

**Appendix 1.** Species, age, sex, pair number (no.) and bill measurements of the 103 individuals in this study.

Species	Age	Sex	Pair no.	Bill Length (mm)	Bill Depth (mm)	Bill width (mm)
Adélie Penguin	Adult	Female	6	39.1	18.4	12.3
Adélie Penguin	Adult	Female	7	40.4	18.4	12.7
Adélie Penguin	Adult	Female	8	37.5	17.9	11.9
Adélie Penguin	Adult	Female	9	38.7	17.9	9.7
Adélie Penguin	Adult	Female	10	40.5	19.6	12.6
Adélie Penguin	Adult	Female	11	35.5	19.2	12.4
Adélie Penguin	Adult	Female	13	34.0	17.8	12.4
Adélie Penguin	Adult	Female	12	33.2	16.8	11.9
Adélie Penguin	Adult	Female	14	38.4	17.8	12.0
Adélie Penguin	Adult	Female	15	35.6	19.5	14.2
Adélie Penguin	Adult	Female	16	40.6	17.9	12.4
Adélie Penguin	Adult	Female	-	35.0	17.0	13.5
Adélie Penguin	Adult	Female	-	40.2	18.4	12.5
Adélie Penguin	Adult	Female	-	36.9	17.8	12.0
Adélie Penguin	Adult	Female	-	40.2	17.0	13.5
Adélie Penguin	Adult	Male	6	38.8	20.2	14.2
Adélie Penguin	Adult	Male	7	42.6	20.5	12.9
Adélie Penguin	Adult	Male	8	39.5	19.4	13.8
Adélie Penguin	Adult	Male	9	40.0	19.5	12.4
Adélie Penguin	Adult	Male	10	37.6	19.2	12.0
Adélie Penguin	Adult	Male	11	39.5	20.0	14.3
Adélie Penguin	Adult	Male	12	38.7	18.9	13.5
Adélie Penguin	Adult	Male	13	42.0	19.5	13.0
Adélie Penguin	Adult	Male	15	42.9	19.9	13.2
Adélie Penguin	Adult	Male	16	38.9	19.8	12.9
Adélie Penguin	Adult	Male	14	37.9	19.6	12.5
Adélie Penguin	Adult	Male	-	43.5	19.0	12.5
Adélie Penguin	Adult	Male	-	41.8	21.0	13.0
Adélie Penguin	Adult	Male	-	43.1	20.2	14.5
Adélie Penguin	Adult	Male	-	43.7	21.1	14.2
Adélie Penguin	Adult	Male	-	42.1	20.6	15.0
Chinstrap Penguin	Adult	Female	1	45.7	19.2	17.9
Chinstrap Penguin	Adult	Female	2	37.3	18.7	13.5
Chinstrap Penguin	Adult	Female	3	47.5	19.0	13.6
Chinstrap Penguin	Adult	Female	4	47.5	18.1	12.7
Chinstrap Penguin	Adult	Female	5	44.5	18.0	13.2
Chinstrap Penguin	Adult	Female	27	46.0	18.5	14.2
Chinstrap Penguin	Adult	Female	28	46.0	18.2	13.0
Chinstrap Penguin	Adult	Female	29	49.5	18.2	13.5
Chinstrap Penguin	Adult	Female	30	40.7	18.2	14.0

**Appendix 1.** Continued.

<b>Species</b>	<b>Age</b>	<b>Sex</b>	<b>Pair no.</b>	<b>Bill Length (mm)</b>	<b>Bill Depth (mm)</b>	<b>Bill width (mm)</b>
Chinstrap Penguin	Adult	Female	31	45.0	17.5	13.2
Chinstrap Penguin	Adult	Female	32	45.6	18.5	14.1
Chinstrap Penguin	Adult	Female	33	46.4	17.4	13.4
Chinstrap Penguin	Adult	Female	34	45.7	18.3	14.4
Chinstrap Penguin	Adult	Female	35	43.1	17.5	12.1
Chinstrap Penguin	Adult	Female	36	47.5	18.3	12.9
Chinstrap Penguin	Adult	Male	1	49.4	19.6	17.6
Chinstrap Penguin	Adult	Male	2	53.5	19.8	15.2
Chinstrap Penguin	Adult	Male	3	50.0	19.5	14.1
Chinstrap Penguin	Adult	Male	4	50.2	21.4	15.0
Chinstrap Penguin	Adult	Male	5	49.5	19.9	16.1
Chinstrap Penguin	Adult	Male	27	49.0	20.3	14.4
Chinstrap Penguin	Adult	Male	28	52.2	20.5	13.8
Chinstrap Penguin	Adult	Male	29	51.0	20.5	17.0
Chinstrap Penguin	Adult	Male	30	51.8	19.6	16.0
Chinstrap Penguin	Adult	Male	31	51.3	19.9	14.0
Chinstrap Penguin	Adult	Male	32	47.5	20.0	14.6
Chinstrap Penguin	Adult	Male	33	51.5	19.0	14.1
Chinstrap Penguin	Adult	Male	34	51.6	19.2	14.9
Chinstrap Penguin	Adult	Male	35	50.0	19.3	14.1
Chinstrap Penguin	Adult	Male	36	48.1	18.6	14.6
Gentoo Penguin	Adult	Female	-	41.8	15.1	10.6
Gentoo Penguin	Adult	Female	-	46.0	16.1	10.2
Gentoo Penguin	Adult	Female	-	46.4	14.6	9.8
Gentoo Penguin	Adult	Female	17	47.3	16.2	11.7
Gentoo Penguin	Adult	Female	18	45.4	16.4	12.5
Gentoo Penguin	Adult	Female	19	41.4	14.5	11.0
Gentoo Penguin	Adult	Female	20	44.1	14.7	10.9
Gentoo Penguin	Adult	Female	21	45.0	16.0	10.7
Gentoo Penguin	Adult	Female	22	45.9	15.3	10.9
Gentoo Penguin	Adult	Female	23	43.8	16.2	11.8
Gentoo Penguin	Adult	Female	24	44.8	15.0	11.2
Gentoo Penguin	Adult	Female	25	44.8	15.5	10.4
Gentoo Penguin	Adult	Female	26	49.2	16.2	11.5
Gentoo Penguin	Adult	Male	-	50.3	16.3	11.0
Gentoo Penguin	Adult	Male	17	49.2	16.3	12.0
Gentoo Penguin	Adult	Male	18	50.6	18.9	12.0
Gentoo Penguin	Adult	Male	19	44.3	16.2	12.0
Gentoo Penguin	Adult	Male	20	49.7	16.9	12.6
Gentoo Penguin	Adult	Male	21	52.0	17.3	12.0

**Appendix 1.** Continued.

<b>Species</b>	<b>Age</b>	<b>Sex</b>	<b>Pair no.</b>	<b>Bill Length (mm)</b>	<b>Bill Depth (mm)</b>	<b>Bill width (mm)</b>
Gentoo Penguin	Adult	Male	22	46.2	17.2	10.7
Gentoo Penguin	Adult	Male	23	45.5	16.7	11.5
Gentoo Penguin	Adult	Male	24	49.4	16.4	11.2
Gentoo Penguin	Adult	Male	25	48.3	18.7	12.3
Gentoo Penguin	Adult	Male	26	51.5	17.0	11.5
Gentoo Penguin	Juvenile	Female	-	43.0	15.8	11.0
Gentoo Penguin	Juvenile	Female	-	39.9	15.0	11.0
Gentoo Penguin	Juvenile	Female	-	44.4	14.6	10.4
Gentoo Penguin	Juvenile	Female	-	46.5	15.4	10.7
Gentoo Penguin	Juvenile	Female	-	40.9	14.7	10.8
Gentoo Penguin	Juvenile	Female	-	43.5	14.2	10.5
Gentoo Penguin	Juvenile	Female	-	43.6	14.4	11.0
Gentoo Penguin	Juvenile	Female	-	45.0	15.3	11.1
Gentoo Penguin	Juvenile	Female	-	45.8	15.4	10.1
Gentoo Penguin	Juvenile	Female	-	42.5	14.6	12.5
Gentoo Penguin	Juvenile	Female	-	43.0	14.3	11.3
Gentoo Penguin	Juvenile	Female	-	42.3	14.8	10.0
Gentoo Penguin	Juvenile	Male	-	48.2	15.8	11.9
Gentoo Penguin	Juvenile	Male	-	46.3	15.5	11.6
Gentoo Penguin	Juvenile	Male	-	46.1	15.2	11.6
Gentoo Penguin	Juvenile	Male	-	46.5	16.1	11.3
Gentoo Penguin	Juvenile	Male	-	46.1	15.6	11.1
Gentoo Penguin	Juvenile	Male	-	48.0	16.8	11.1