.263 0.123 0.127 0.235 0.469 0.304 0.387 0.369 0.334 0.381 0.481 0.317 0.276 0.450 0.396 0.423 0.432 0.441 0.399 0.465 **M18043**
0.378 0.283 0.368 0.330 0.367 0.360 0.332 0.338 0.316 0.354 0.286 0.260 0.326 0.327 0.394 0.387 0.391 0.326 0.404 0.356 0.327 0.347 0.366 0.352 0.387 0.384 0.338 0.391 0.370 **M18044**
0.352 0.447 0.259 0.413 0.444 0.273 0.286 0.365 0.300 0.201 0.192 0.277 0.405 0.356 0.419 0.401 0.349 0.399 0.398 0.334 0.301 0.389 0.412 0.413 0.405 0.398 0.411 0.402 **M18045**
0.504 0.177 0.466 0.463 0.168 0.216 0.478 0.190 0.096 0.109 0.197 0.521 0.256 0.351 0.338 0.311 0.341 0.485 0.280 0.229 0.476 0.362 0.385 0.355 0.416 0.339 0.441 **M18046**
0.215 0.480 0.489 0.228 0.242 0.477 0.245 0.103 0.122 0.211 0.539 0.327 0.421 0.371 0.369 0.414 0.473 0.346 0.278 0.481 0.416 0.437 0.431 0.495 0.427 0.495 **M18047**
0.213 0.207 0.411 0.400 0.194 0.381 0.382 0.414 0.394 0.211 0.344 0.294 0.291 0.313 0.285 0.190 0.327 0.398 0.264 0.265 0.269 0.266 0.206 0.300 0.230 **M18048**
0.544 0.231 0.268 0.464 0.269 0.151 0.141 0.249 0.472 0.344 0.421 0.393 0.372 0.405 0.482 0.350 0.304 0.489 0.429 0.450 0.445 0.468 0.405 0.456 **M18049**
0.225 0.263 0.451 0.250 0.128 0.128 0.256 0.508 0.329 0.429 0.417 0.359 0.417 0.468 0.326 0.283 0.474 0.436 0.474 0.443 0.465 0.415 0.480 **M18051**
0.401 0.216 0.388 0.361 0.380 0.390 0.208 0.327 0.302 0.284 0.351 0.282 0.215 0.343 0.401 0.245 0.276 0.263 0.282 0.247 0.294 0.259 **M18052**
0.246 0.406 0.357 0.380 0.398 0.245 0.320 0.317 0.313 0.364 0.317 0.248 0.350 0.413 0.284 0.305 0.298 0.296 0.263 0.320 0.275 **M18053**
0.254 0.120 0.116 0.209 0.508 0.310 0.369 0.340 0.337 0.366 0.500 0.327 0.281 0.415 0.402 0.433 0.379 0.458 0.391 0.455 **M18054**
0.370 0.356 0.355 0.224 0.347 0.315 0.307 0.328 0.306 0.273 0.321 0.382 0.259 0.289 0.285 0.282 0.269 0.320 0.252 **M18055**
0.408 0.361 0.097 0.305 0.222 0.224 0.255 0.212 0.193 0.265 0.337 0.169 0.198 0.175 0.189 0.135 0.213 0.142 **M18056**
0.362 0.133 0.290 0.197 0.201 0.266 0.211 0.145 0.281 0.356 0.203 0.219 0.168 0.214 0.147 0.225 0.176 **M18058**
0.216 0.319 0.315 0.384 0.310 0.311 0.219 0.302 0.380 0.252 0.260 0.282 0.300 0.242 0.283 0.241 **M18061**
0.302 0.390 0.374 0.343 0.386 0.467 0.334 0.256 0.477 0.426 0.465 0.397 0.499 0.398 0.485 **M18065**
0.400 0.368 0.325 0.381 0.319 0.345 0.368 0.335 0.355 0.377 0.368 0.326 0.378 0.334 **M18066**
0.429 0.362 0.418 0.407 0.350 0.334 0.433 0.418 0.441 0.427 0.416 0.428 0.410 **M18067**
0.328 0.420 0.379 0.314 0.310 0.412 0.370 0.427 0.424 0.371 0.397 0.396 **M18068**
0.351 0.330 0.496 0.398 0.369 0.358 0.359 0.378 0.346 0.354 0.362 **M18069**
0.382 0.314 0.352 0.417 0.418 0.427 0.431 0.414 0.425 0.420 **M18070**
0.329 0.291 0.449 0.396 0.416 0.389 0.455 0.380 0.447 **M18071**
0.398 0.348 0.357 0.354 0.337 0.350 0.346 0.334 **M18074**
0.318 0.325 0.323 0.327 0.298 0.346 0.299 **M18075**
0.436 0.445 0.419 0.459 0.439 0.484 **M18076**
0.442 0.395 0.449 0.431 0.421 **M18077**
0.430 0.437 0.415 0.440 **M18078**
0.409 0.424 0.425 **M18079**
0.428 0.474 **M18080**
0.550 **M18081**

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