

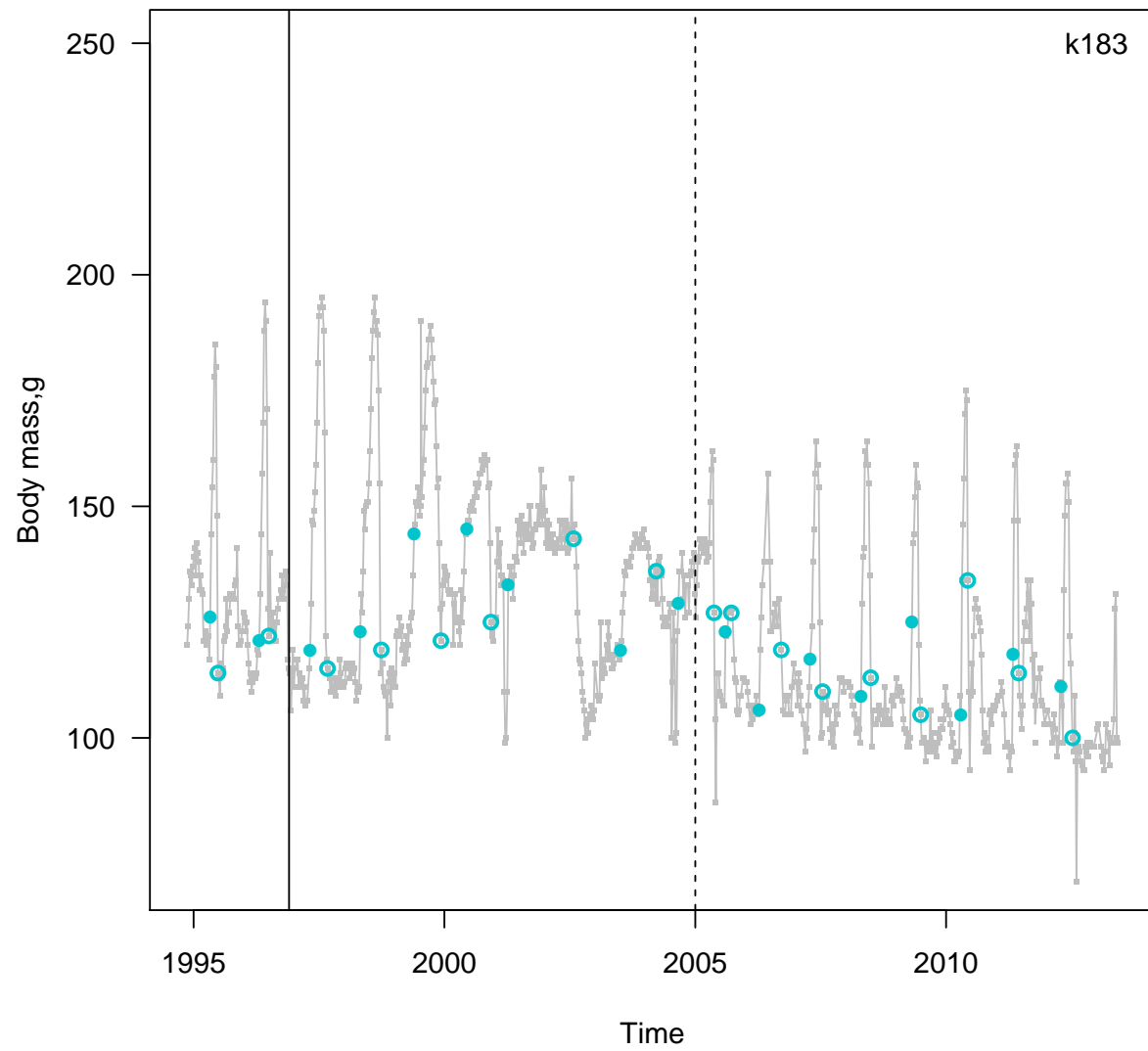
Supplementary Online Material 2

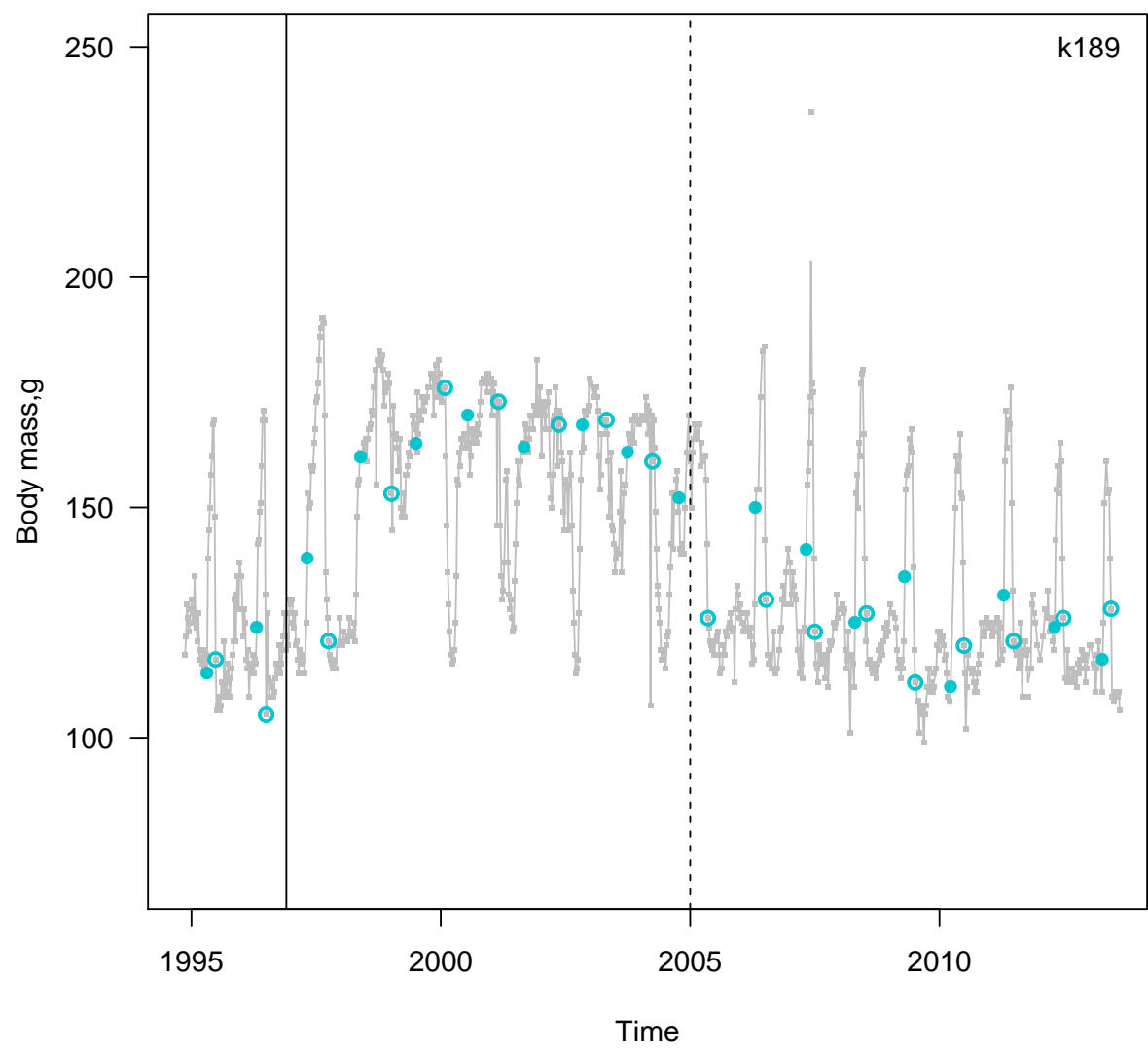
Body mass and wing and plumage molt score of individual red knots

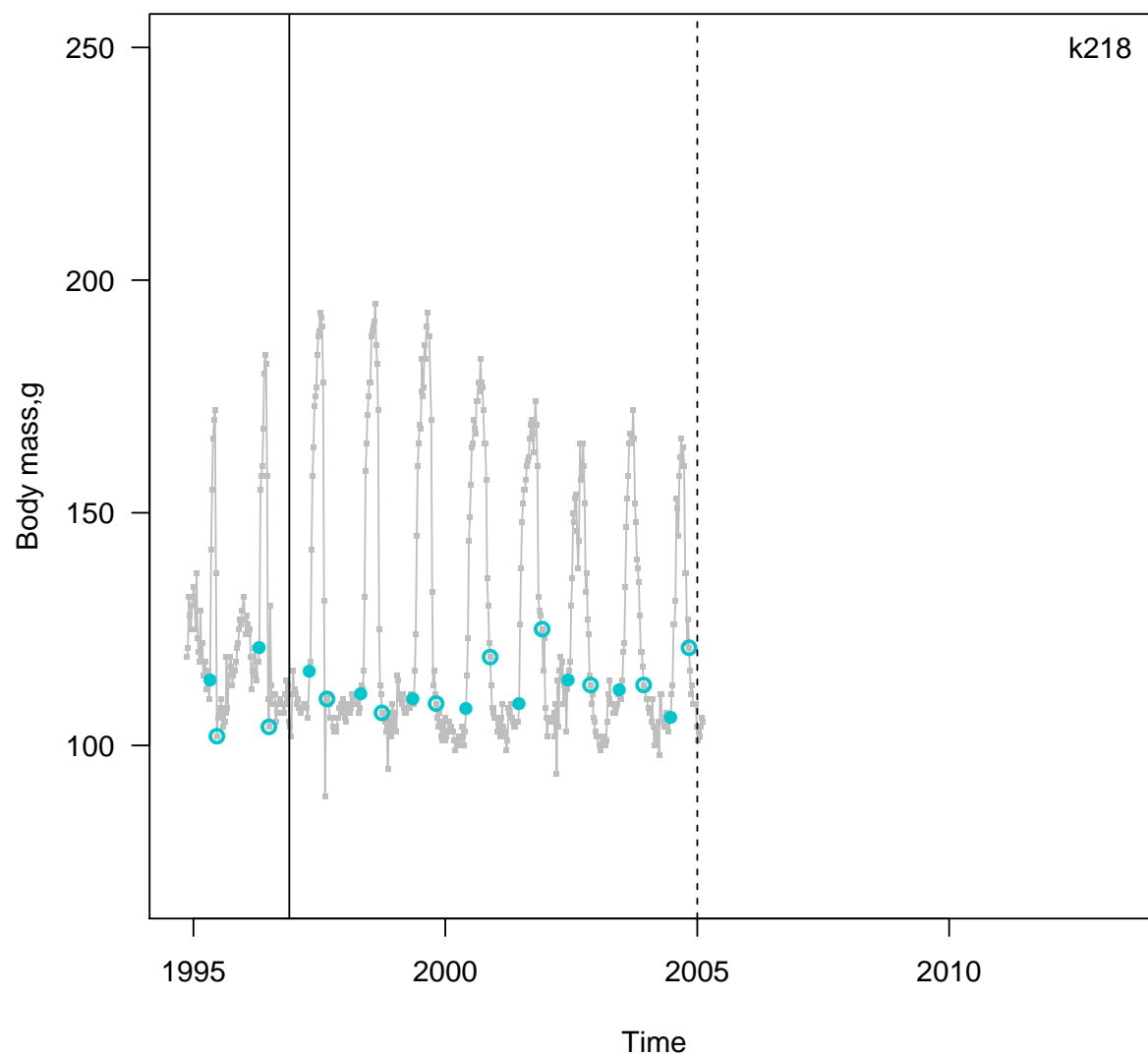
Supplementary 2 to Julia Karagicheva, Eldar Rakhimberdiev, Anne Dekinga, Maarten Brugge, Anita Koolhaas, Job ten Horn & Theunis Piersma 2016 Seasonal time-keeping in a long-distance migrating shorebird. - Journal of Biological Rhythms 000: 000-000.

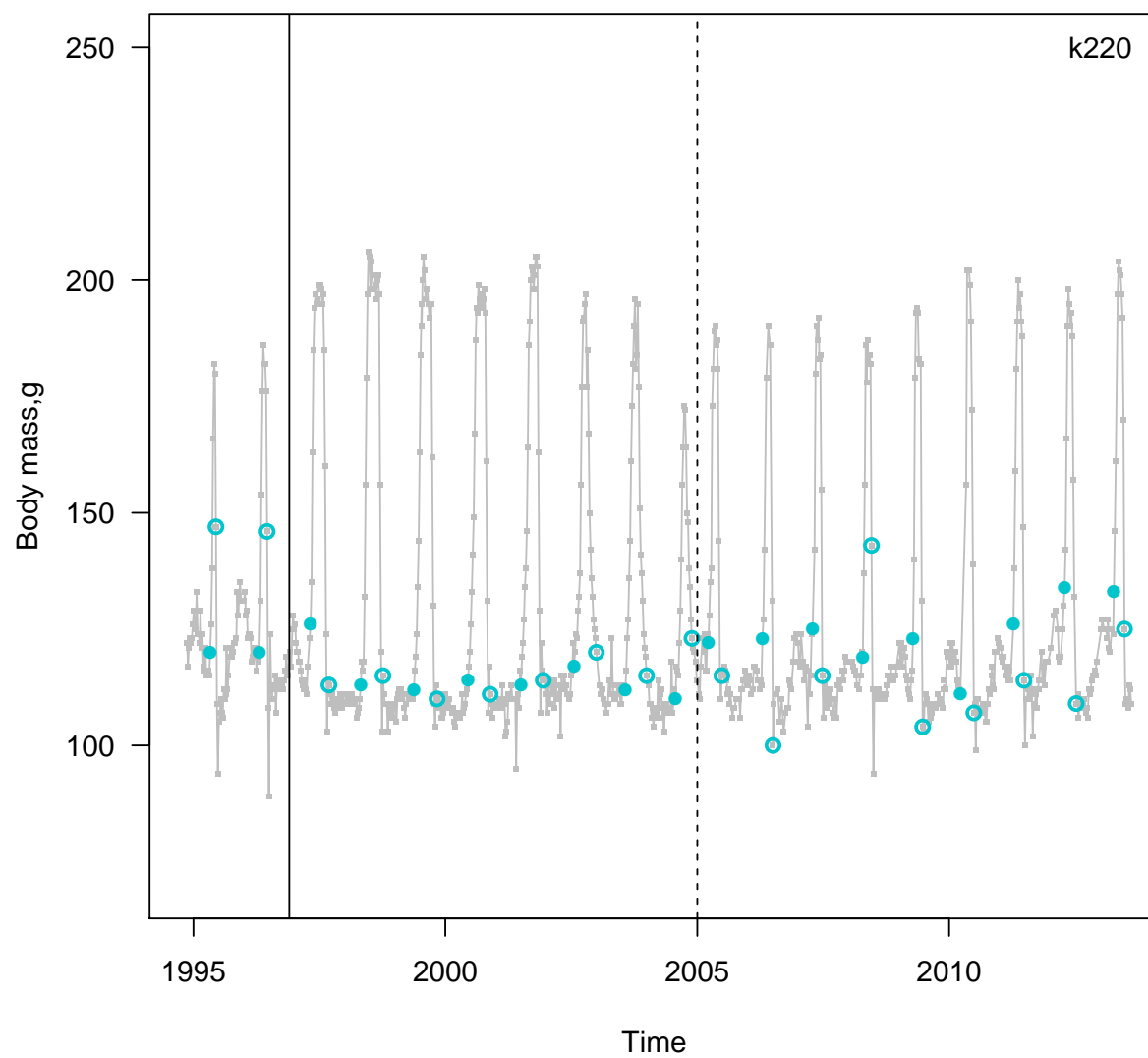
The figures below represent the time-series of the body mass and wing and plumage molt score of individual red knots in the study (grey lines for the results of interpolation and grey dots for the measured values). Onsets (closed circles) and offsets (open circles) of body mass increase, pre-alternate and pre-basic plumage molt and wing molt, defined and used in the analysis, are shown in colors. Vertical lines represent the starts (solid line) and the ends (dashed line) of the treatment with constant conditions (12:12 LD for Group 1 and 12:12 LD and 24 LL for Group 2). Codes for the individual birds are given at each figure.

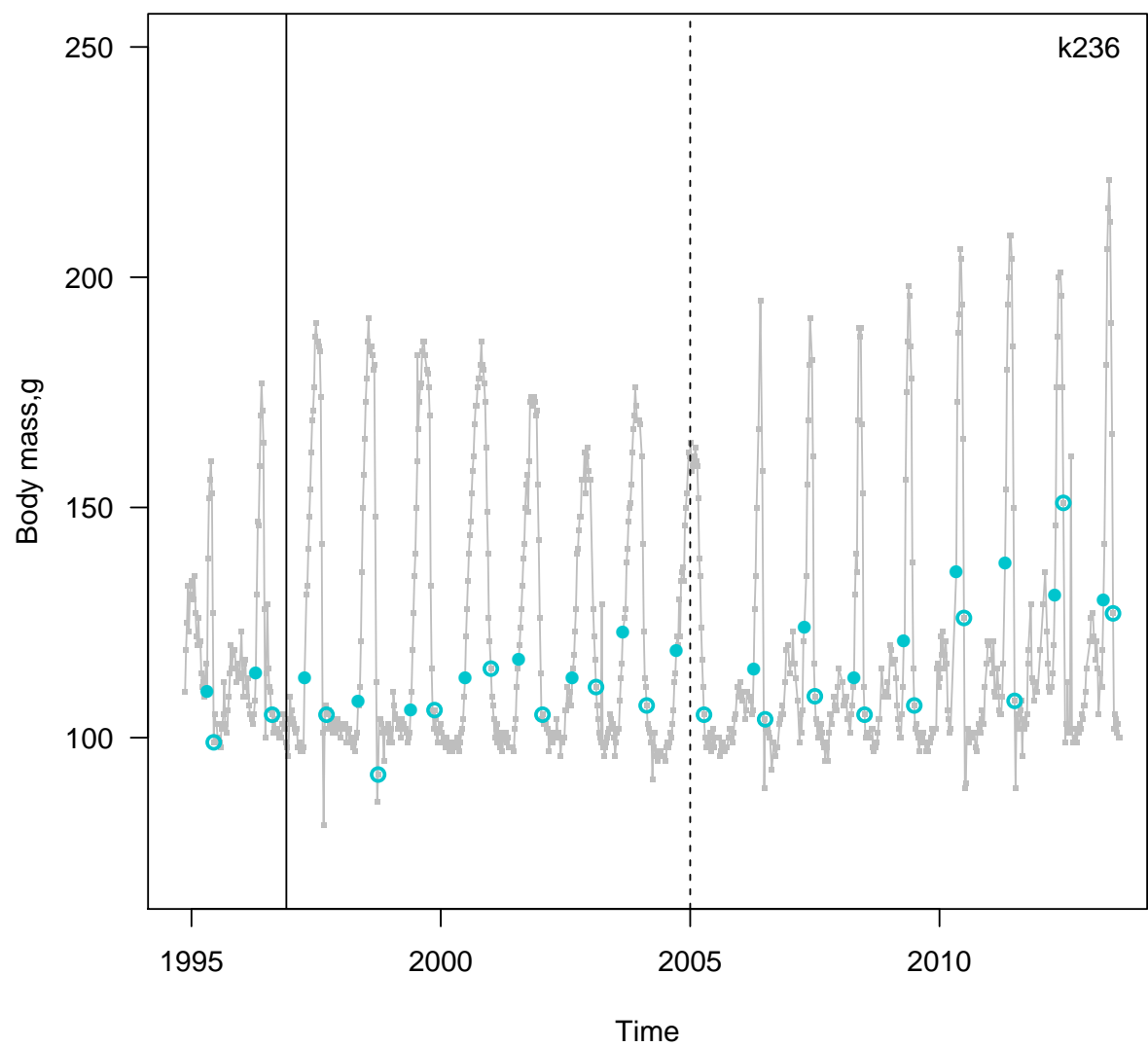
Body mass











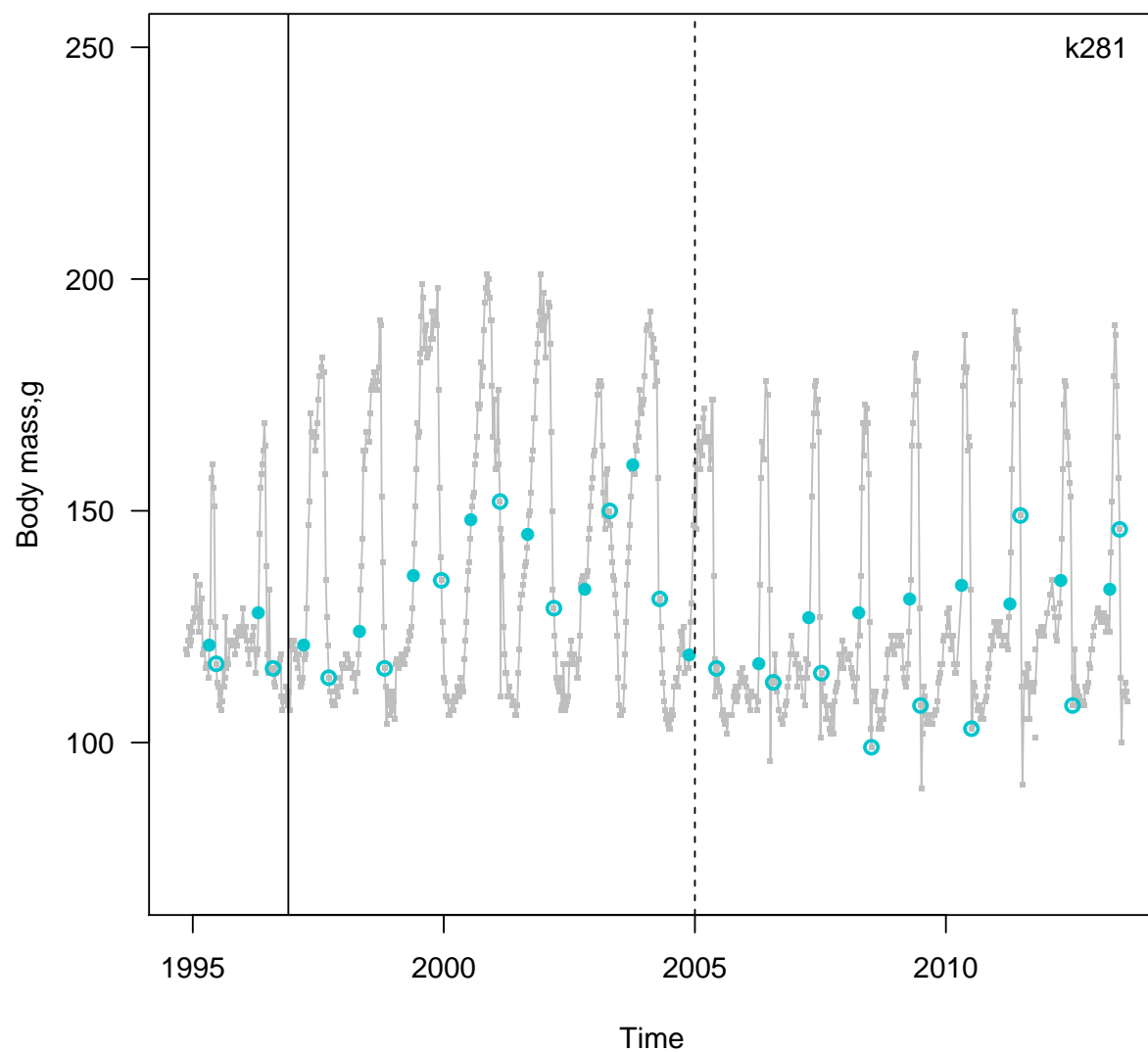
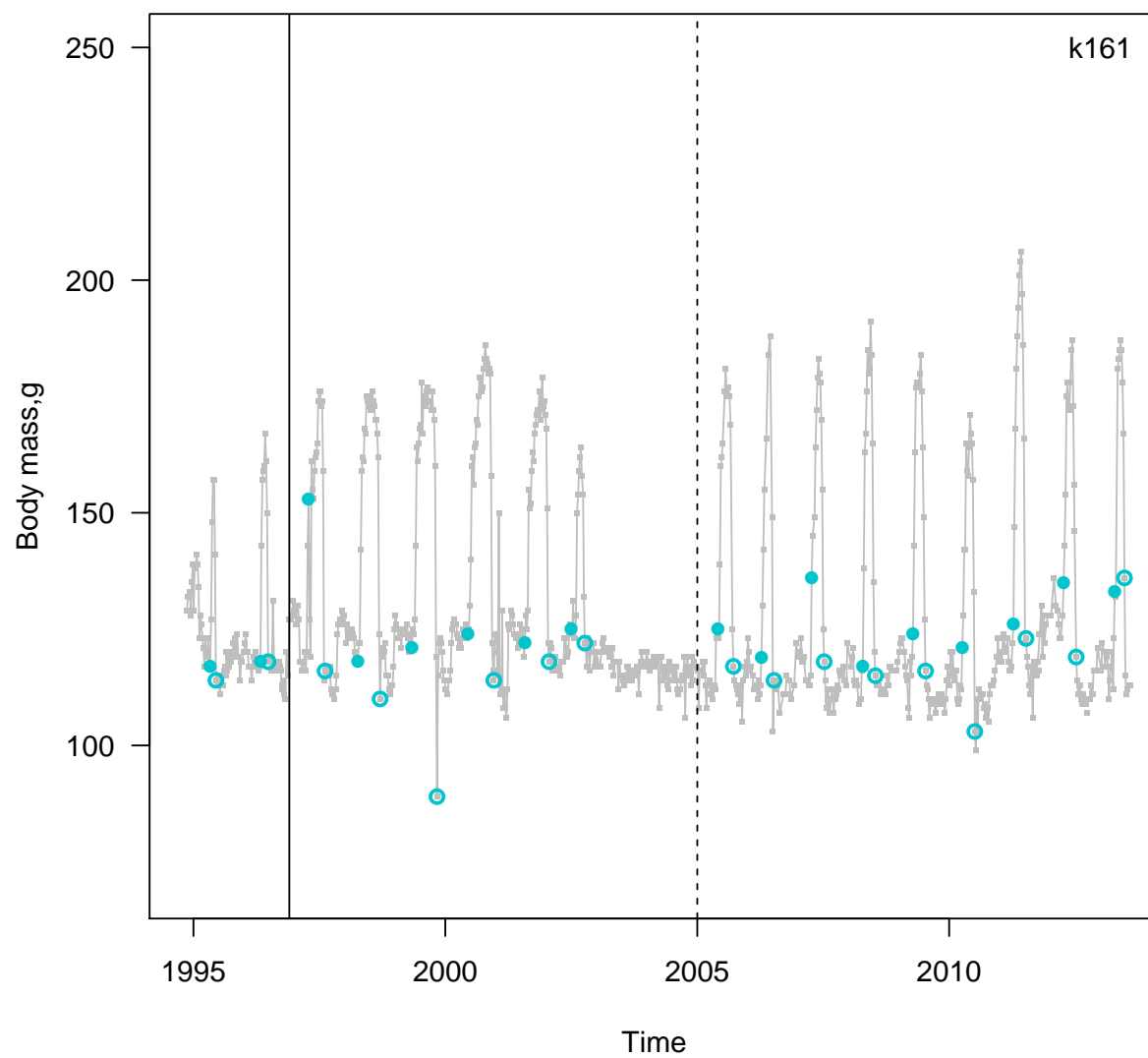
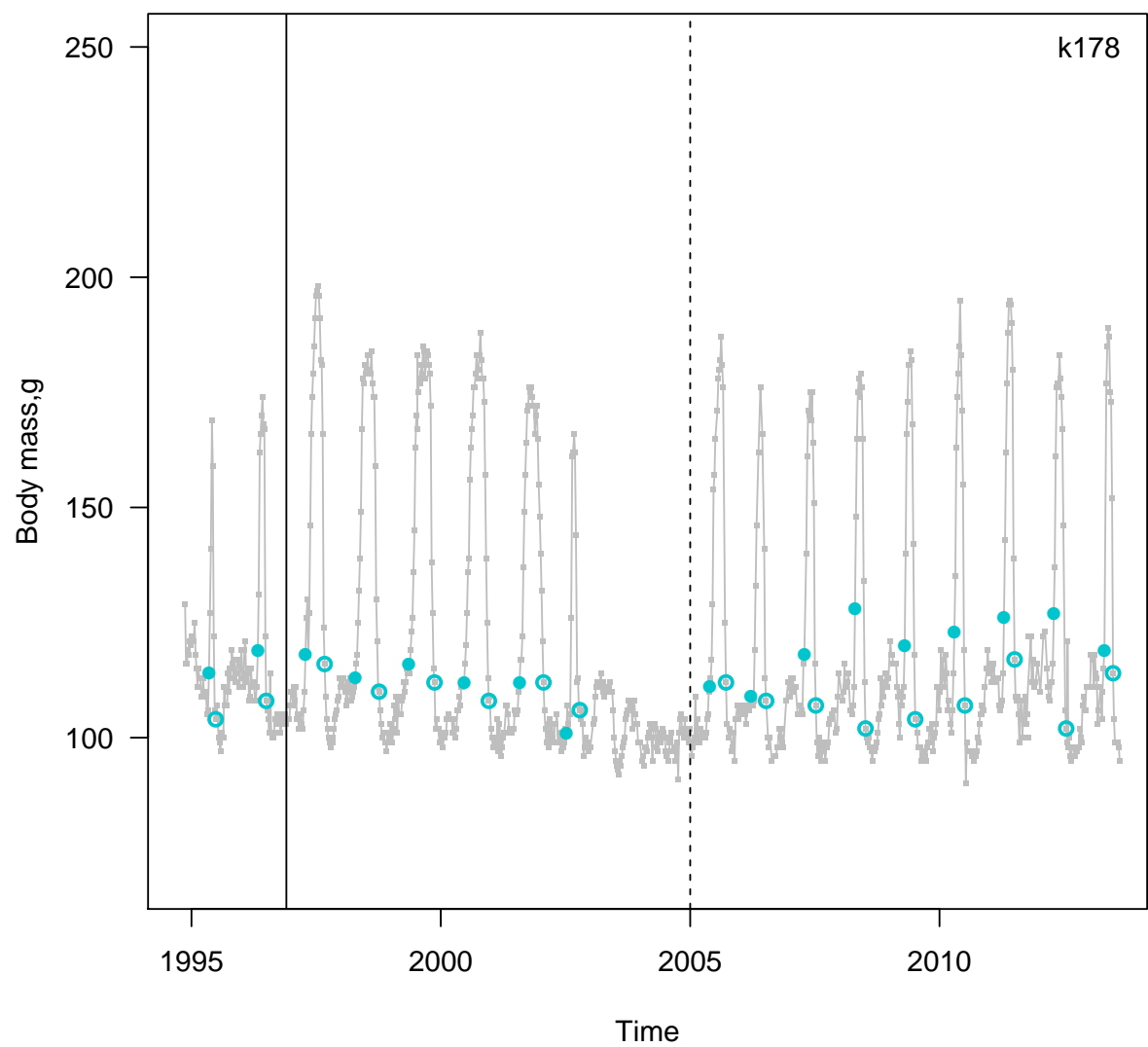
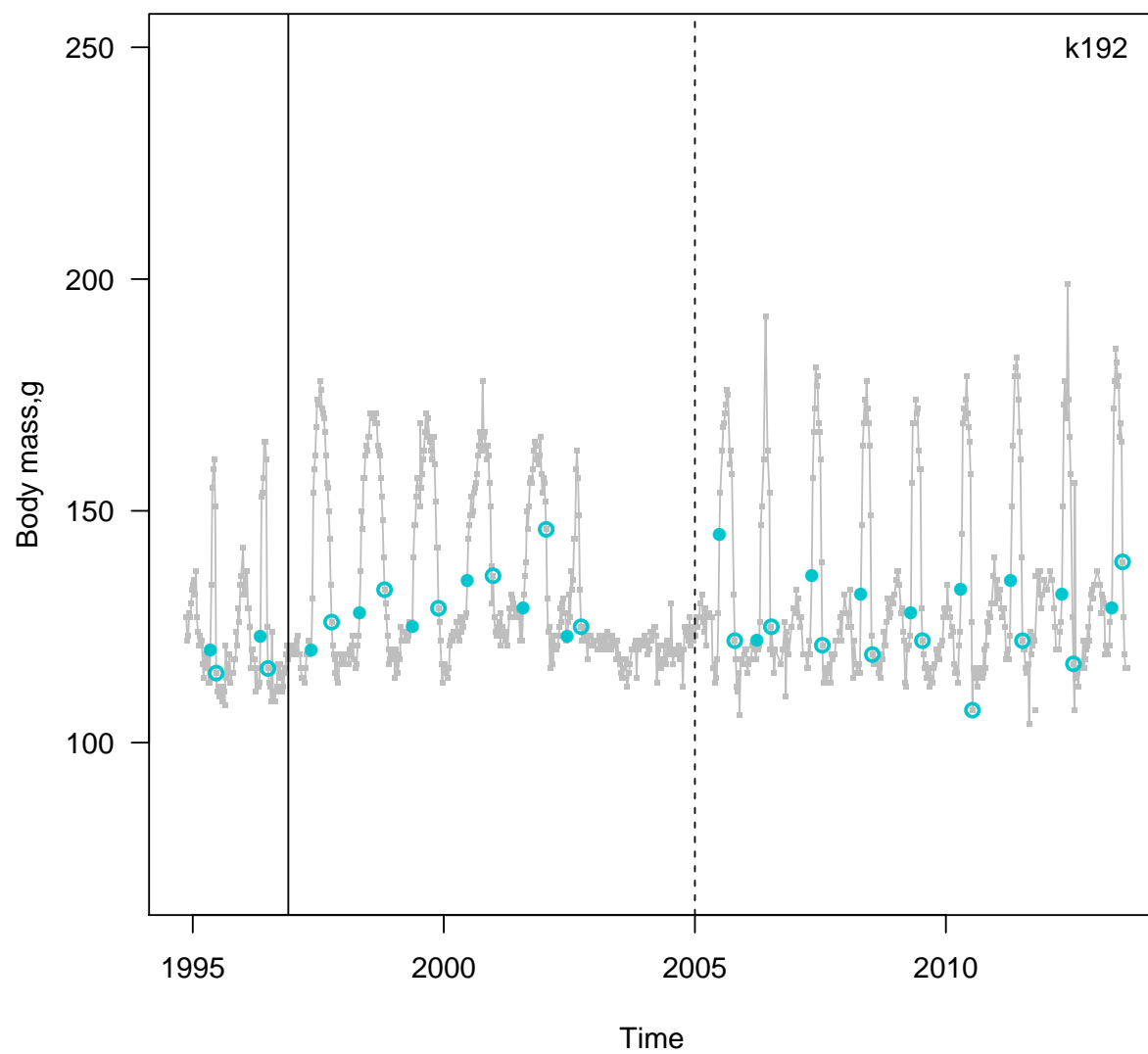
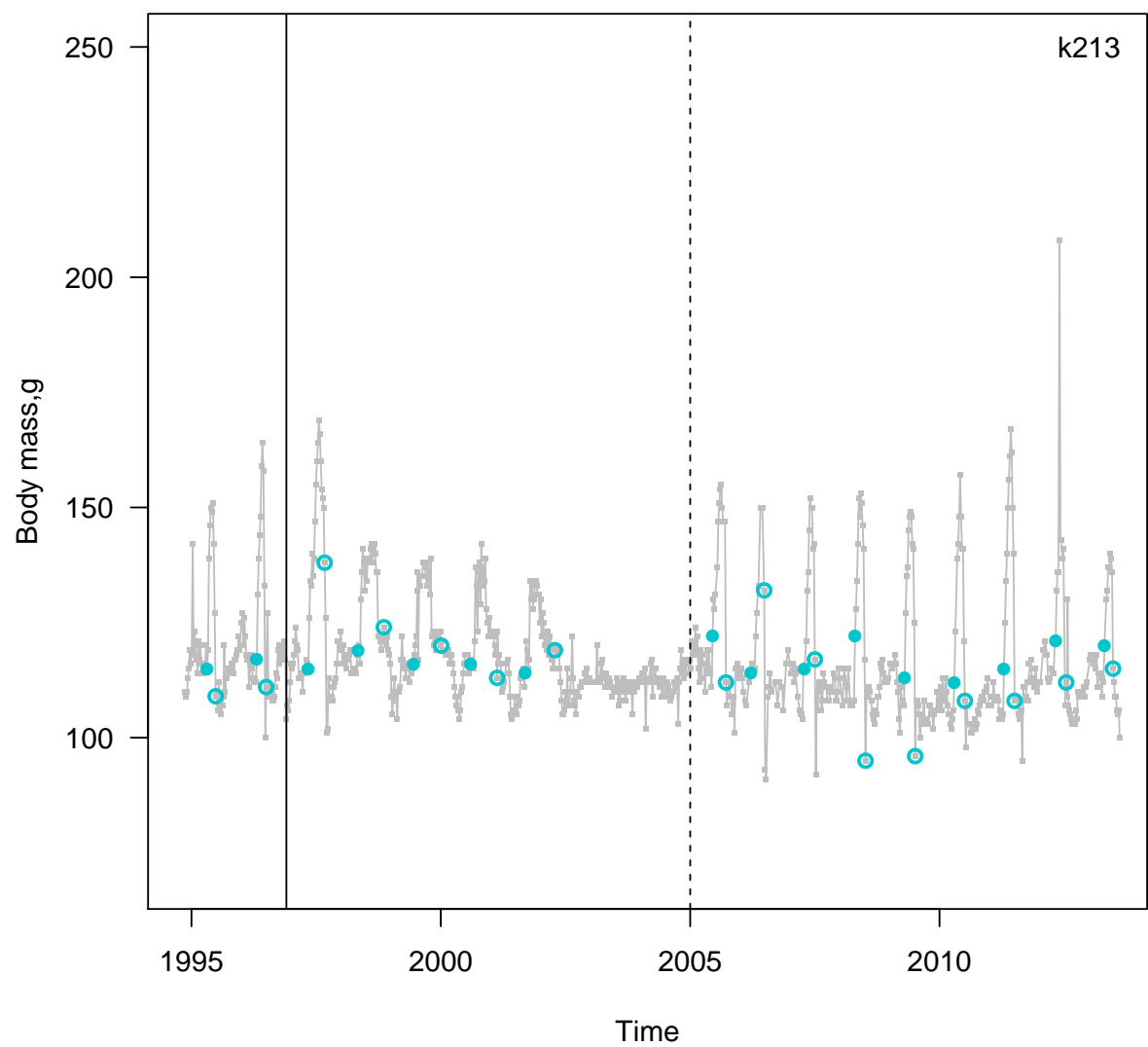


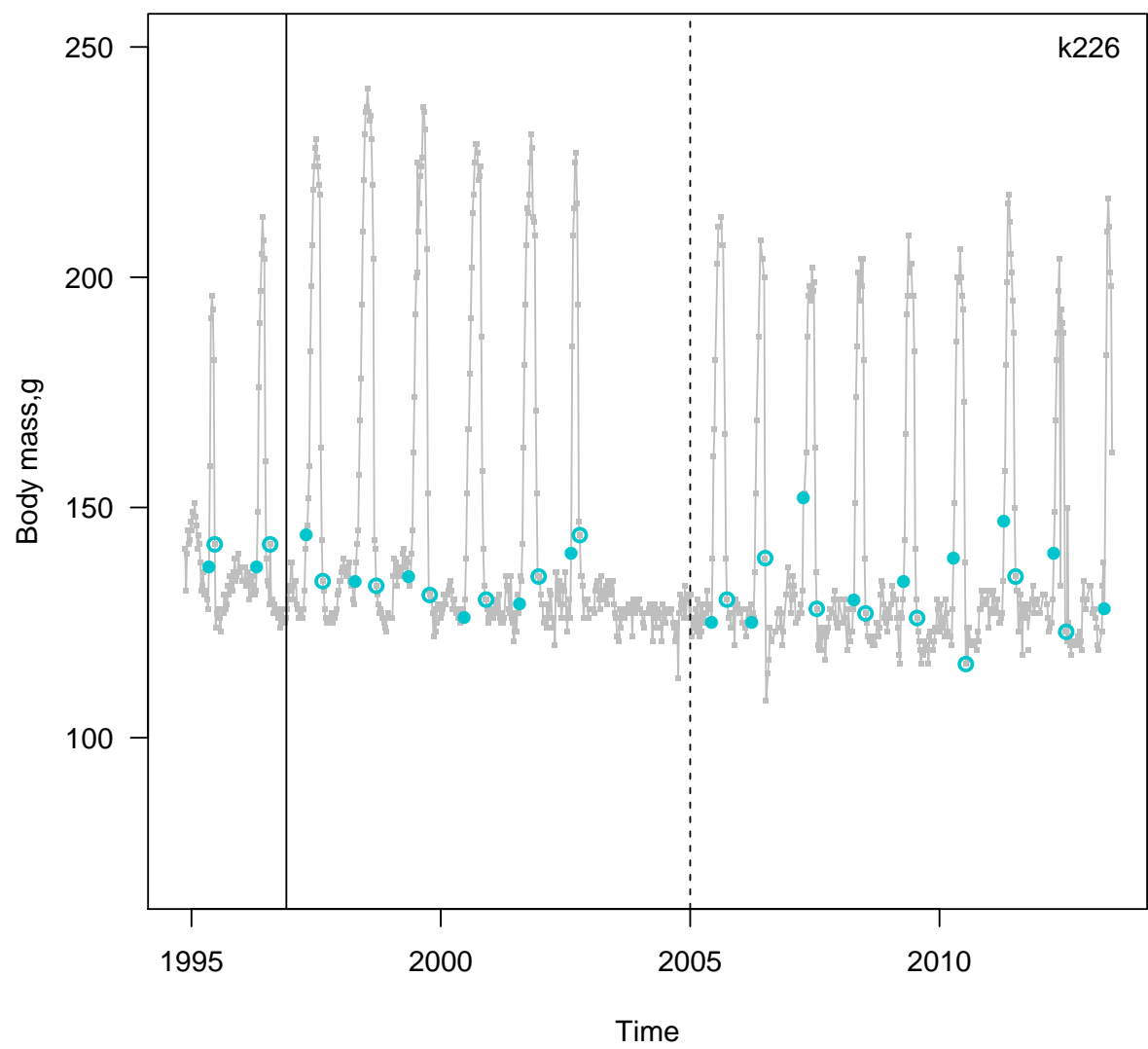
Figure S1. Body mass of red knots from Group 1 that stayed in captivity from November 1994 until June 2015 and experienced constant (12:12 LD) photoperiod from the 26 November 1996 until 28 December 2004. Onsets of body mass increase(closed circles) and offsets of body mass decrease (open circles) are shown in turquoise.

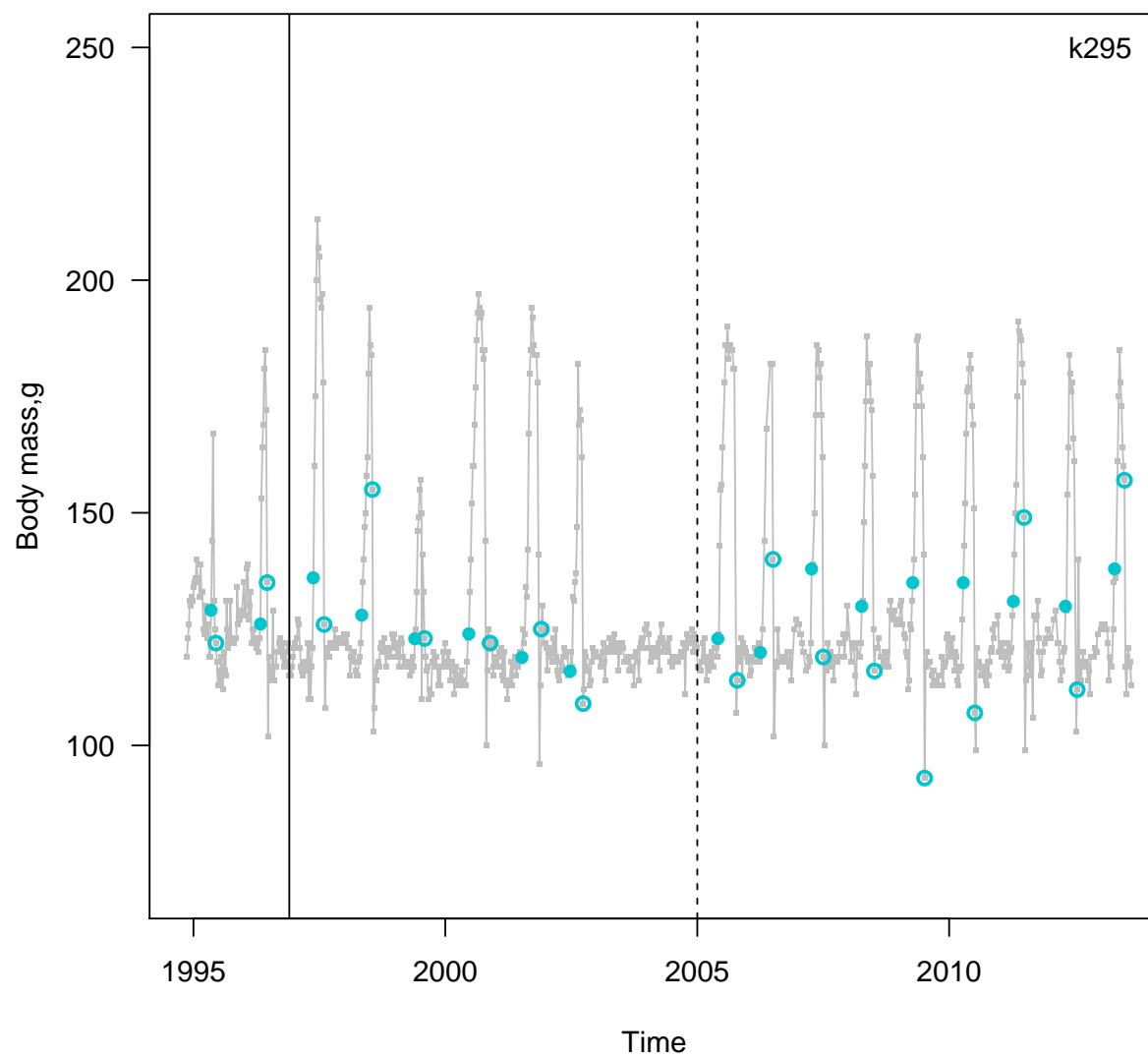












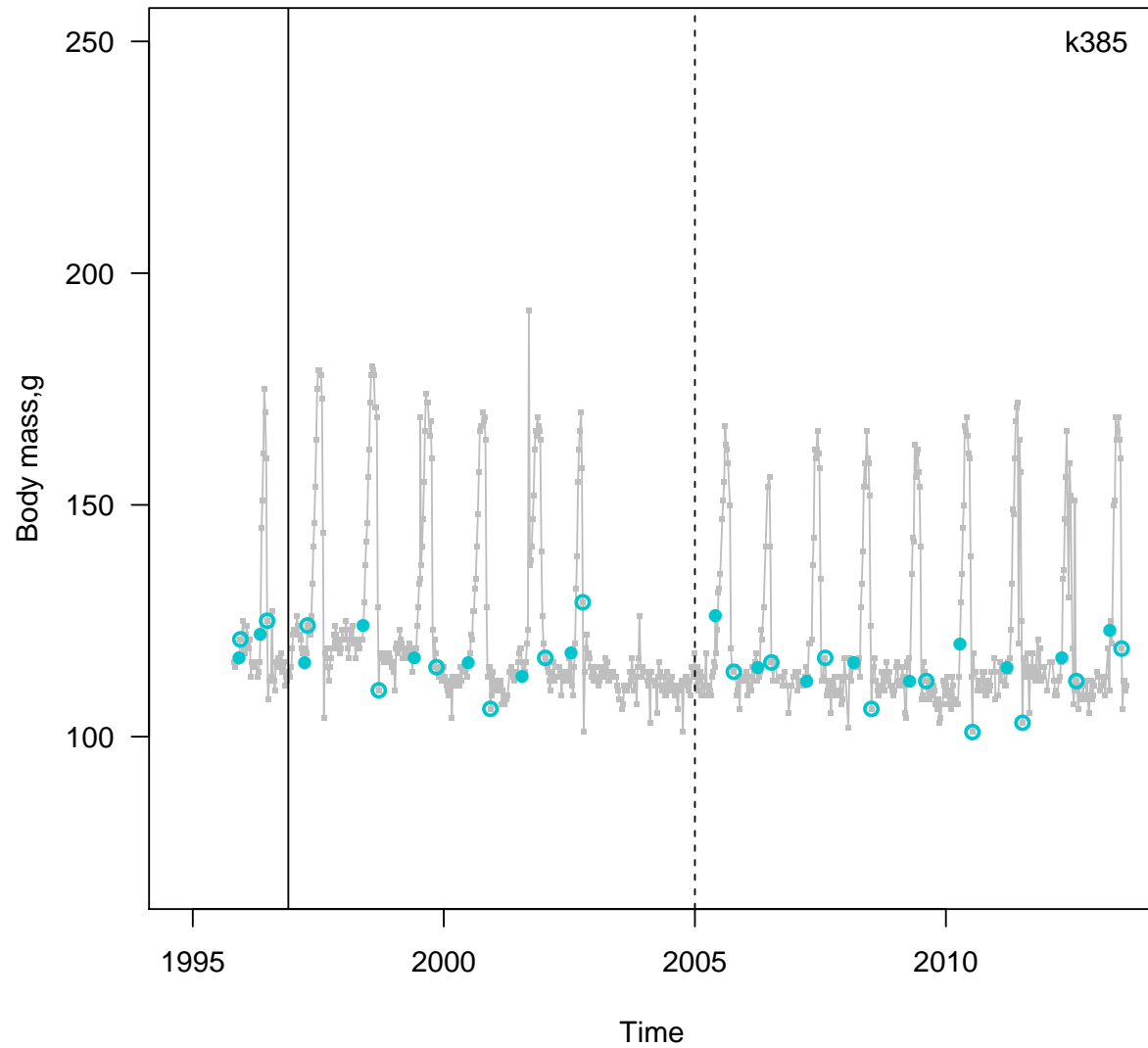
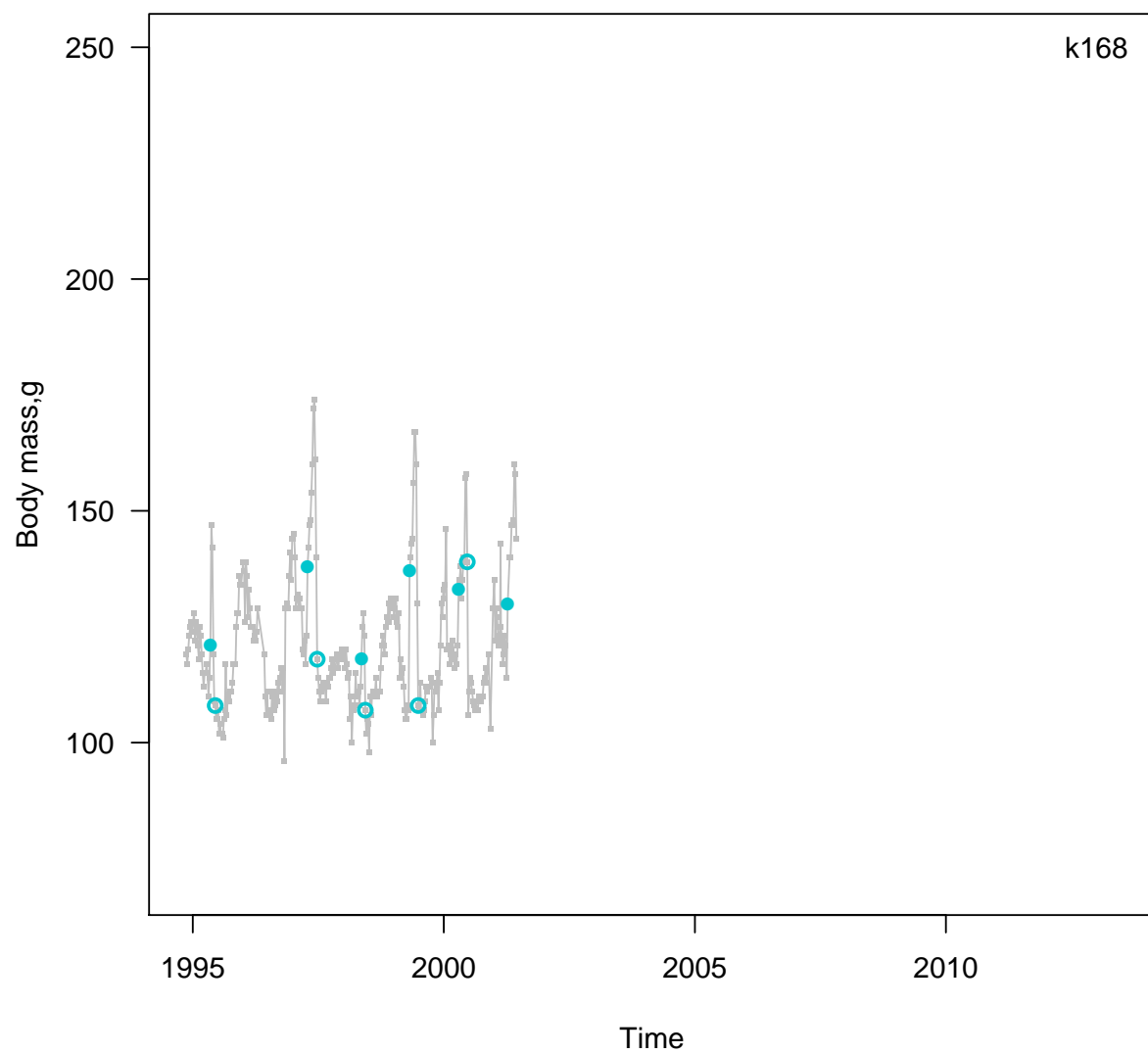
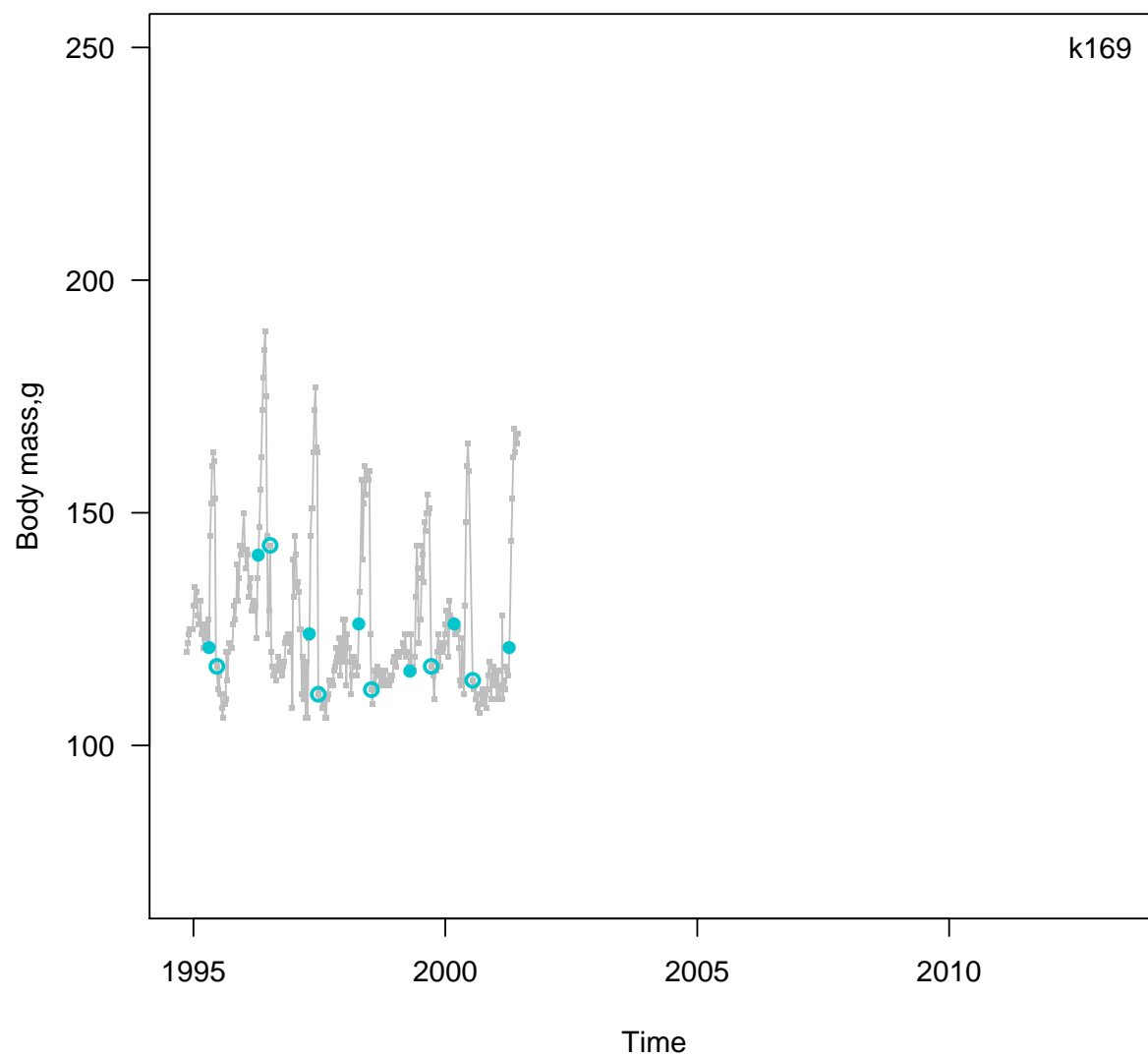
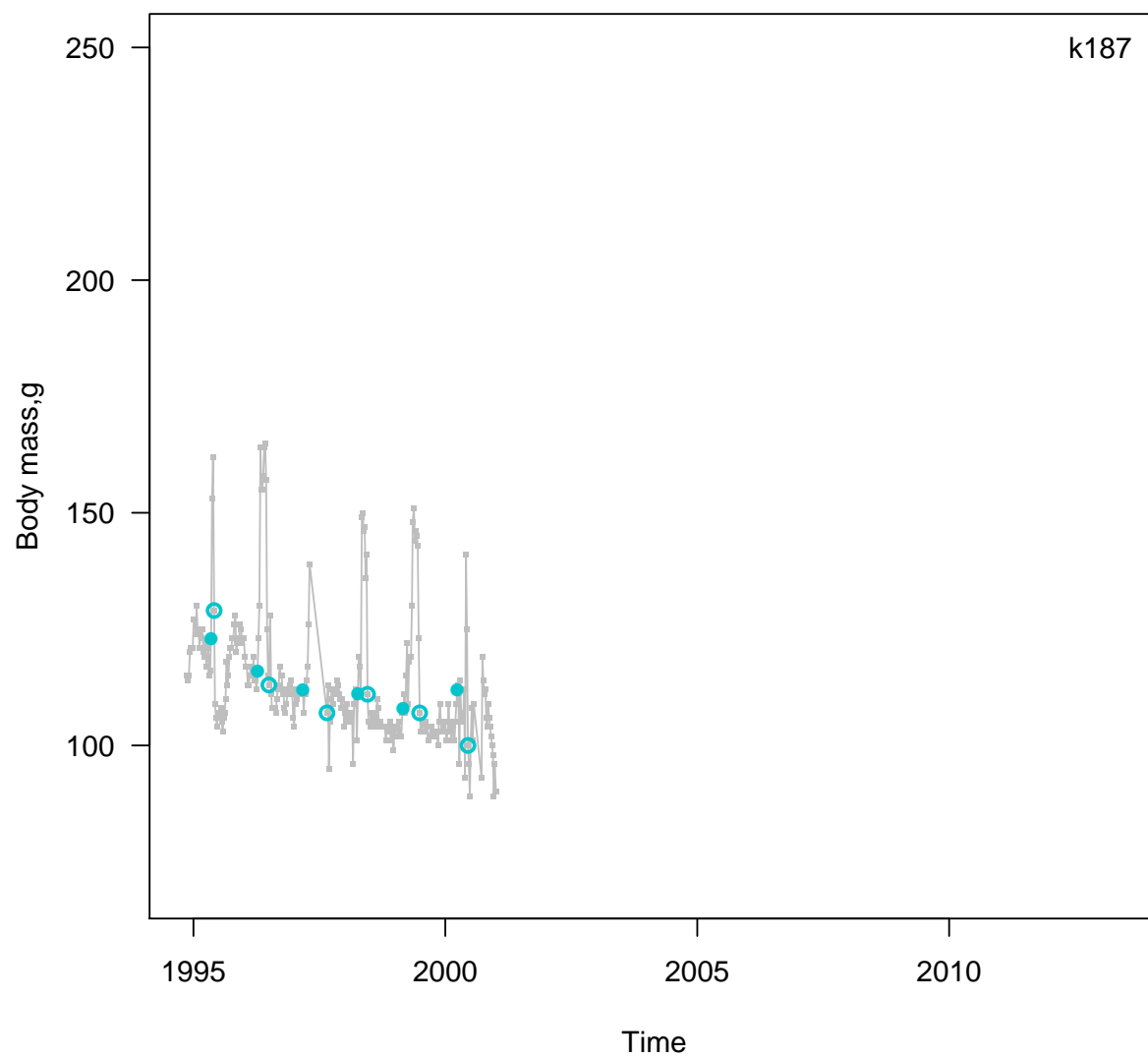
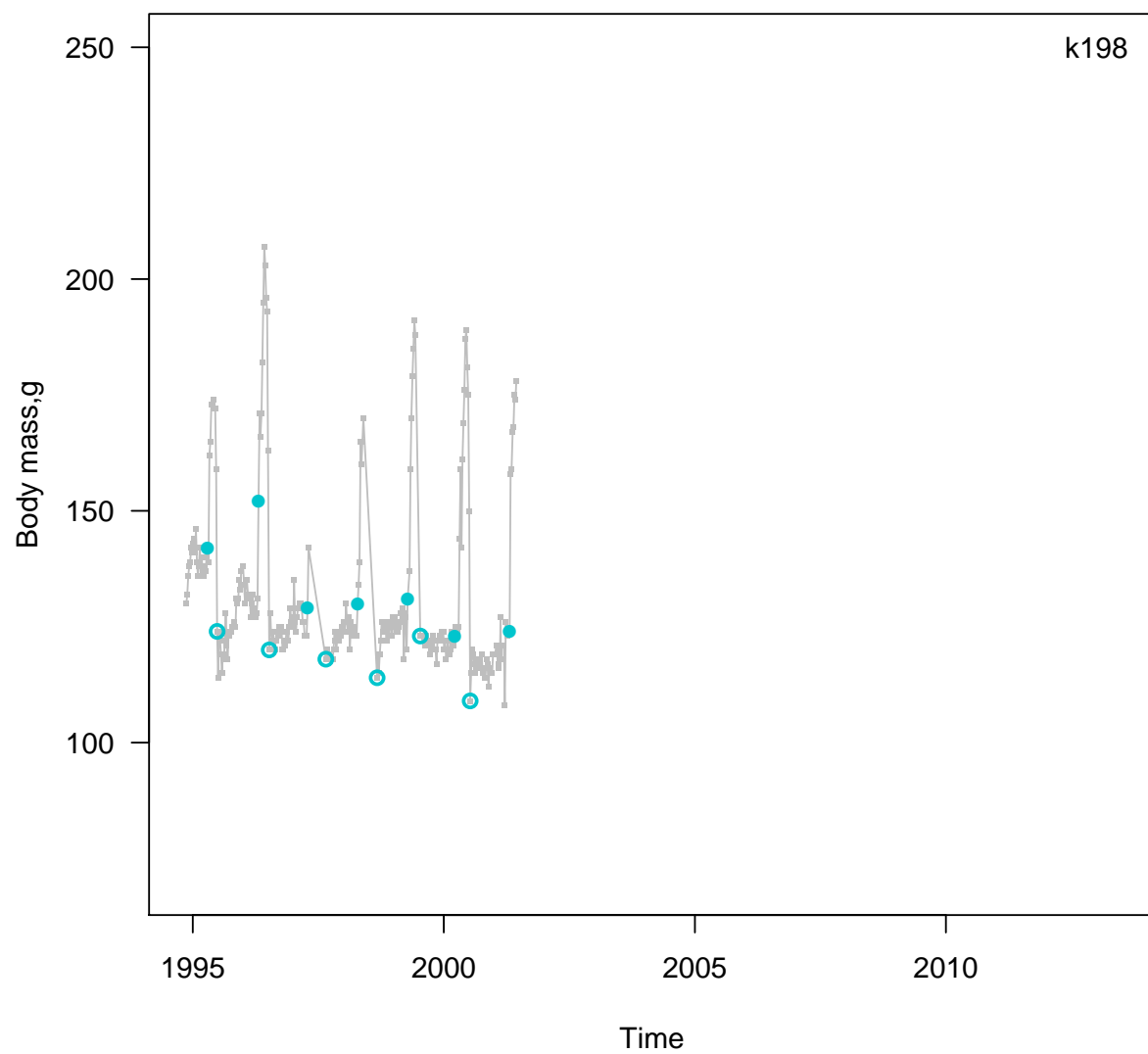


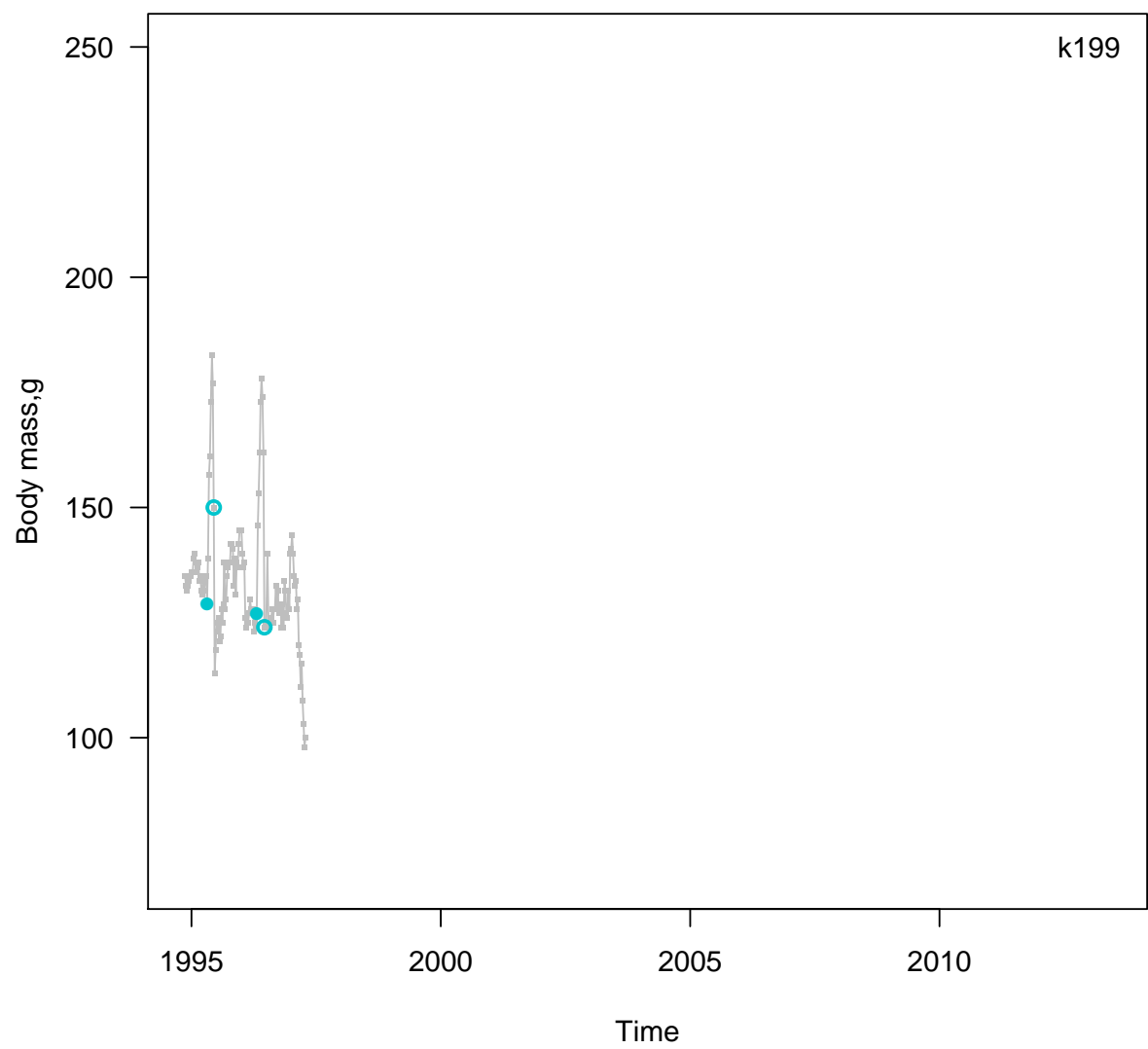
Figure S2. Body mass of red knots from Group 2 that stayed in captivity from November 1994 until June 2015 and experienced constant (12:12 LD) photoperiod from the 26 November 1996 until 25 November 2003 and constant light (24 LL) from 25 November 2003 until 28 December 2004. Onsets of body mass increase(closed circles) and offsets of body mass decrease (open circles) are shown in turquoise.

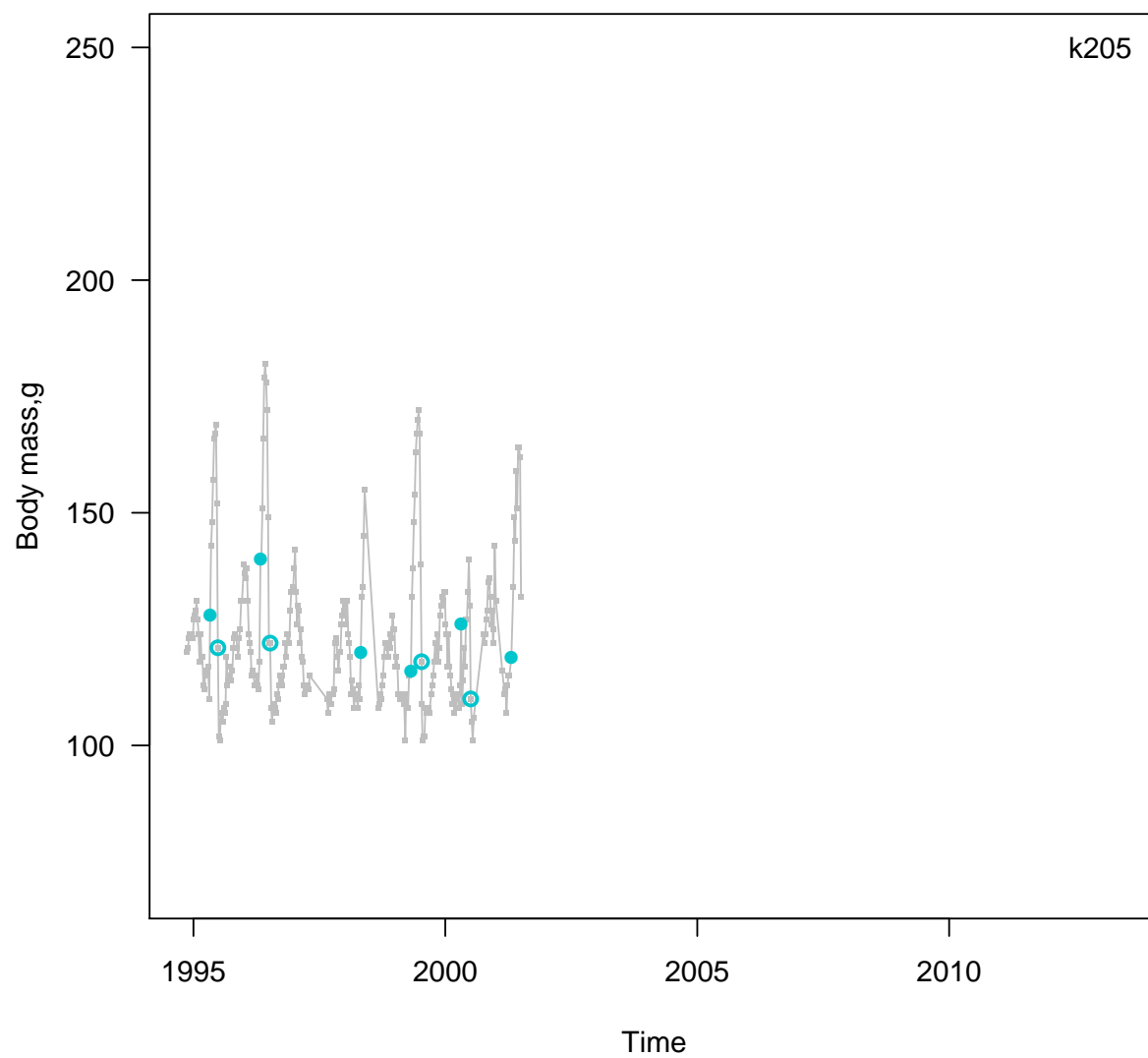


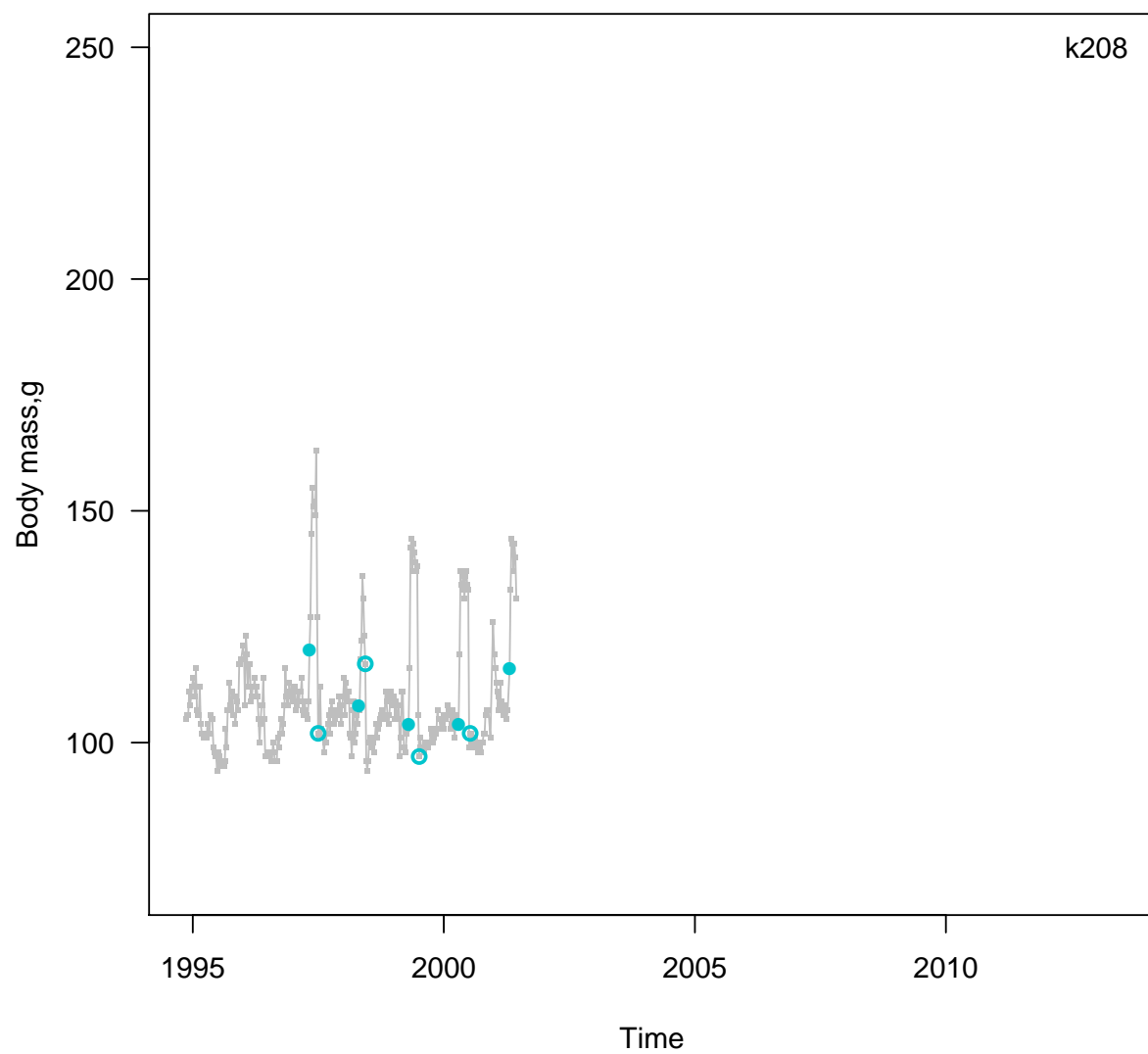


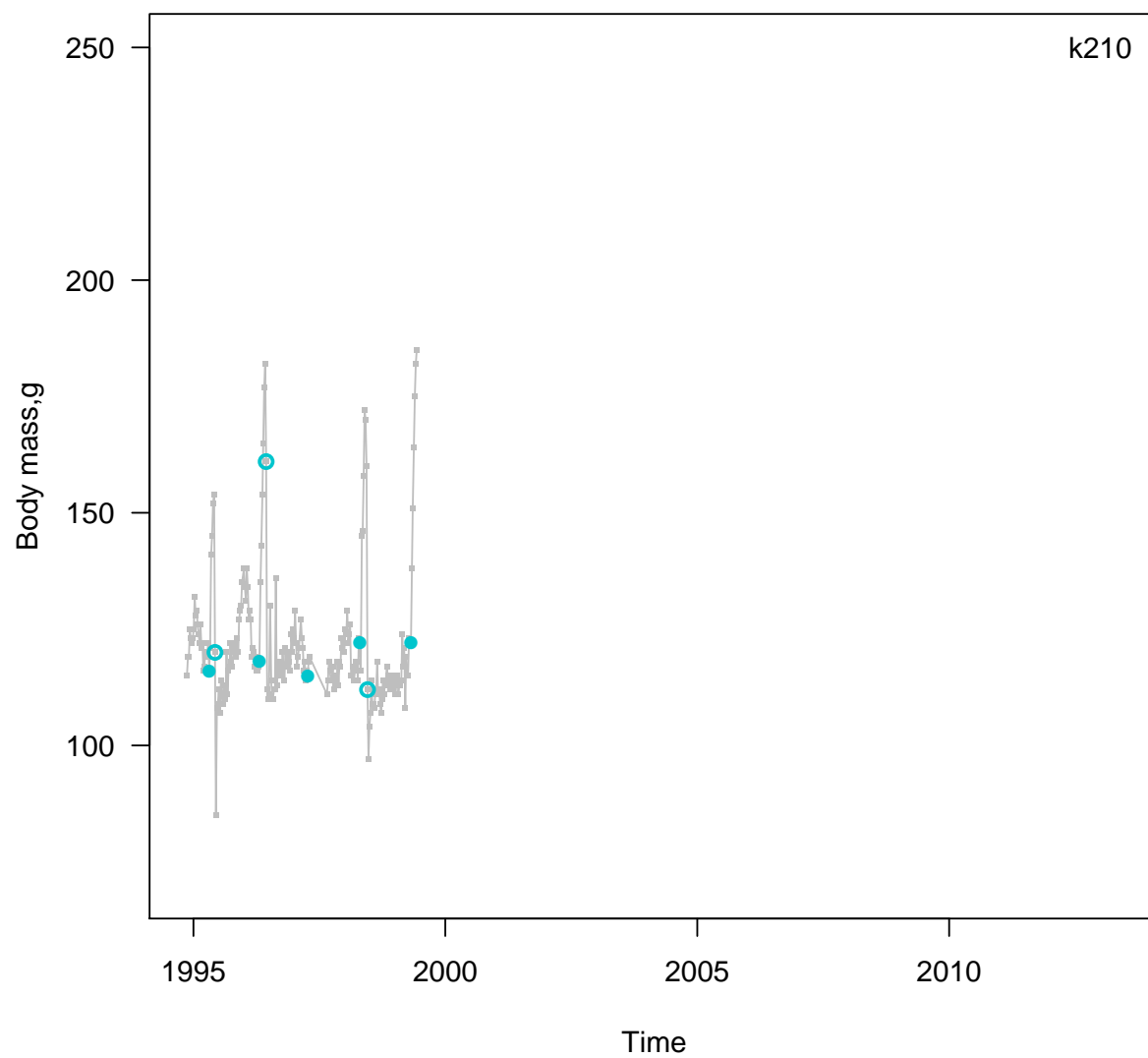


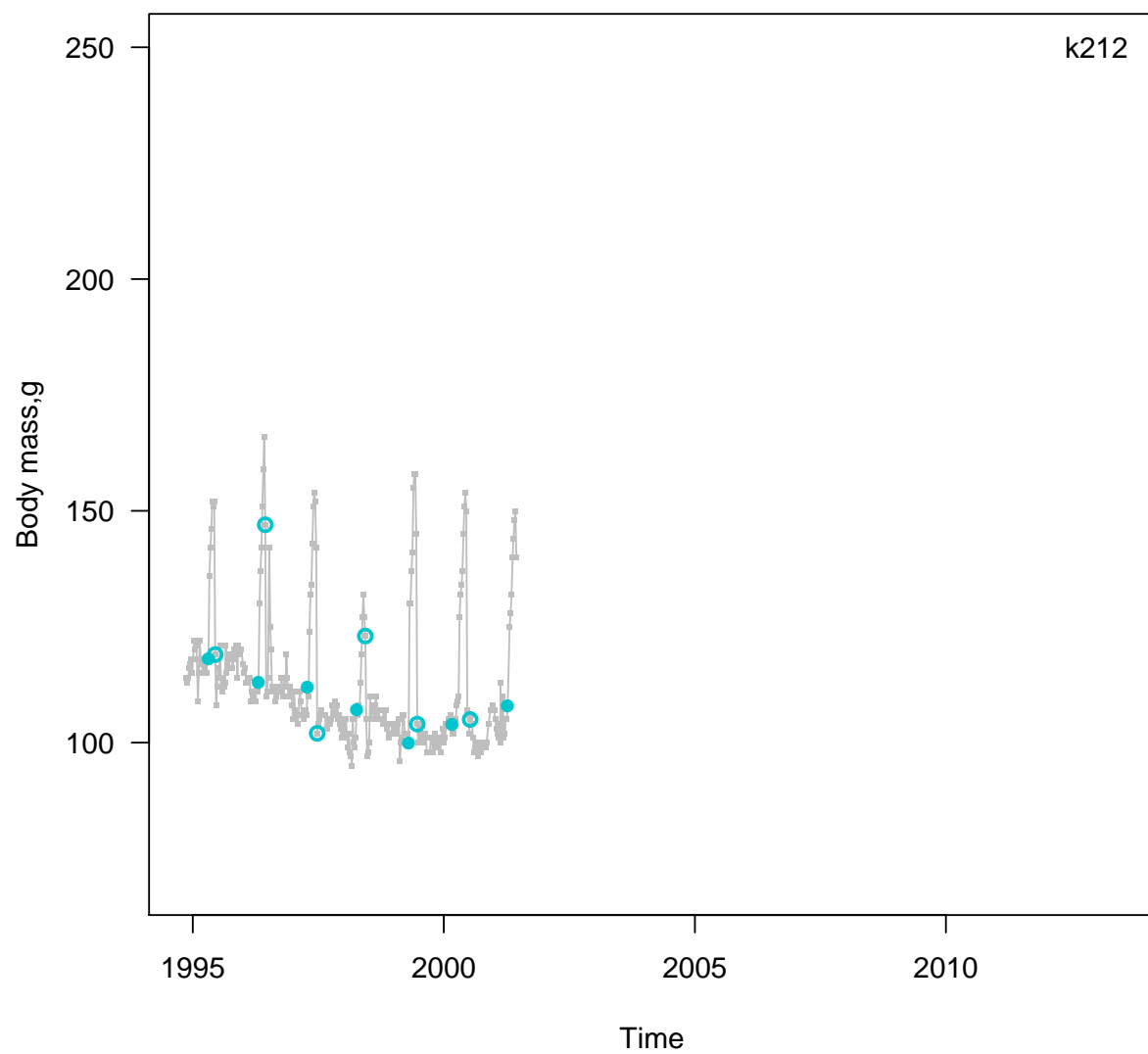


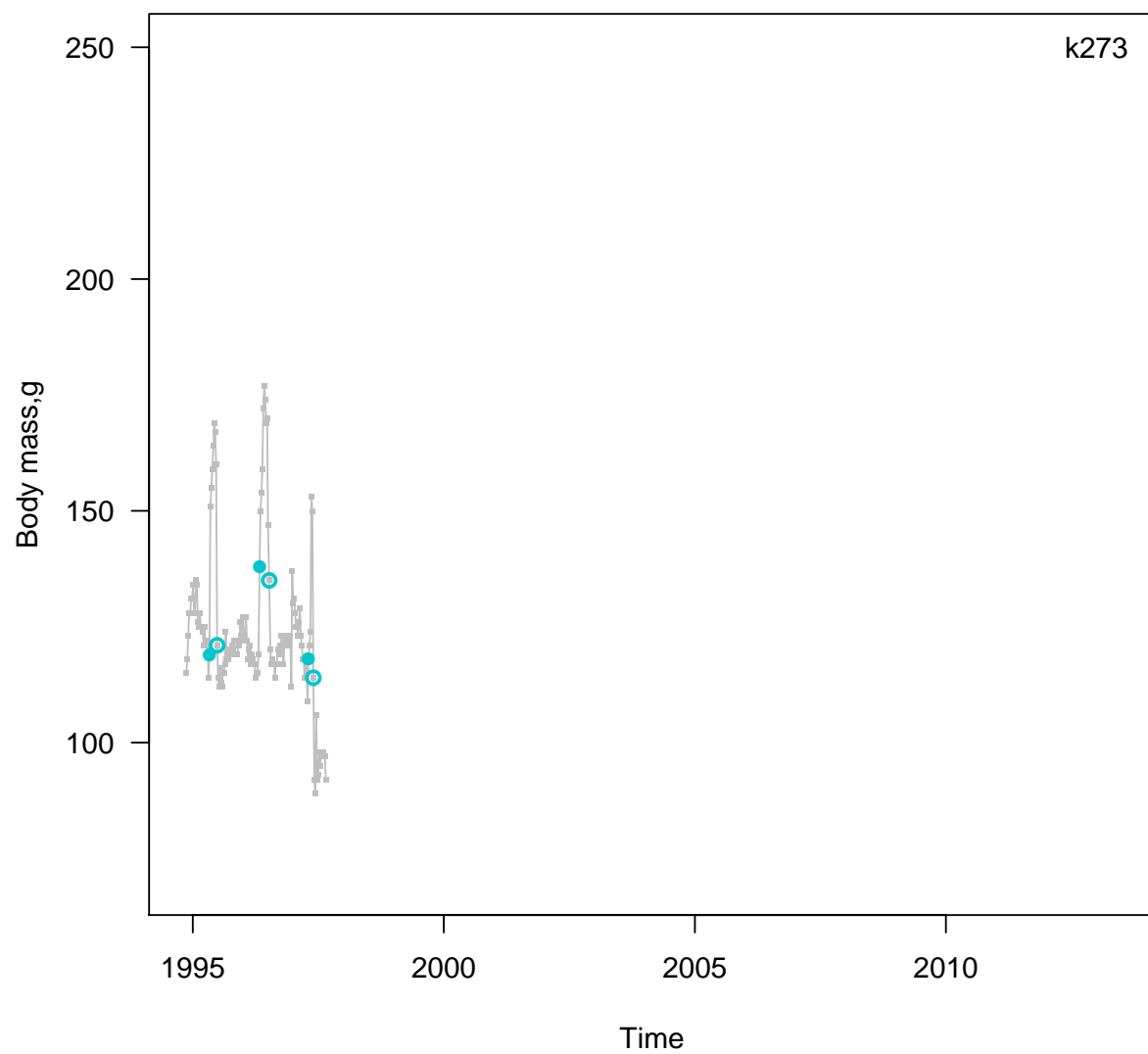


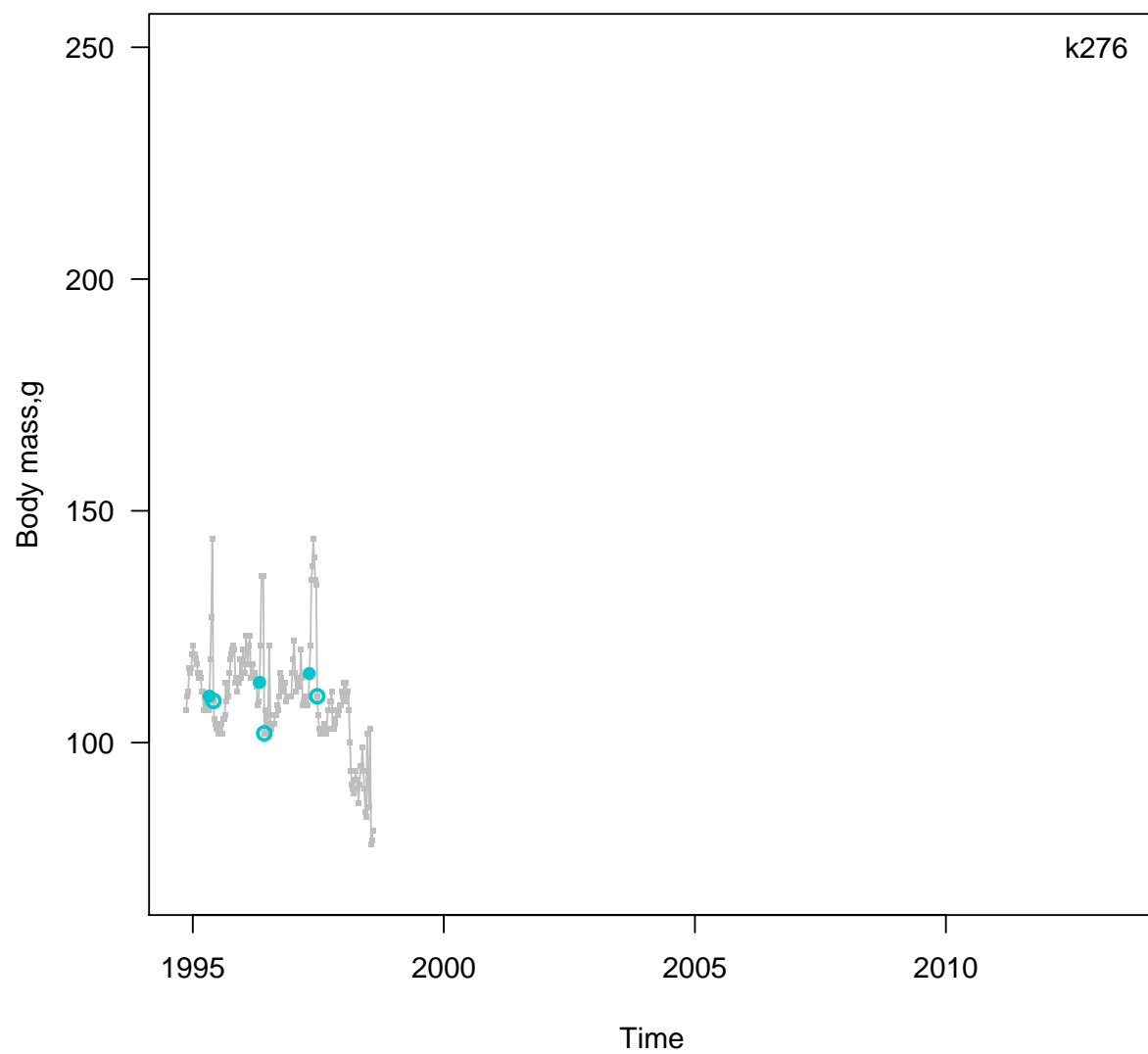


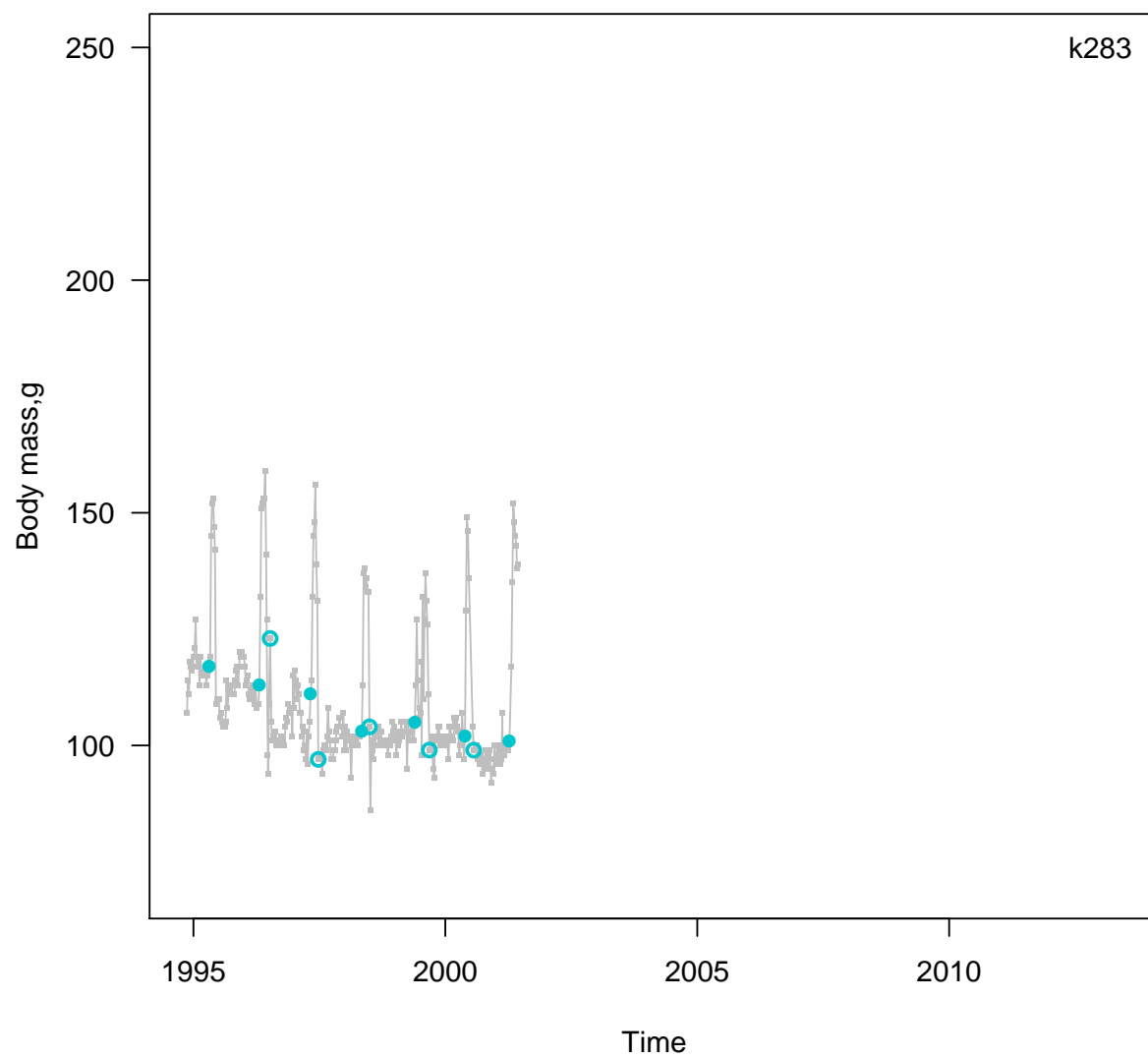


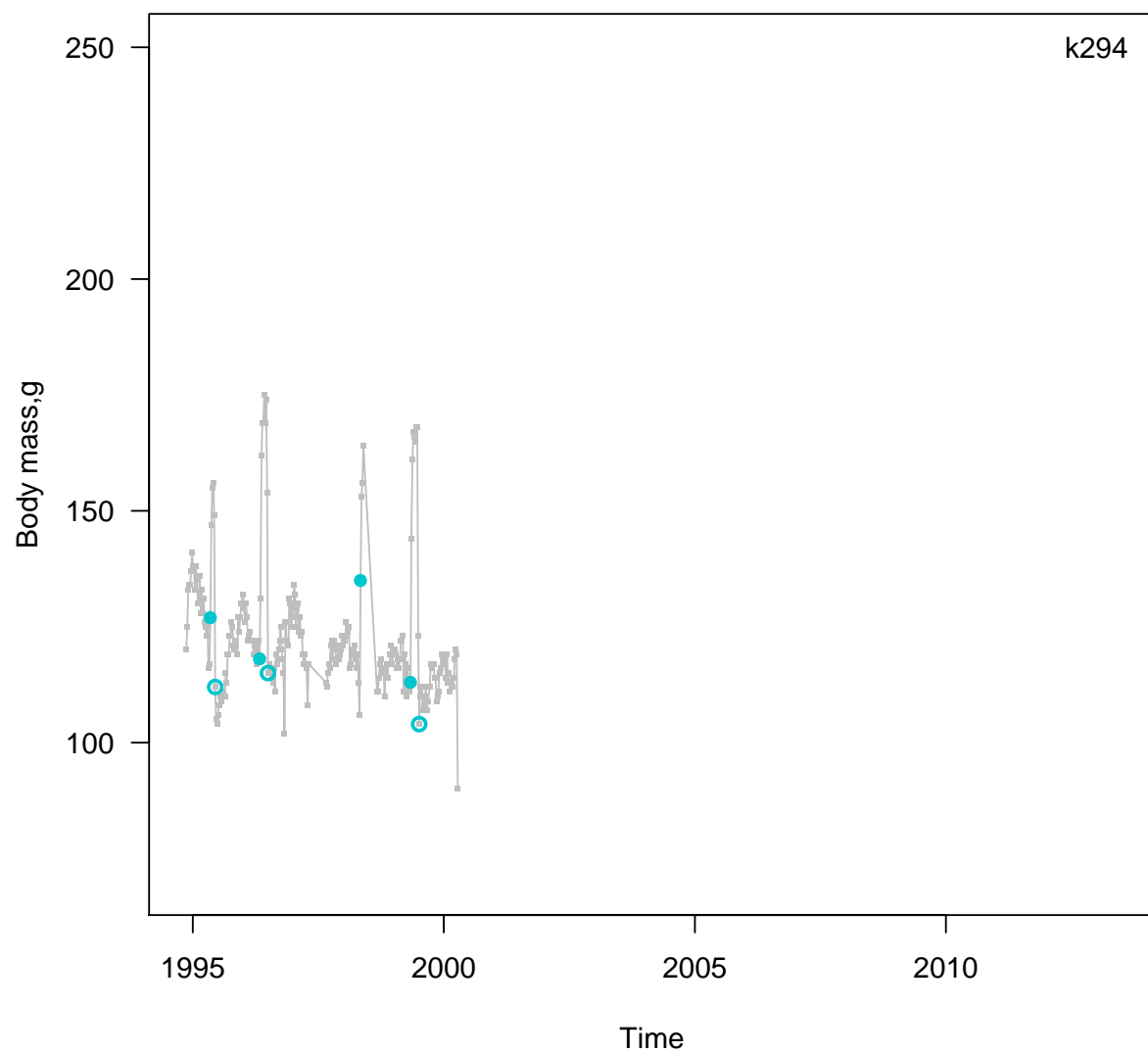


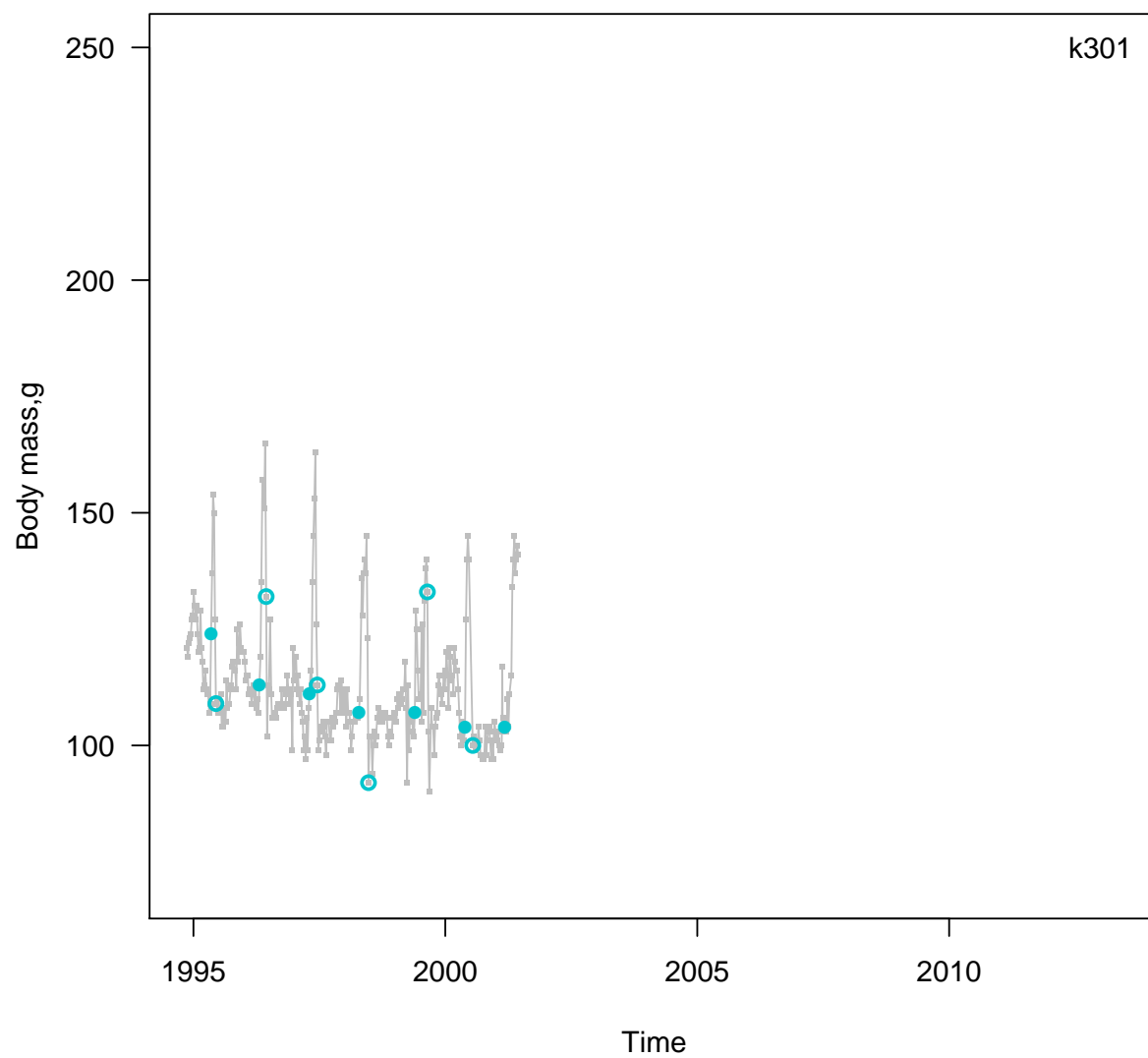


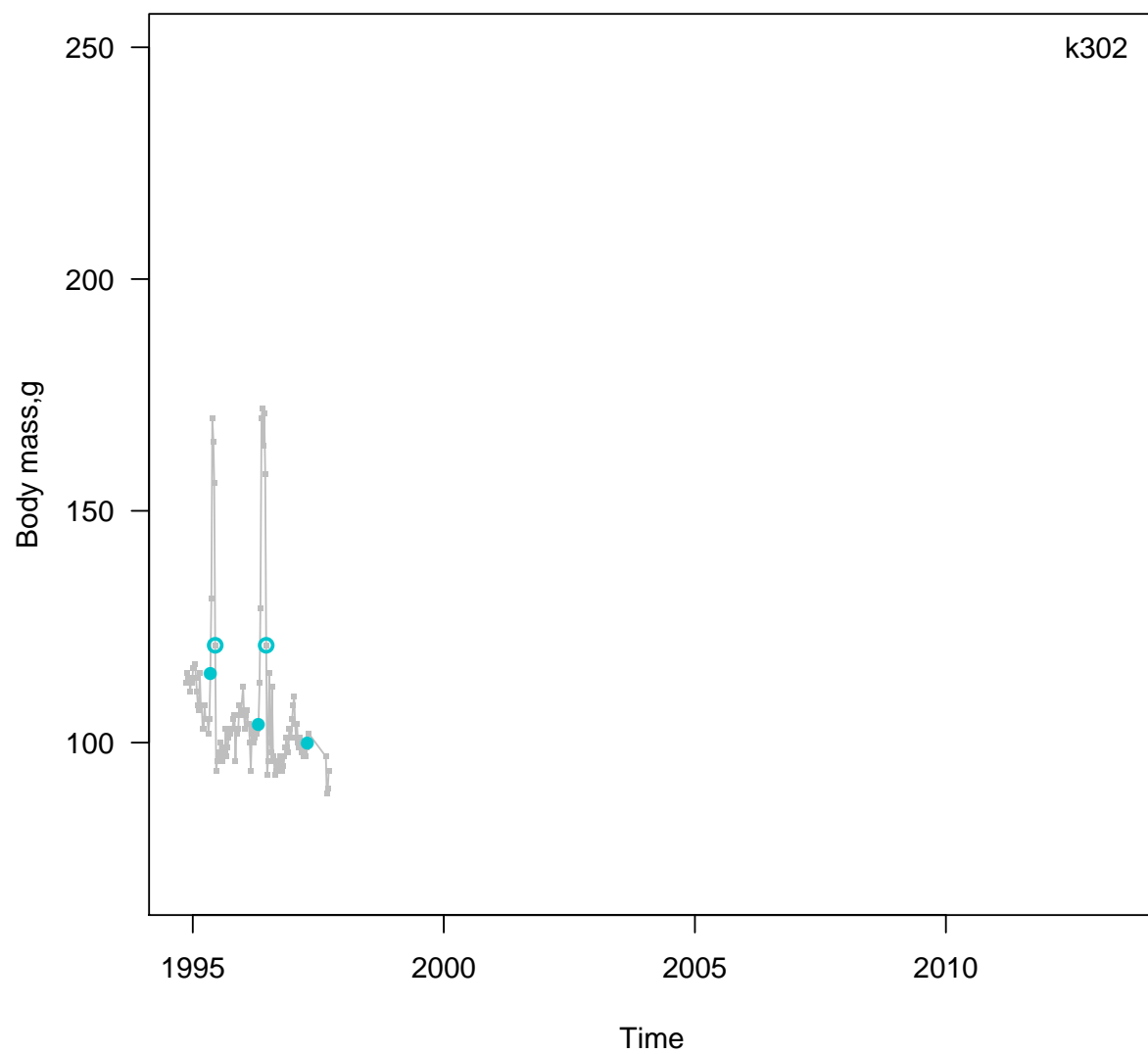


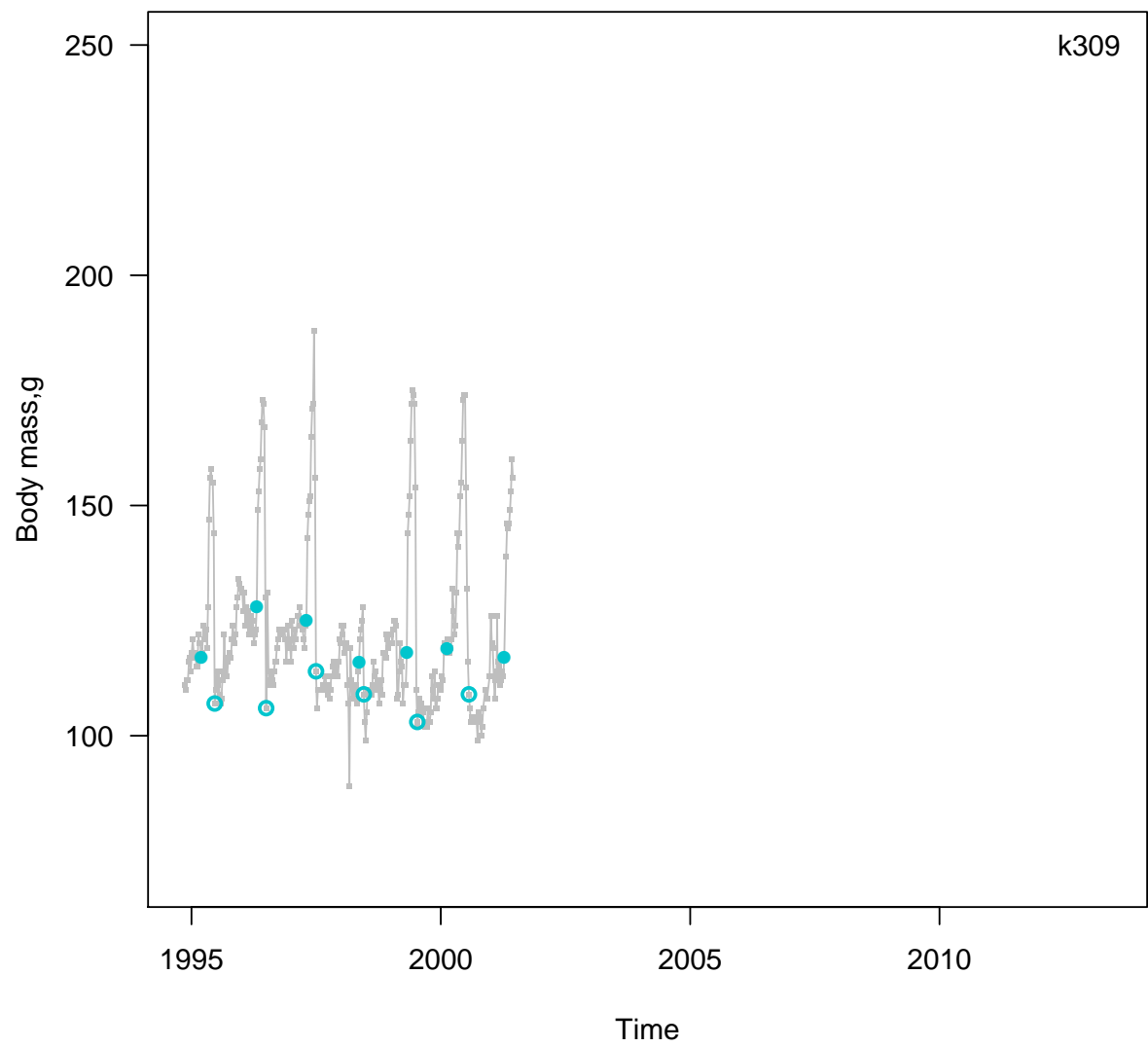












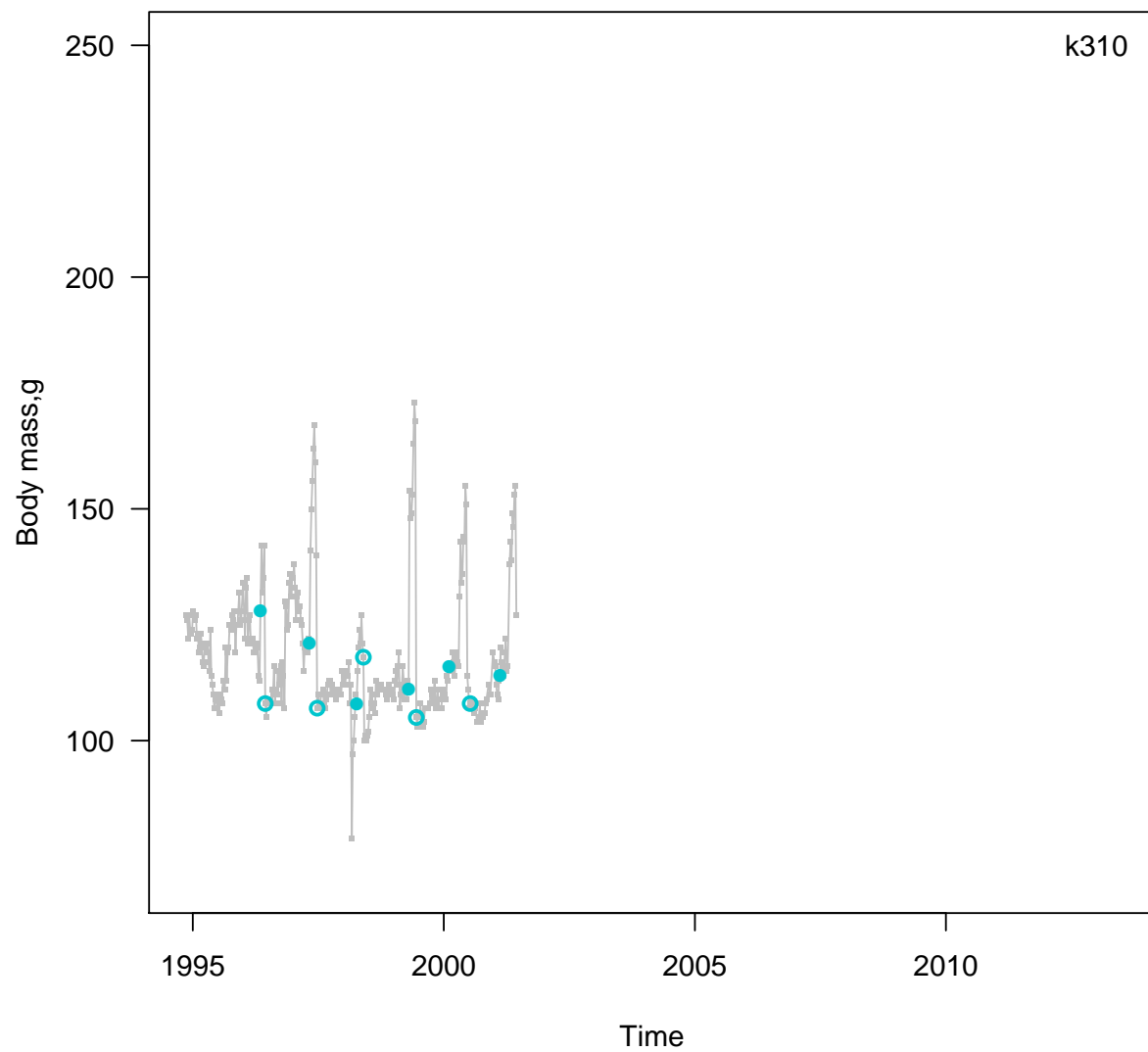
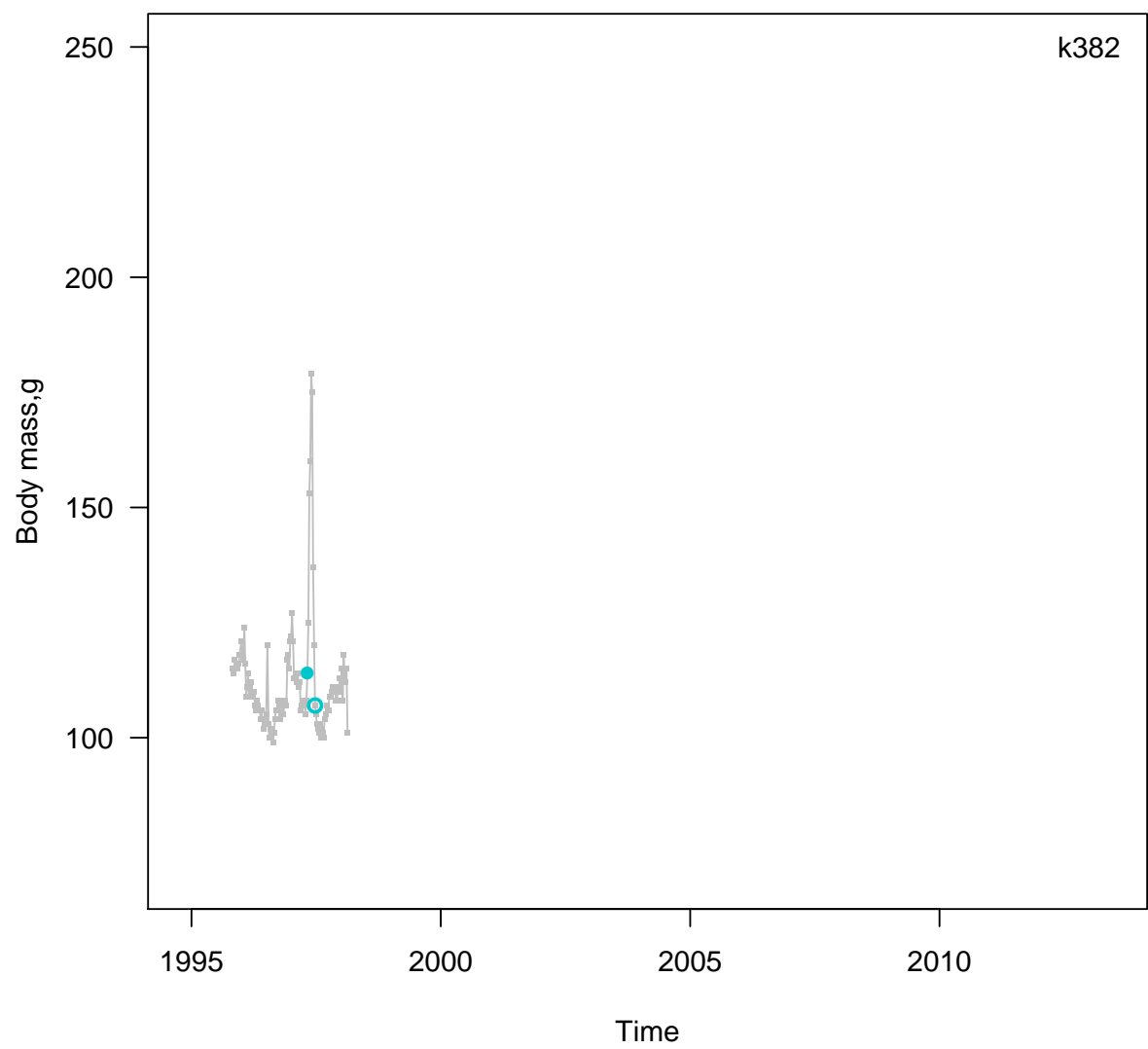
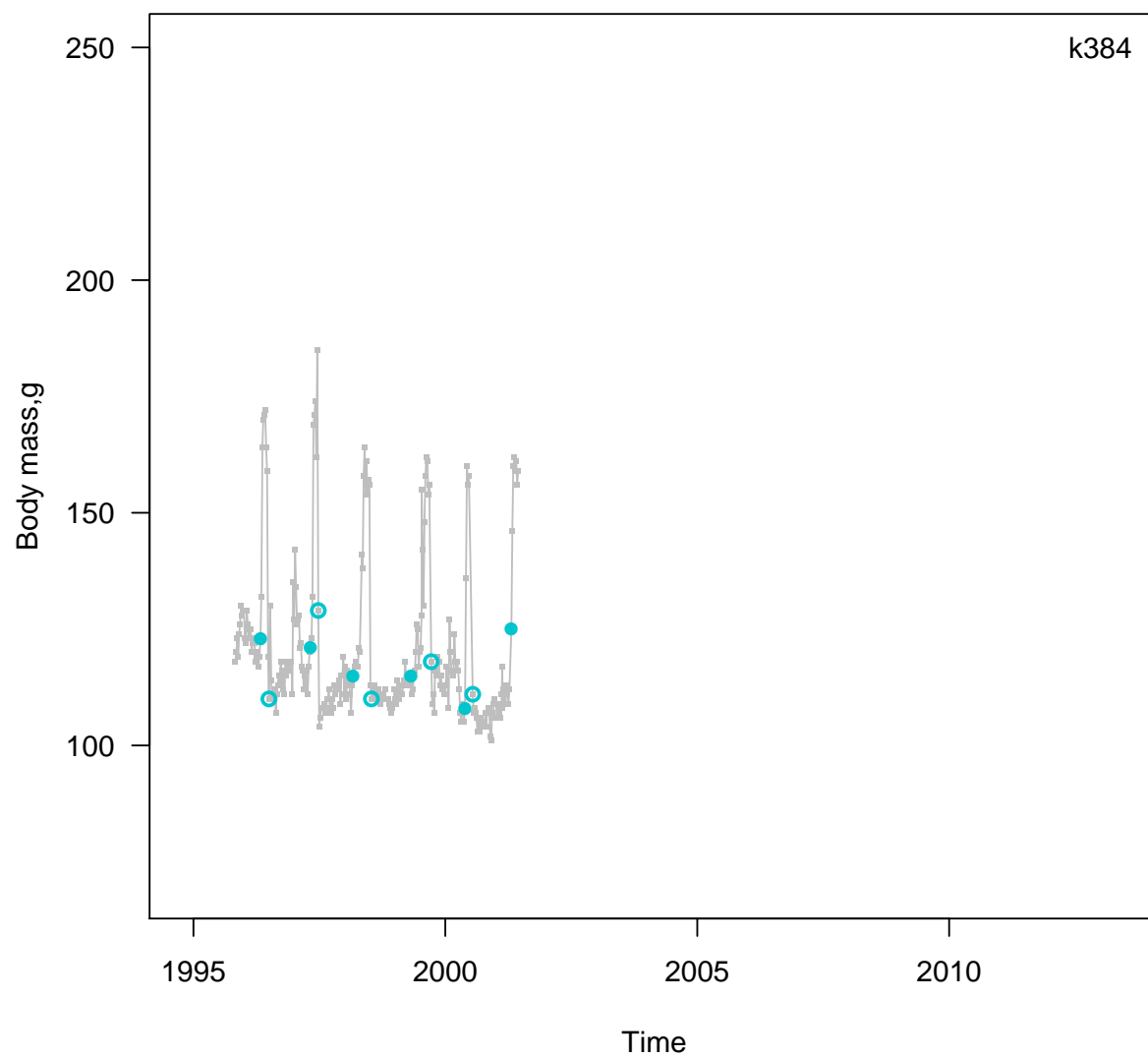
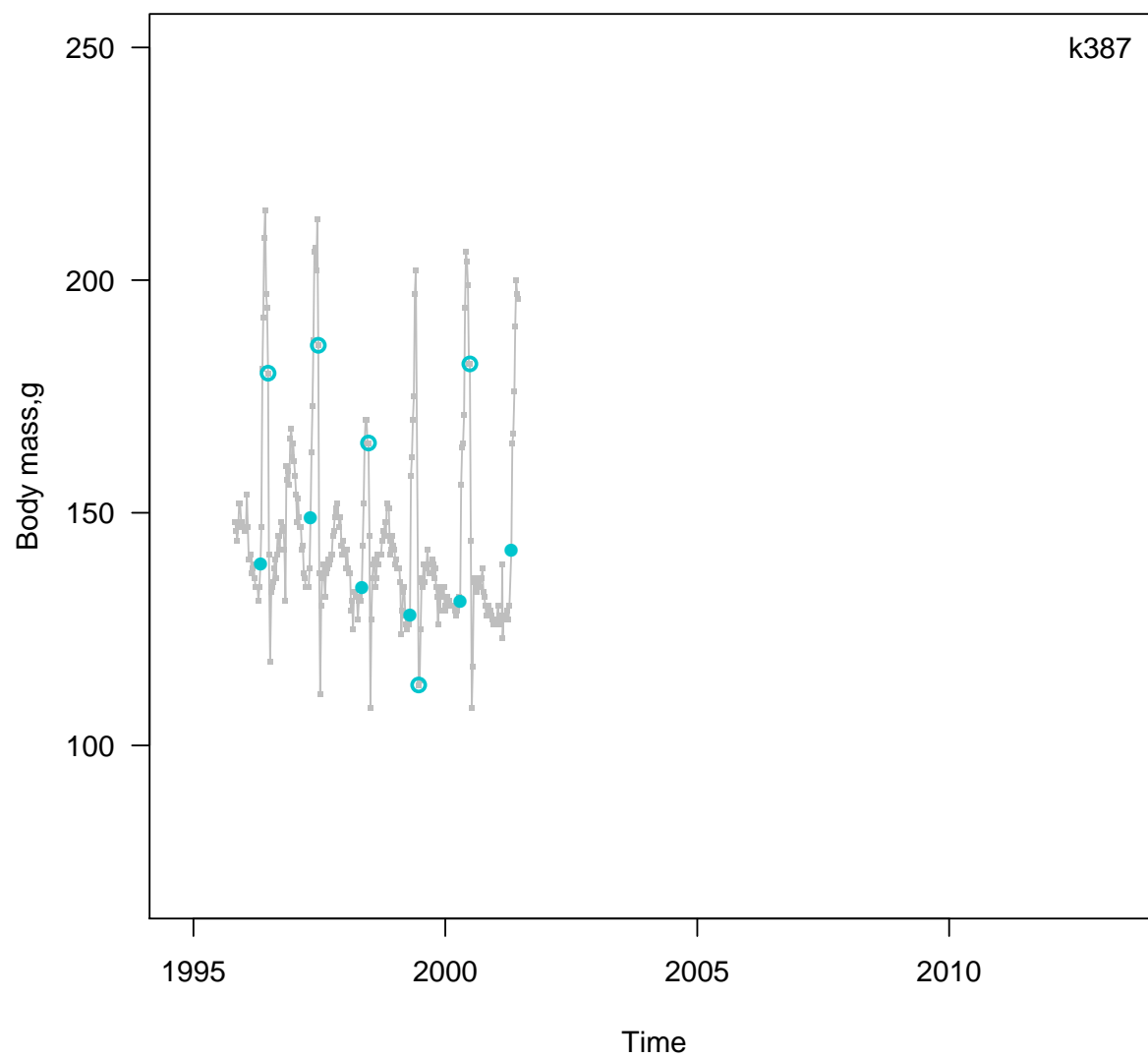
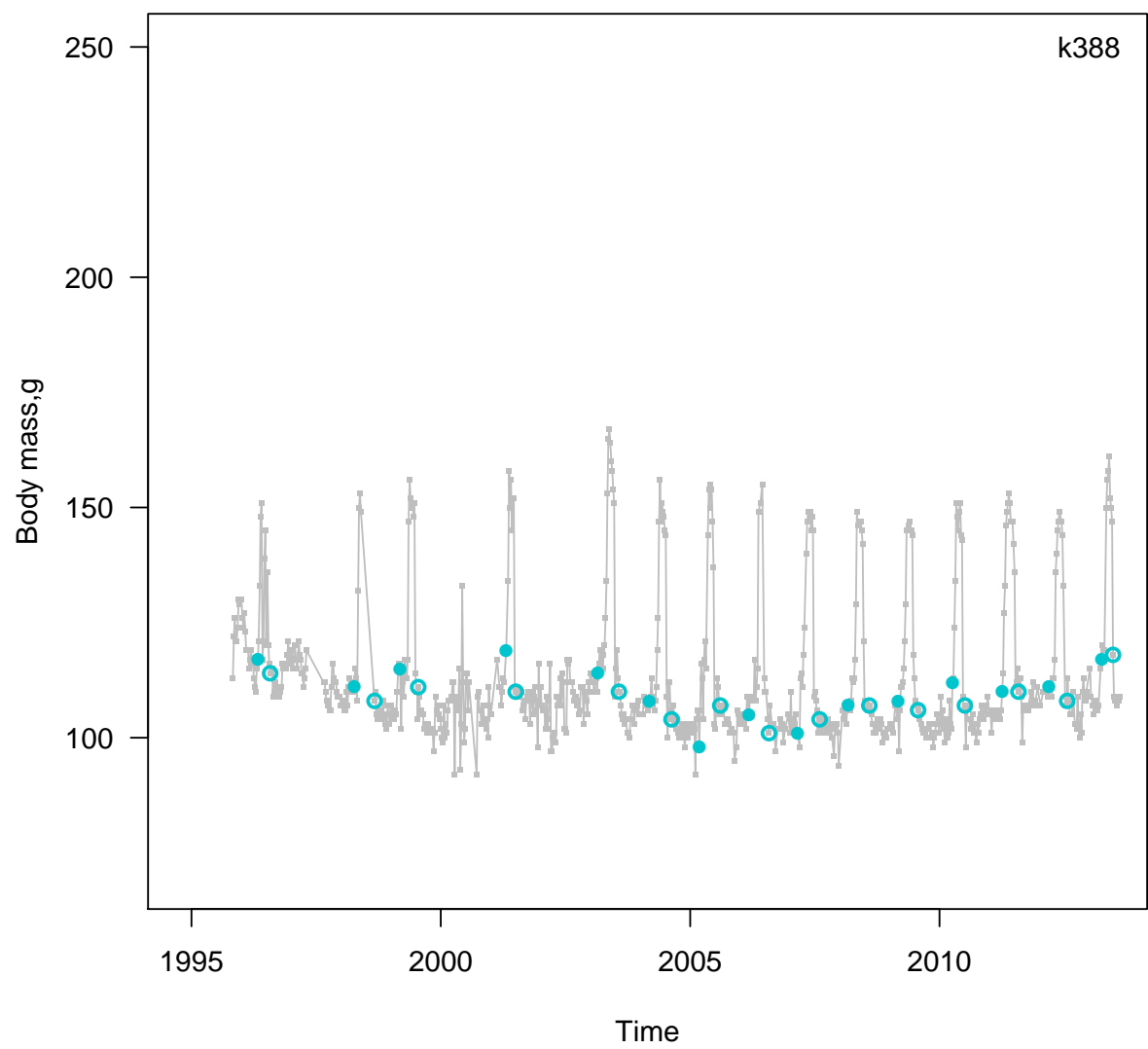


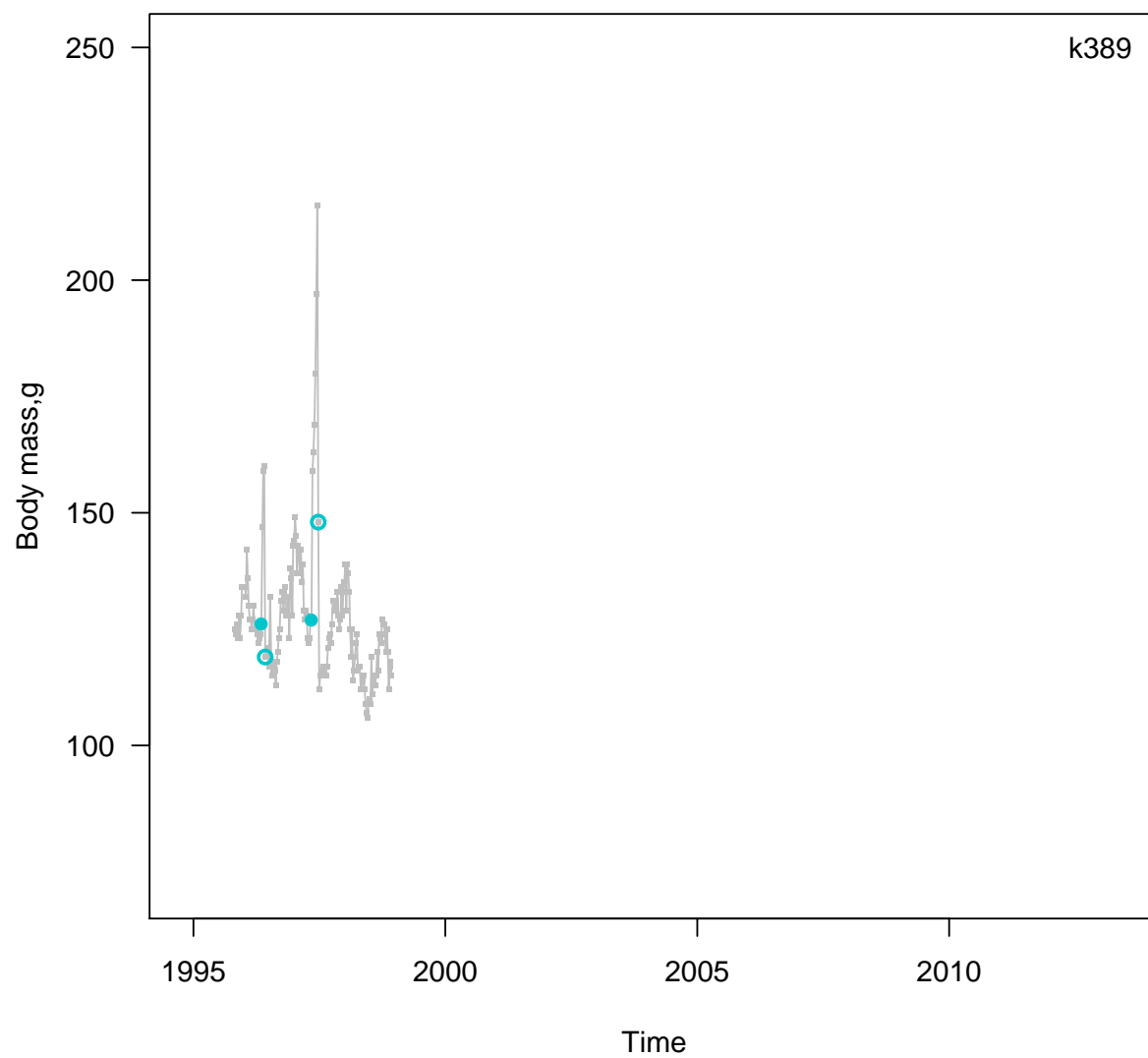
Figure S3. Body mass of red knots from Group 3 that stayed in captivity from November 1994 until 3 July 2001. Onsets of body mass increase(closed circles) and offsets of body mass decrease (open circles) are shown in turquoise.

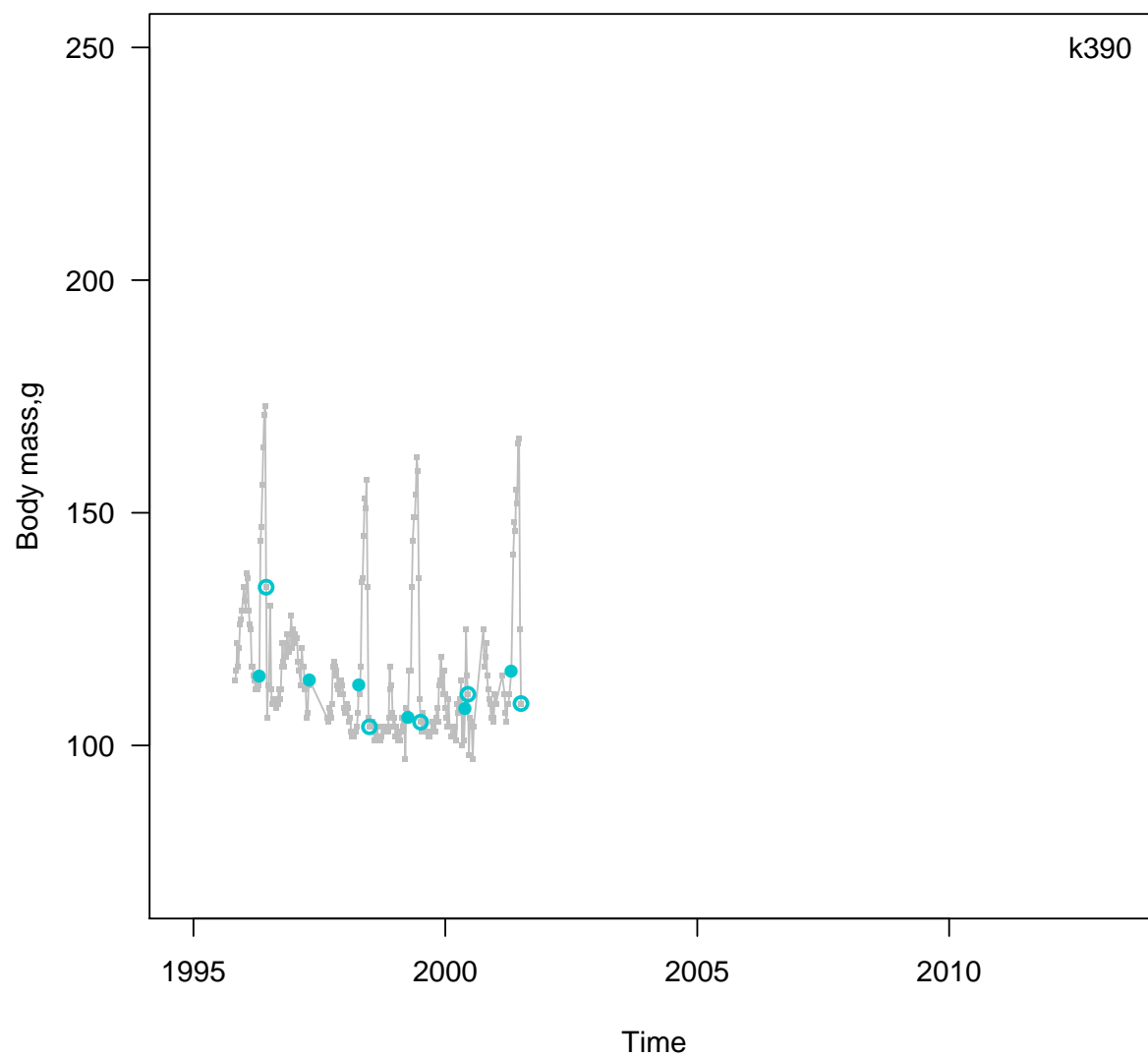


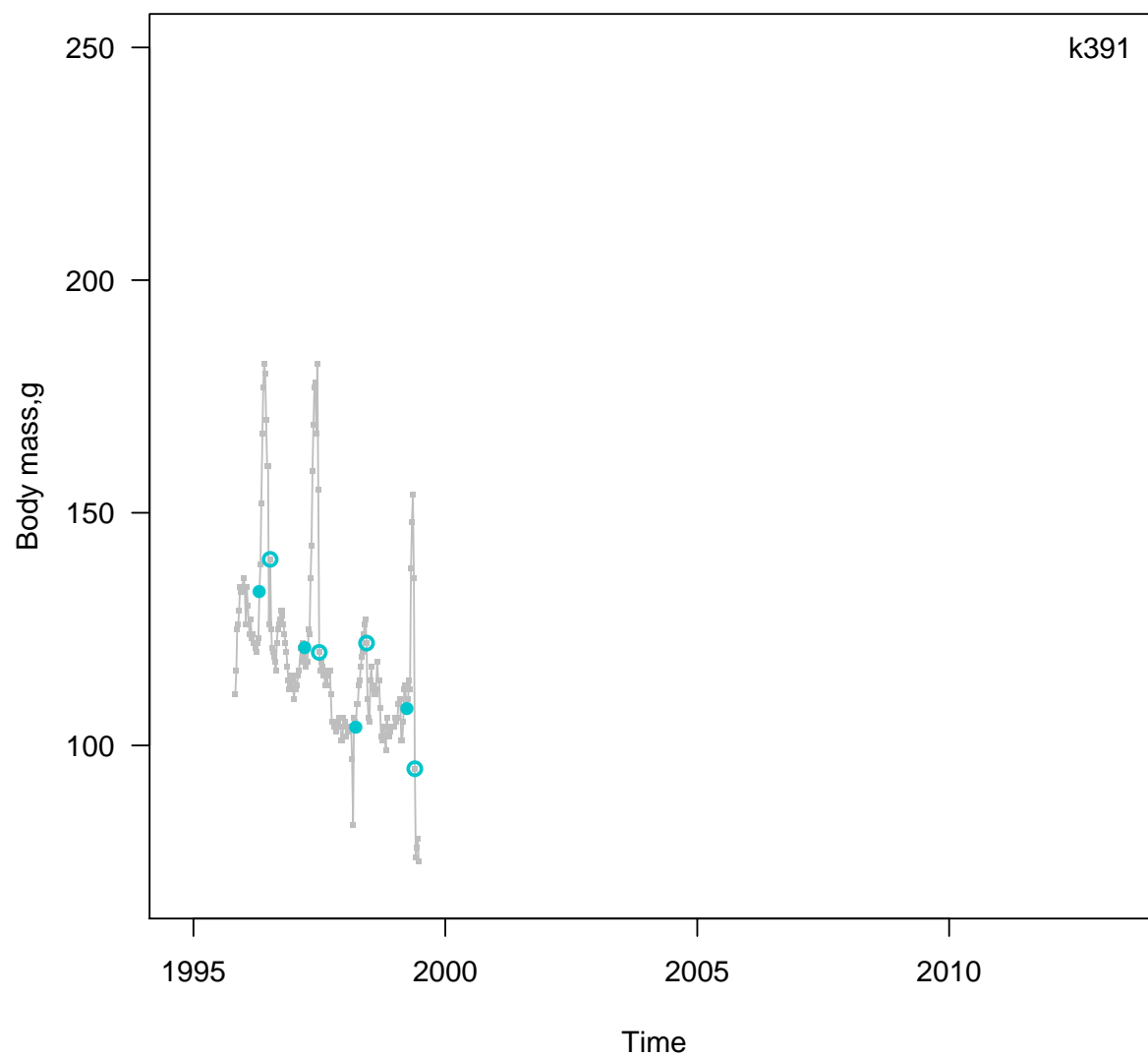


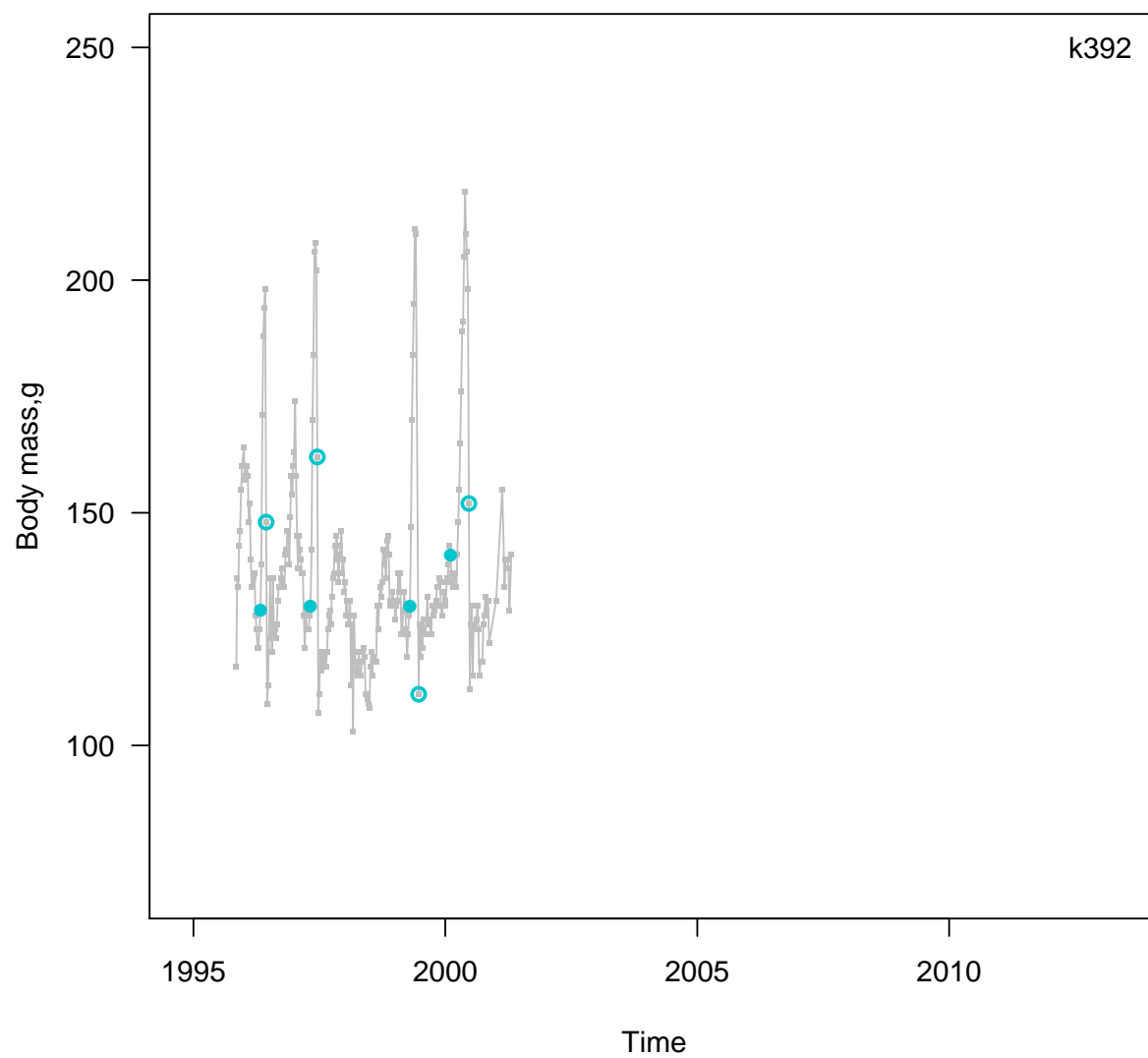


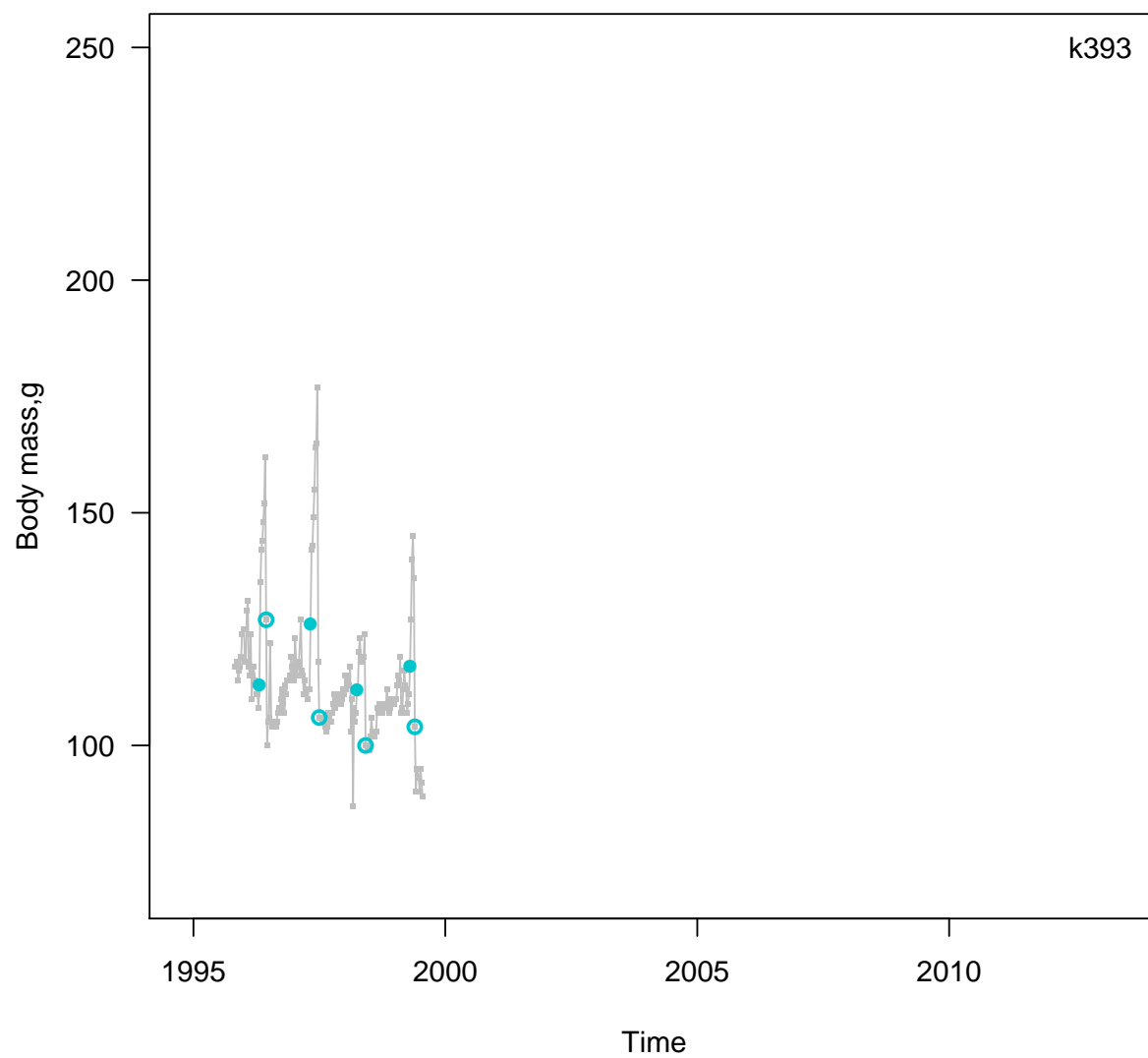


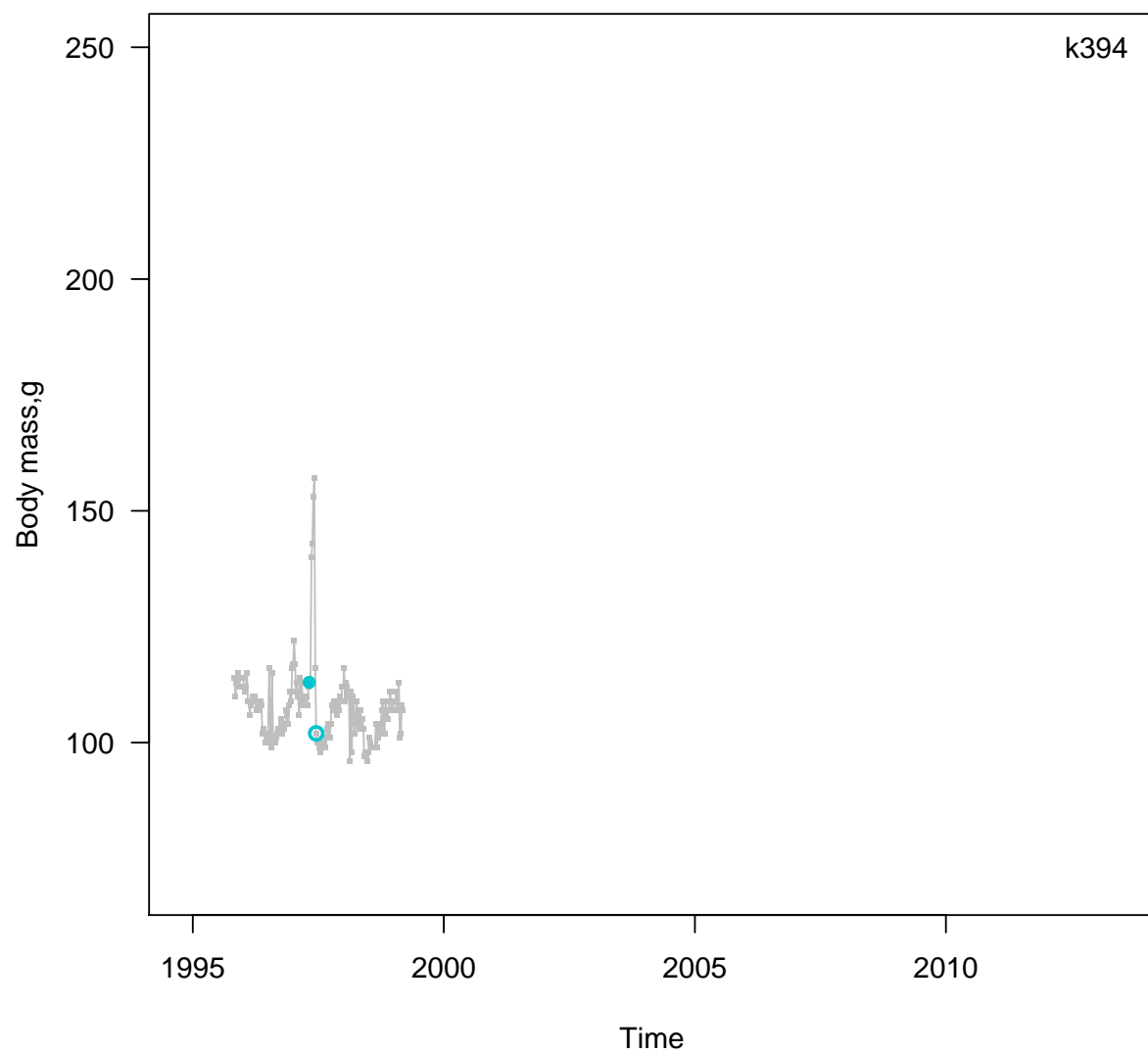


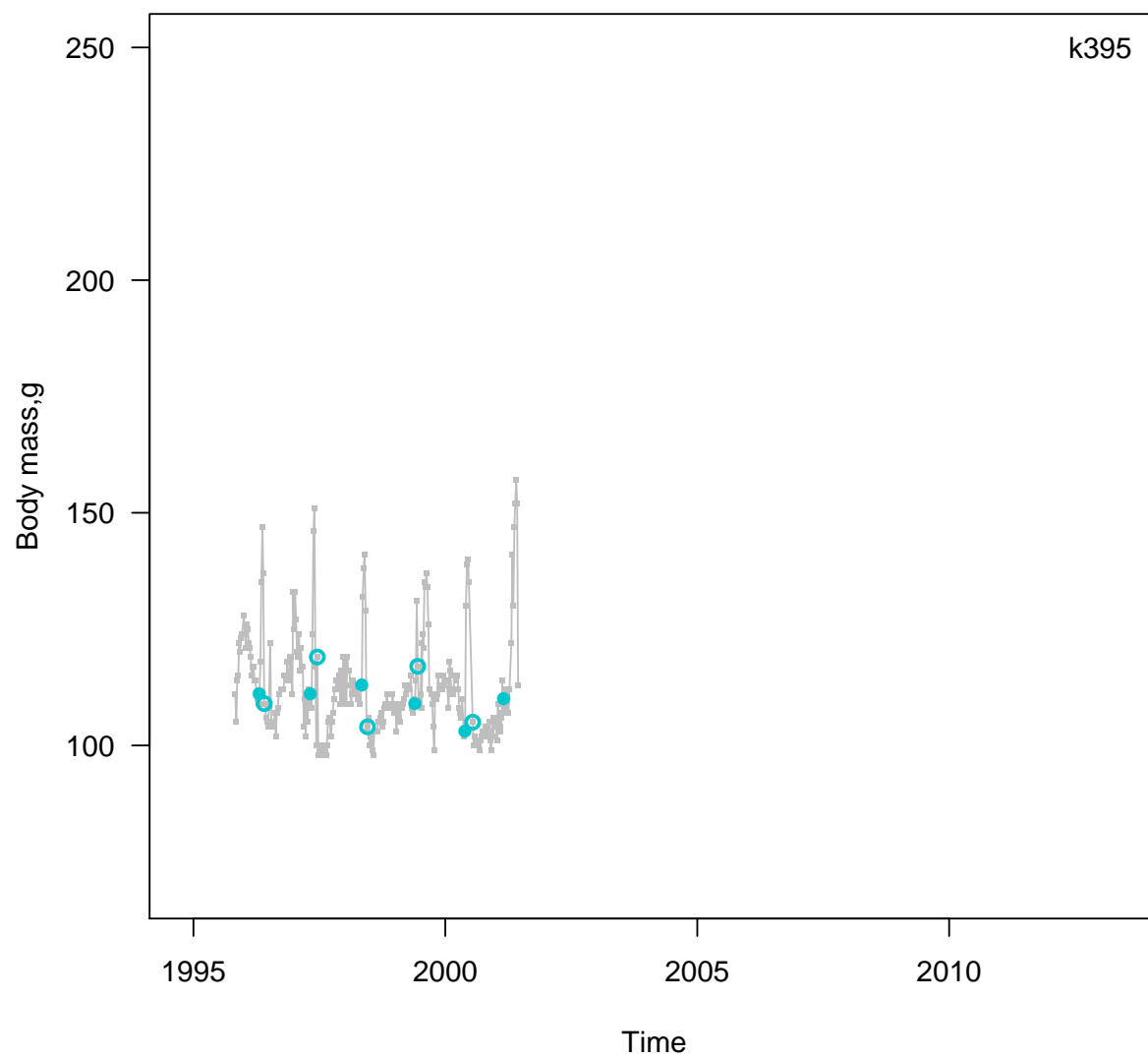


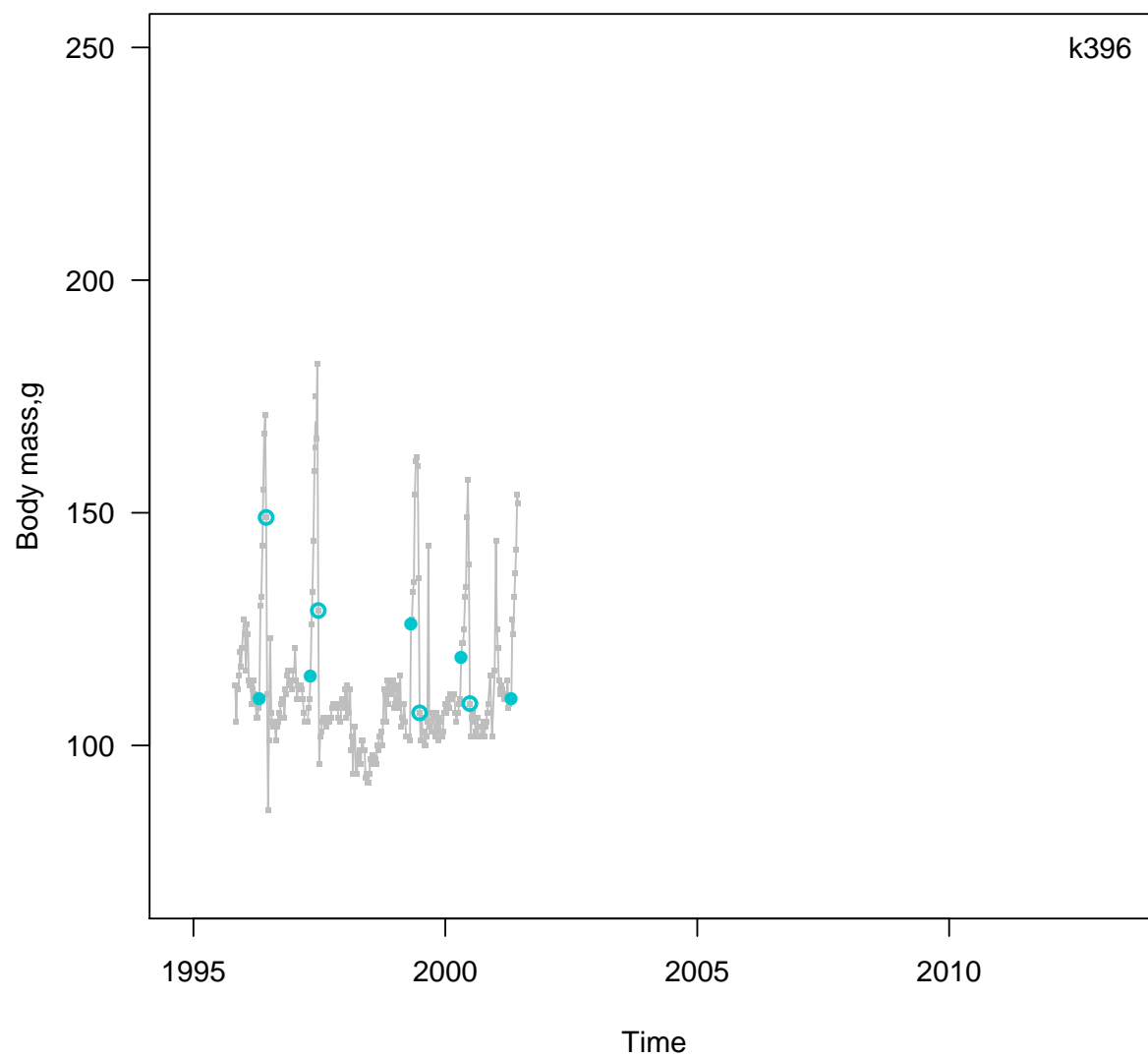


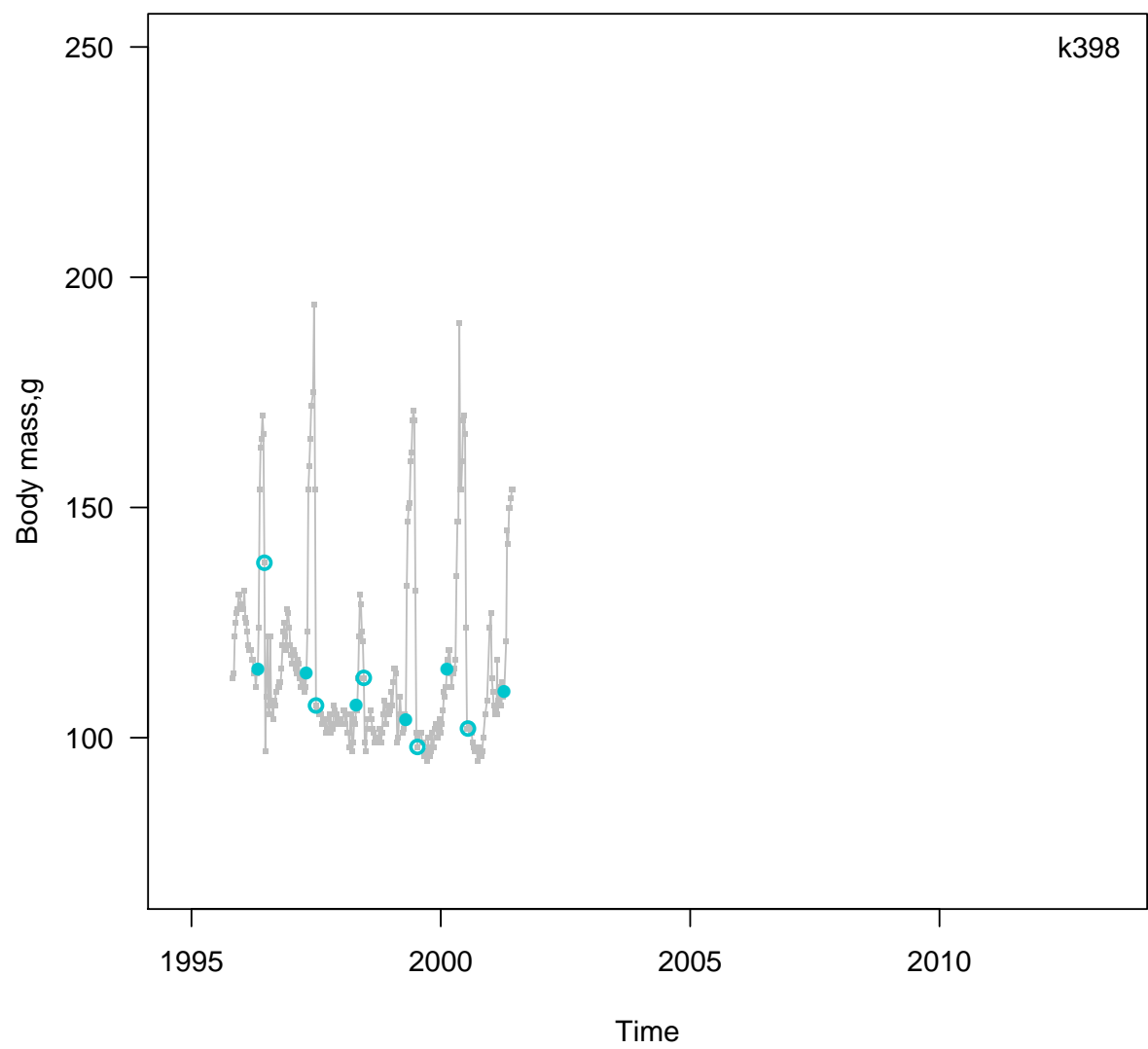












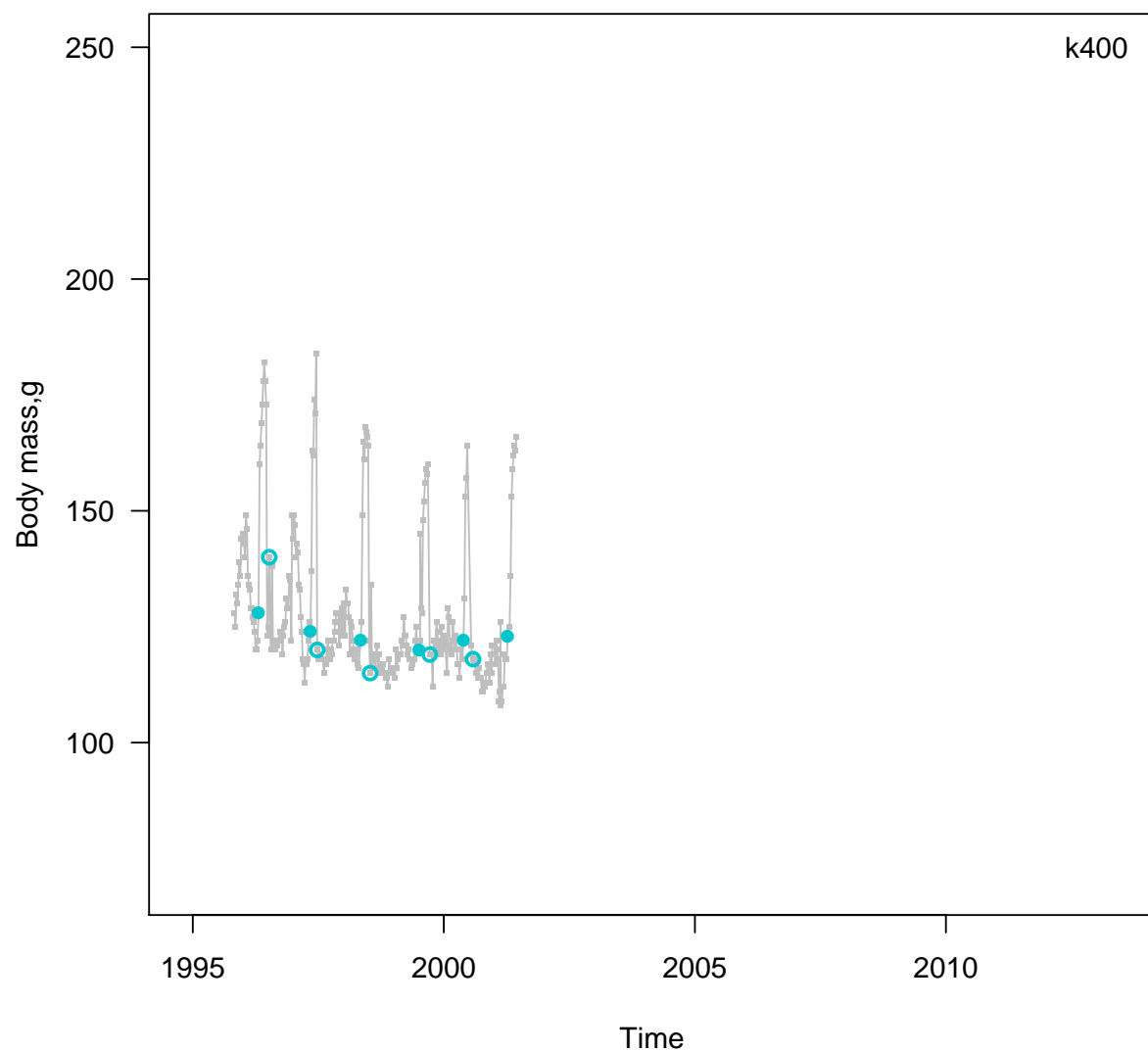
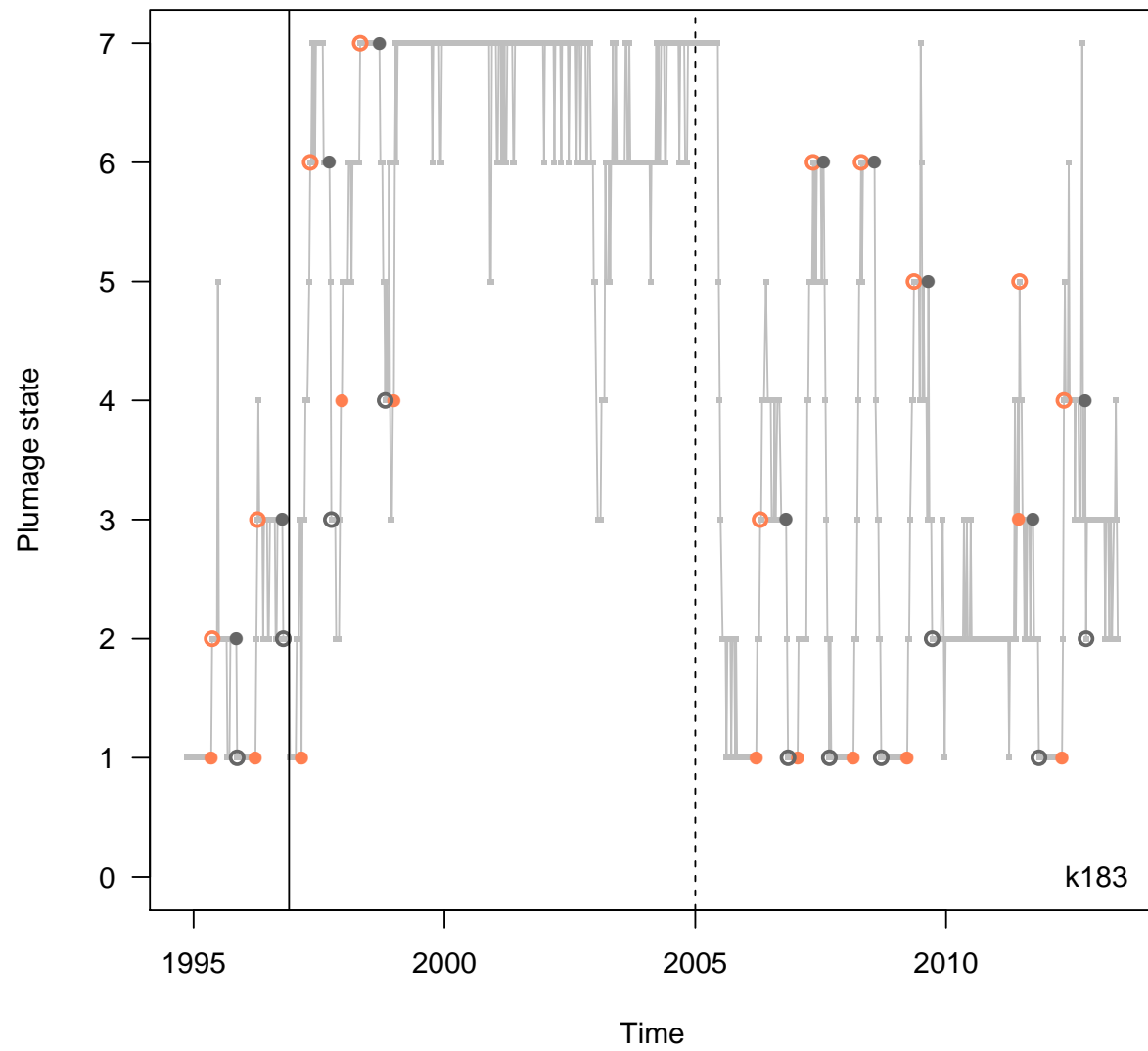
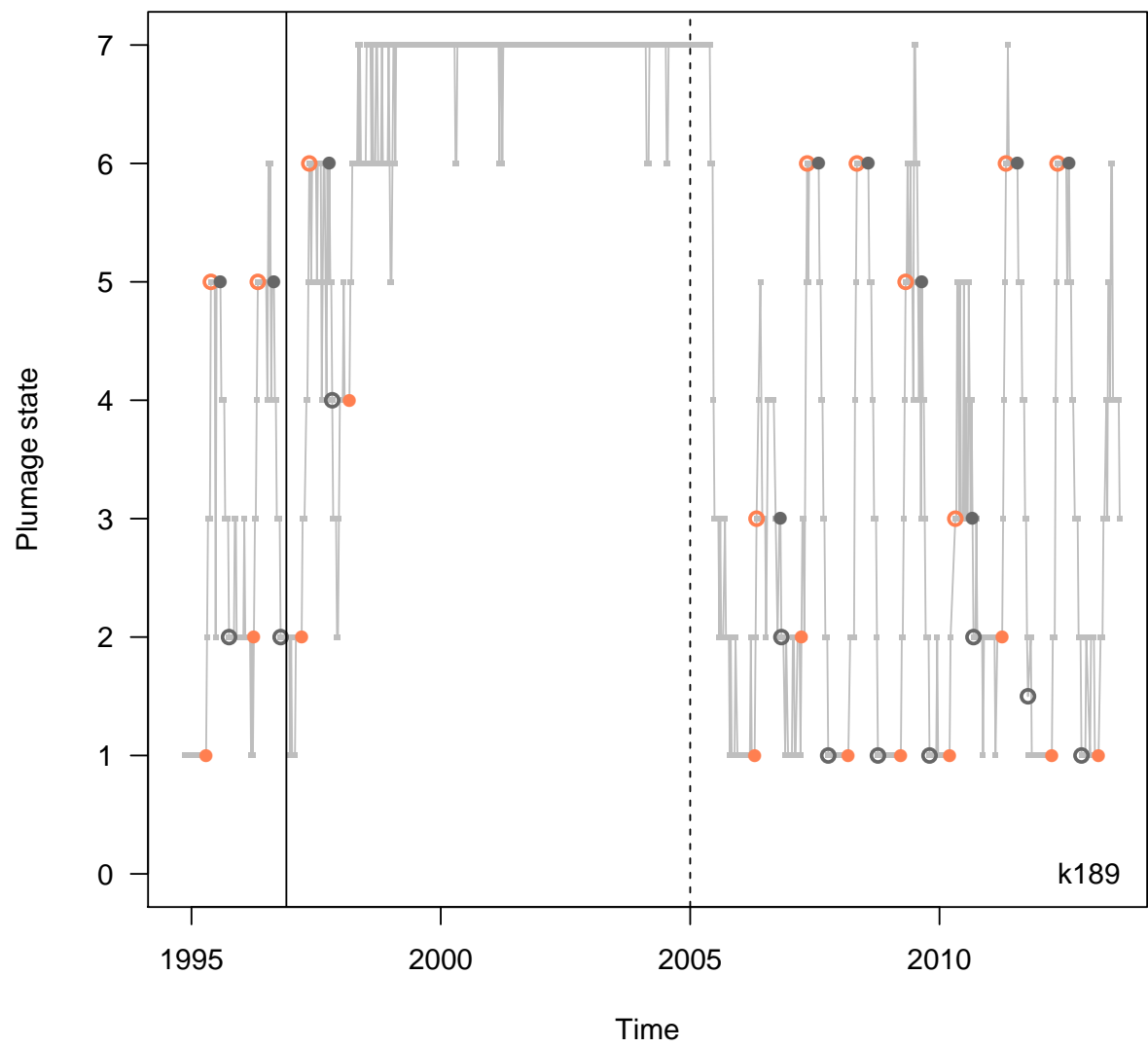
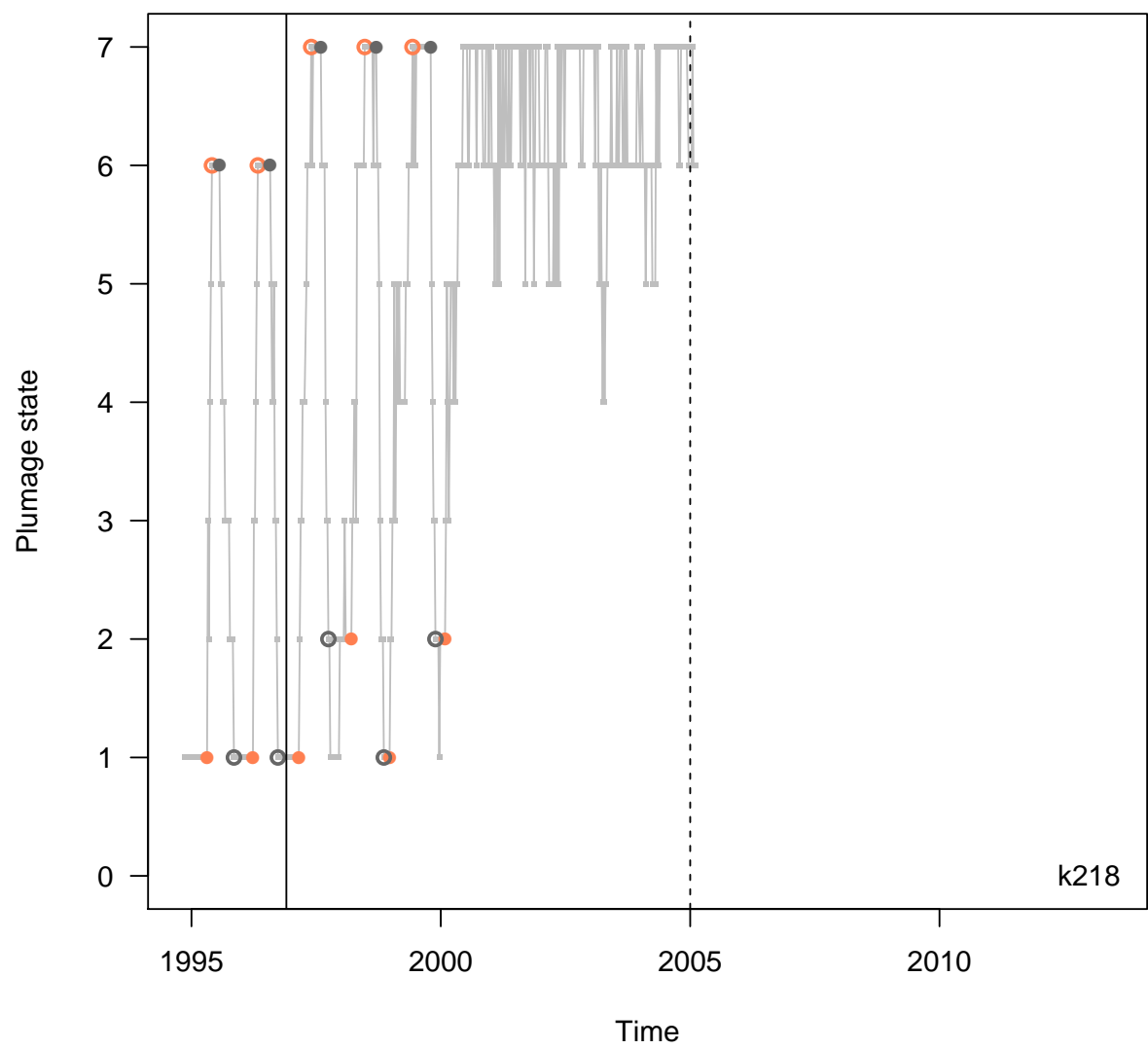


Figure S4. Body mass of red knots from Group 4 that stayed in captivity from October 1995 until 3 July 2001. Onsets of body mass increase(closed circles) and offsets of body mass decrease (open circles) are shown in turquoise.

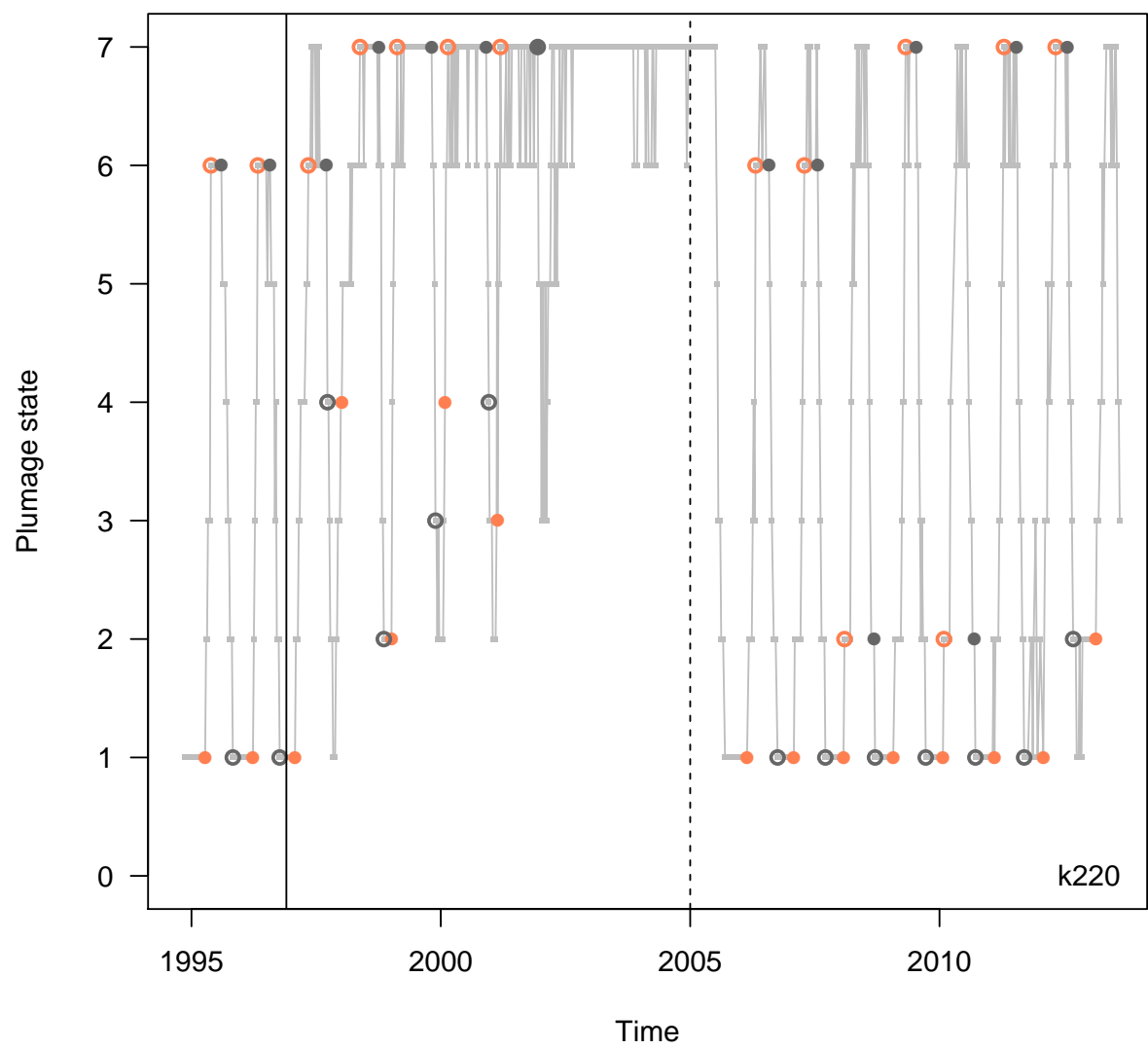
Plumage

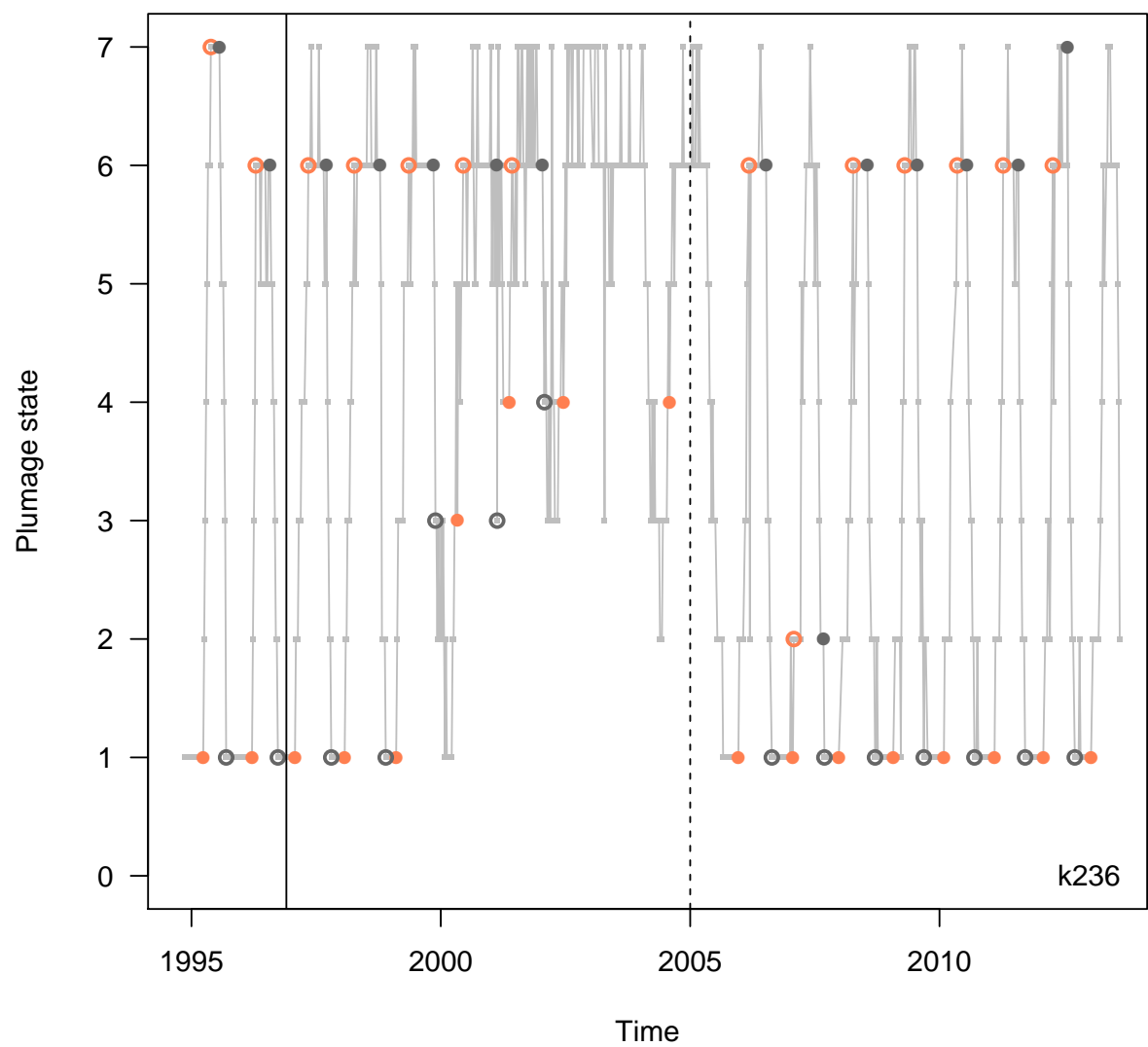


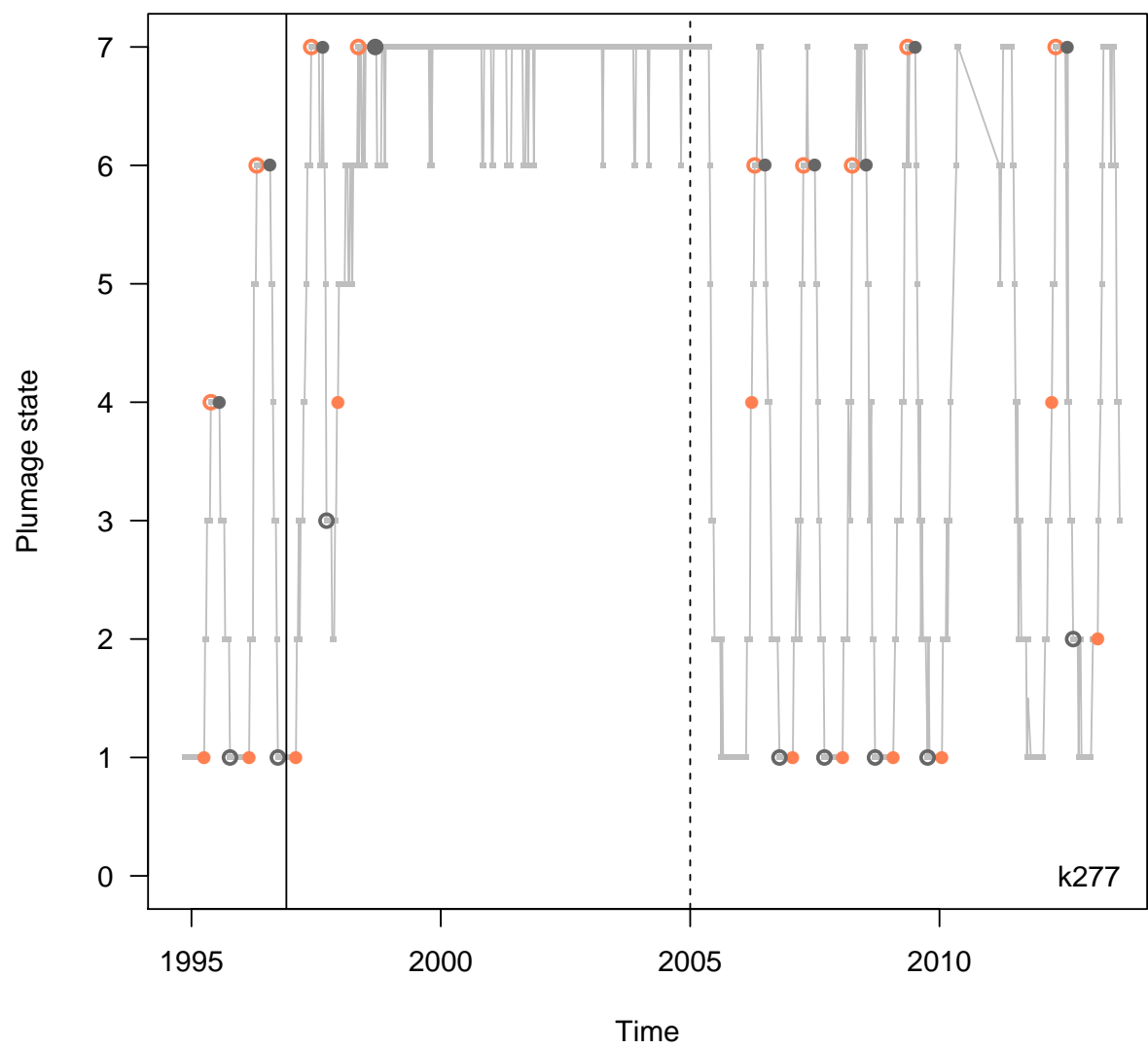




k218







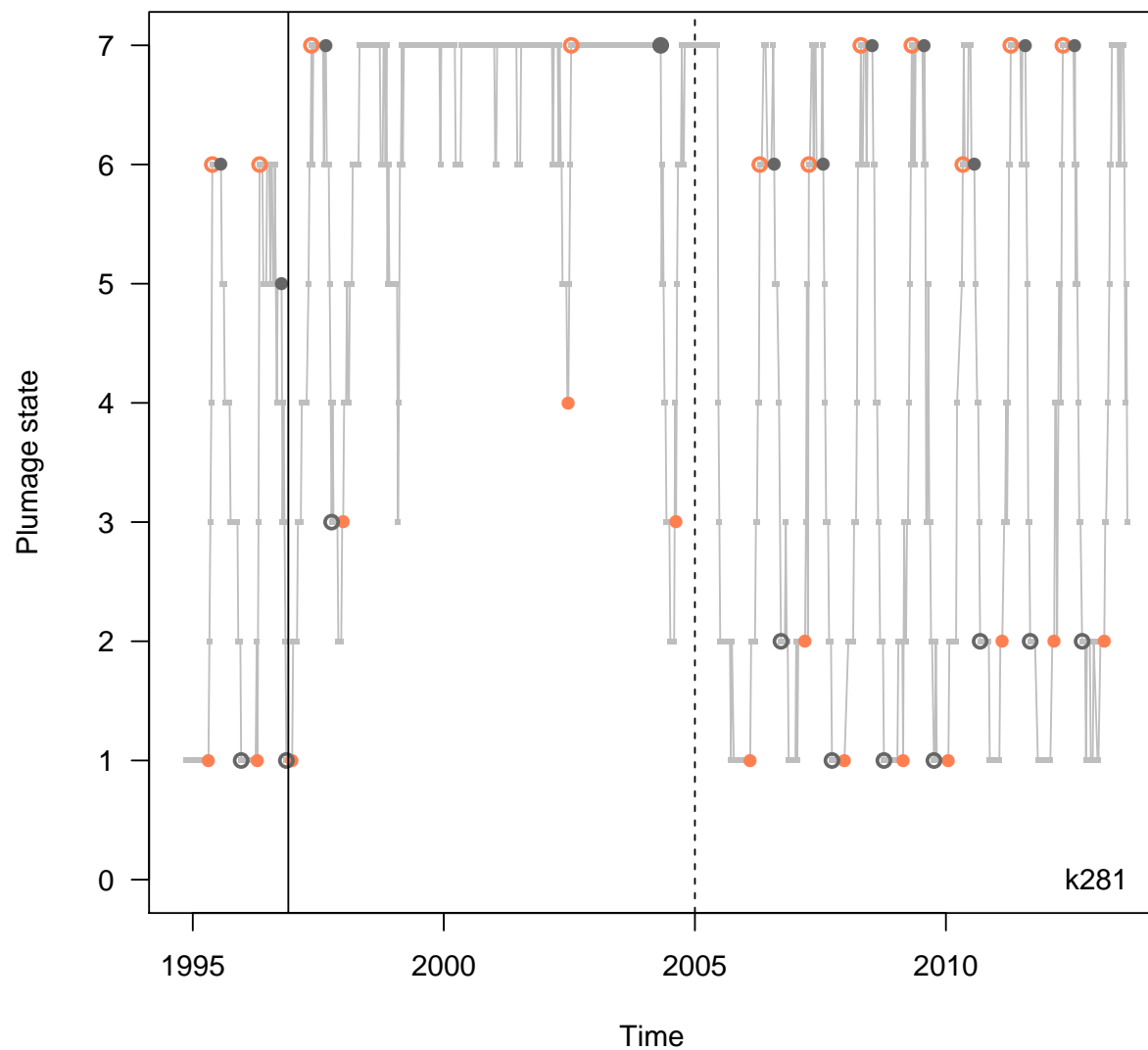
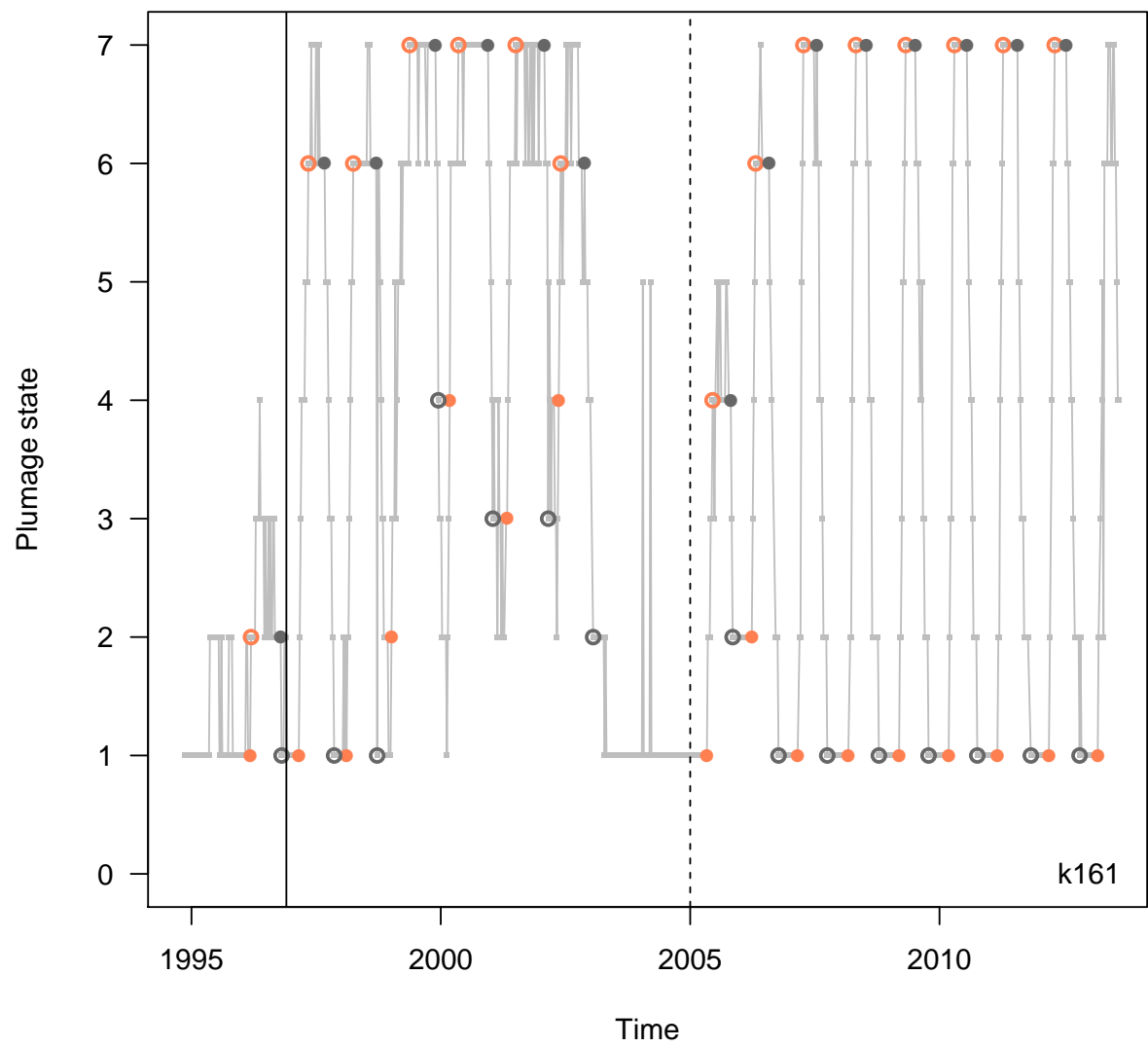
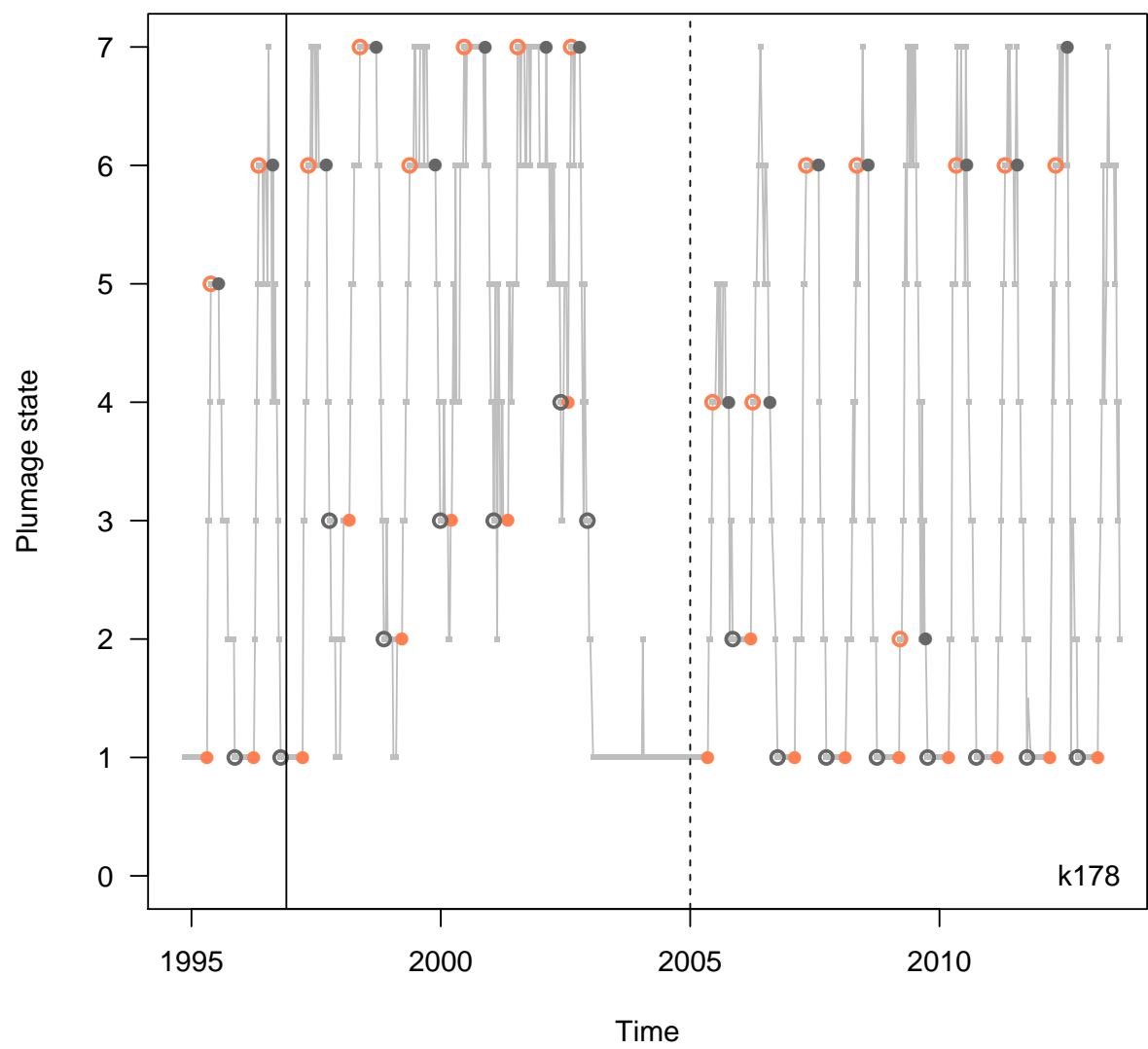
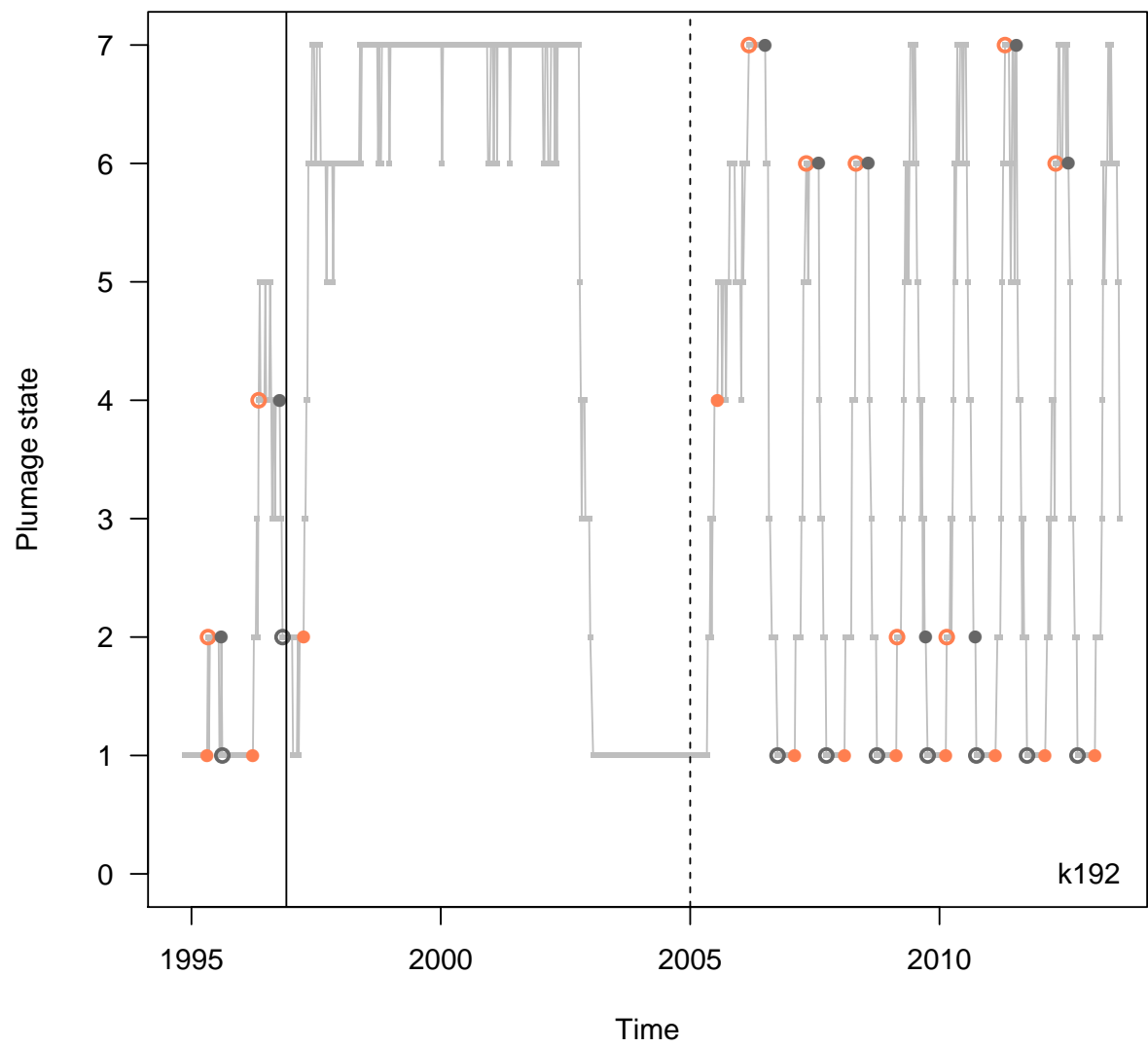
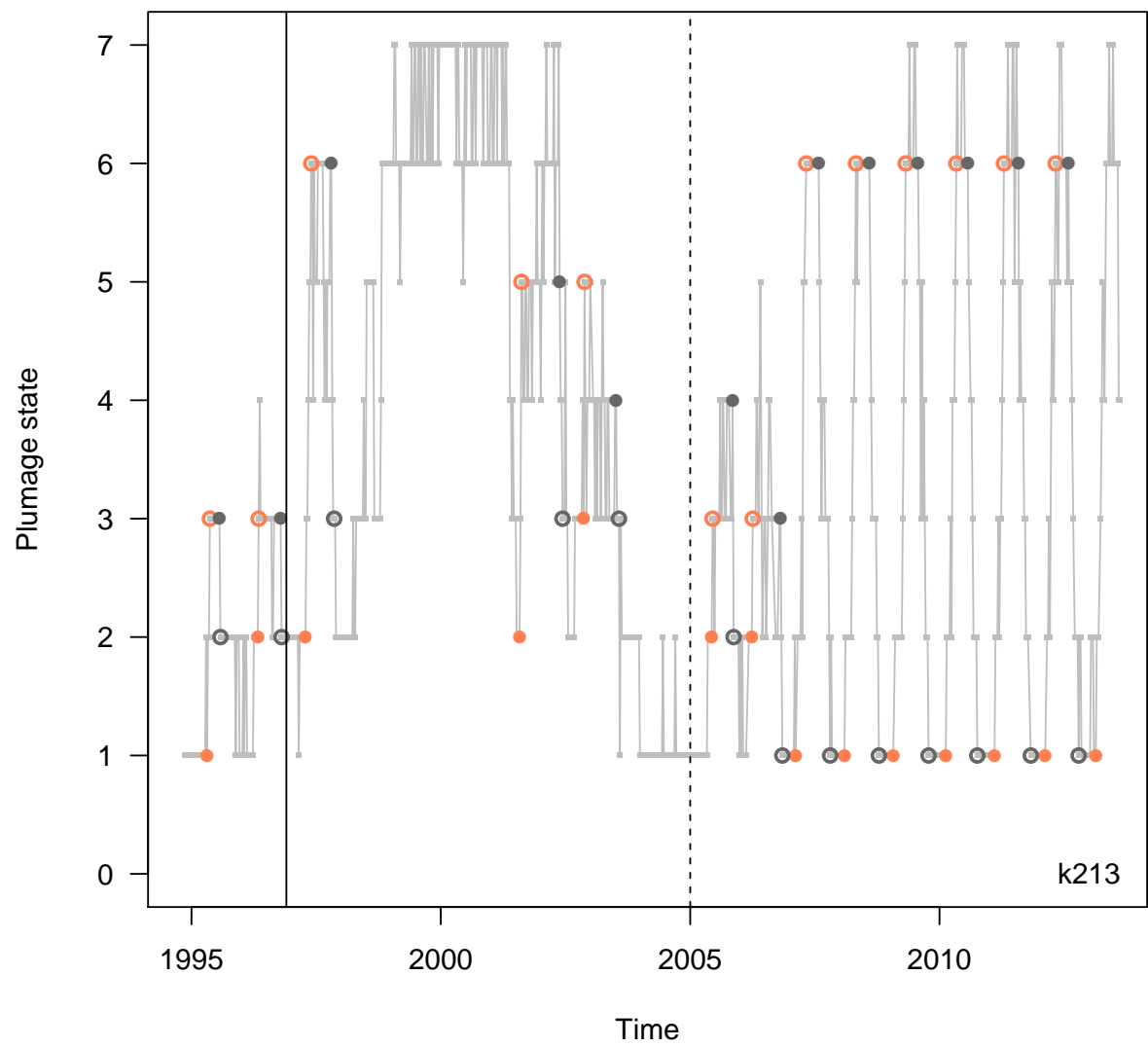


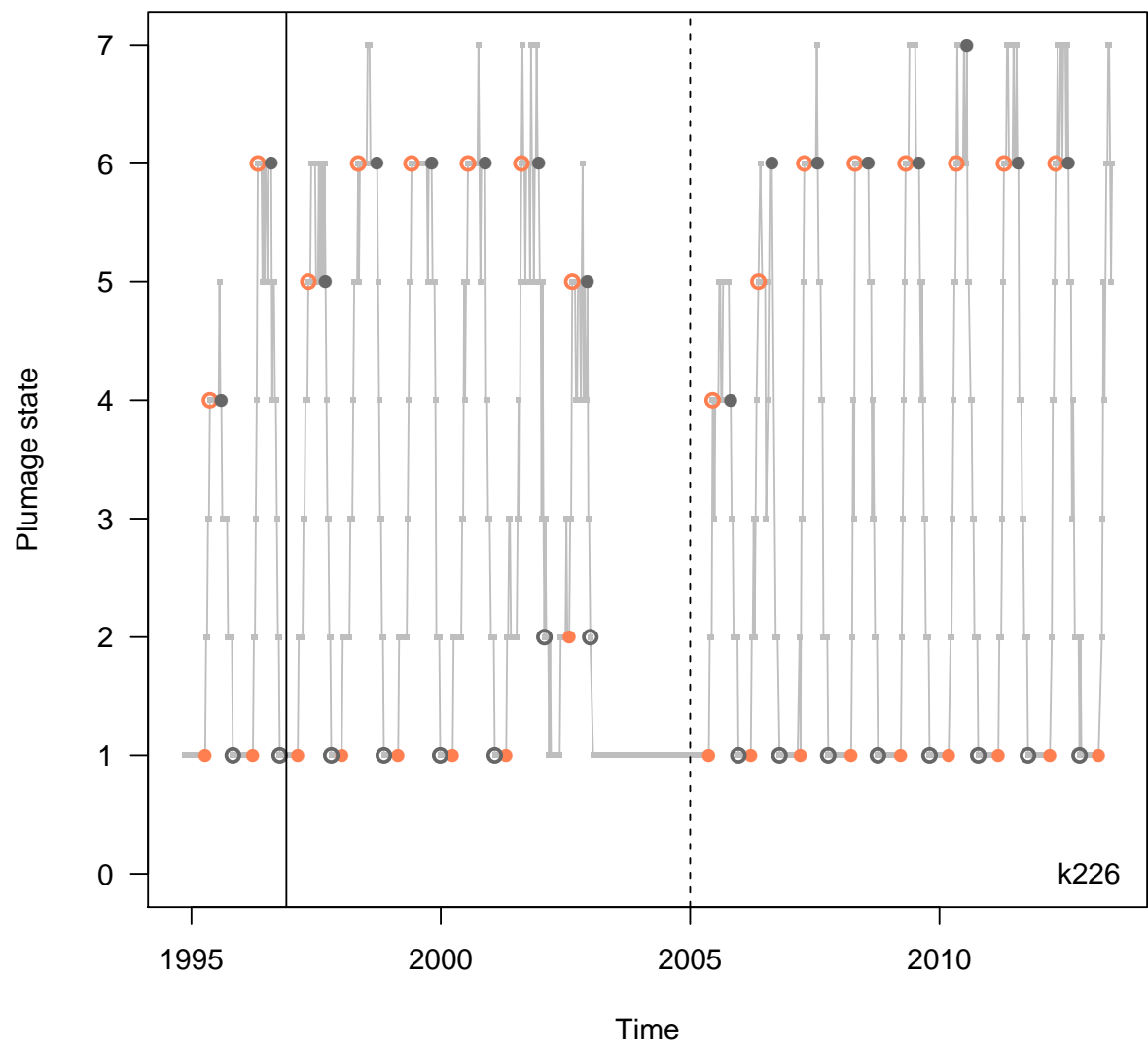
Figure S5. Plumage score change in red knots from Group 1 that stayed in captivity from November 1994 until June 2015 and experienced constant (12:12 LD) photoperiod from the 26 November 1996 until 28 December 2004. Onsets (closed circles) and offsets open circles) of pre-alternate and pre-basic molt are shown in orange and grey, correspondingly.

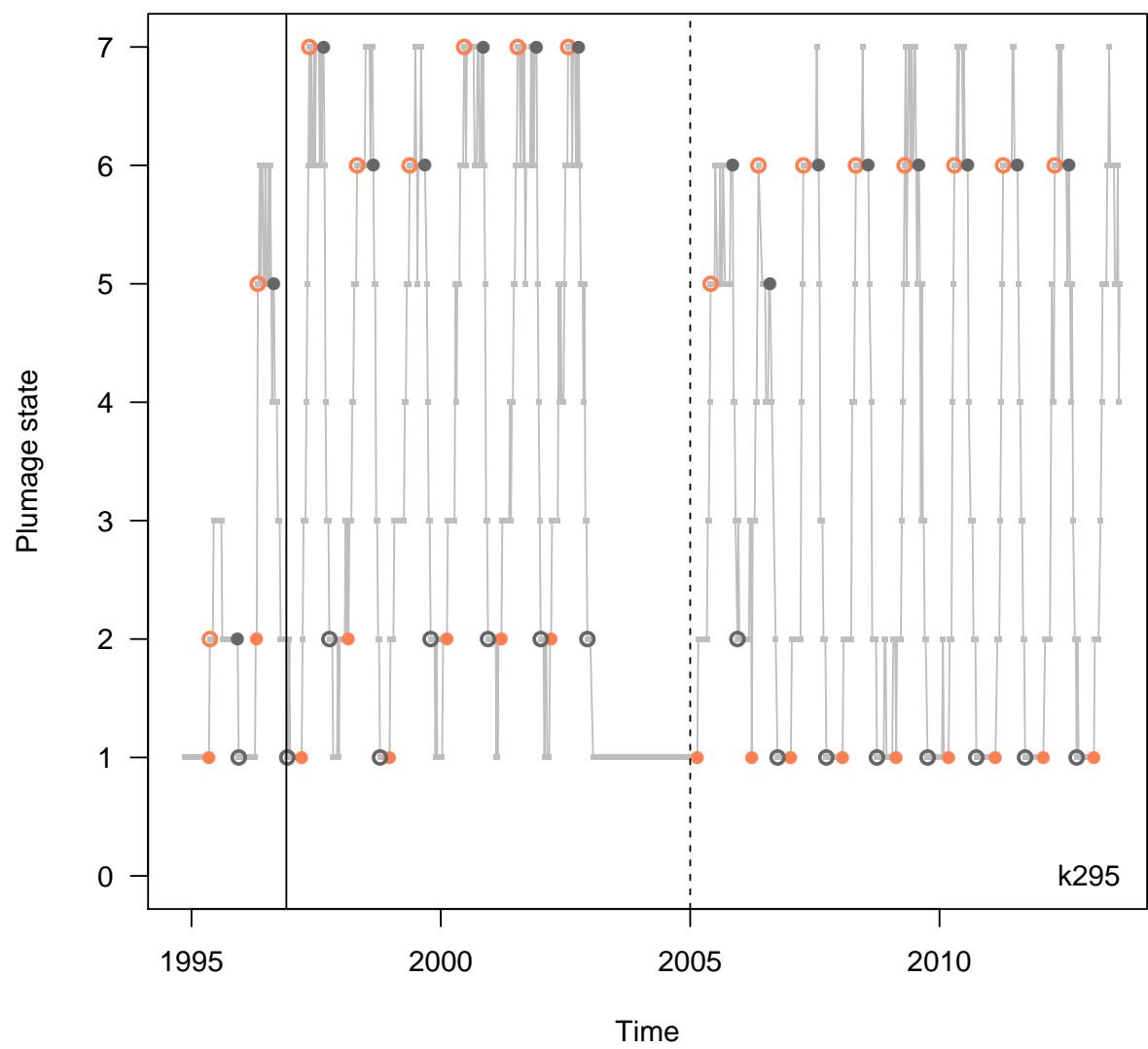












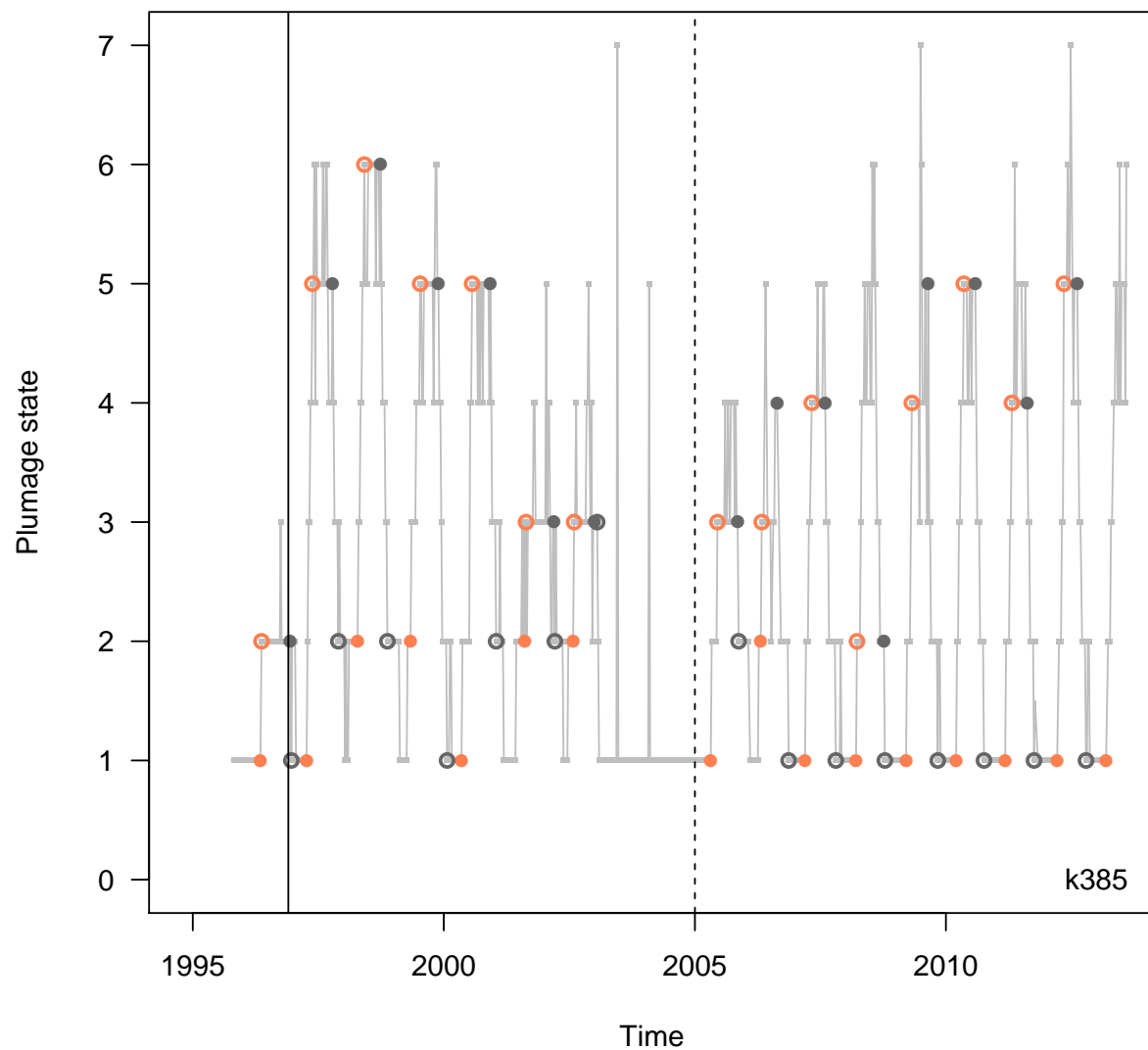
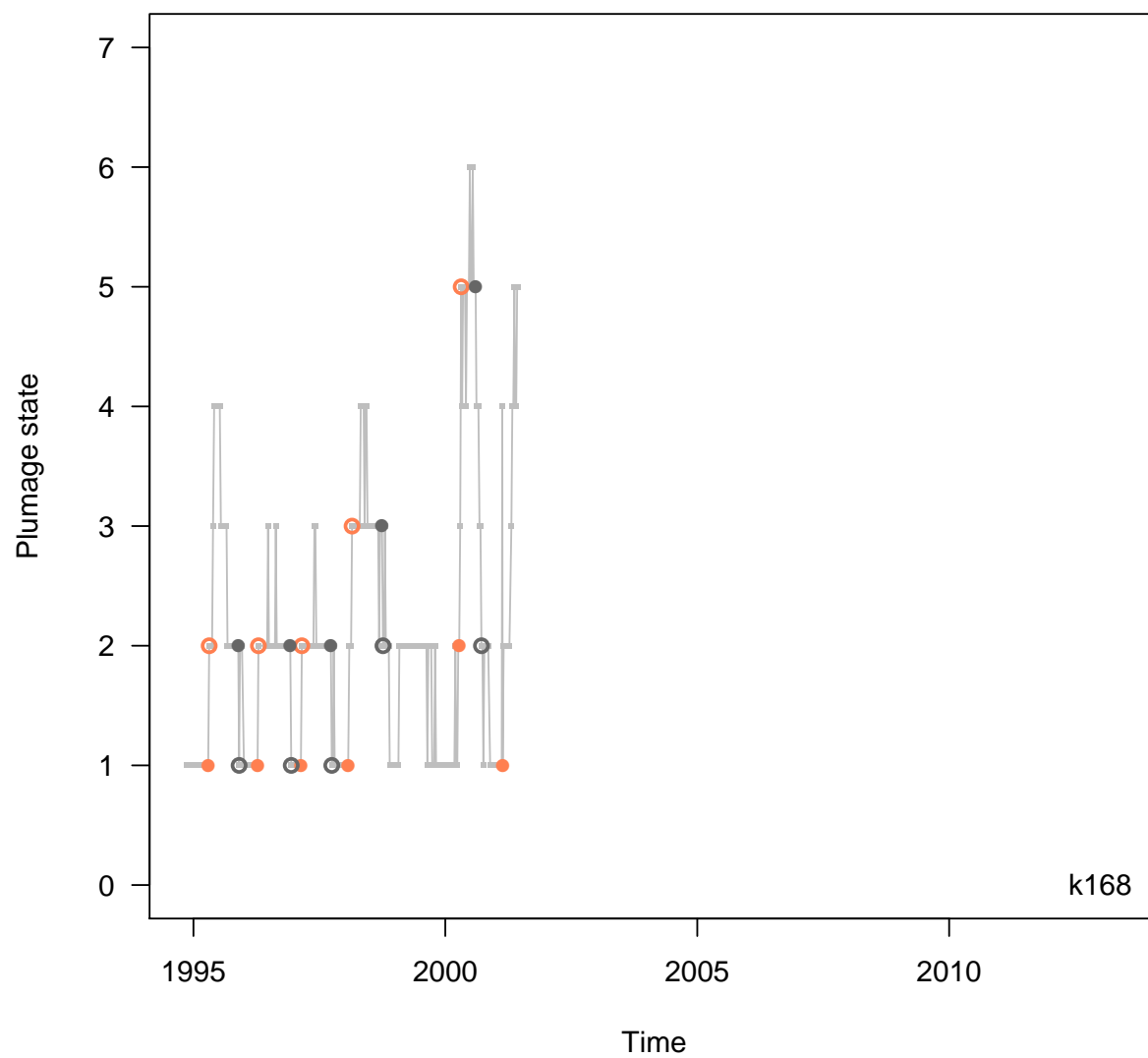
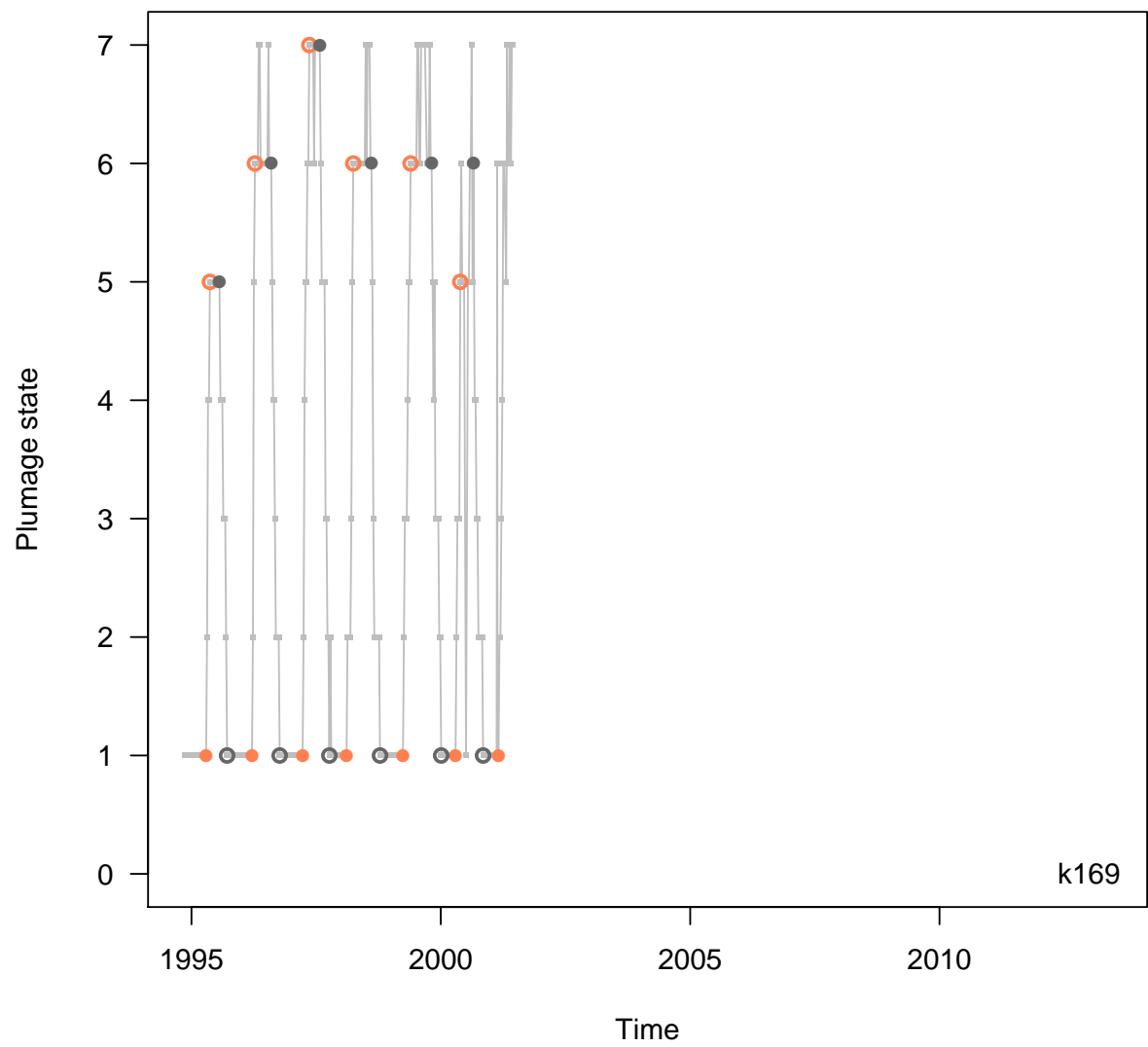
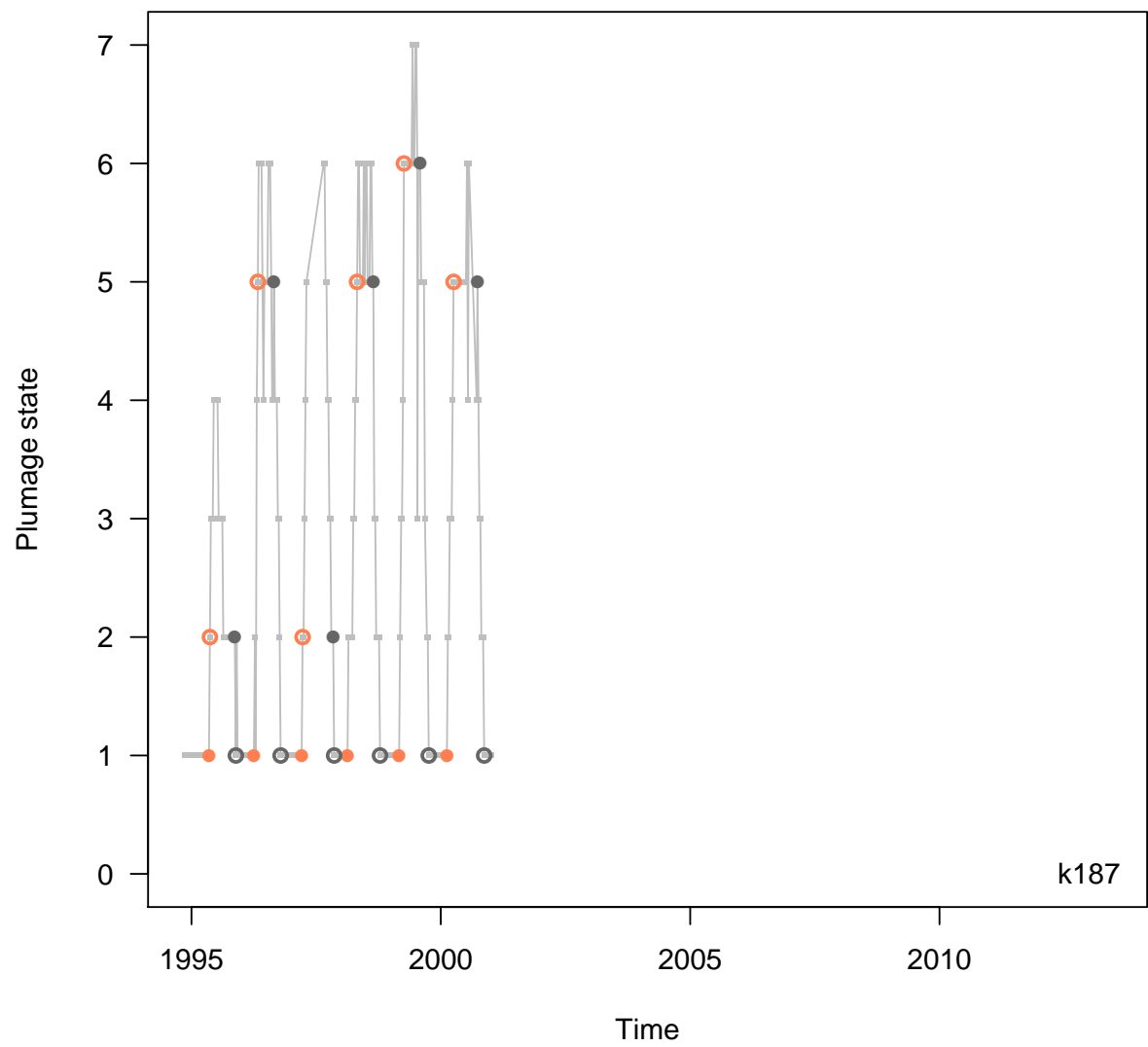
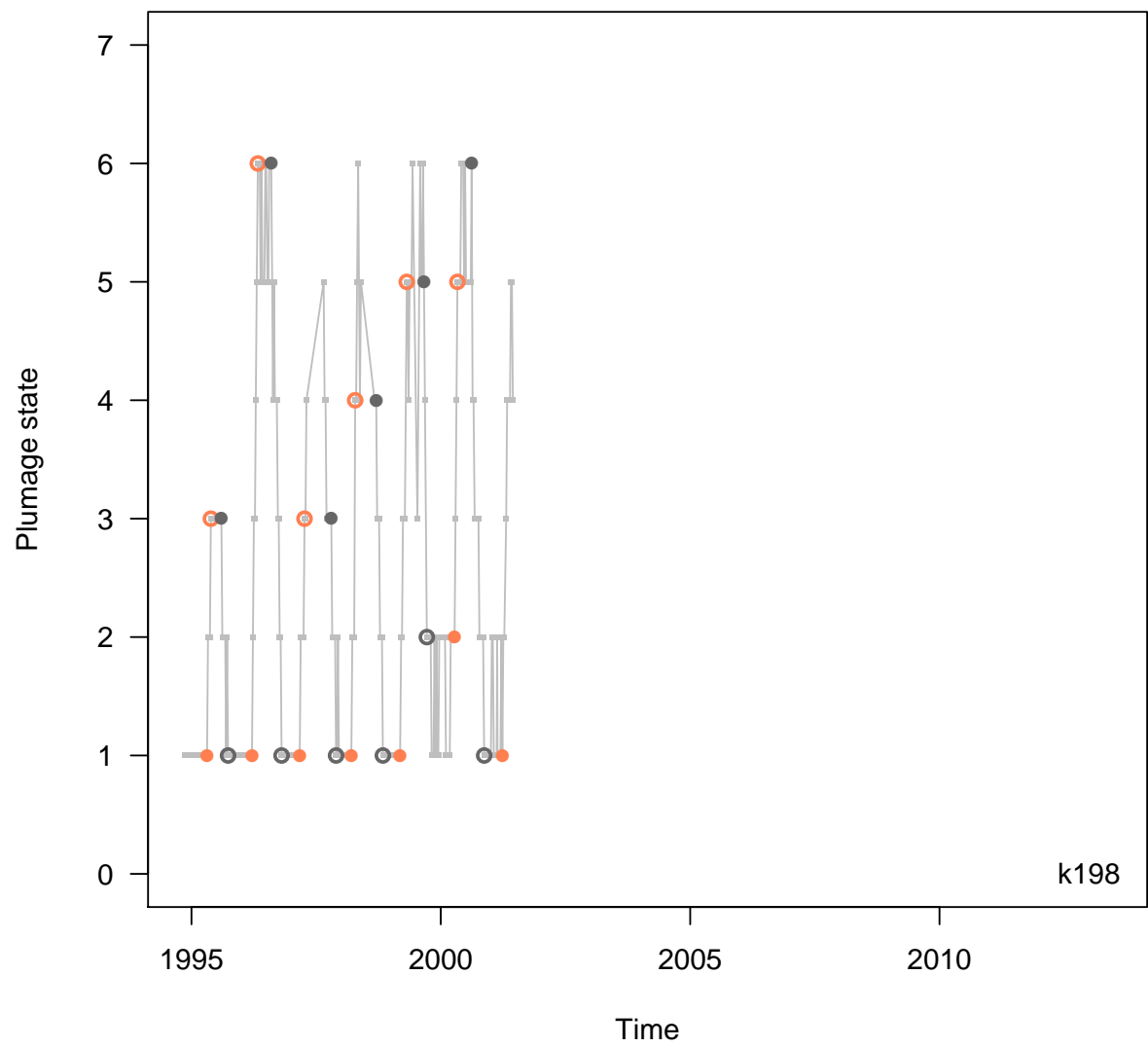


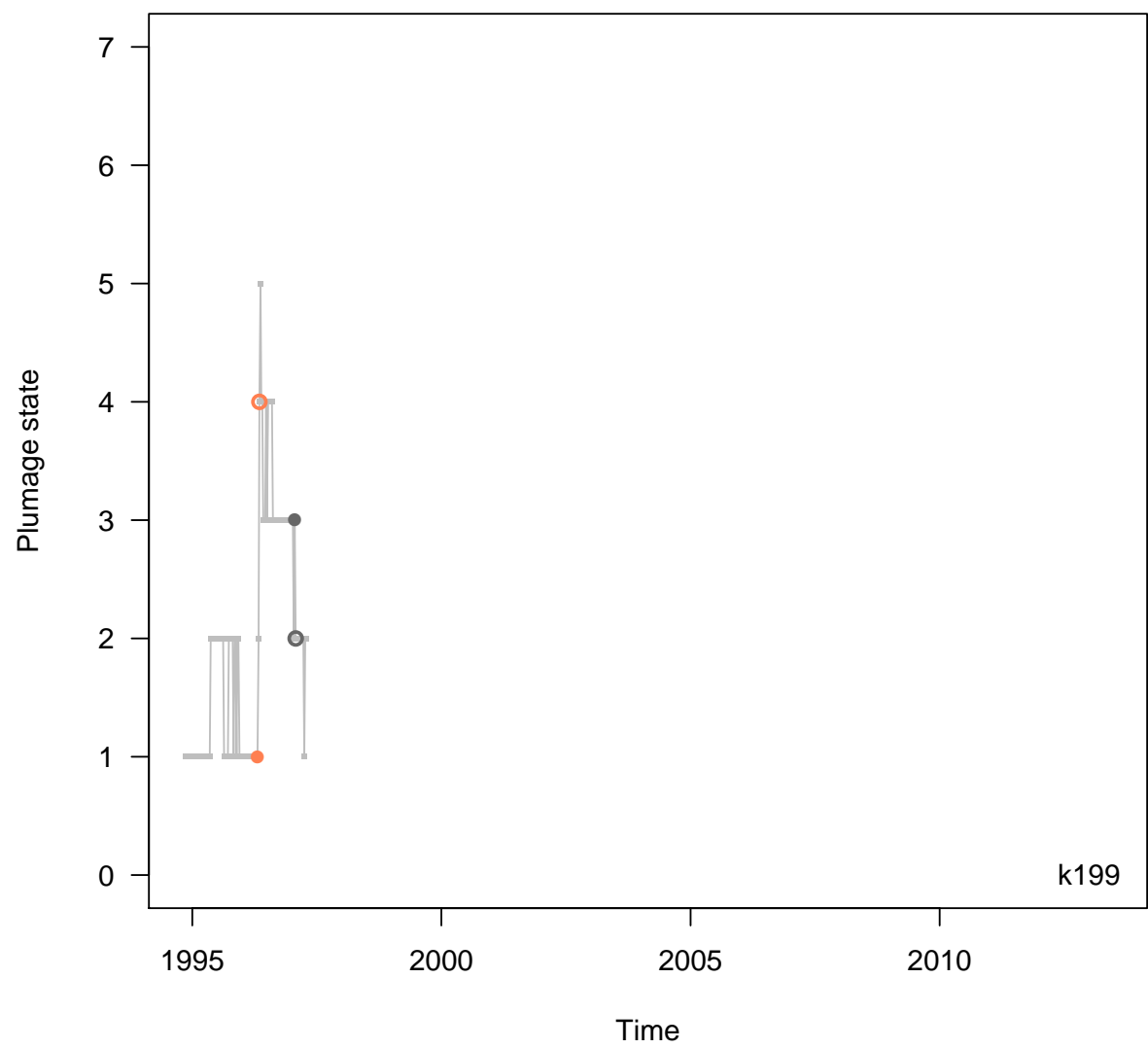
Figure S6. Plumage score change in red knots from Group 2 that stayed in captivity from November 1994 until June 2015 and experienced constant (12:12 LD) photoperiod from the 26 November 1996 until 25 November 2003 and constant light (24 LL) from 25 November 2003 until 28 December 2004. Onsets (closed circles) and offsets open circles) of pre-alternate and pre-basic molt are shown in orange and grey, correspondingly.



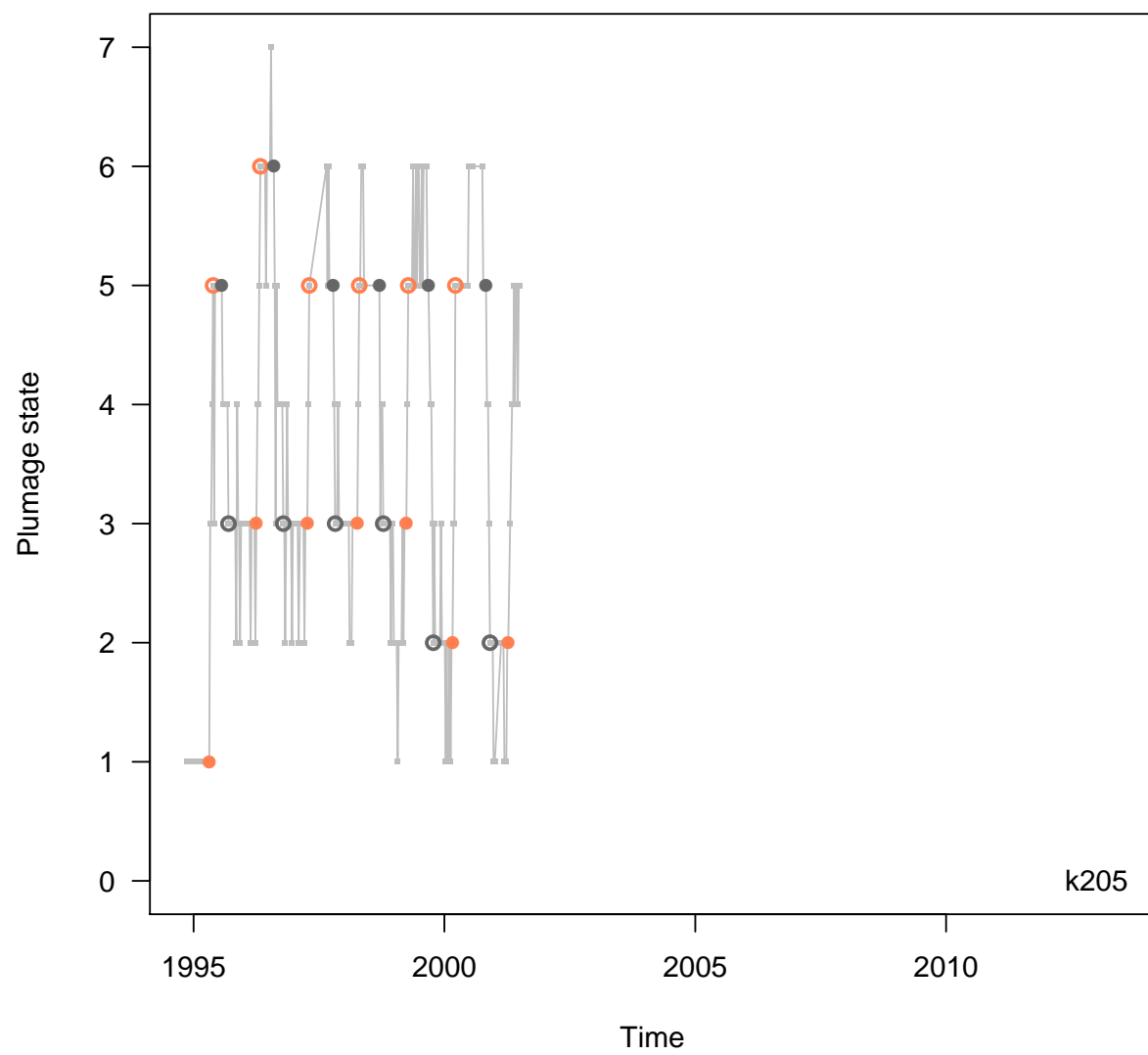


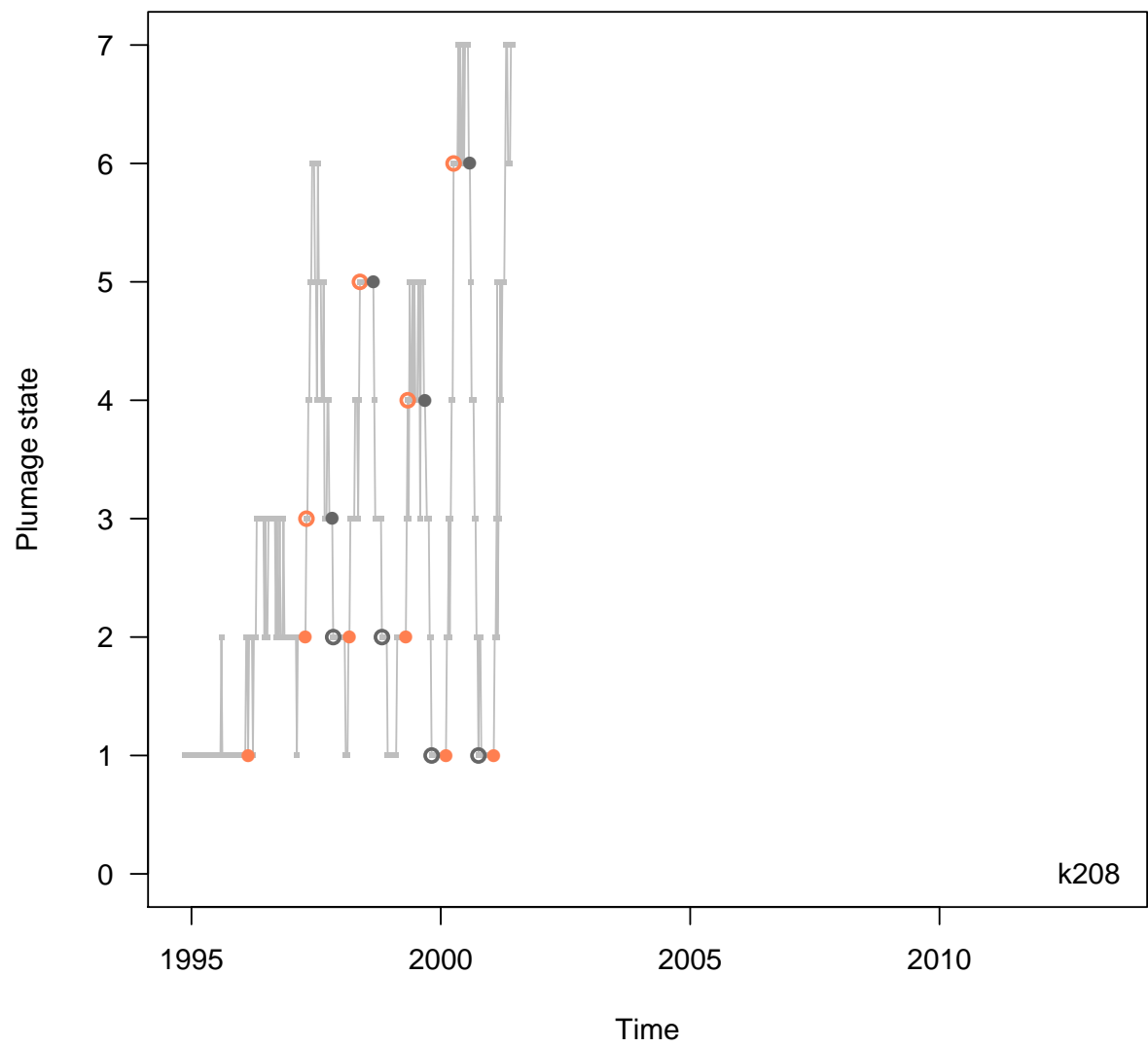


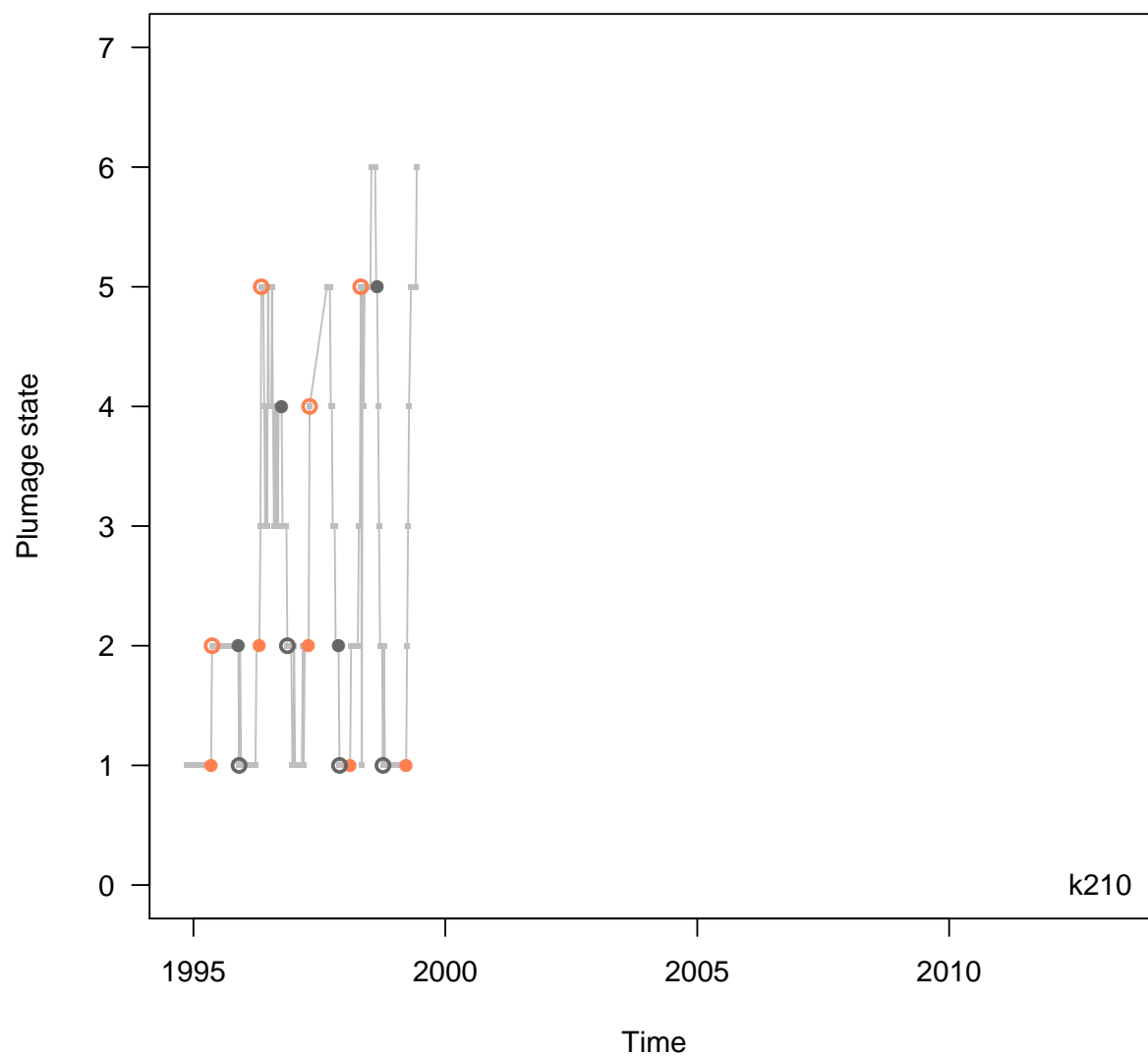


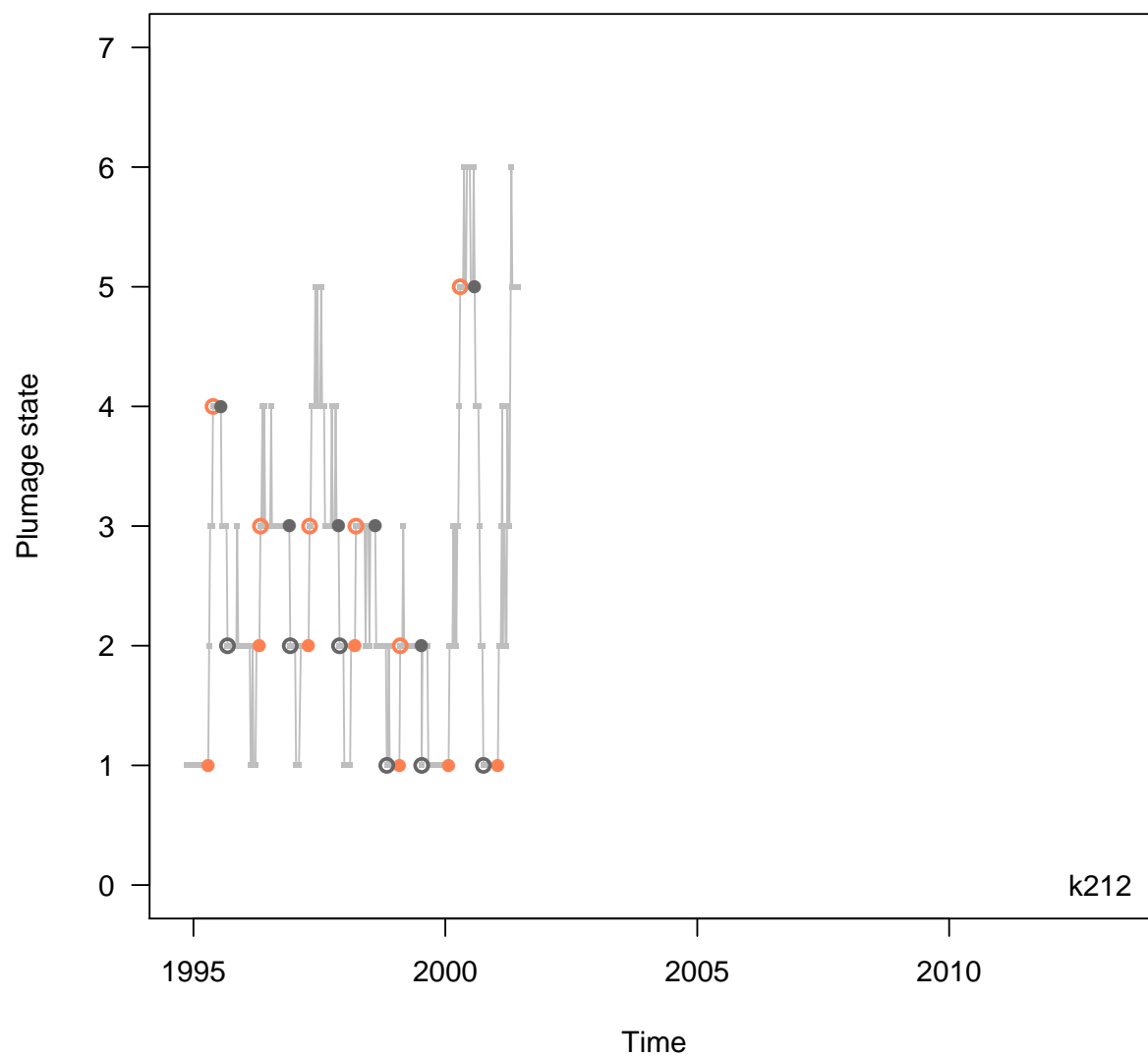


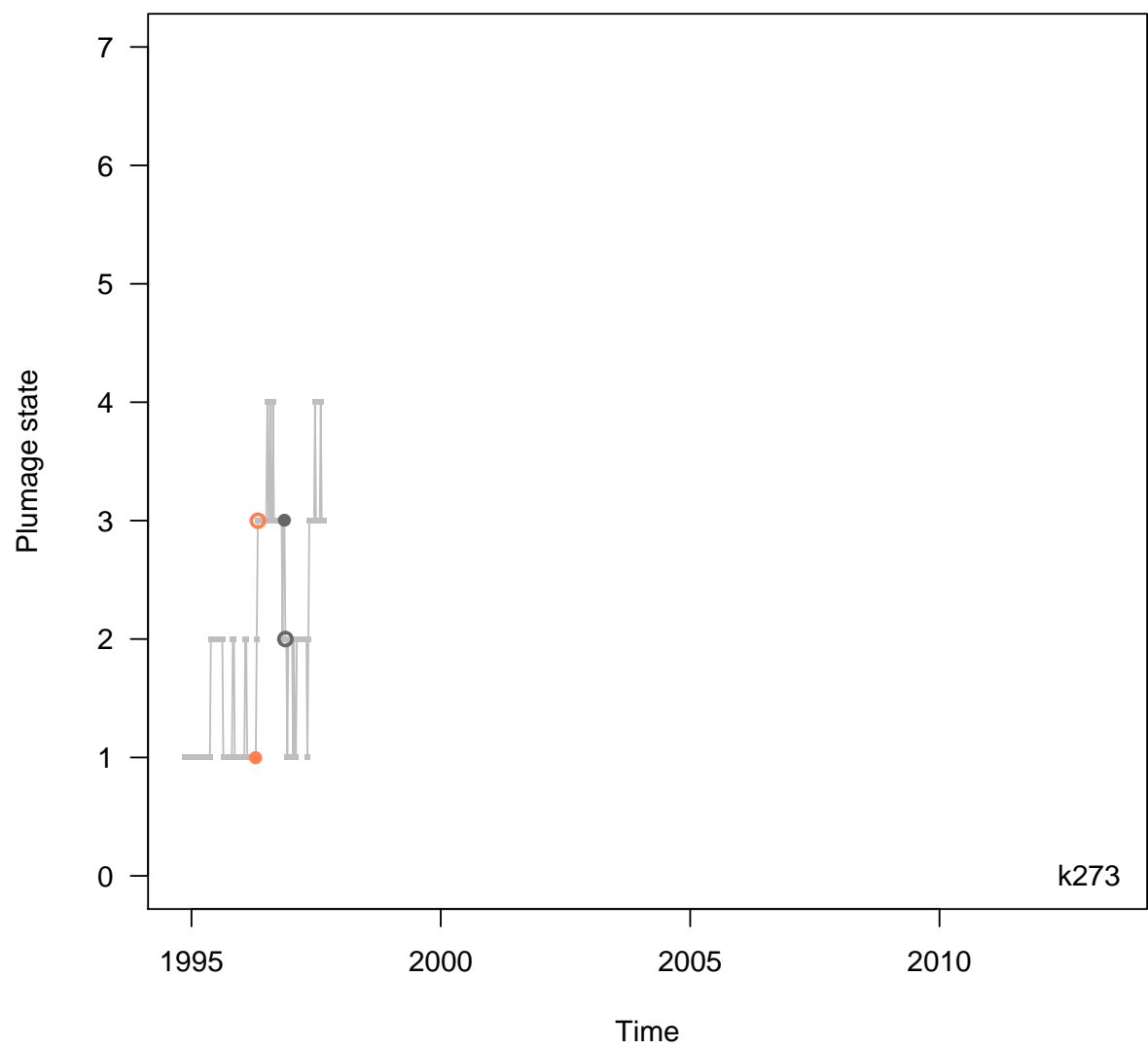
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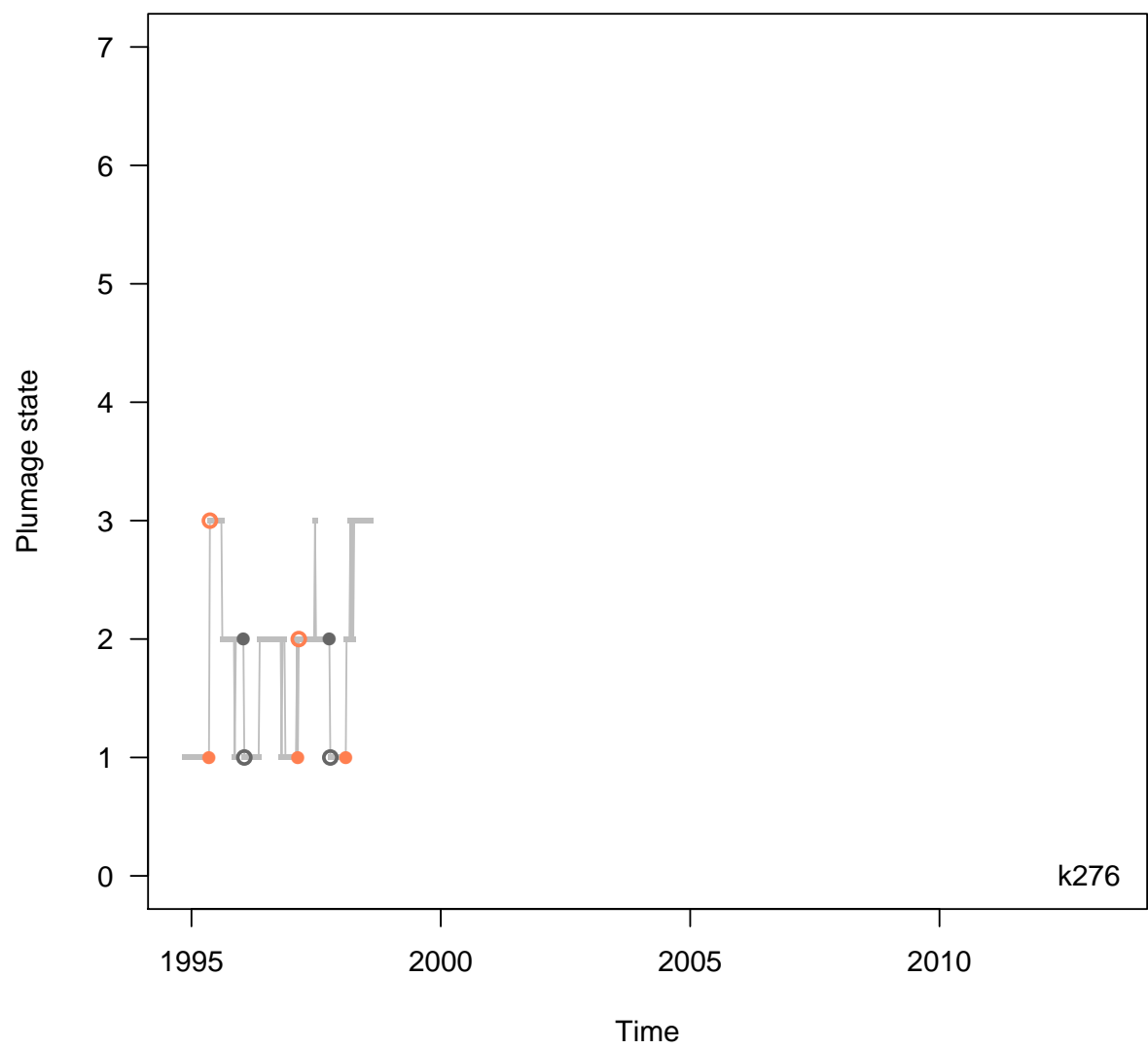


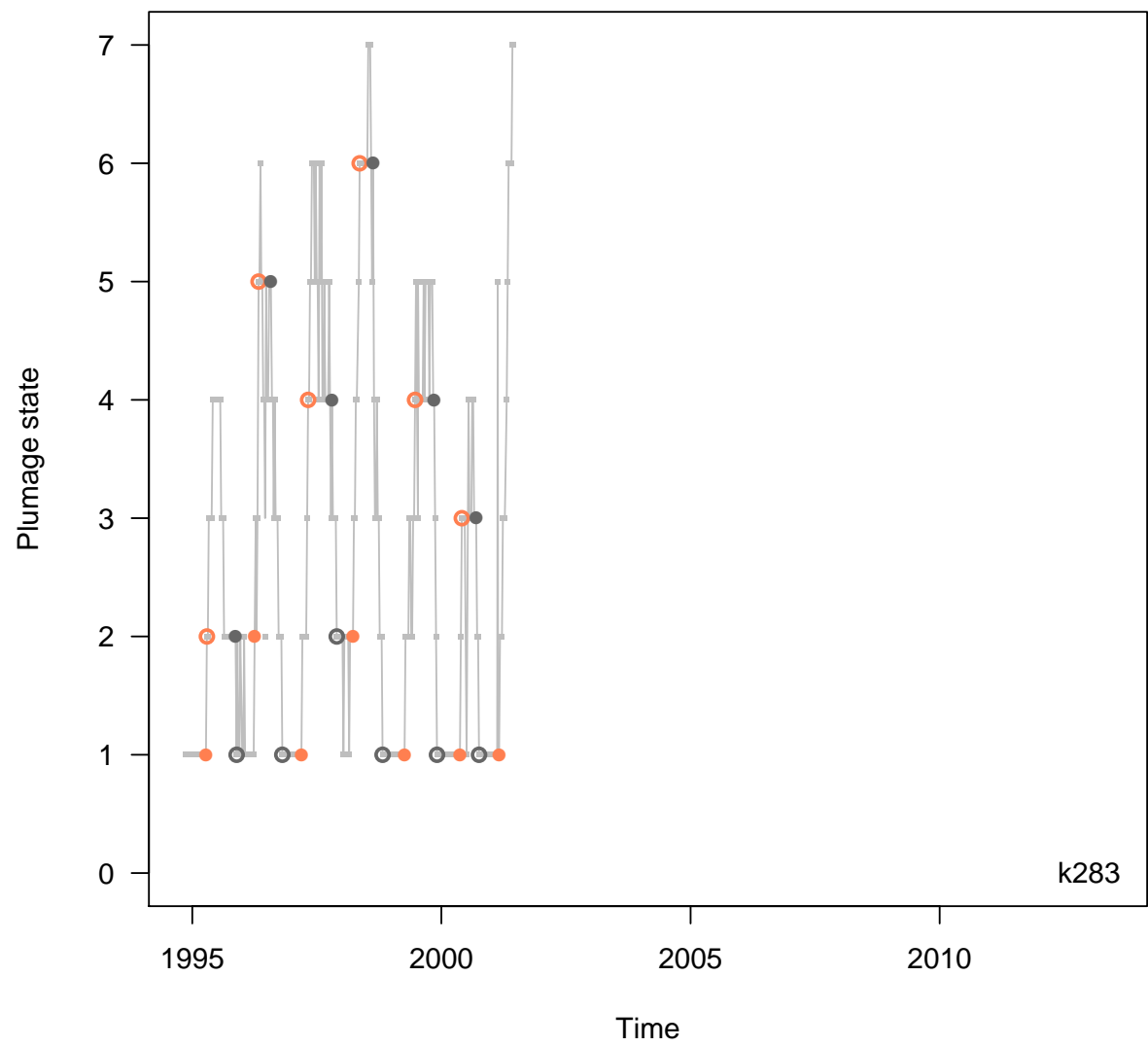


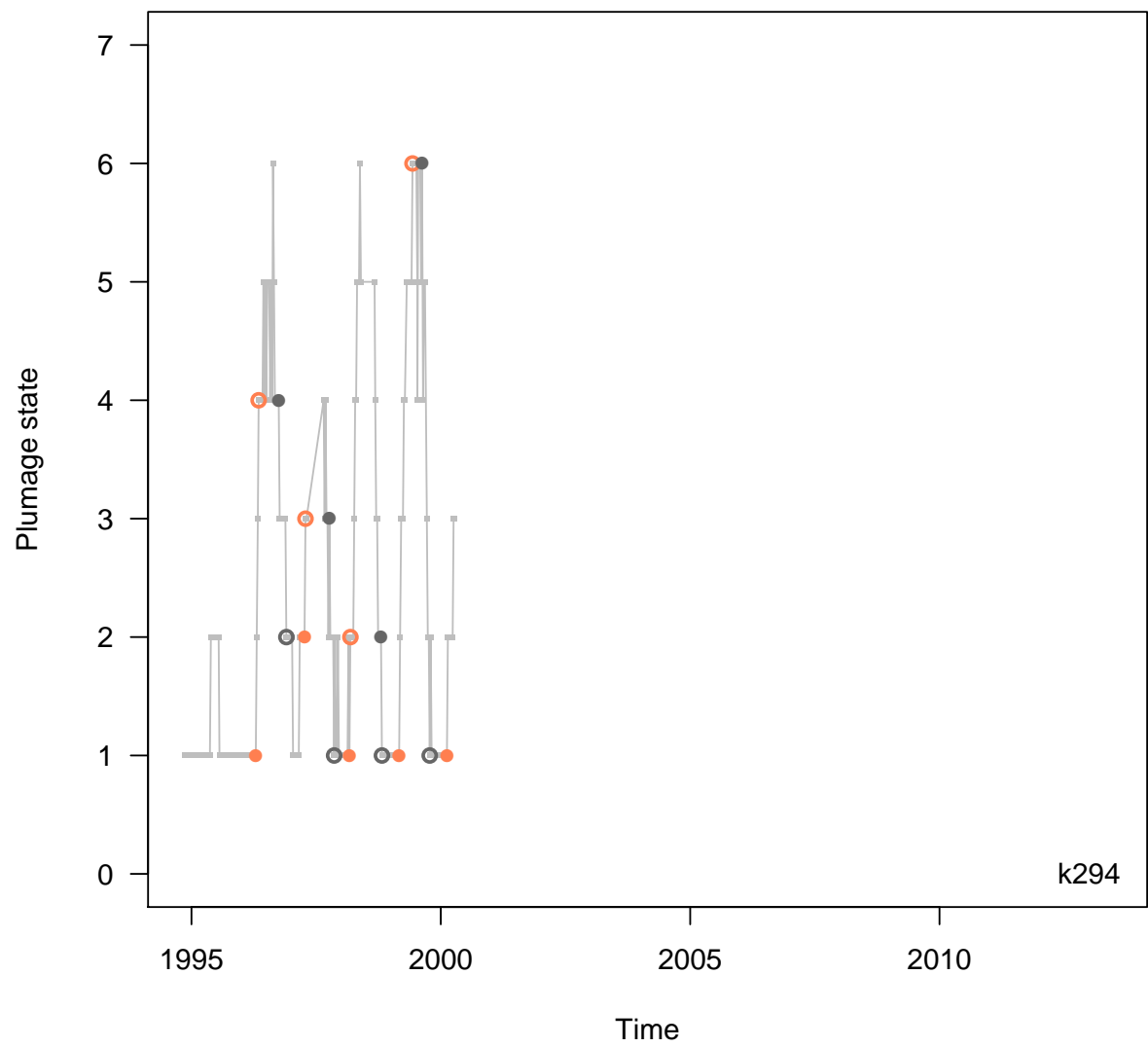


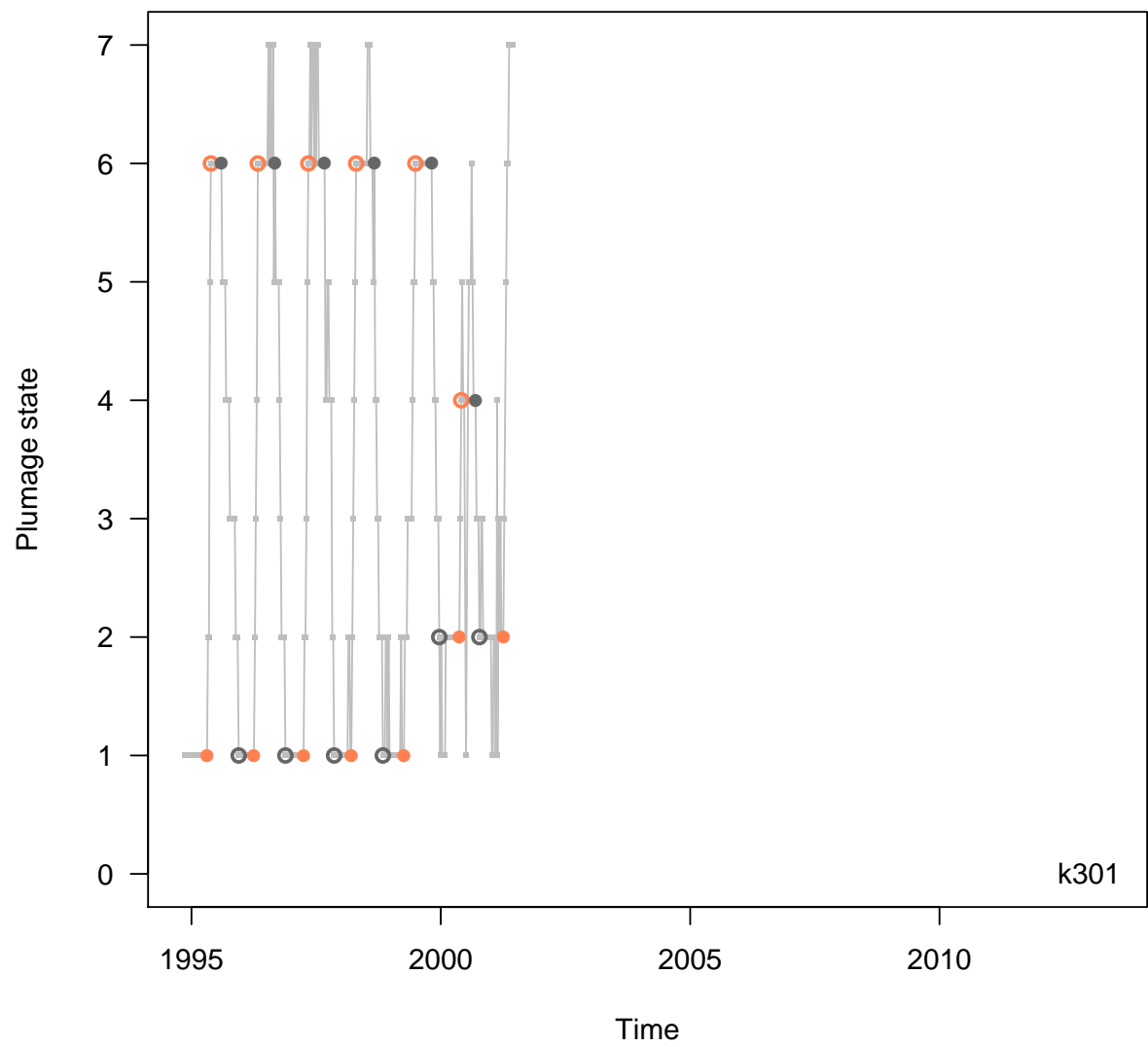


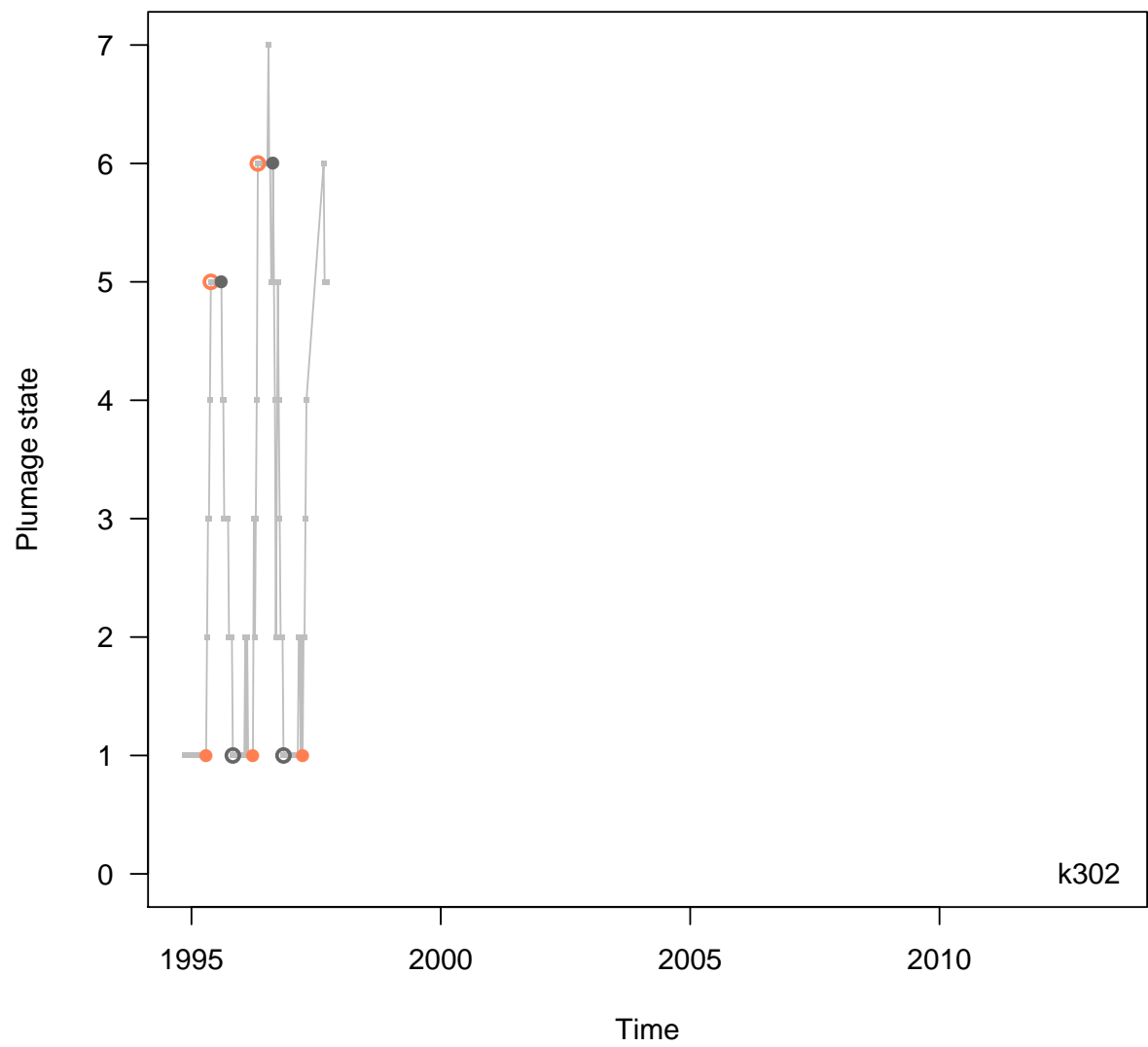


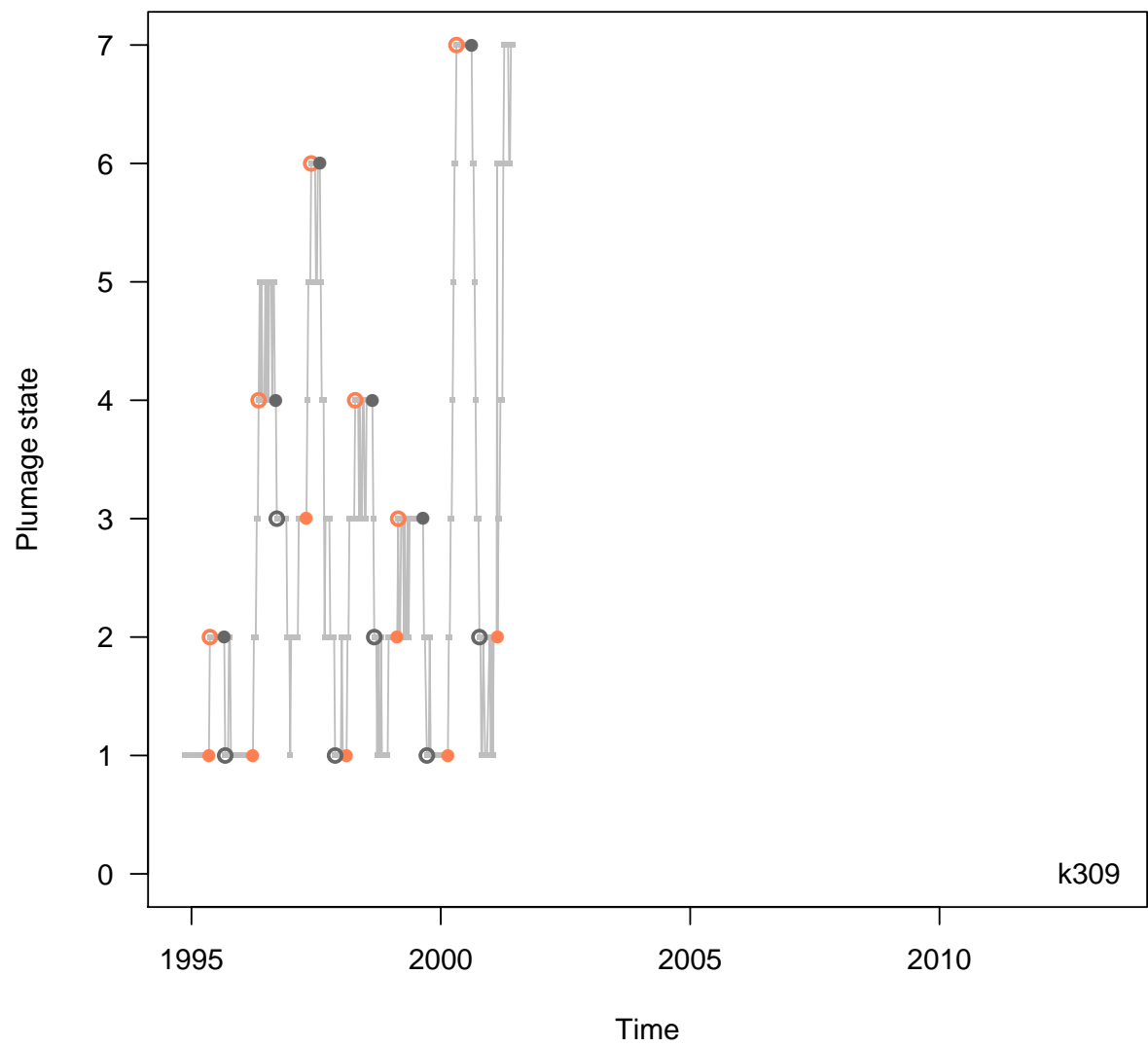












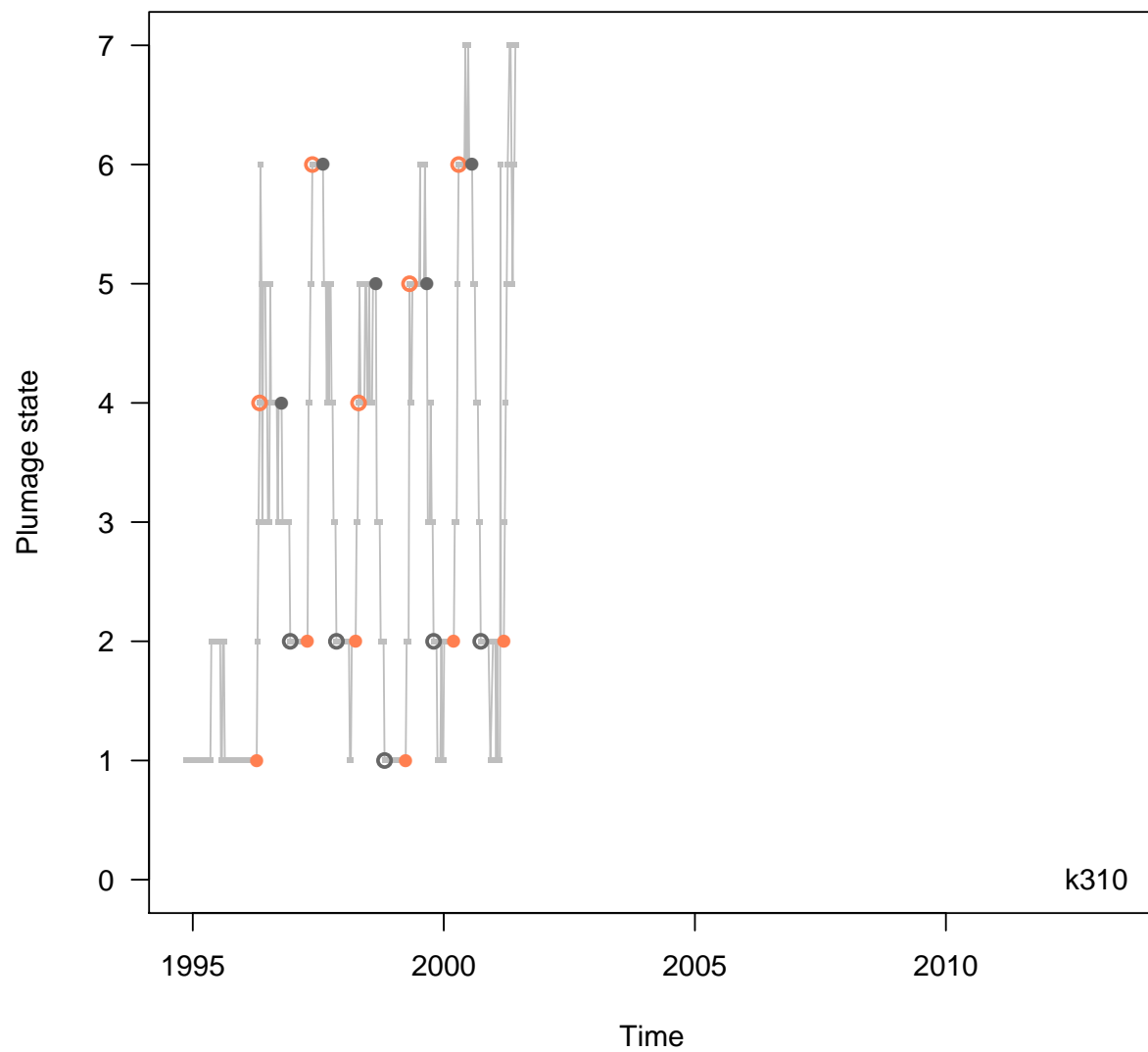
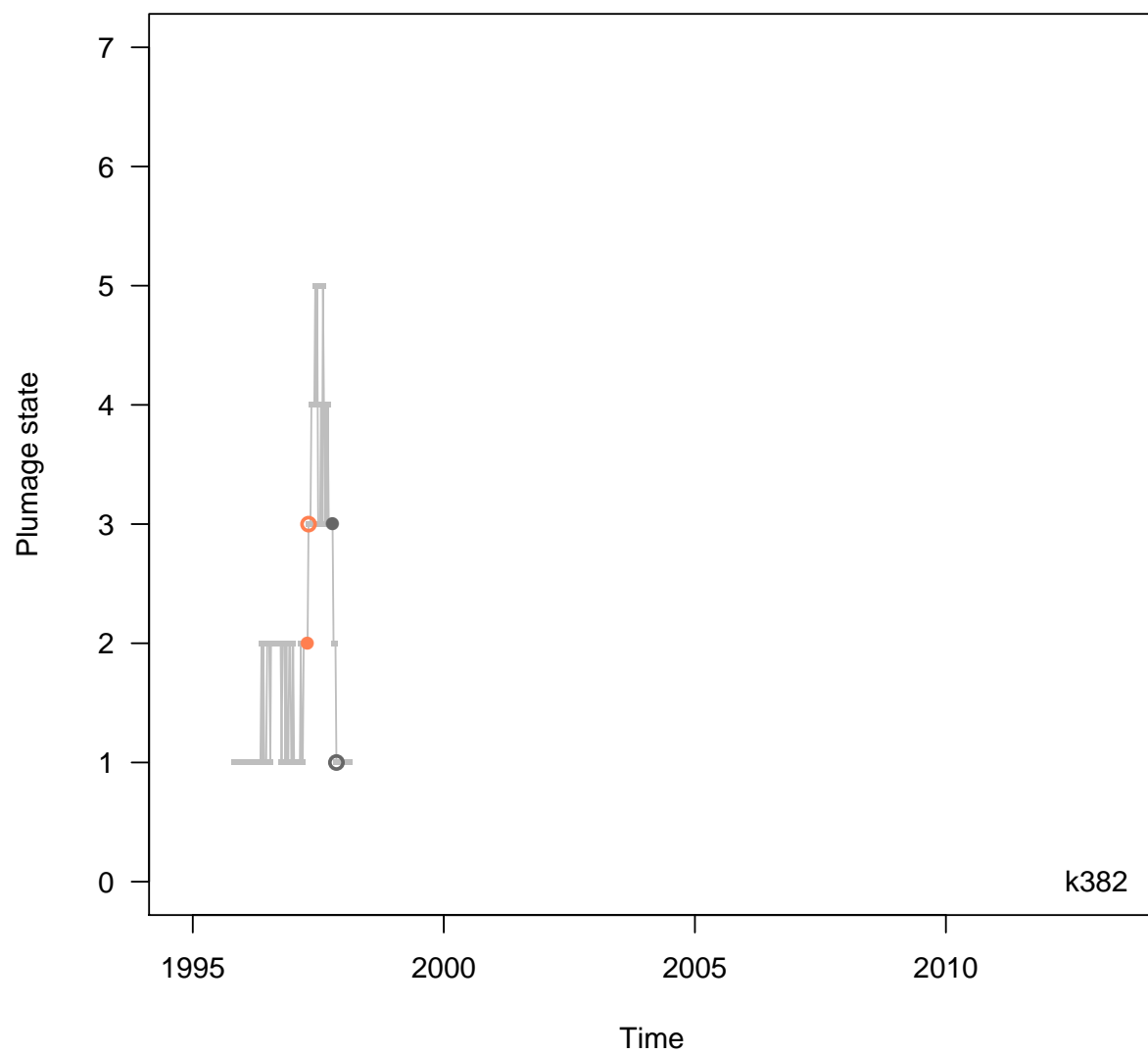
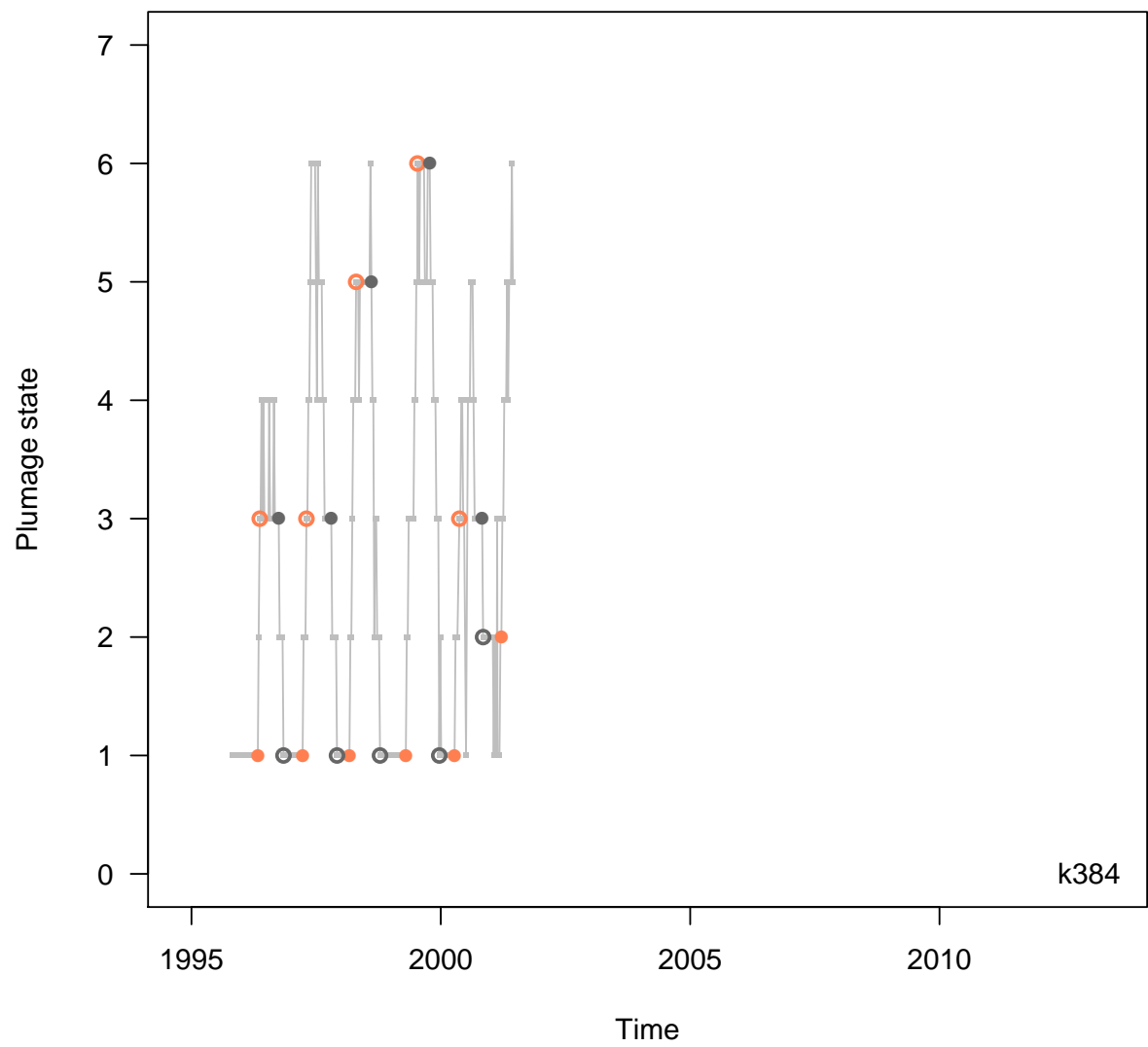
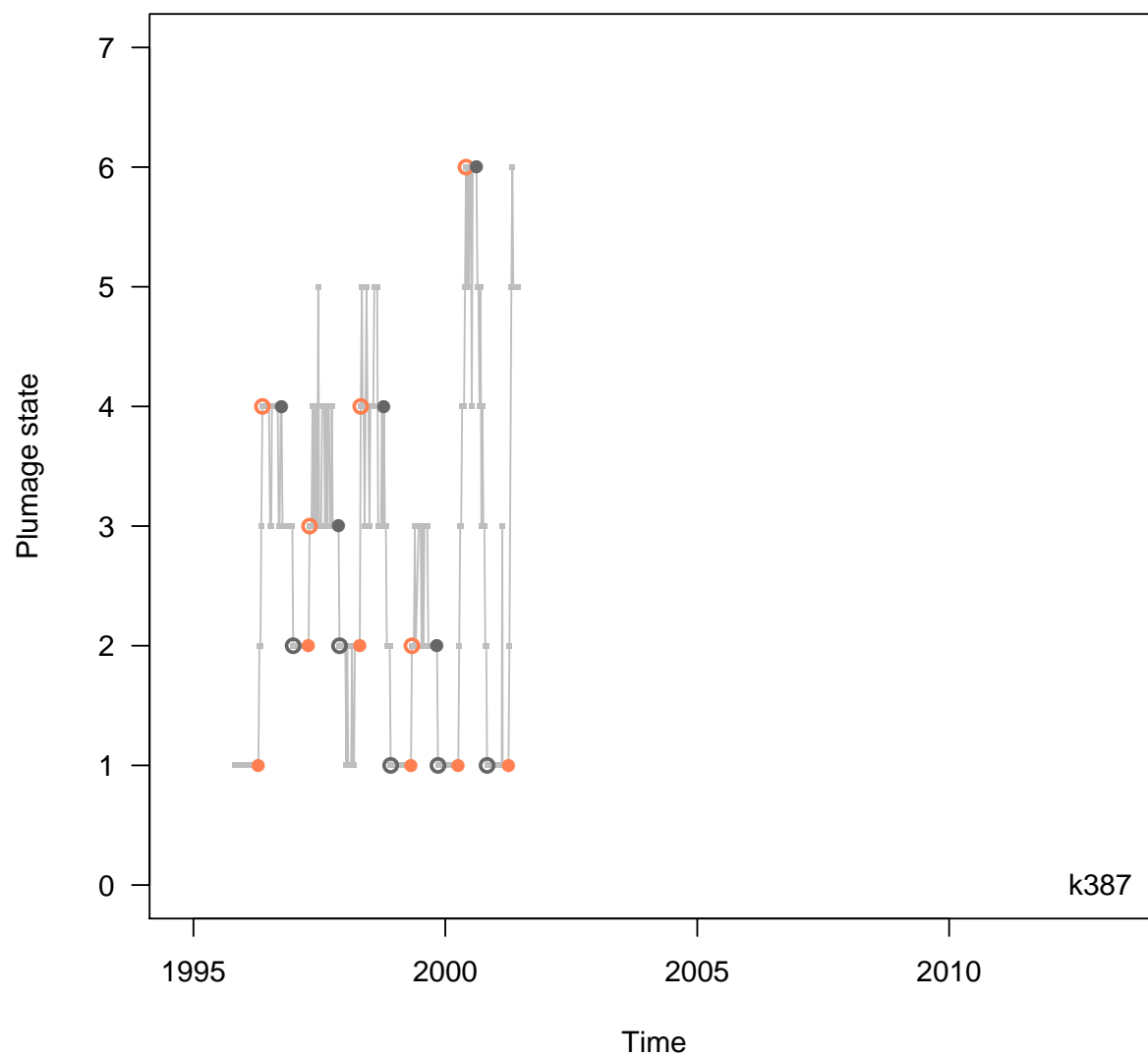
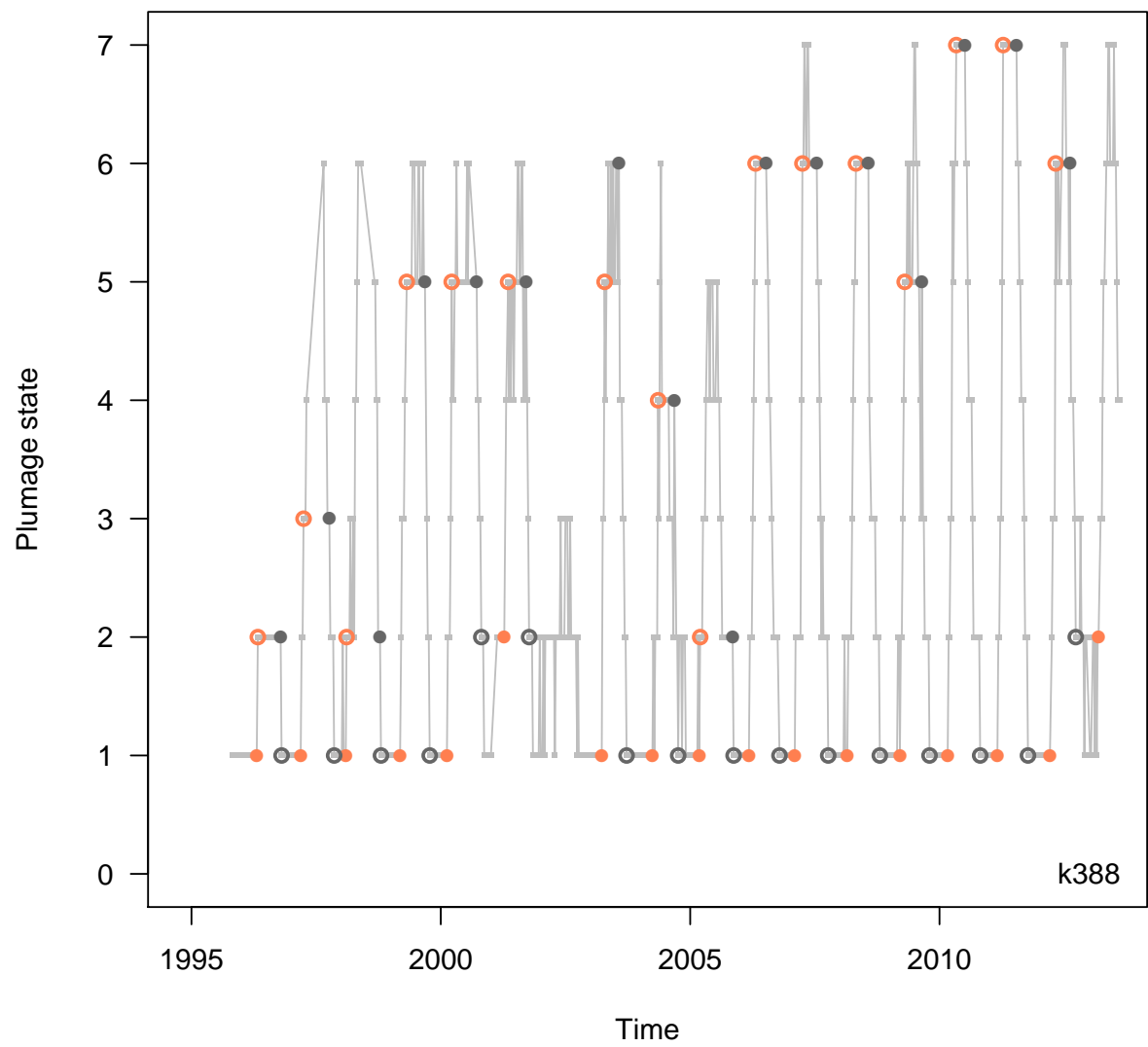


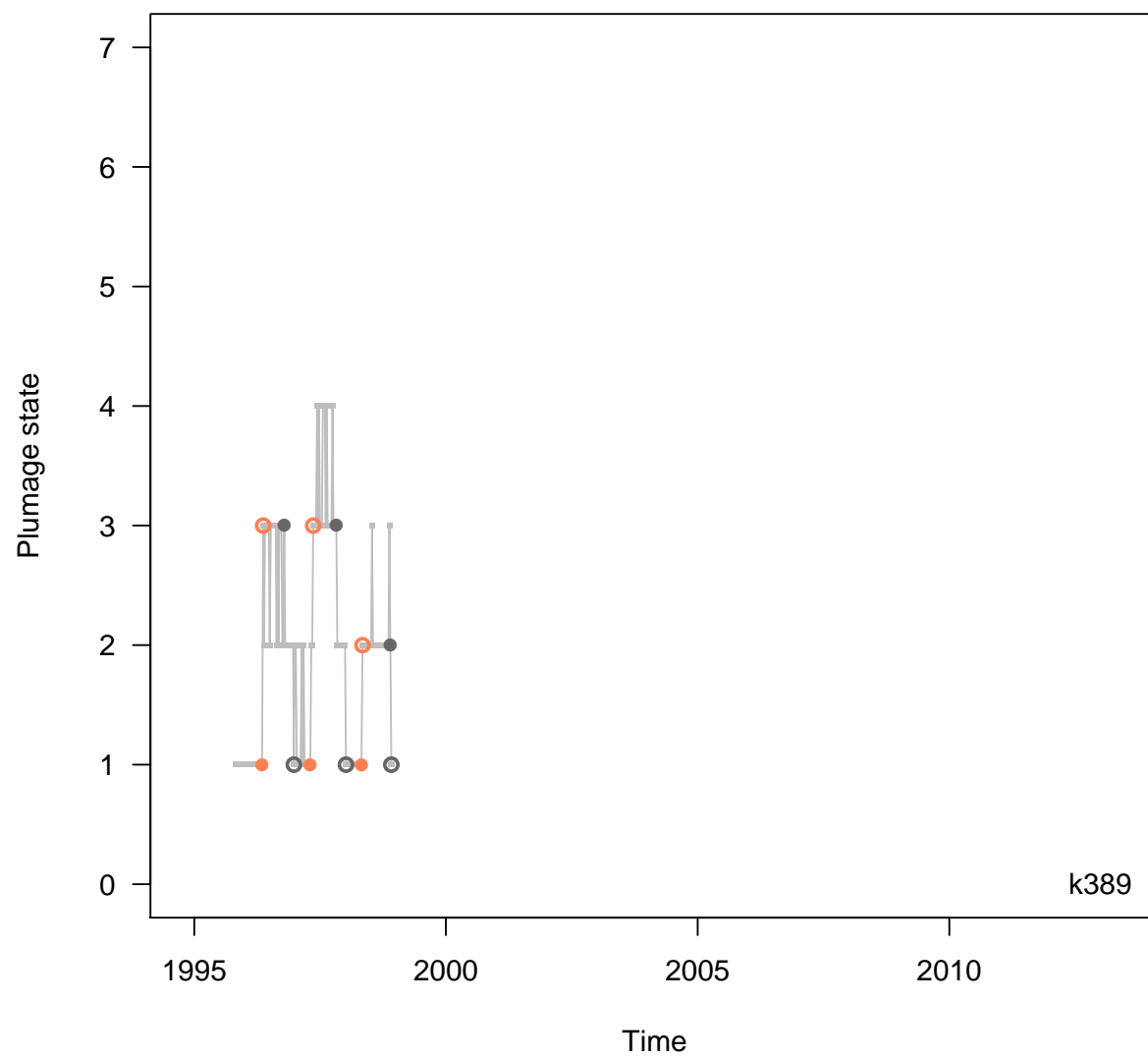
Figure S7. Plumage score change in red knots from Group 3 that stayed in captivity from November 1994 until 3 July 2001. Onsets (closed circles) and offsets open circles) of pre-alternate and pre-basic molt are shown in orange and grey, correspondingly.

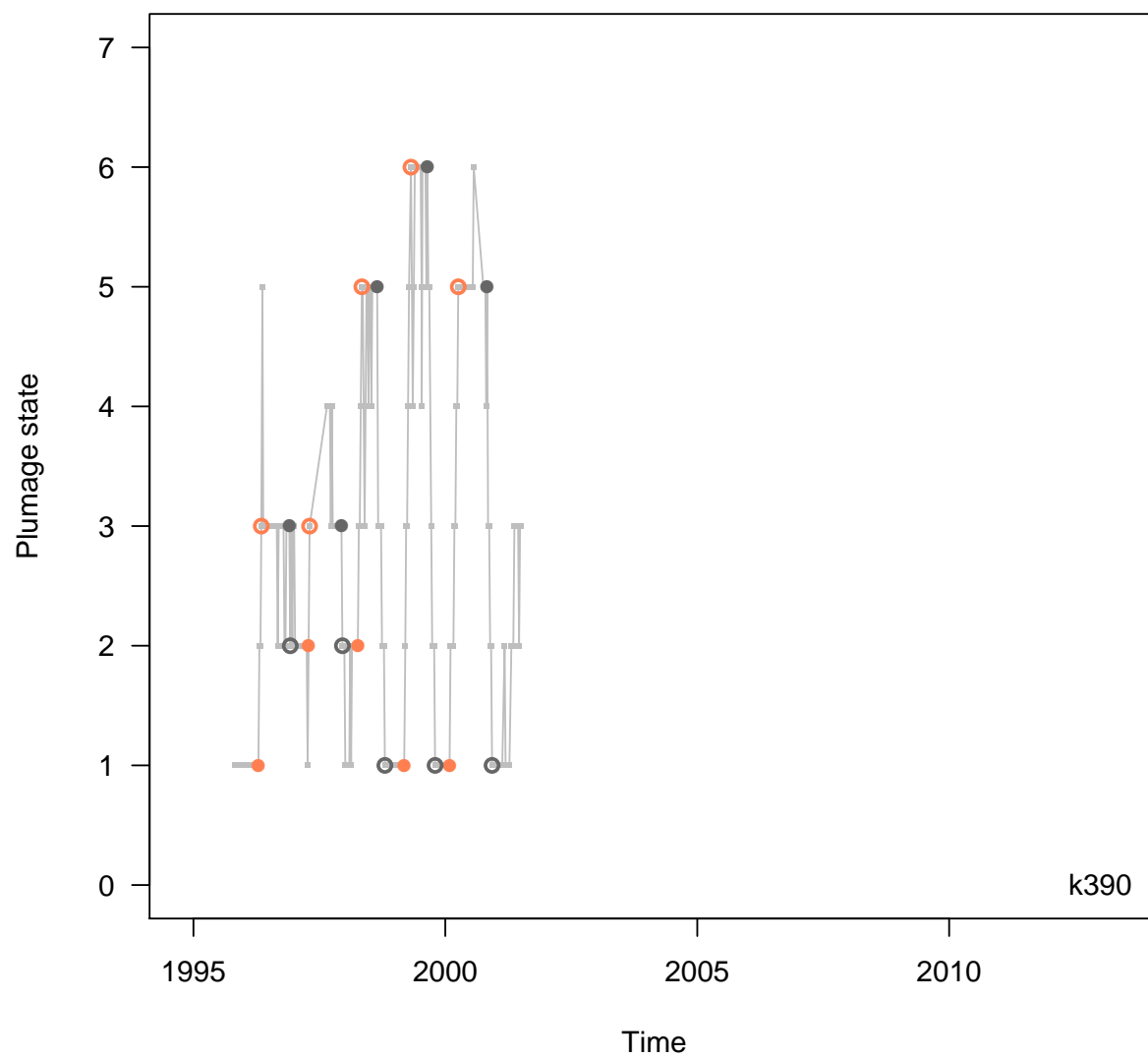


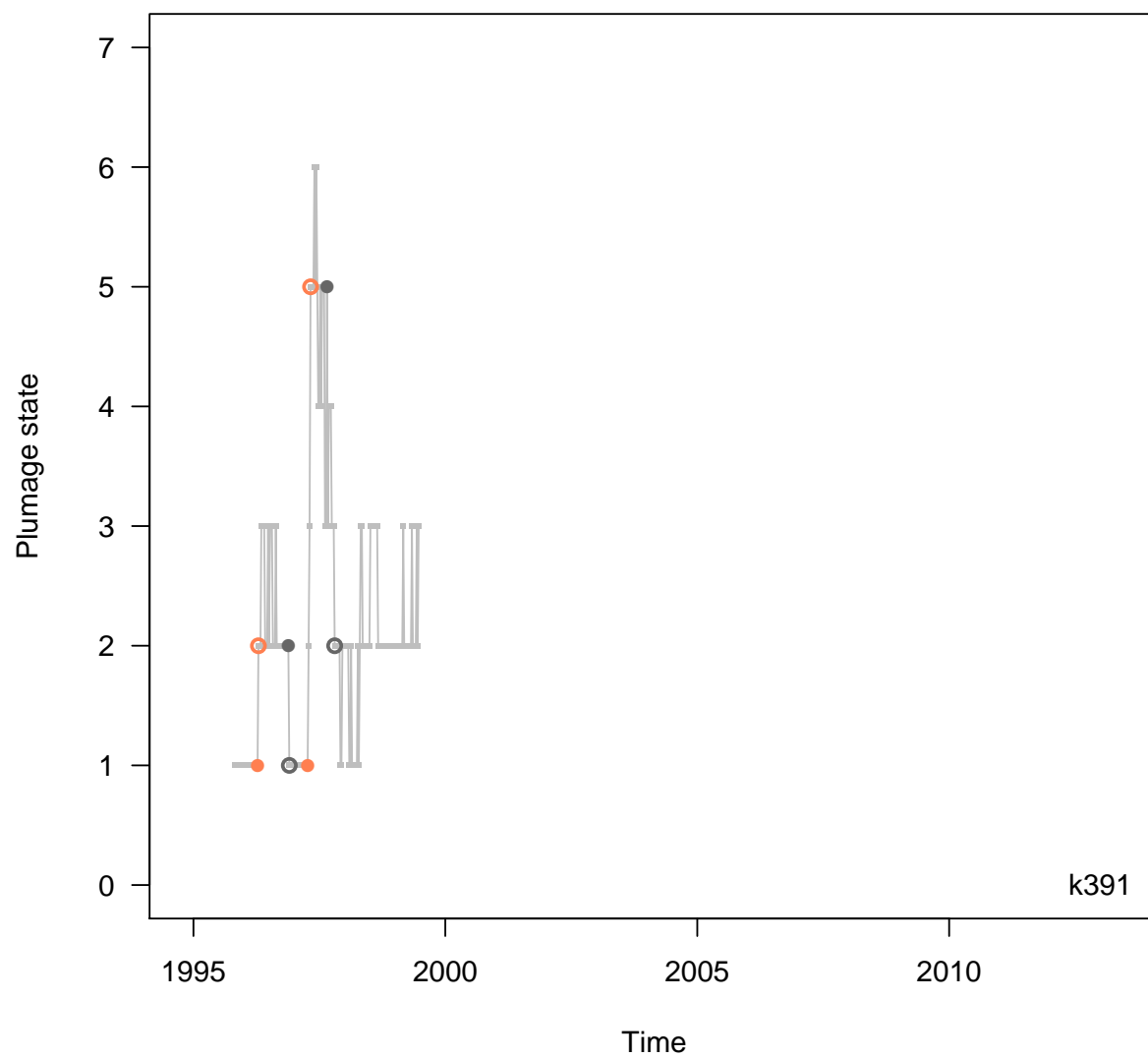


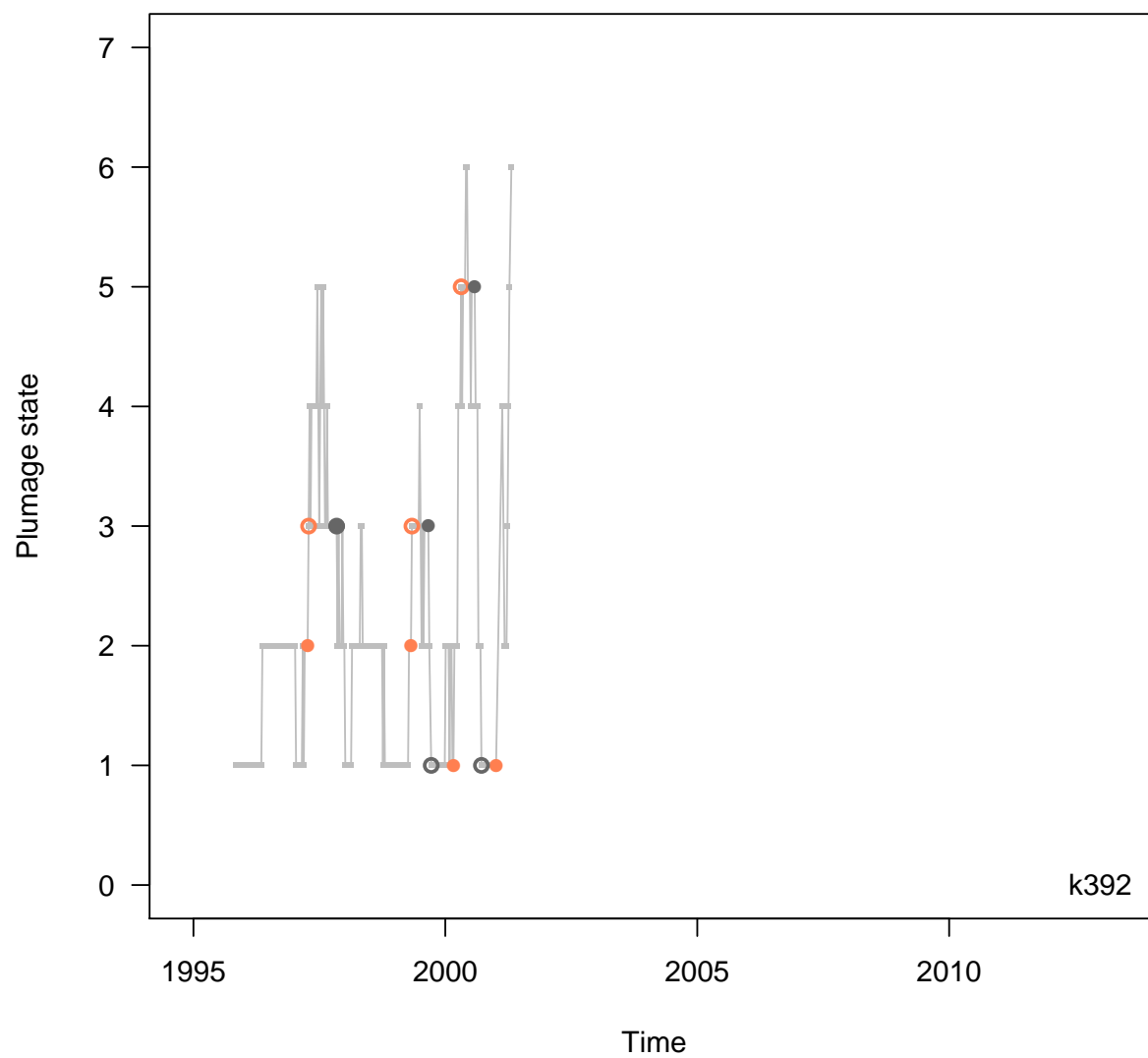


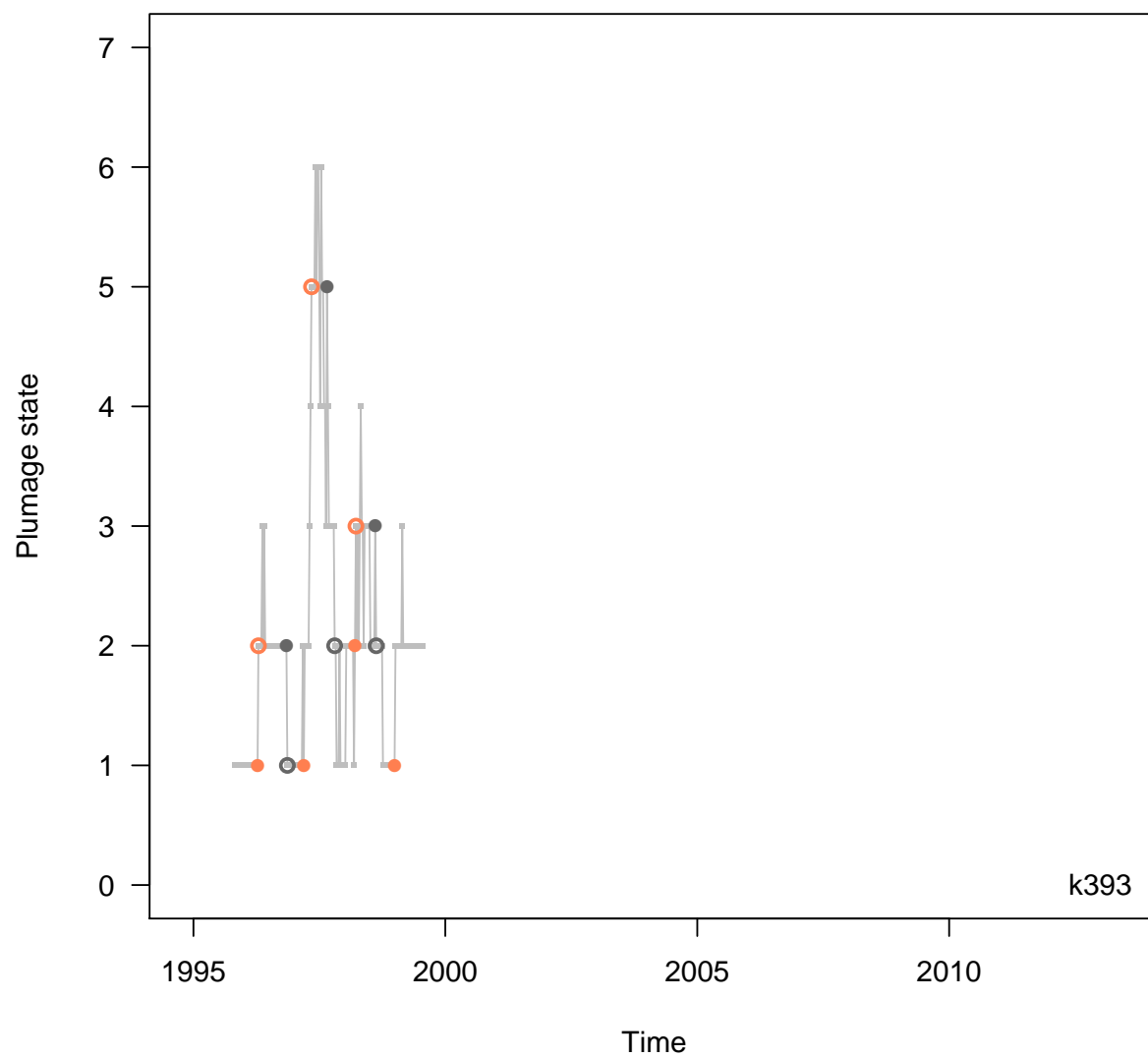


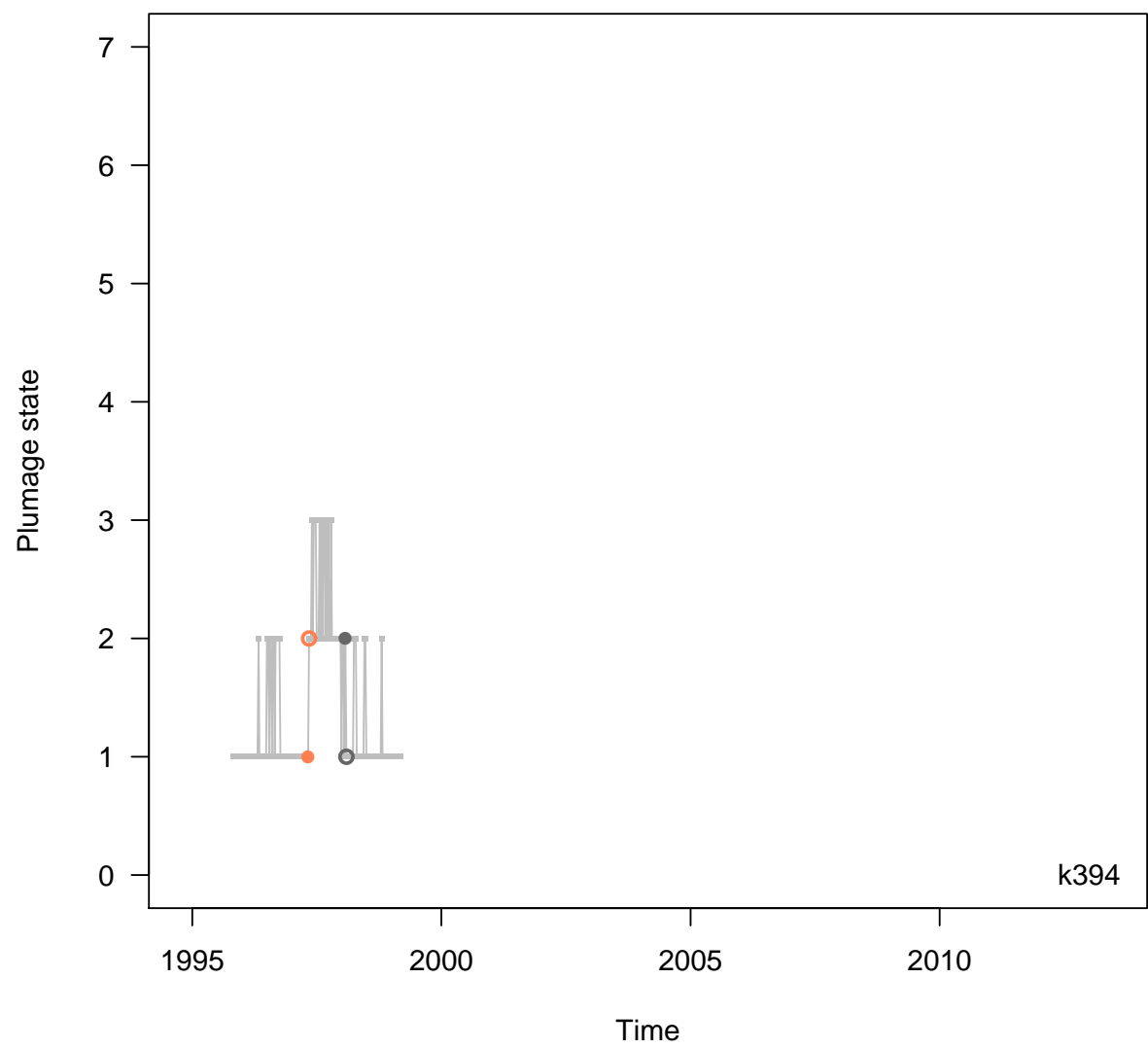


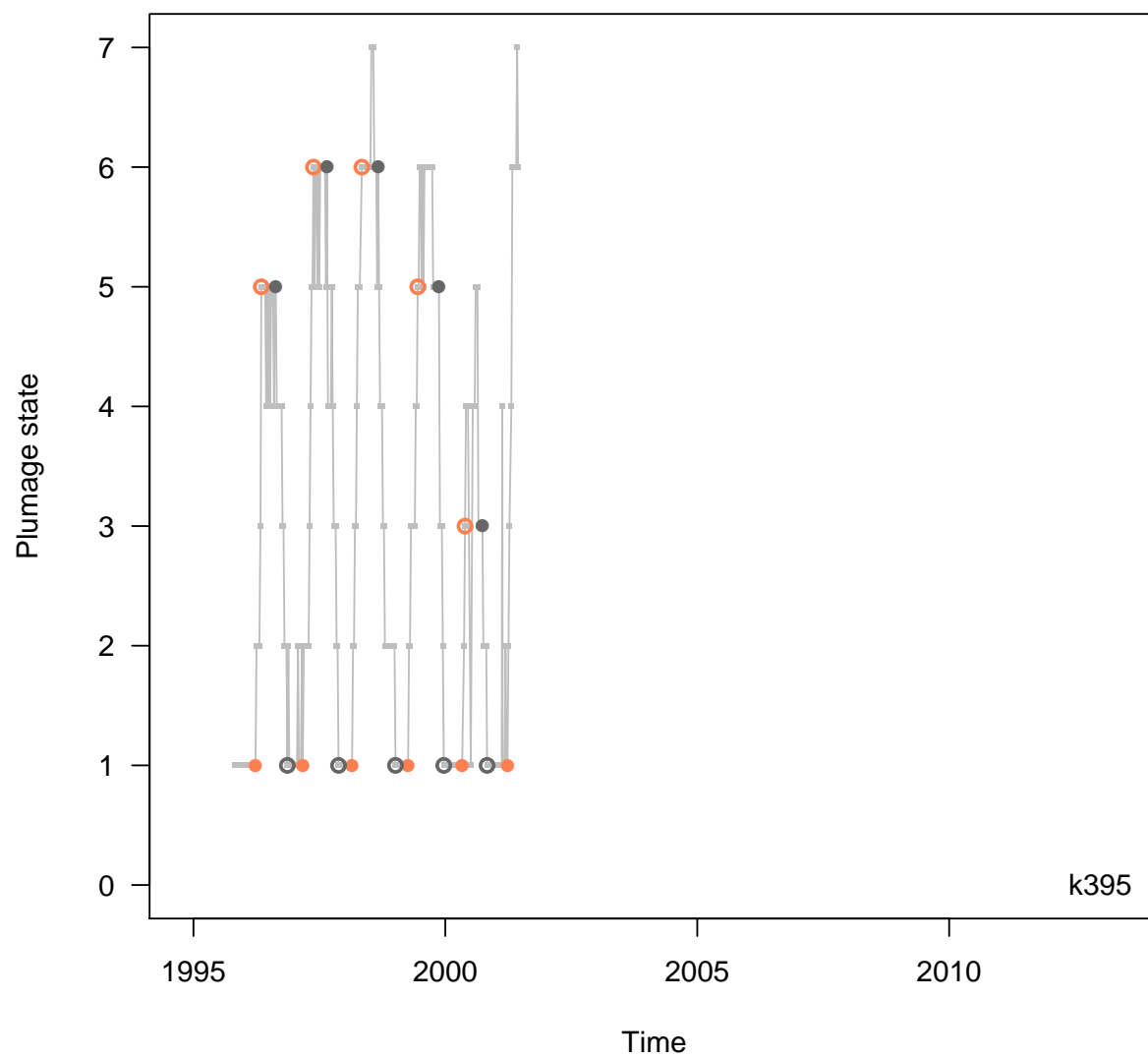


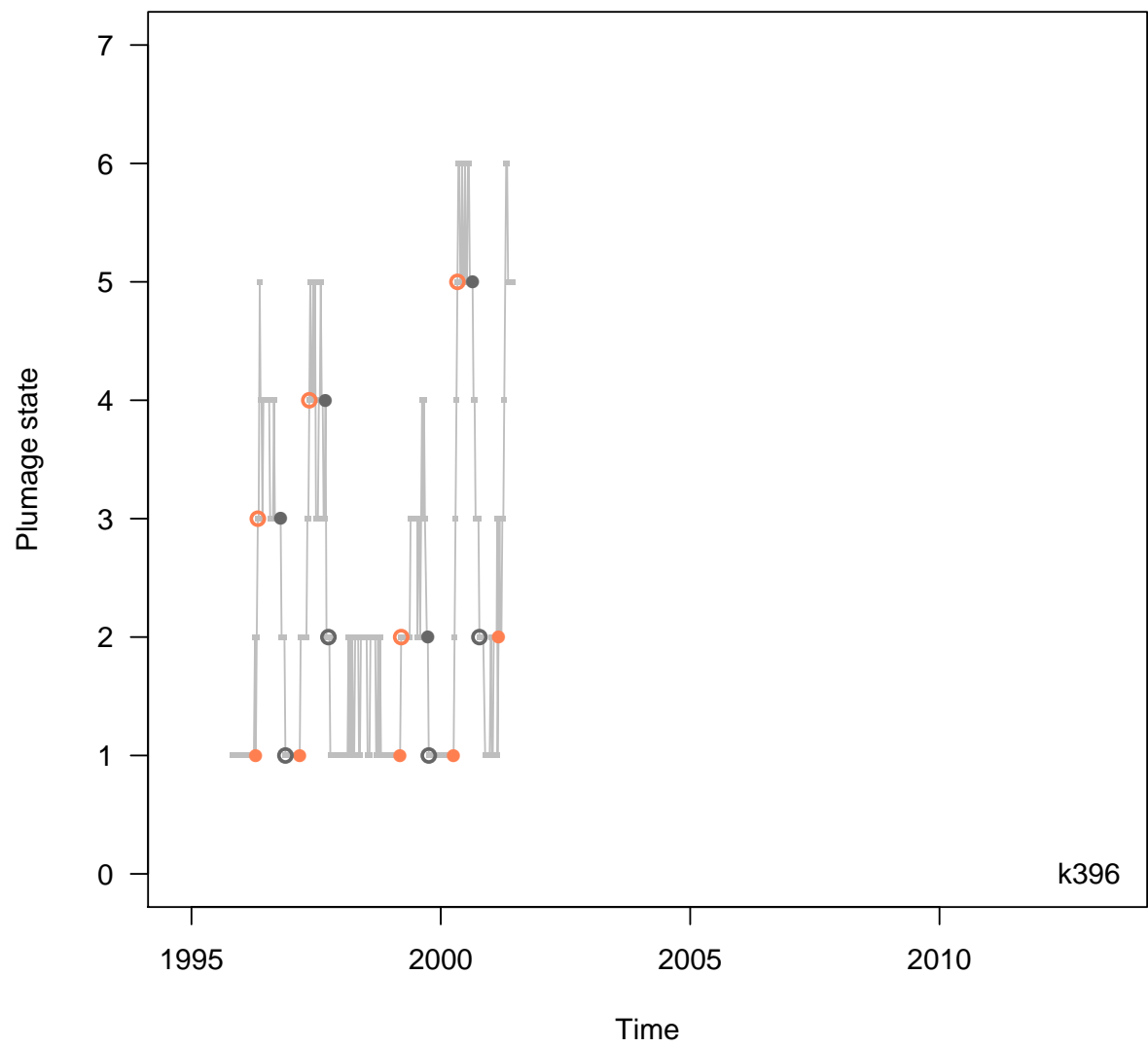


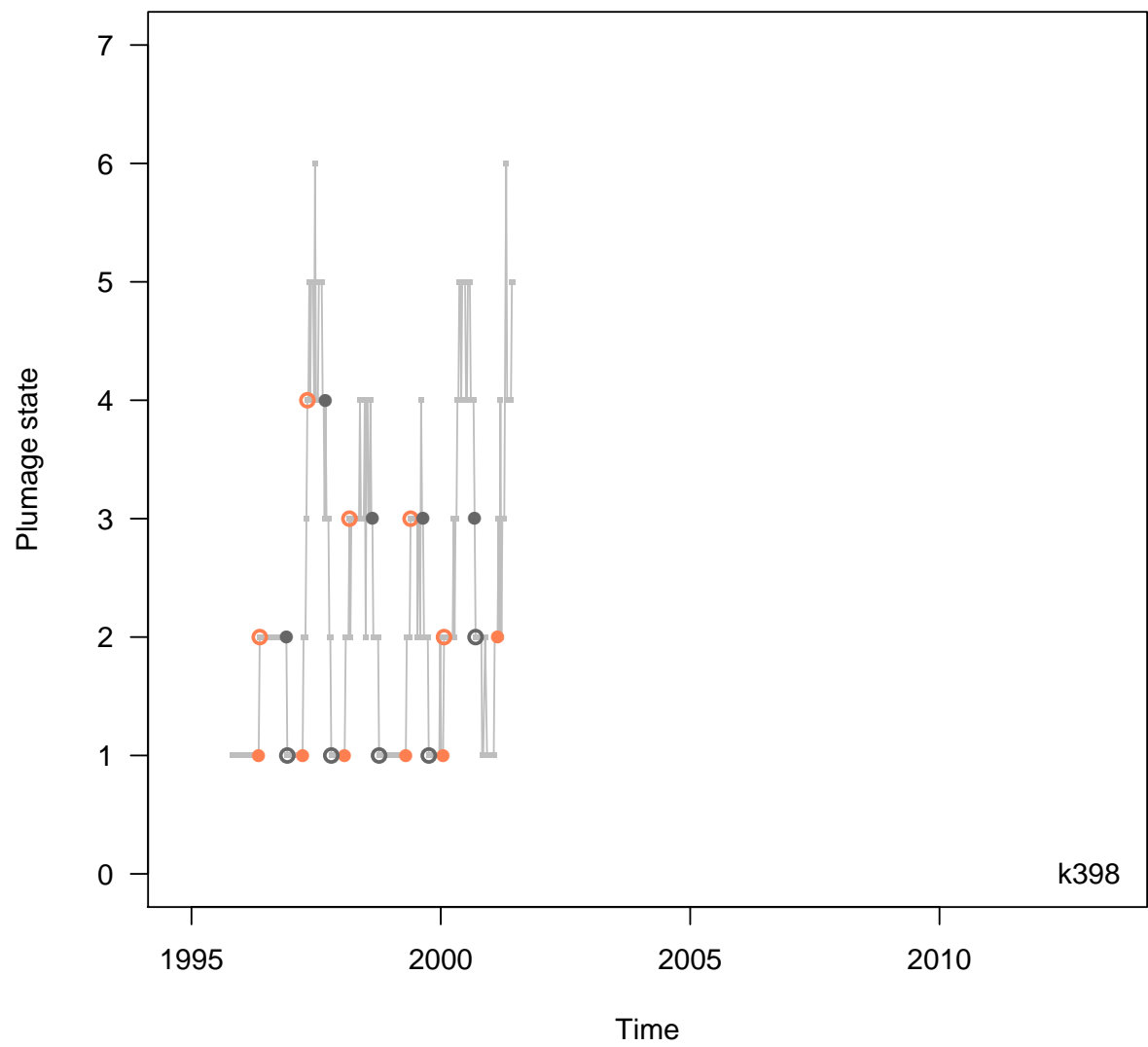












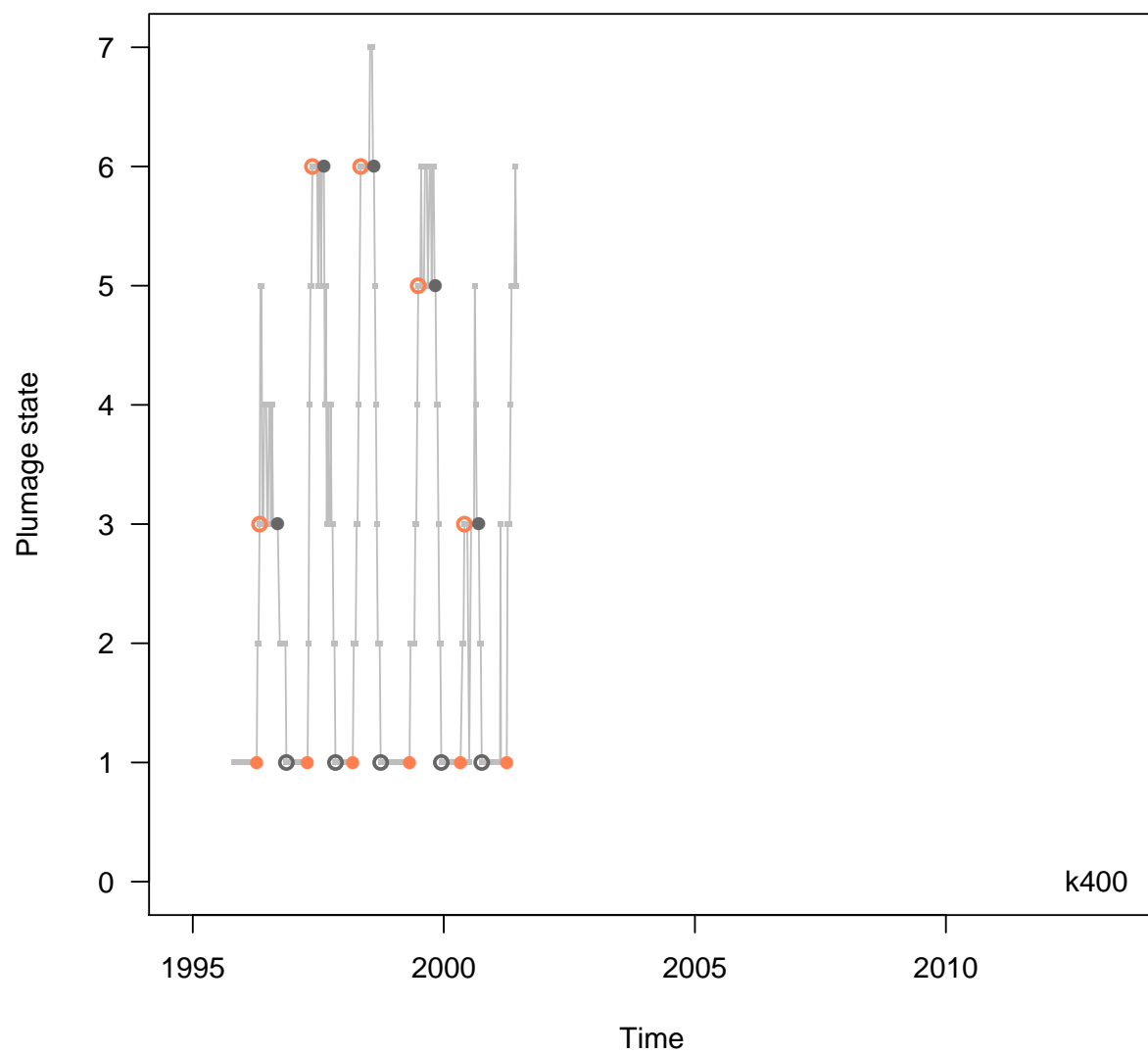
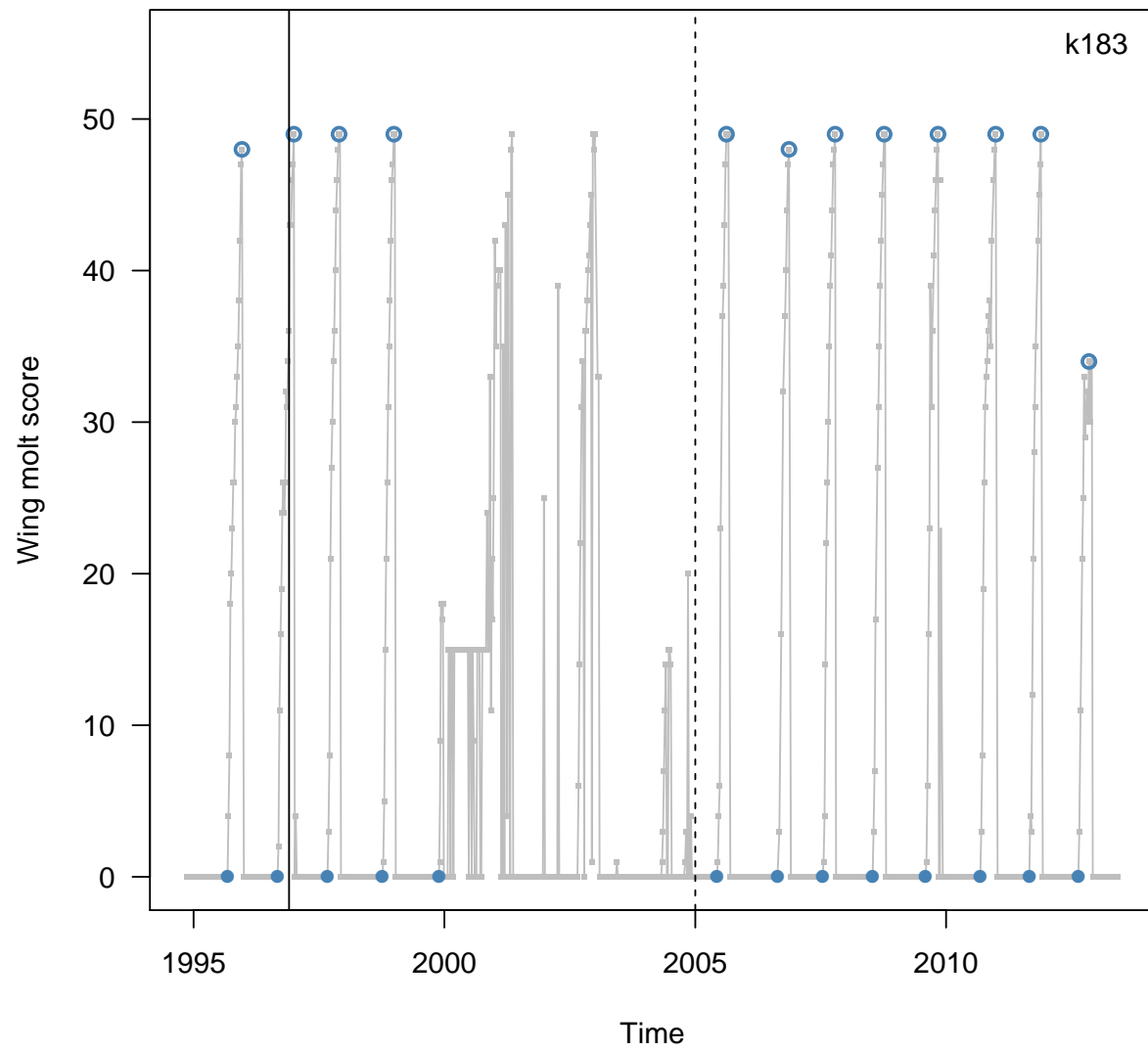
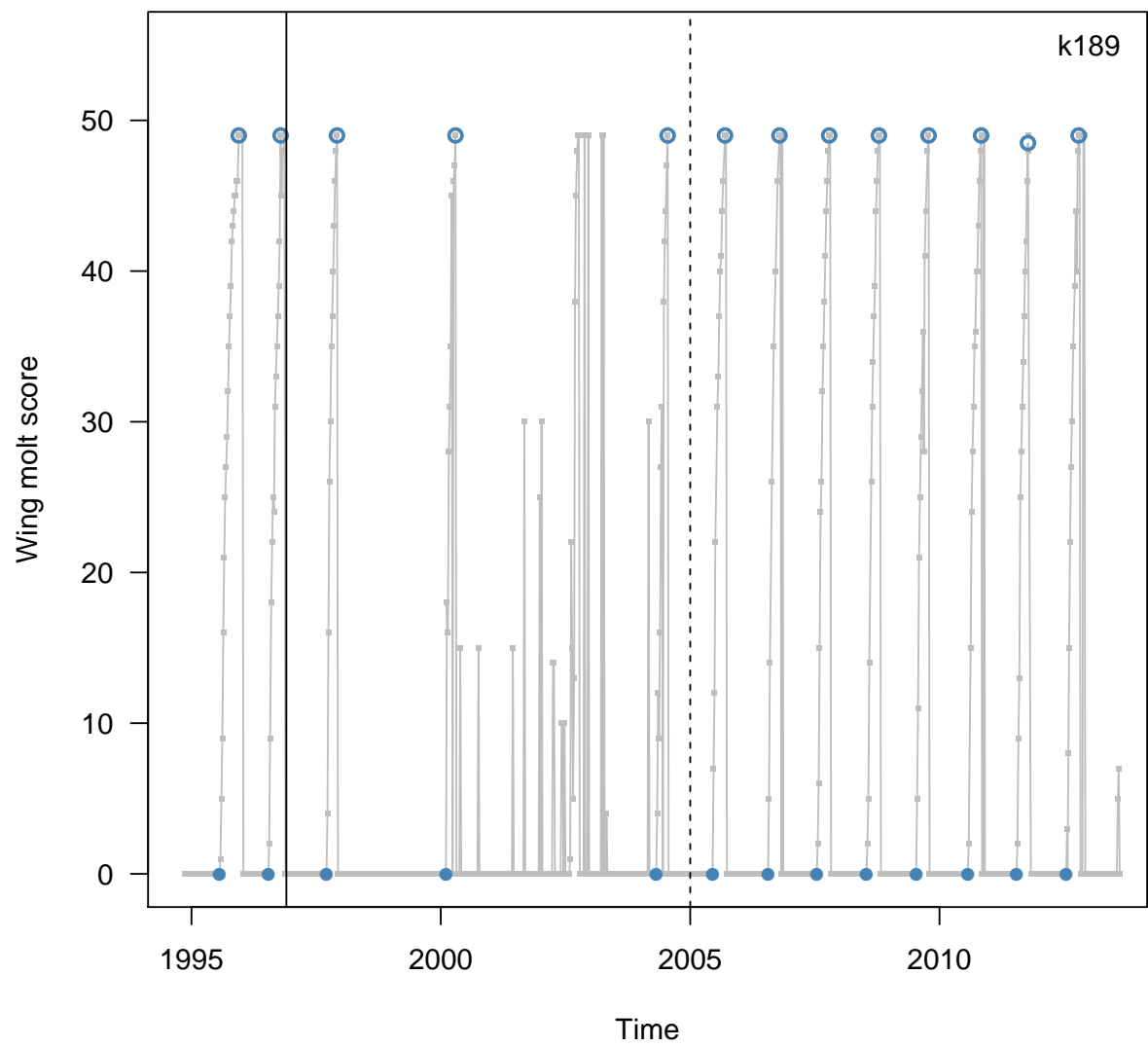
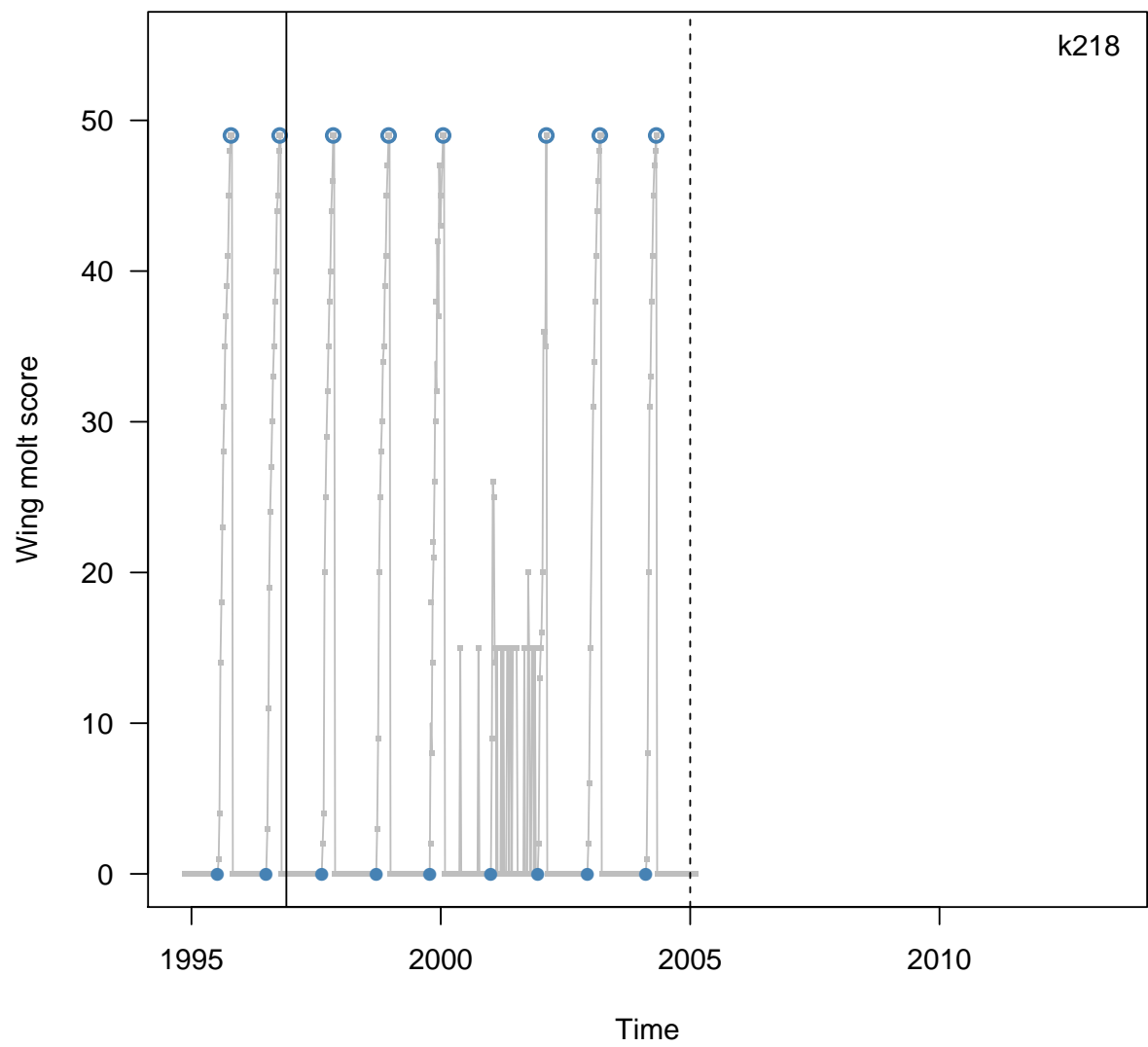


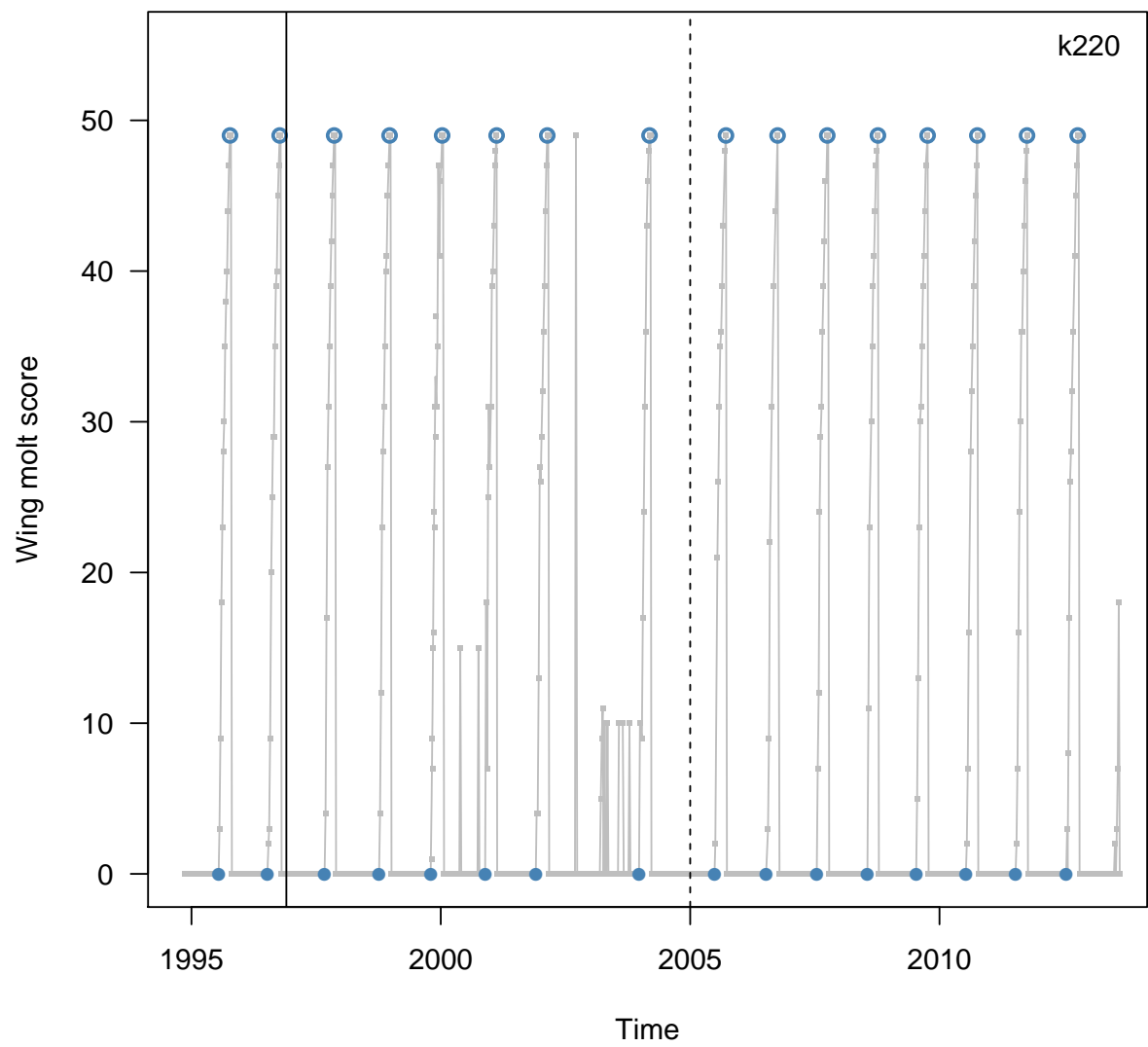
Figure S8. Plumage score change in red knots from Group 4 that stayed in captivity from October 1995 until 3 July 2001. Onsets (closed circles) and offsets open circles) of pre-alternate and pre-basic molt are shown in orange and grey, correspondingly.

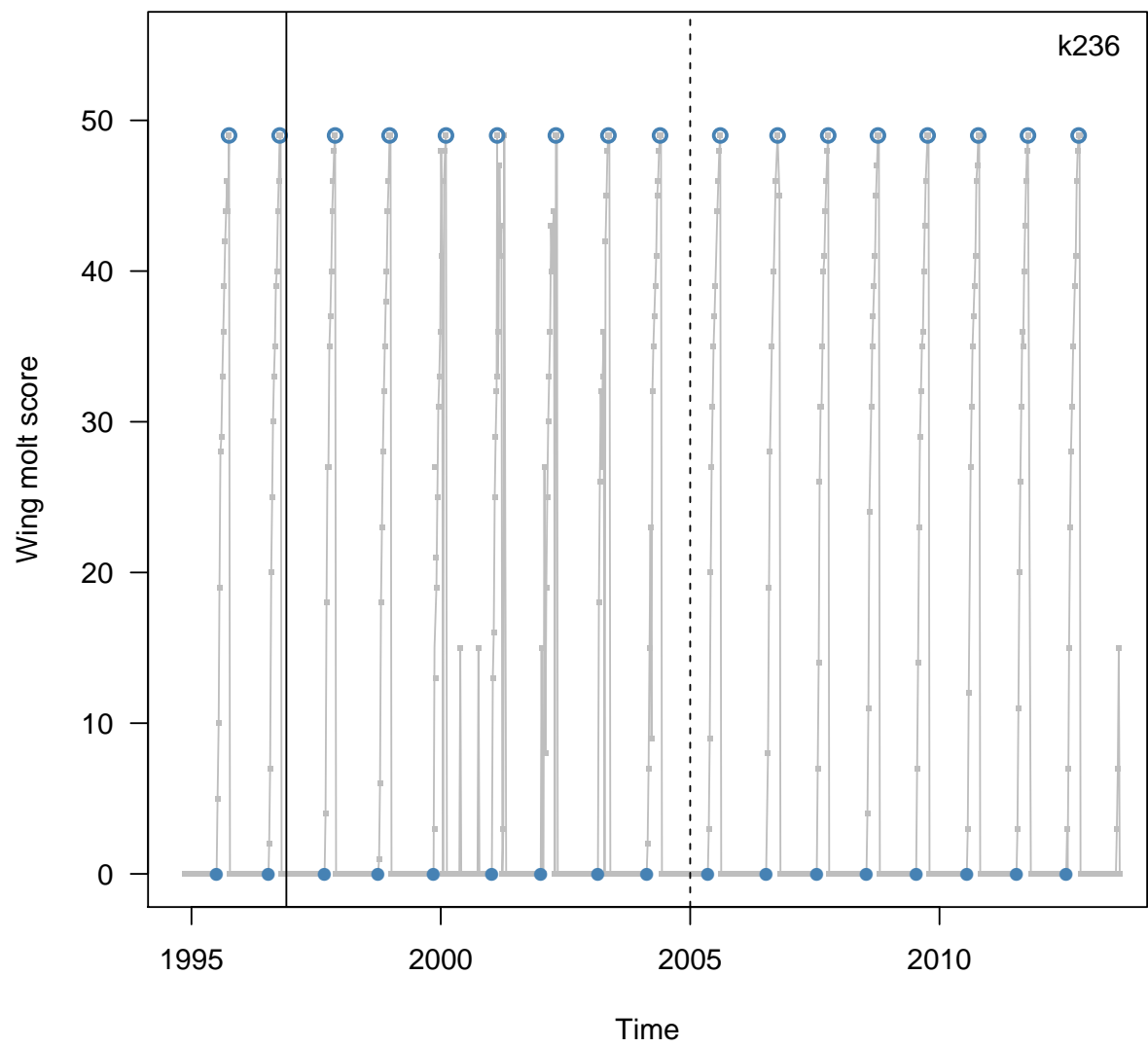
Wing molt

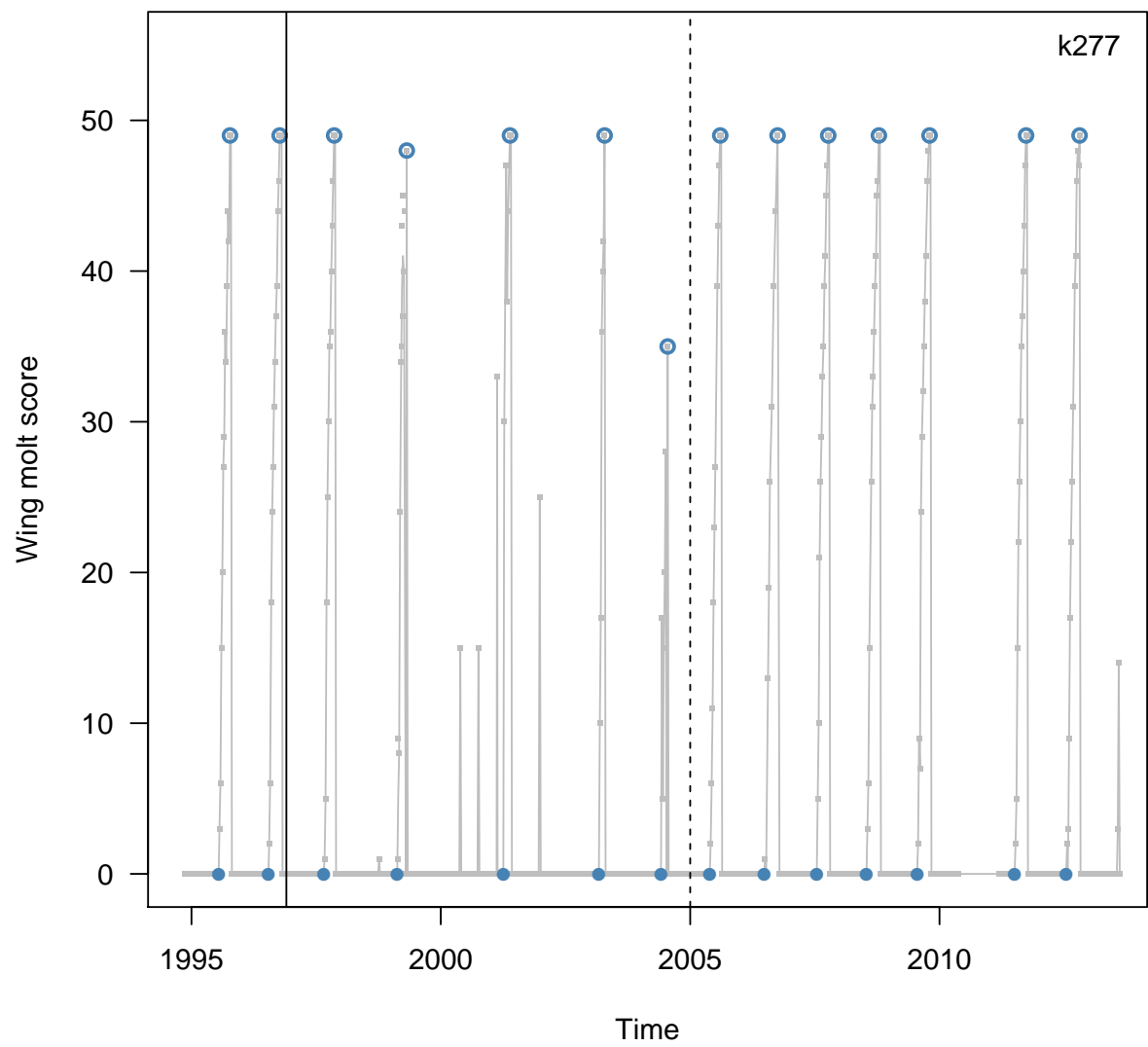












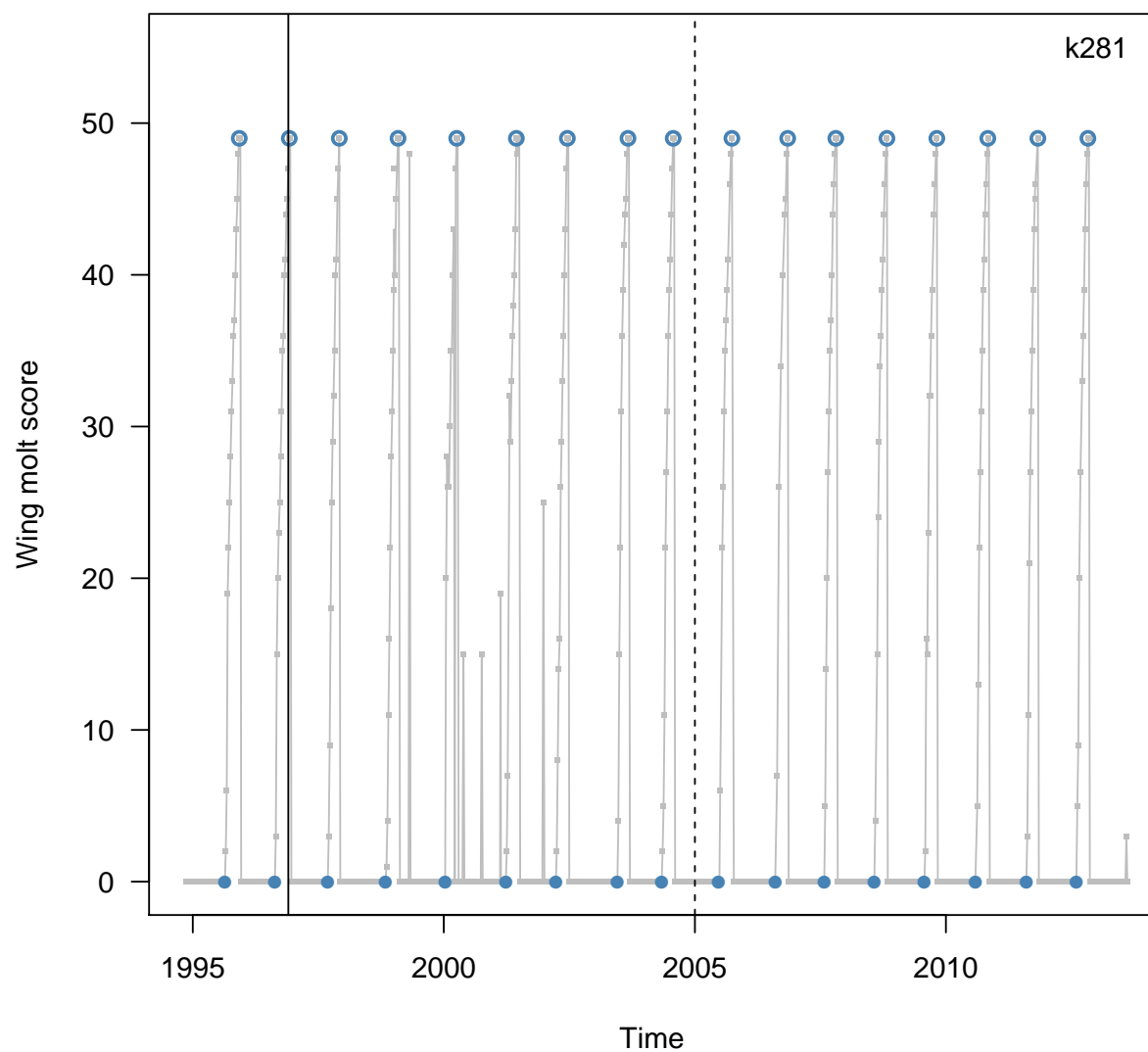
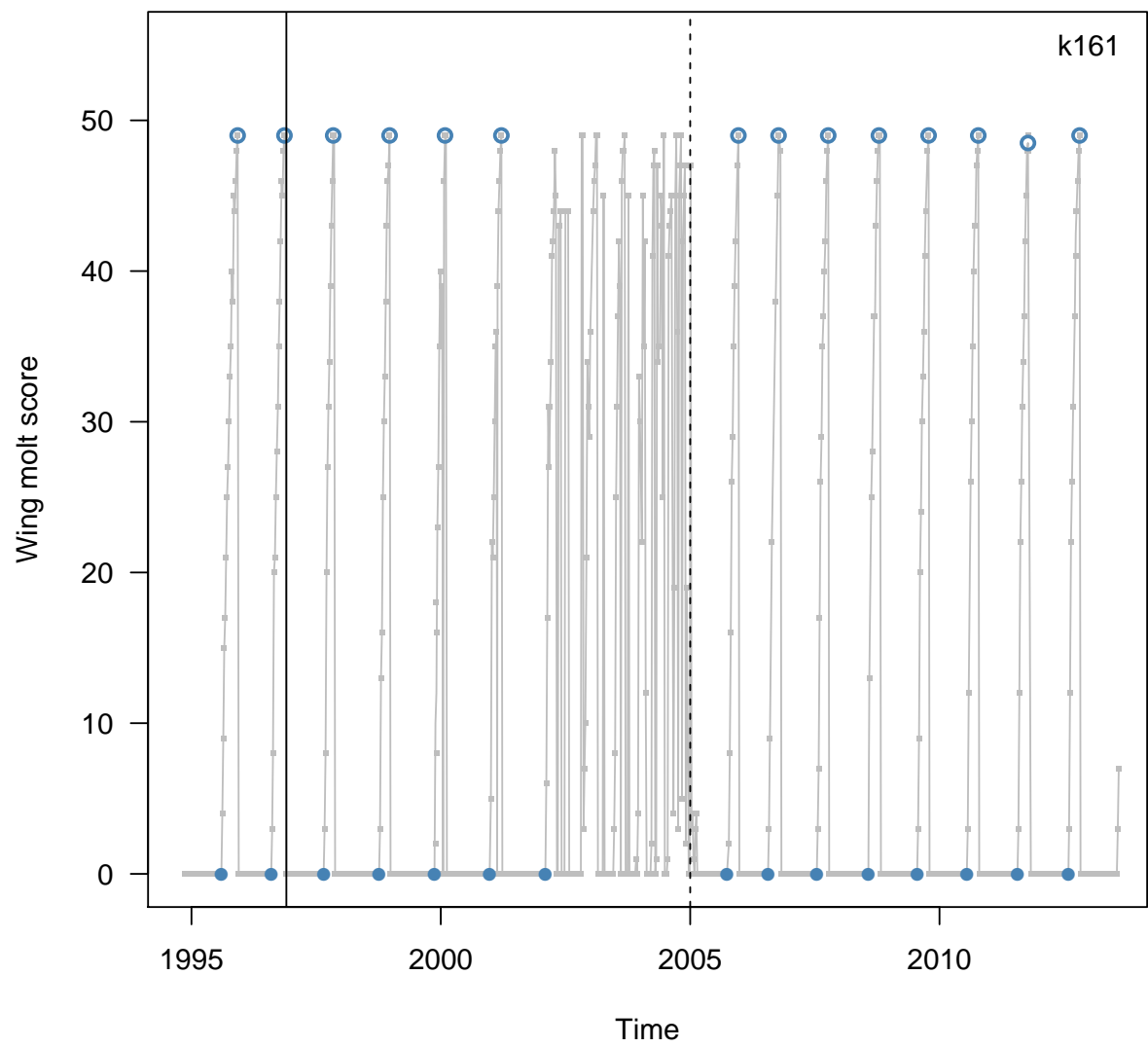
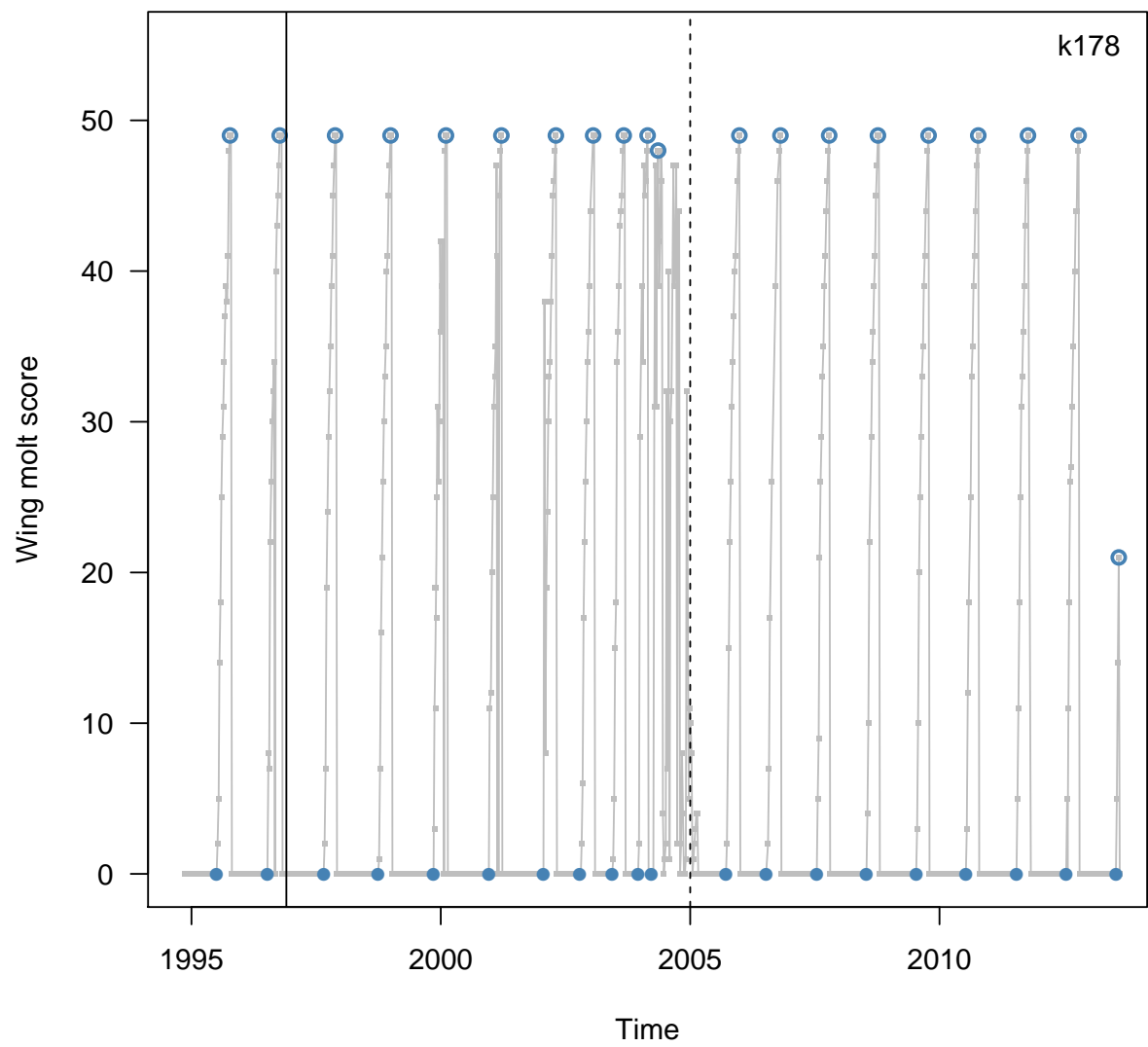
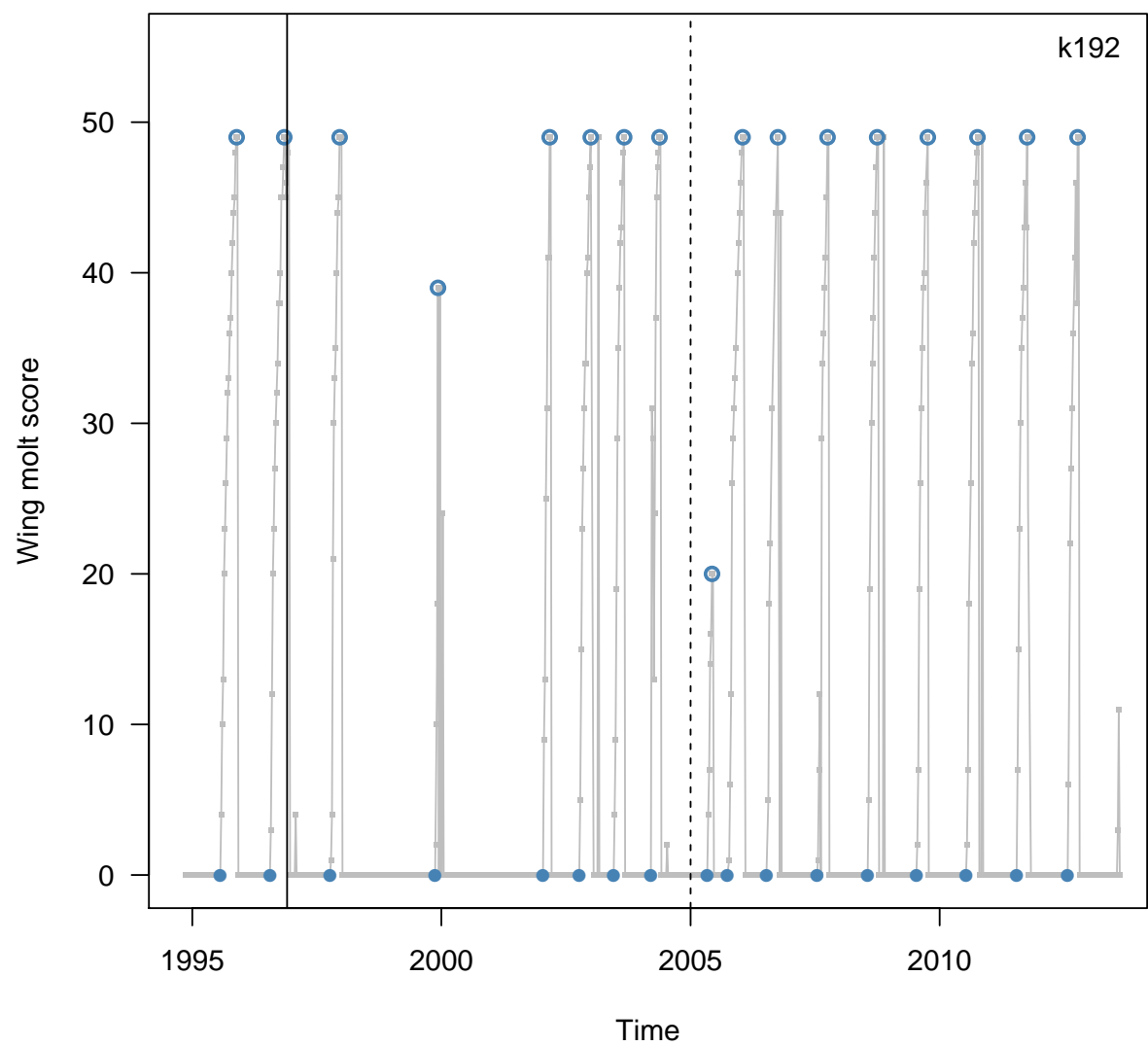
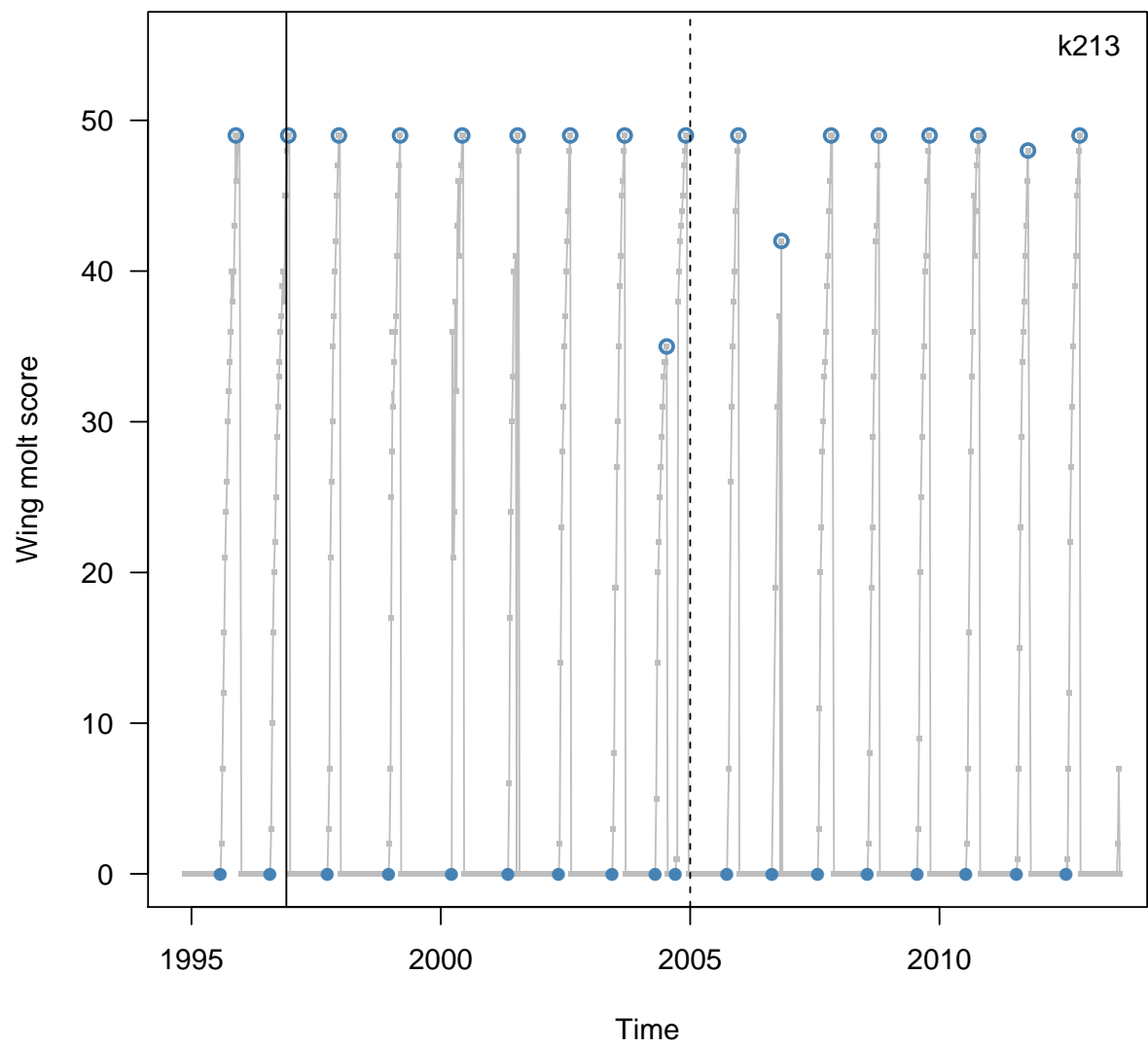


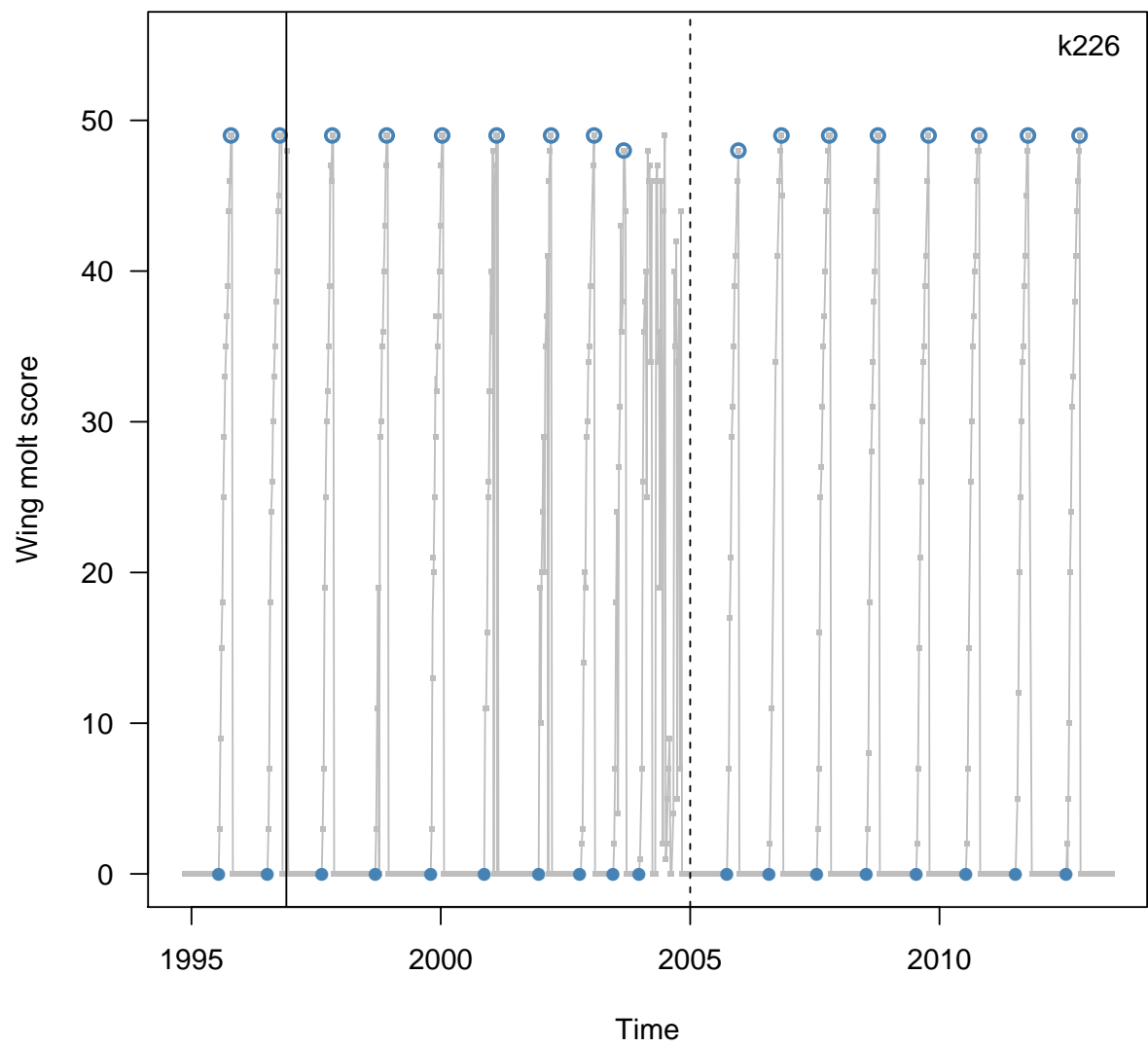
Figure S9. State of wing molt in red knots from Group 1 that stayed in captivity from November 1994 until June 2015 and experienced constant (12:12 LD) photoperiod from the 26 November 1996 until 28 December 2004. Onsets (closed circles) and offsets open circles) of wing molt are shown in blue.

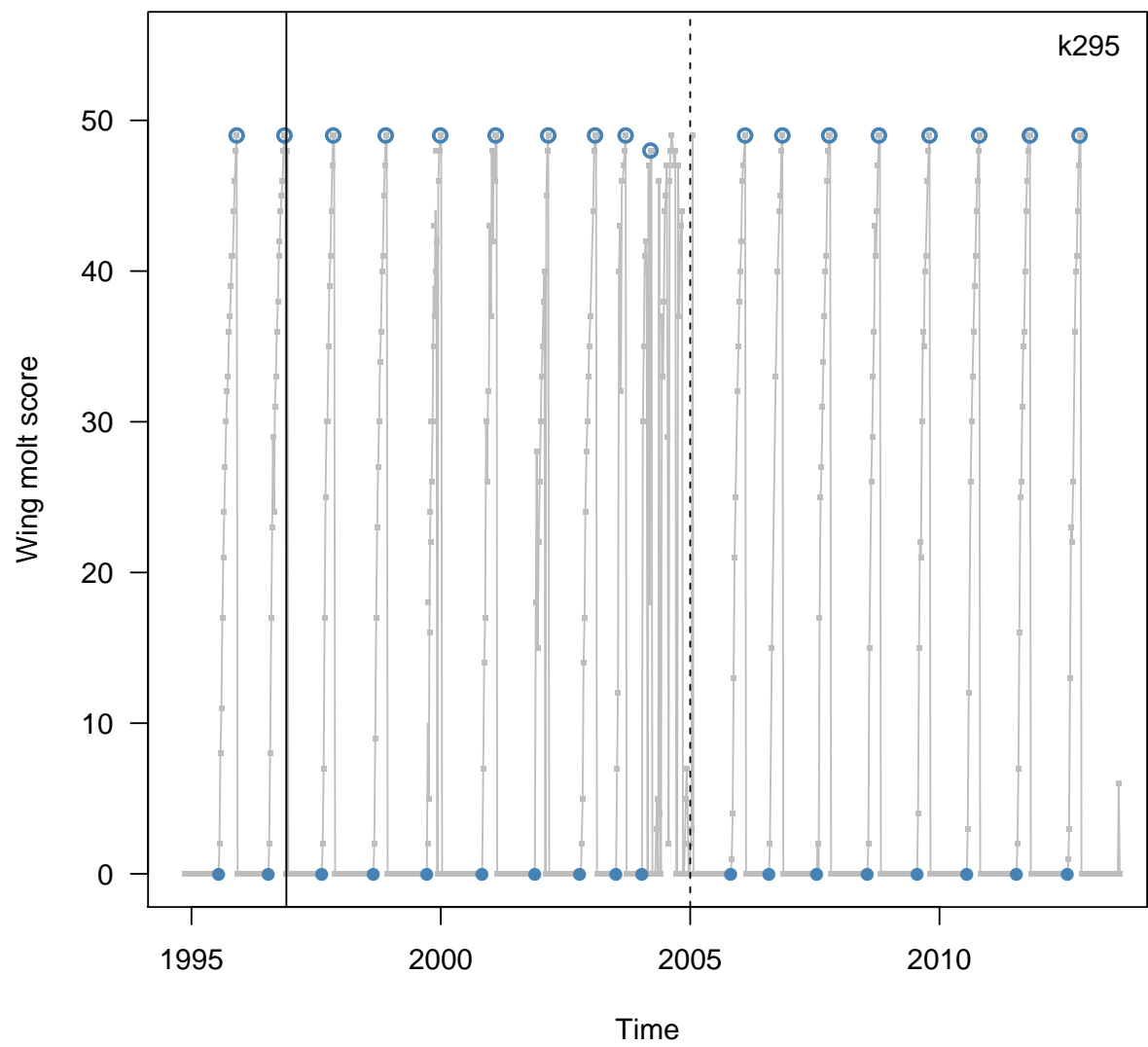












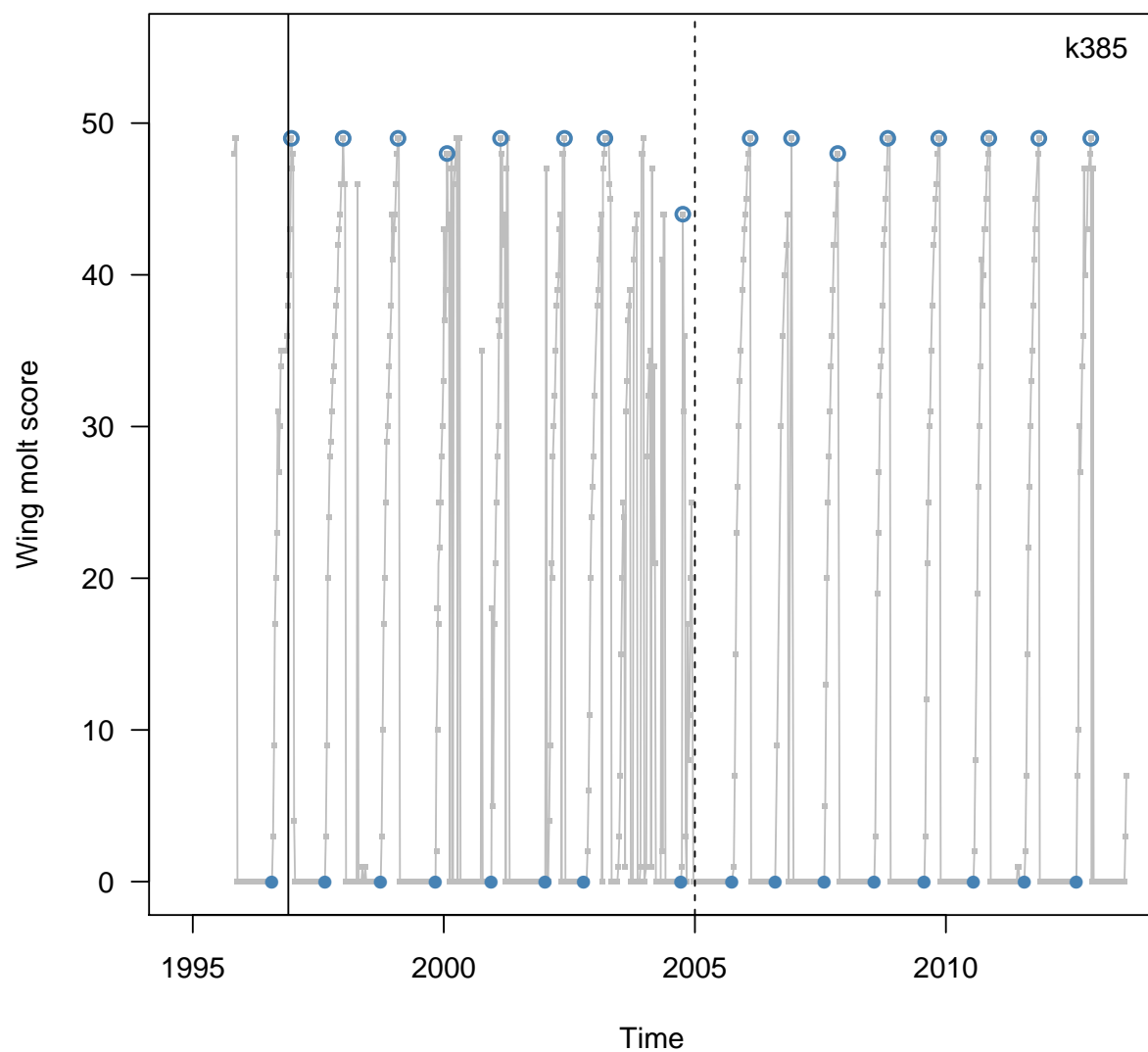
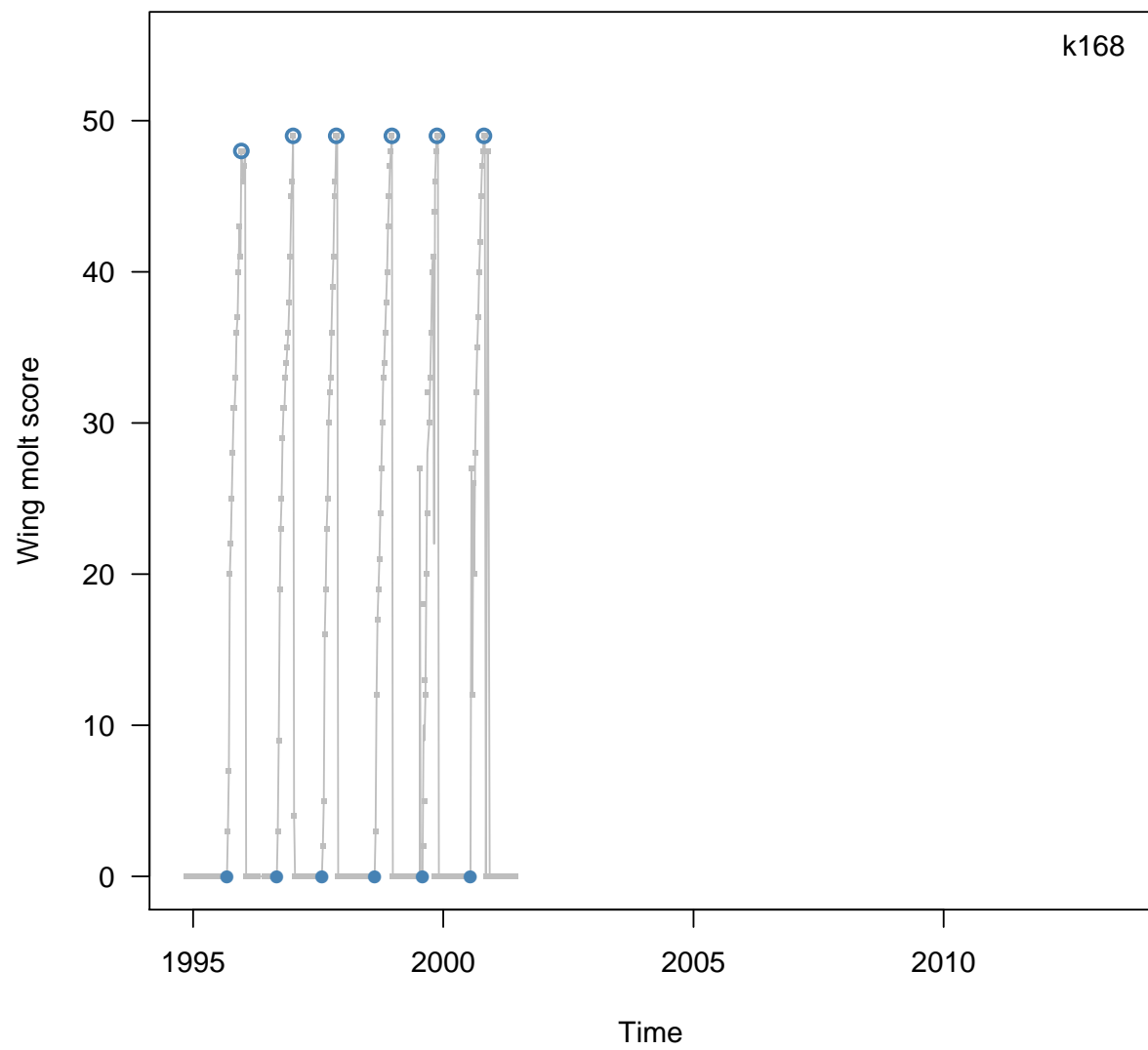
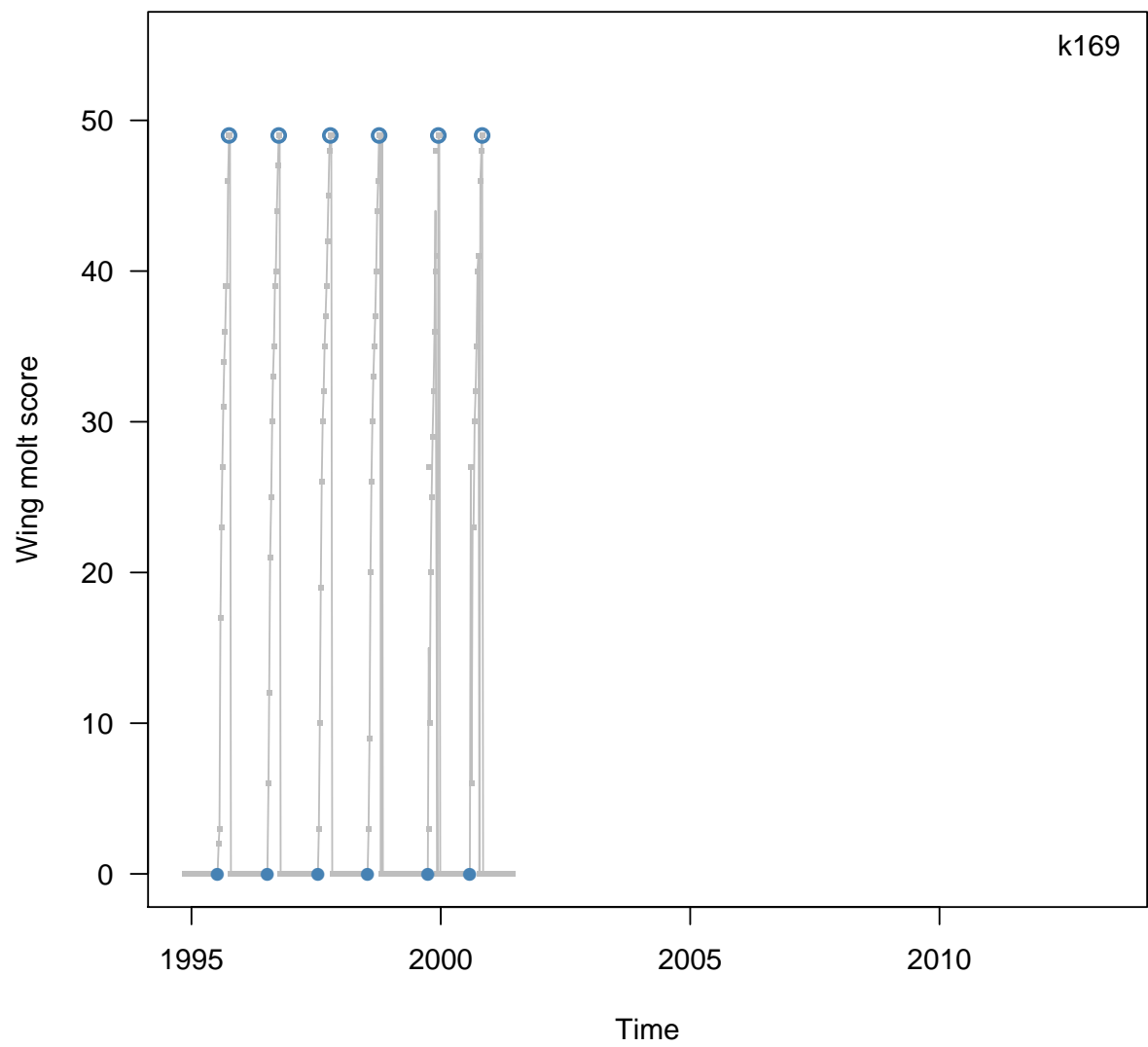
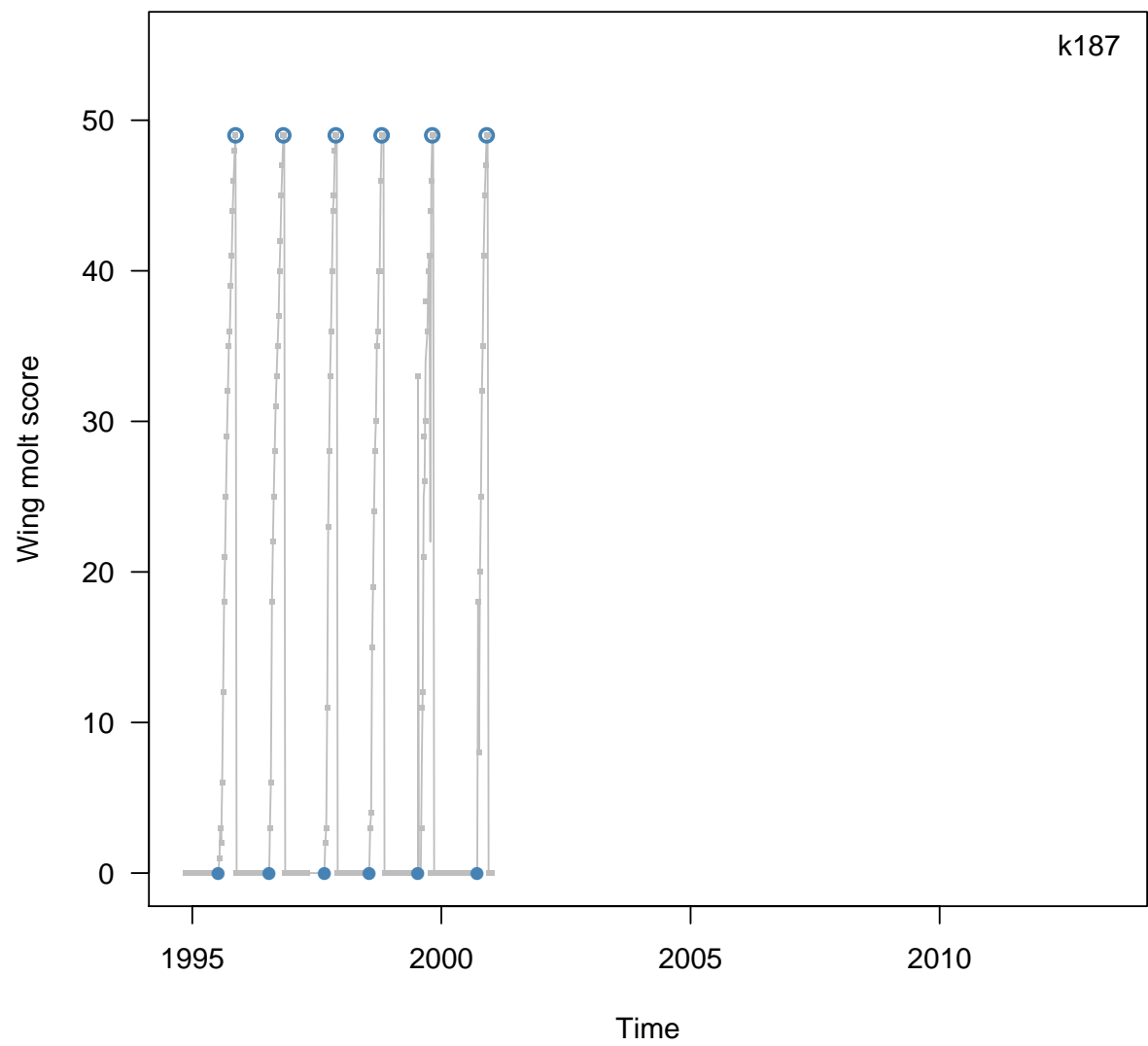
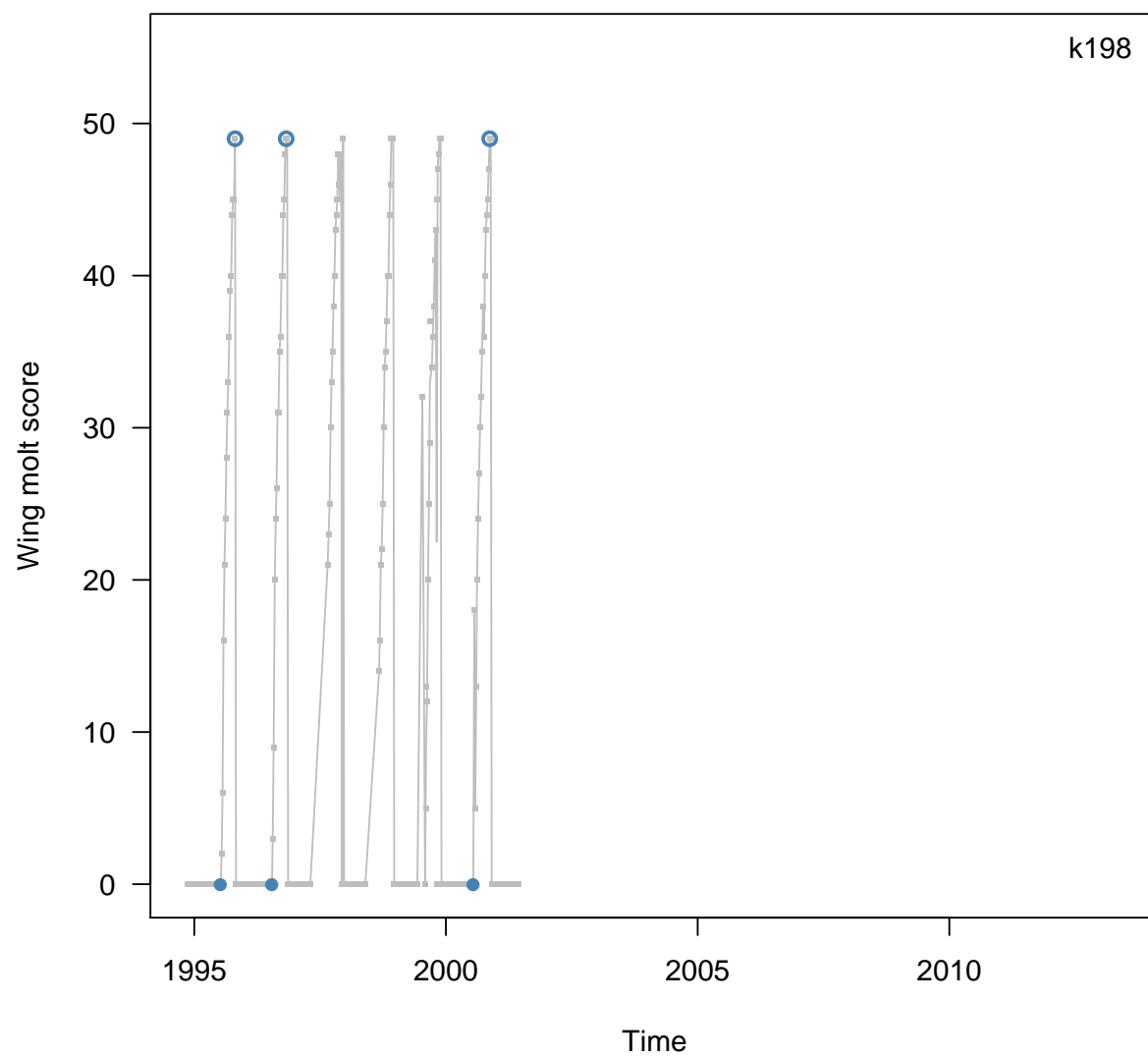


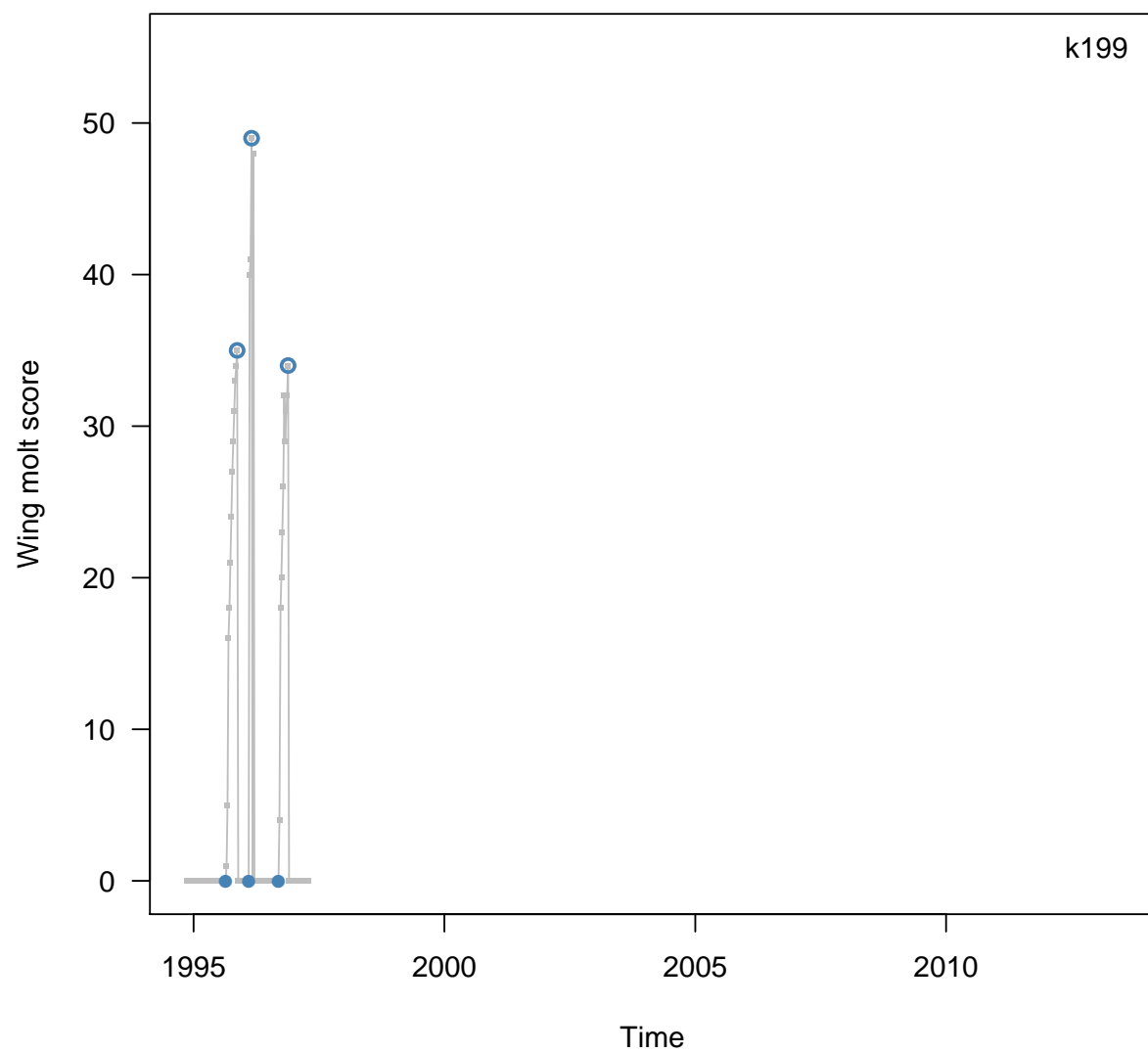
Figure S10. State of wing molt in red knots from Group 2 that stayed in captivity from November 1994 until June 2015 and experienced constant (12:12 LD) photoperiod from the 26 November 1996 until 25 November 2003 and constant light (24 LL) from 25 November 2003 until 28 December 2004. Onsets (closed circles) and offsets open circles) of wing molt are shown in blue.

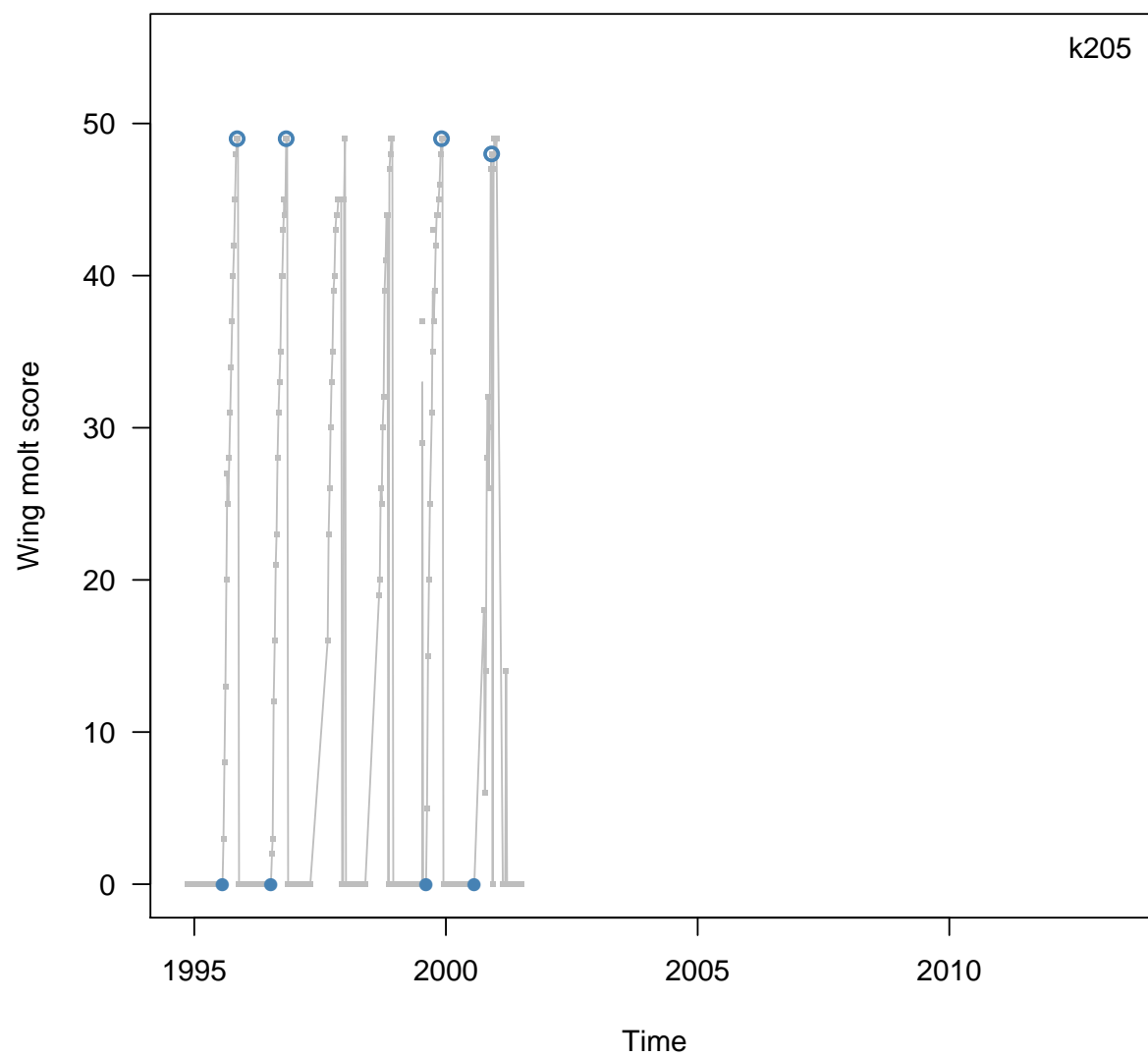


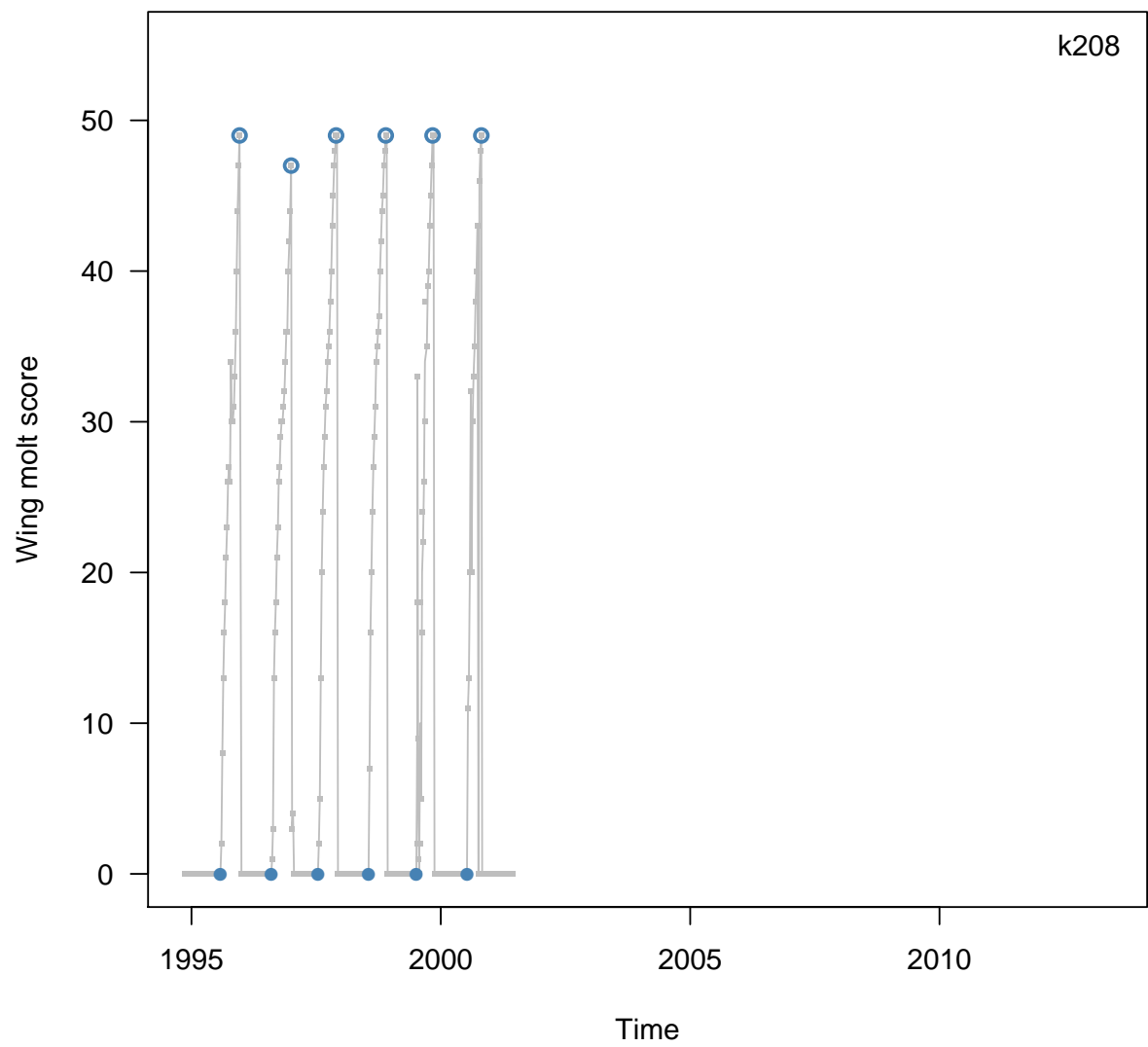


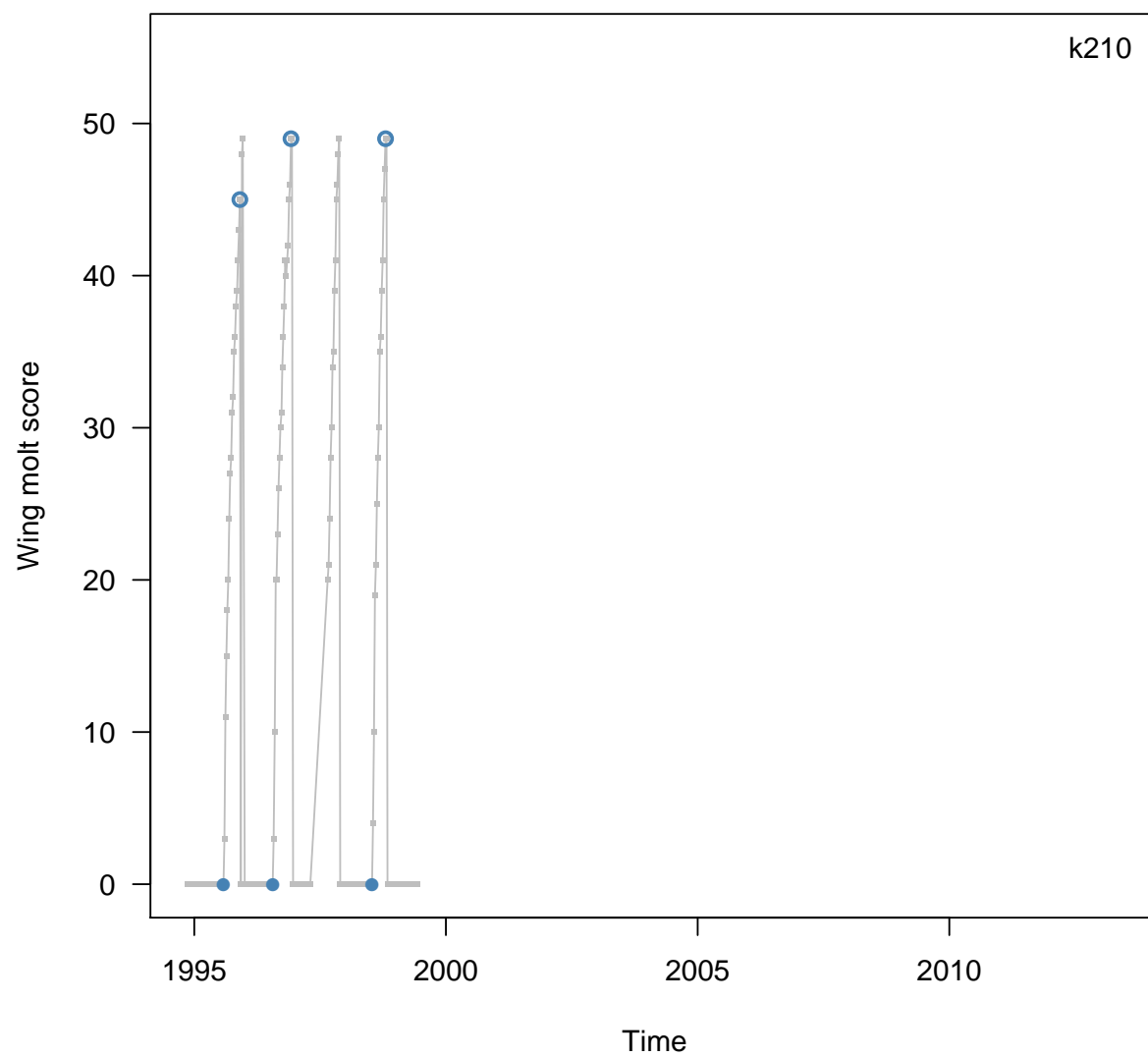


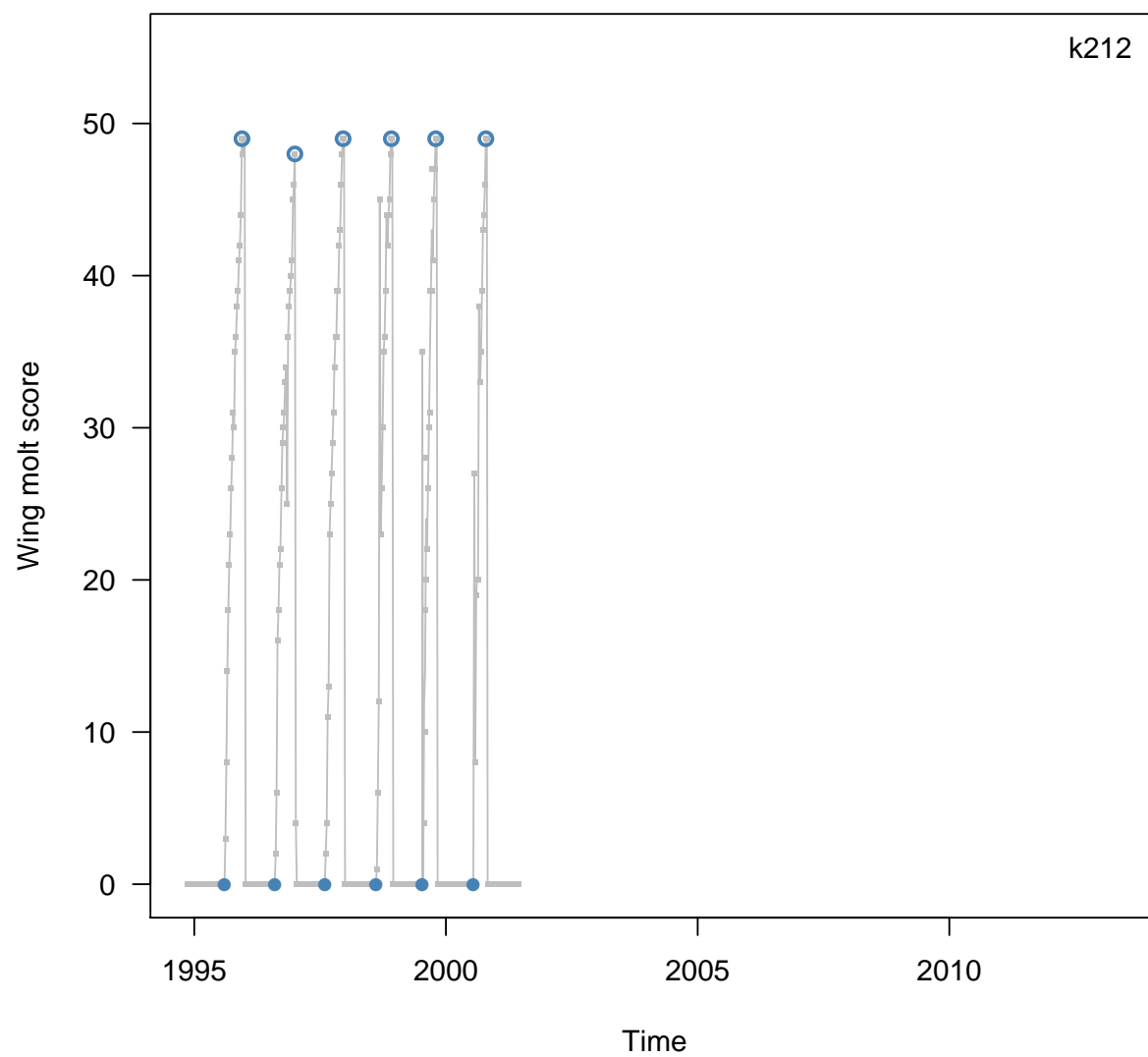


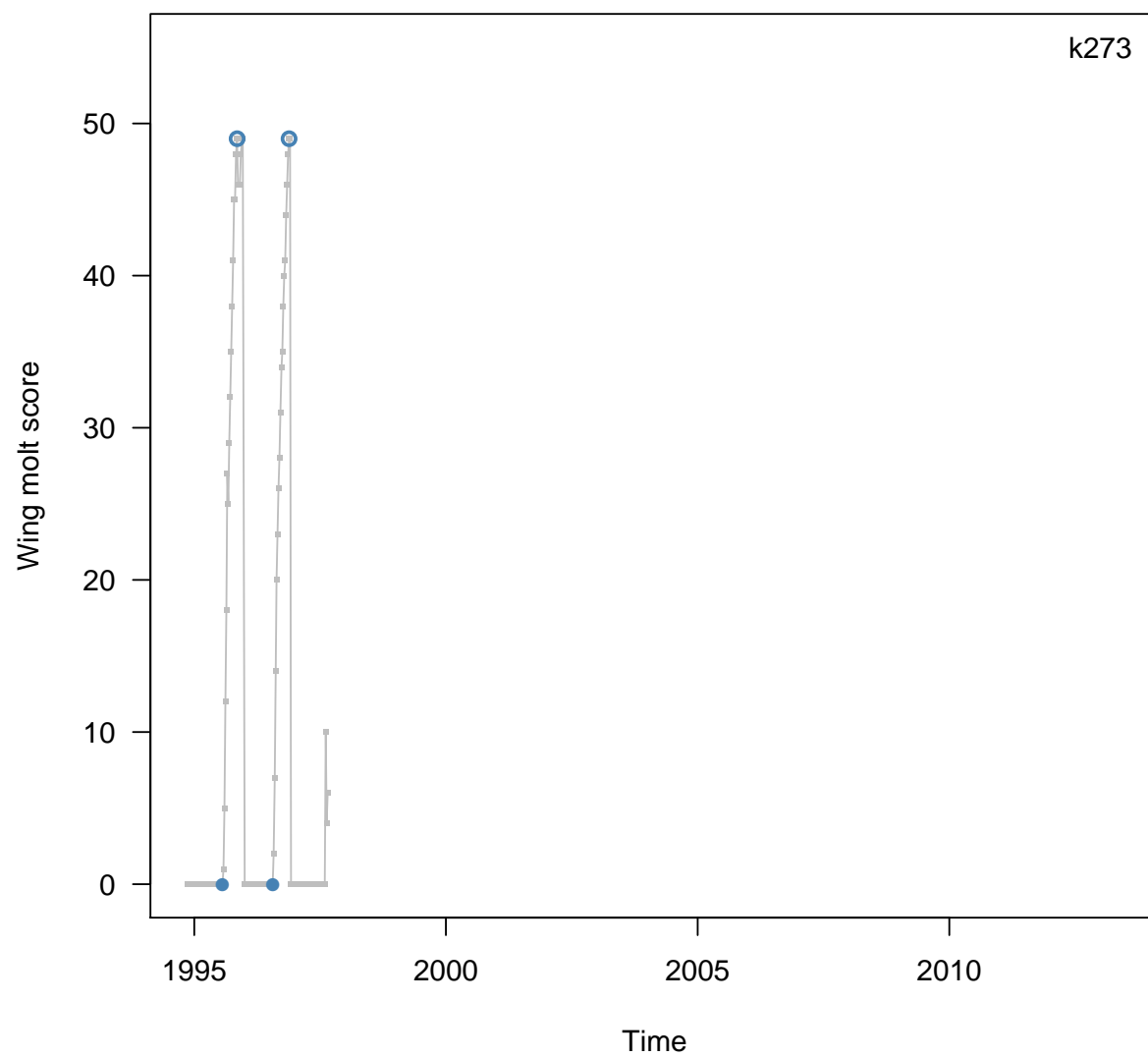


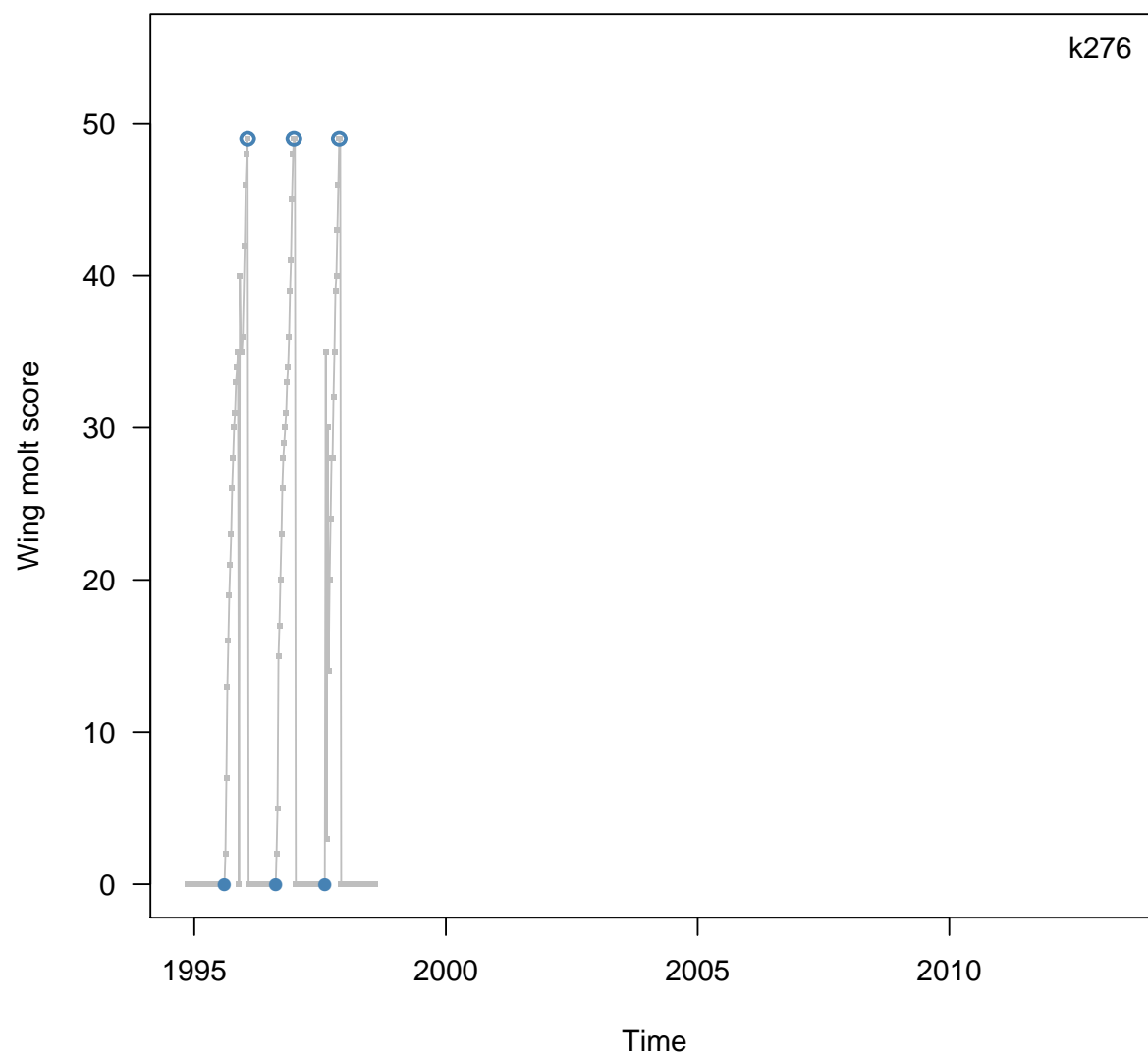


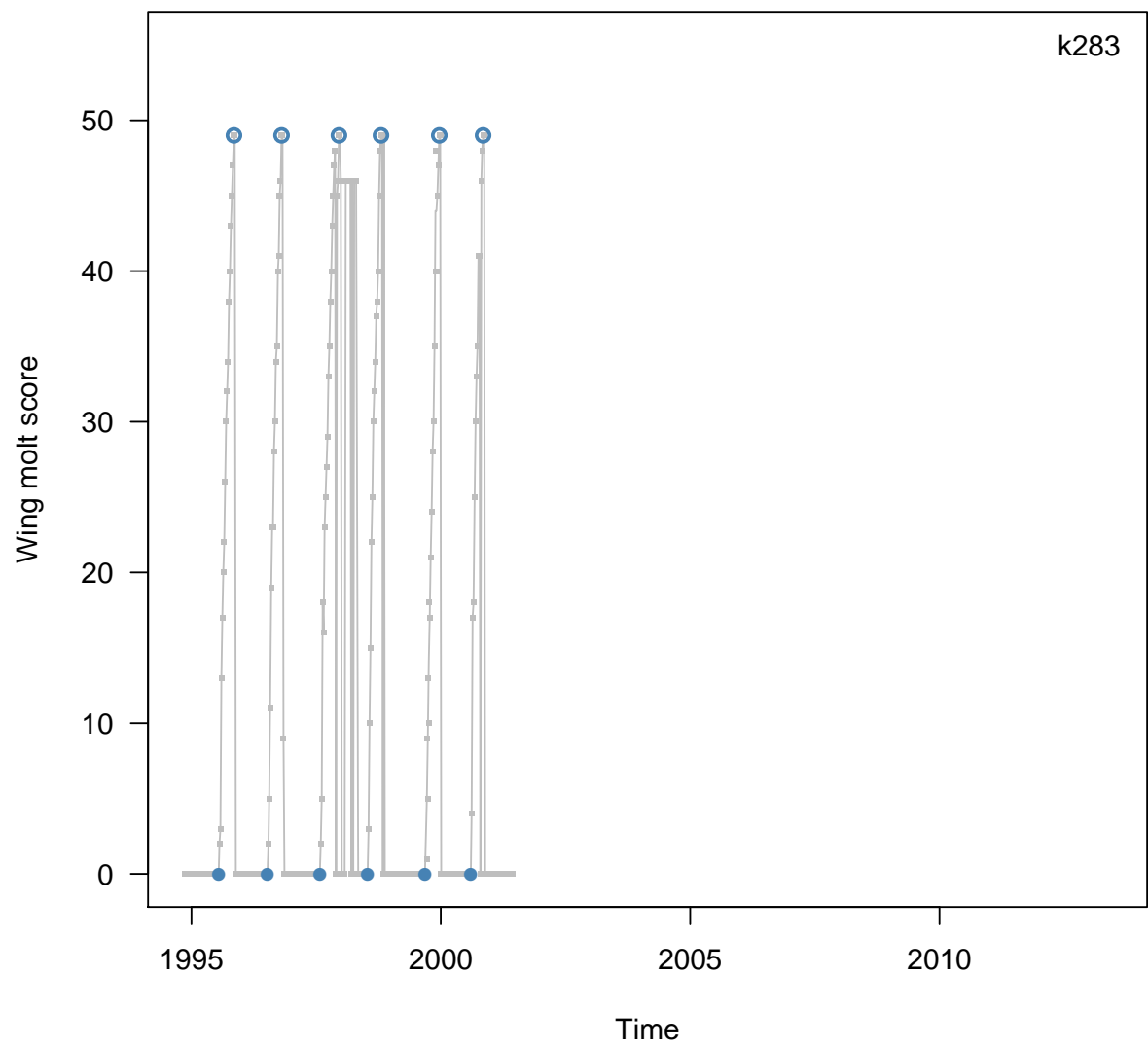


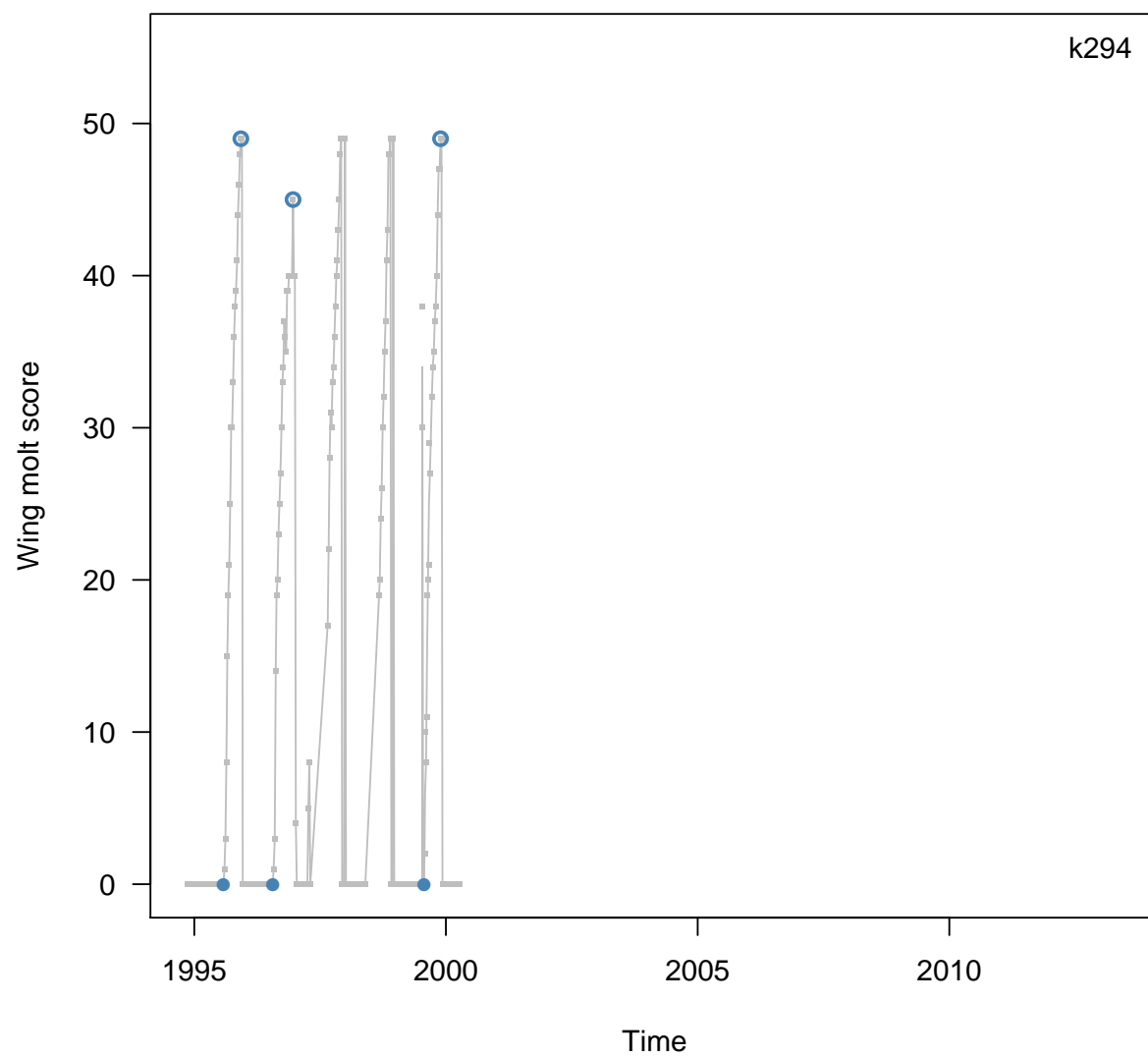


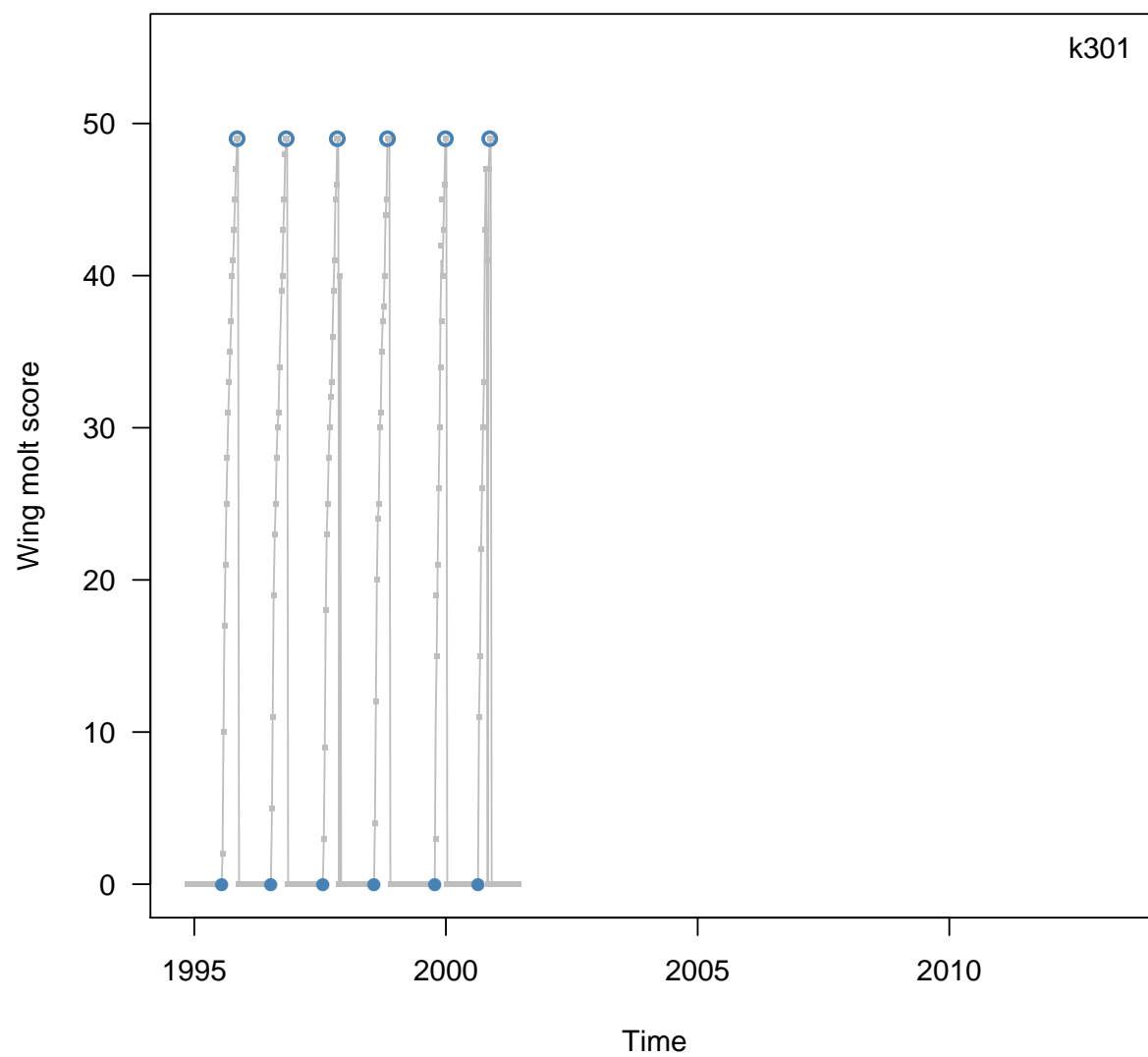


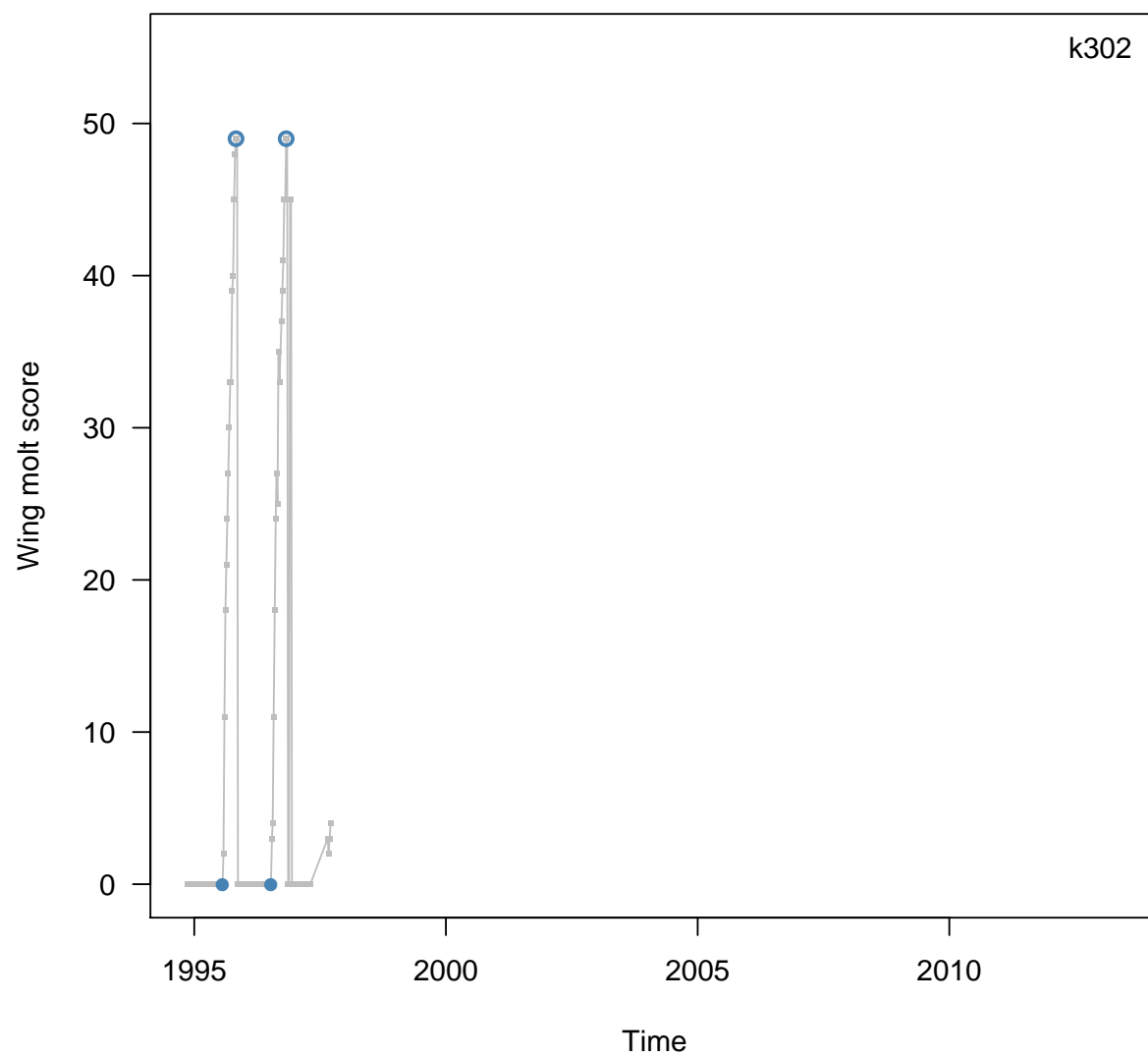


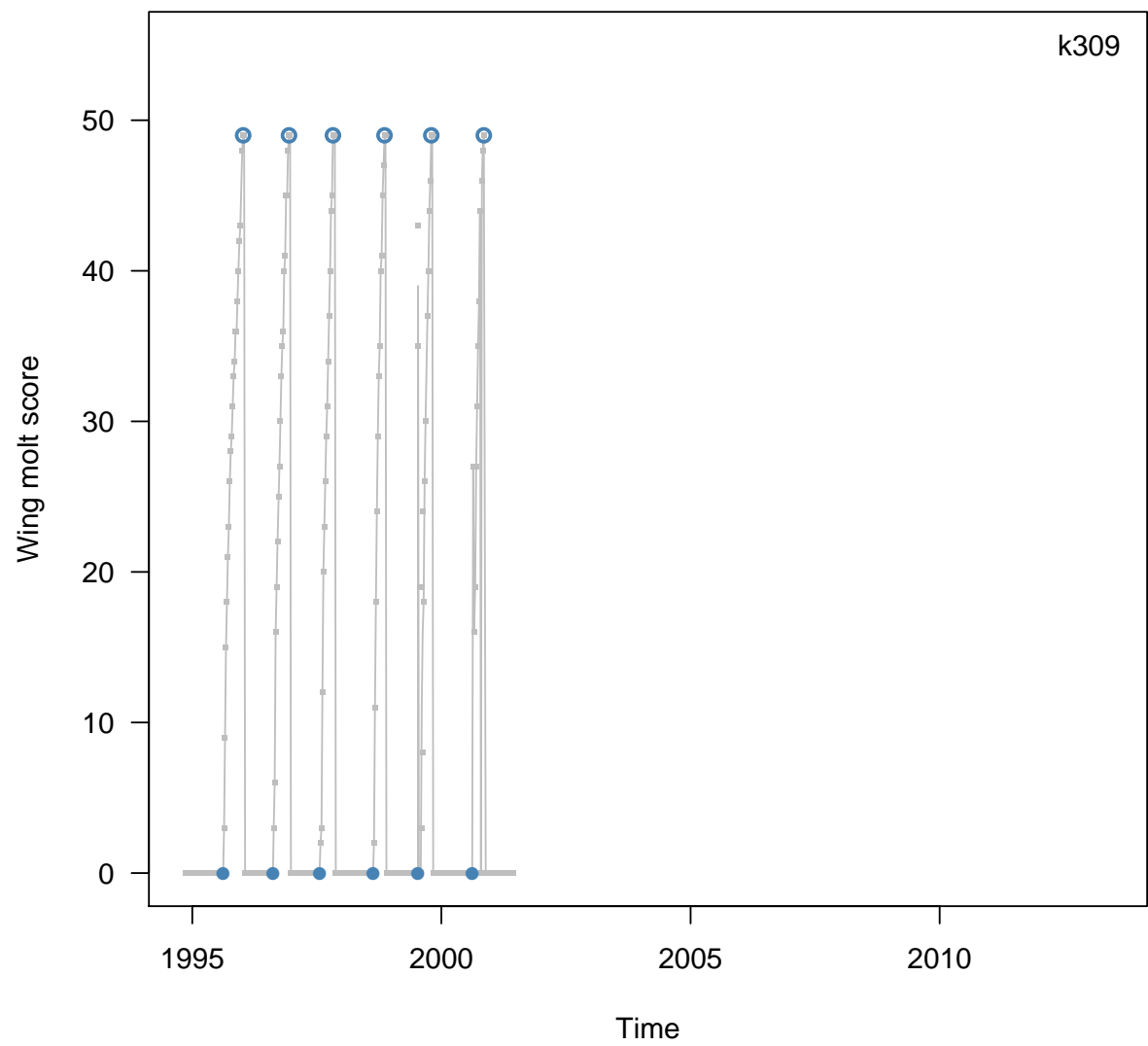












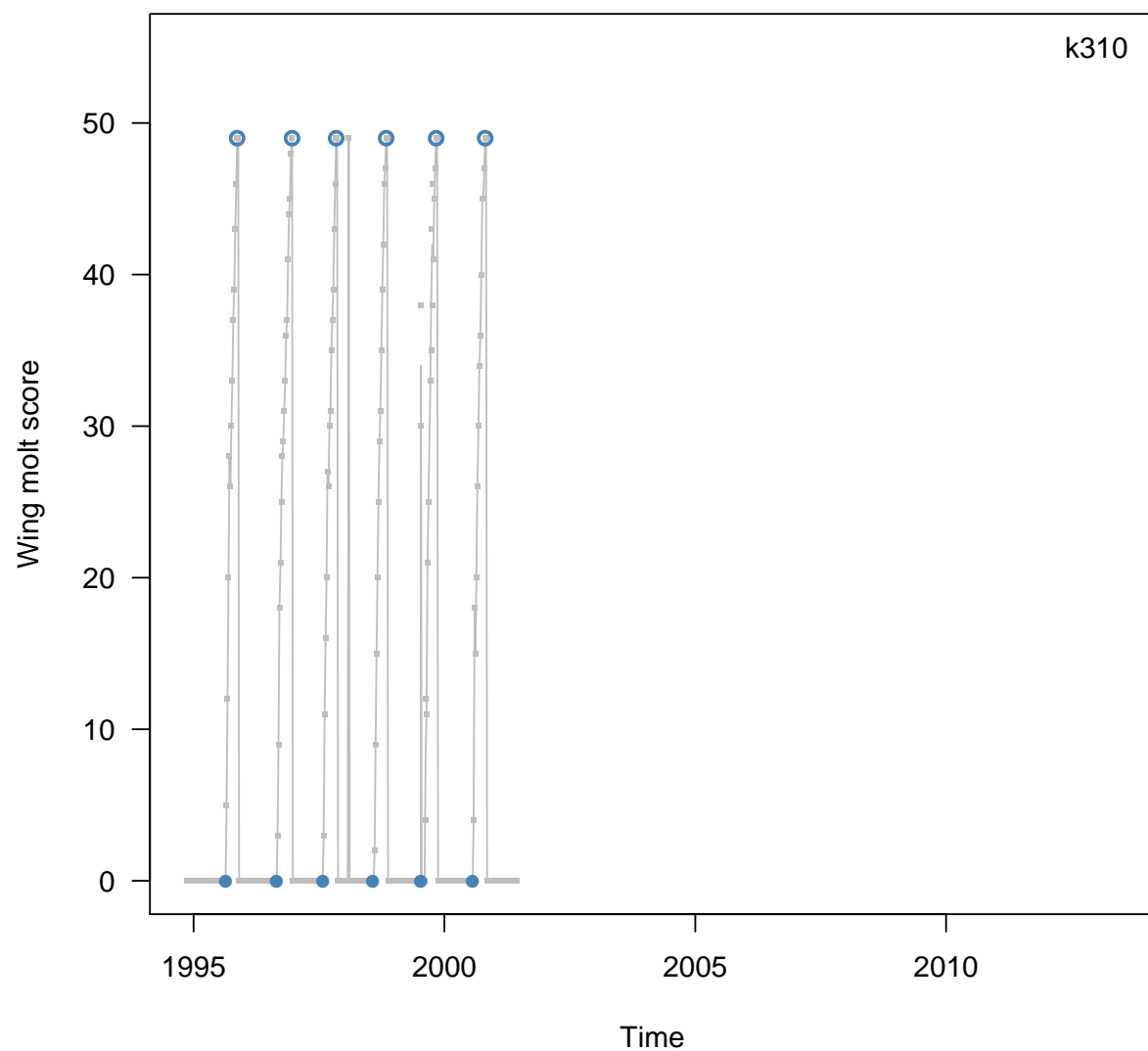
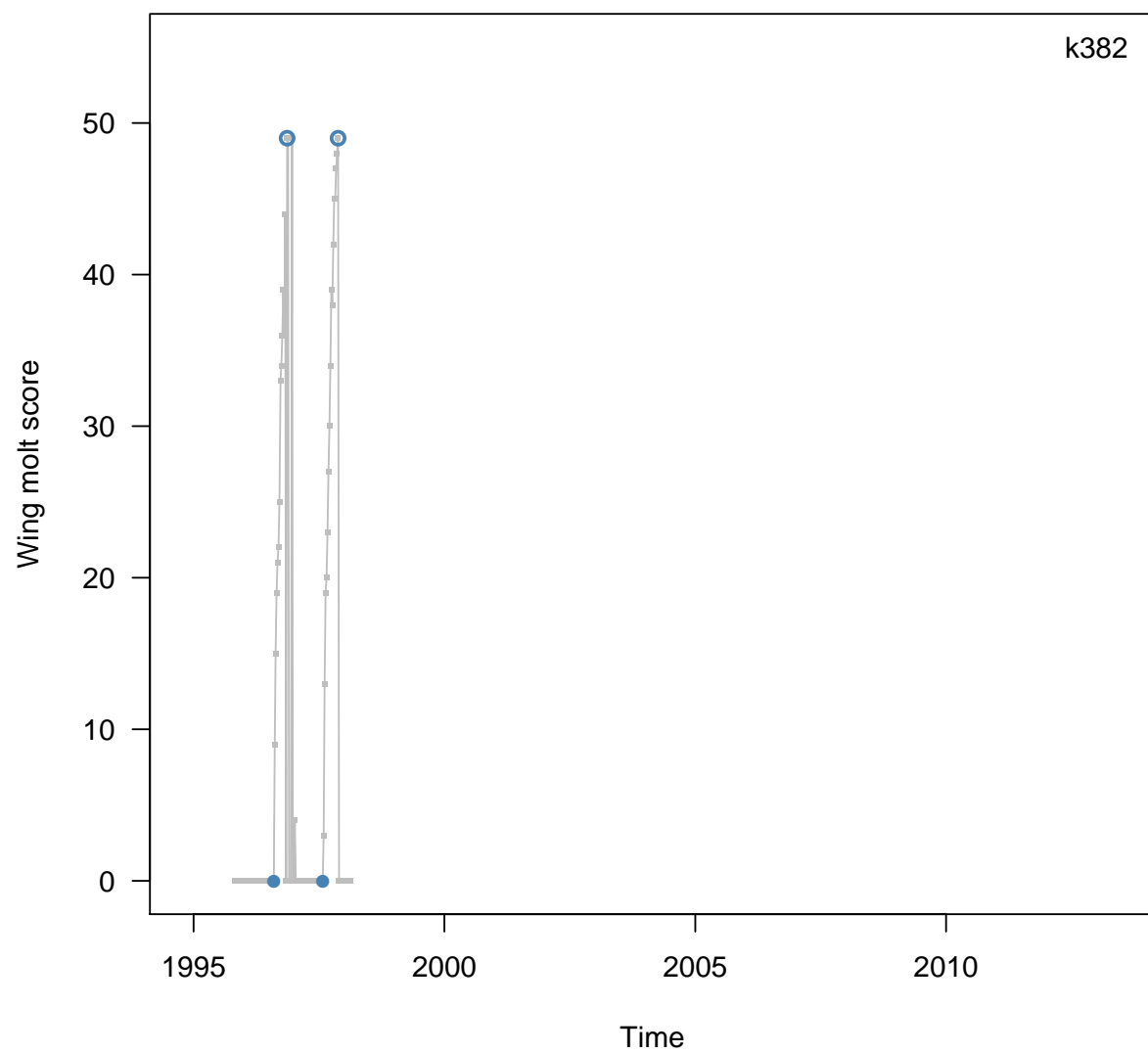
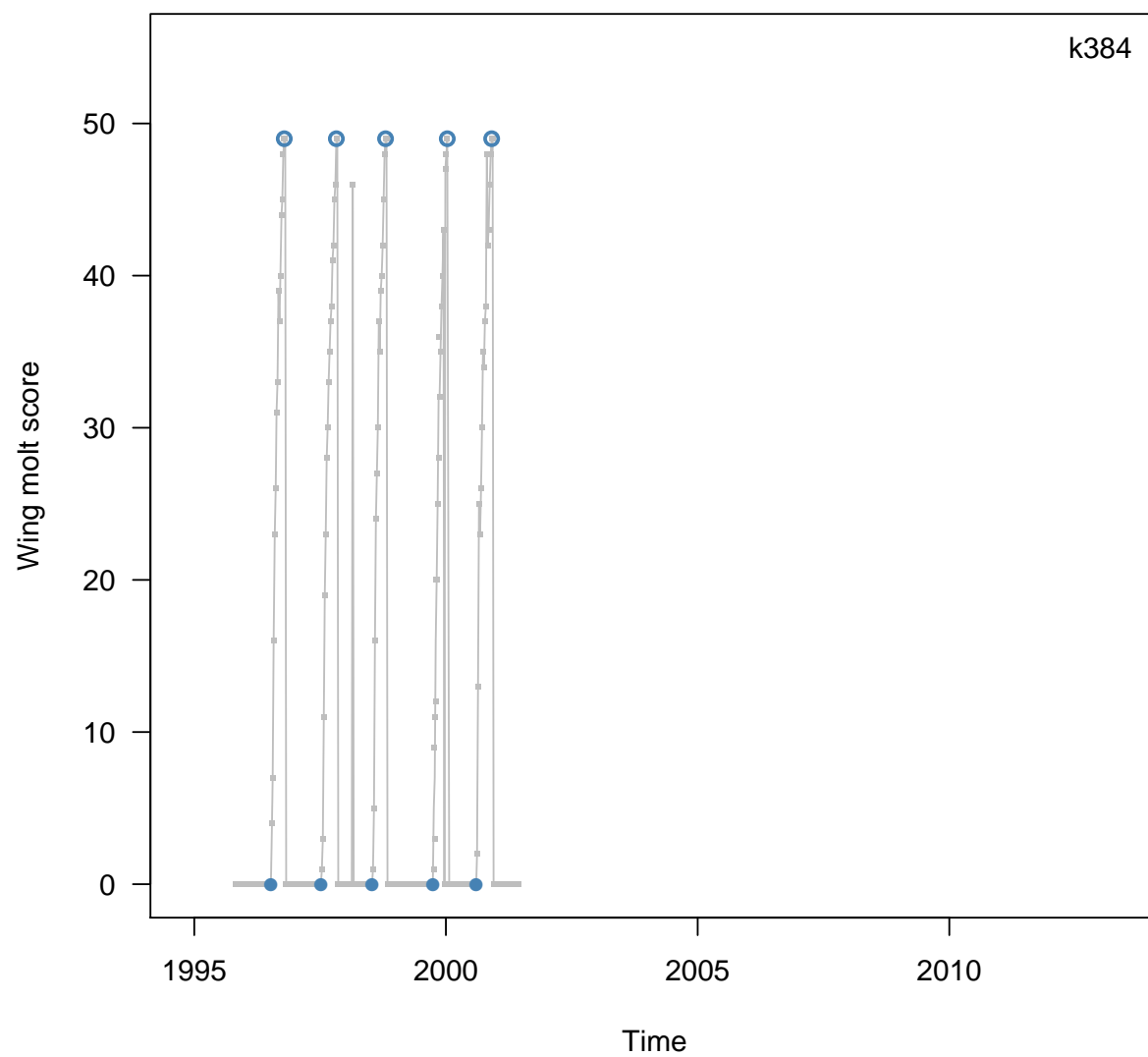
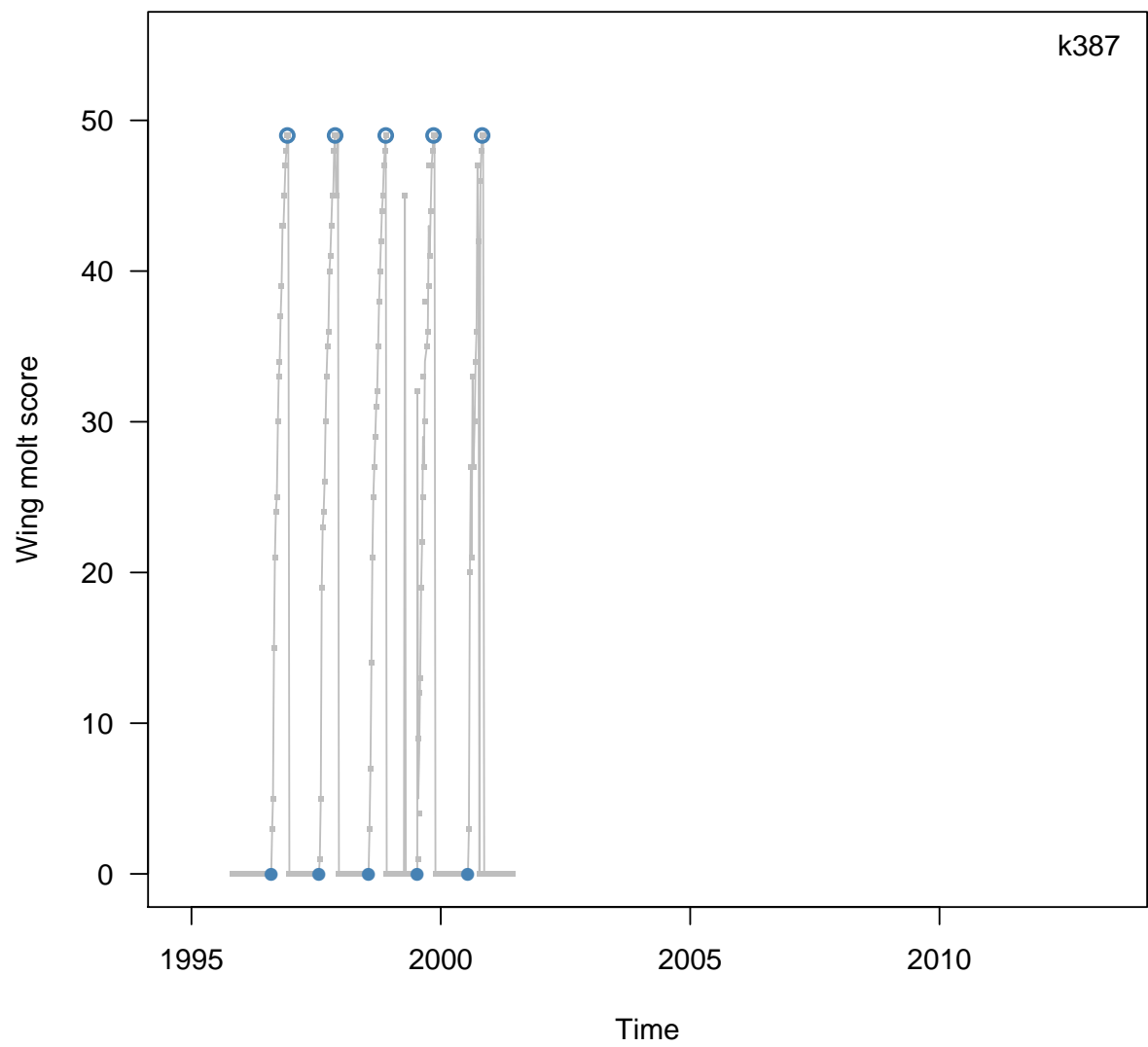
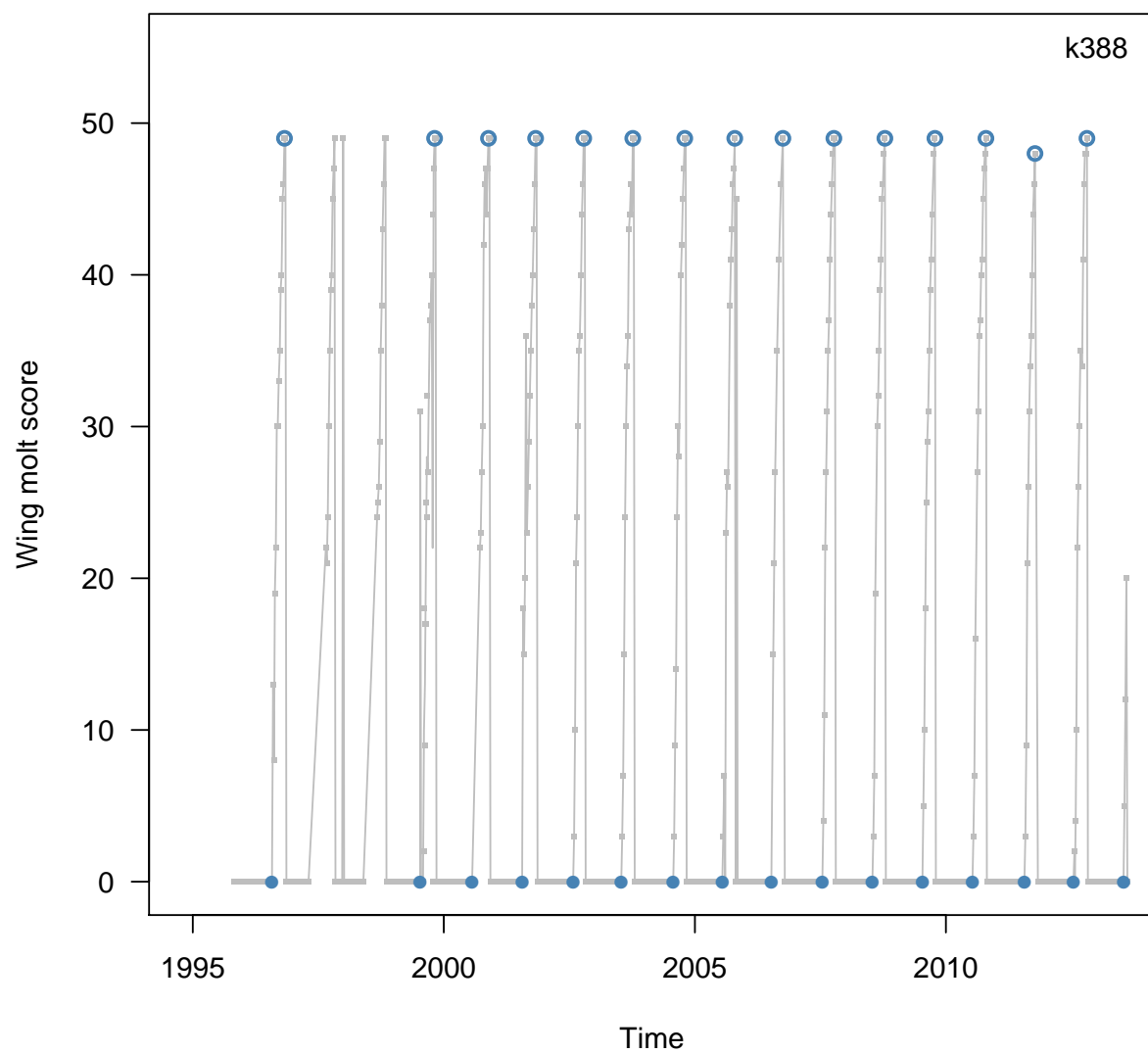


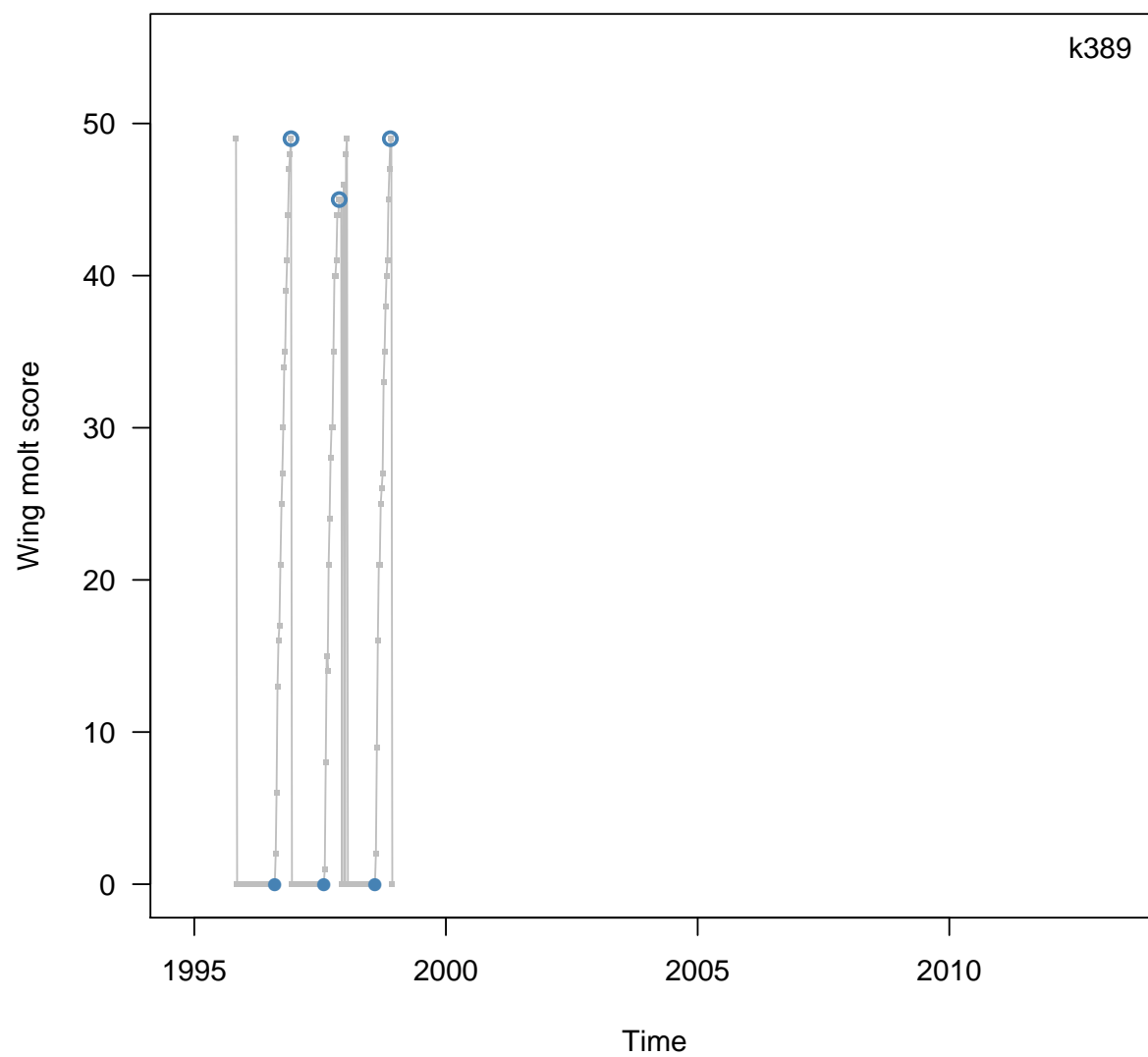
Figure S11. State of wing molt in red knots from Group 3 that stayed in captivity from November 1994 until 3 July 2001. Onsets (closed circles) and offsets open circles) of wing molt are shown in blue.

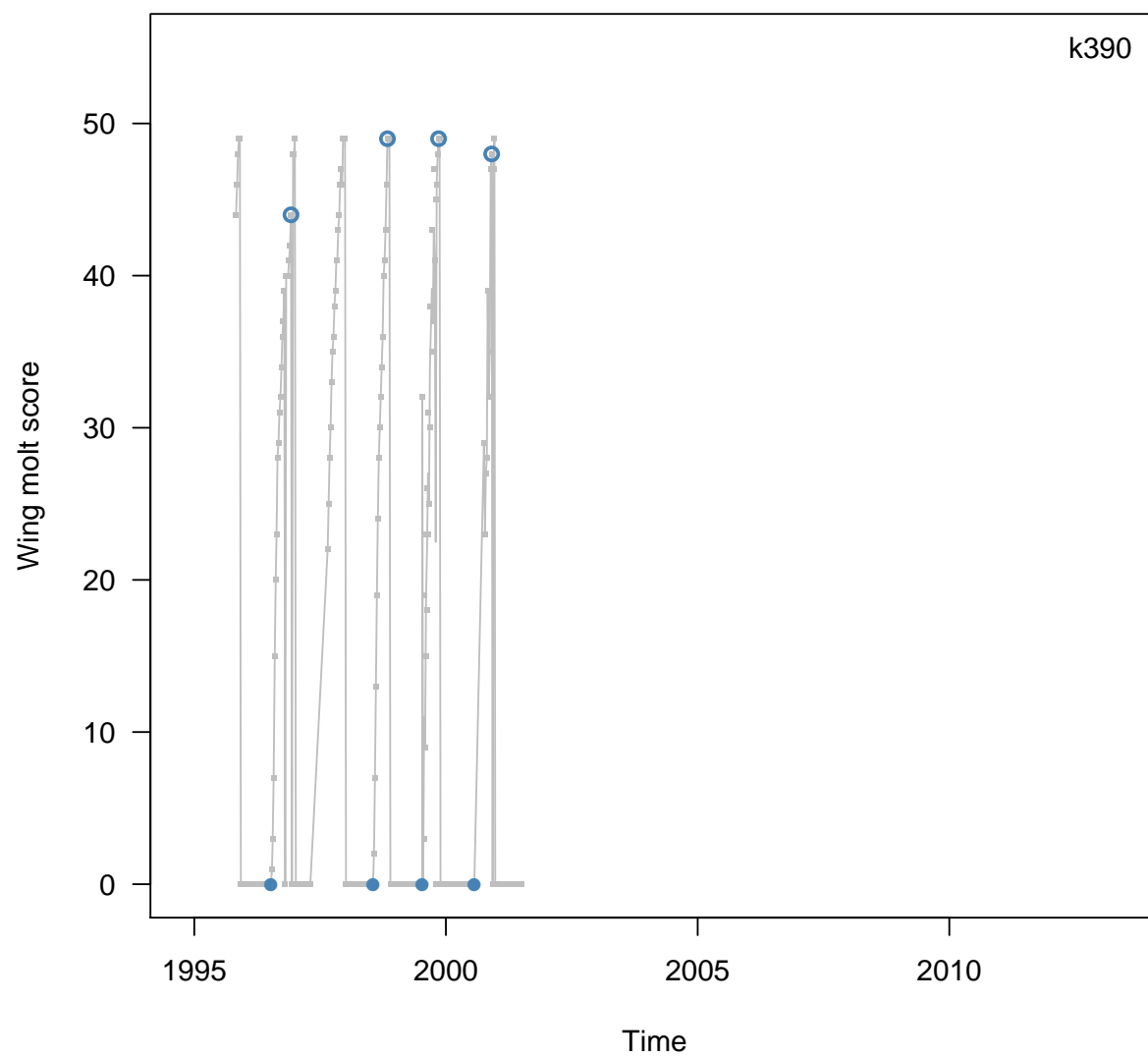


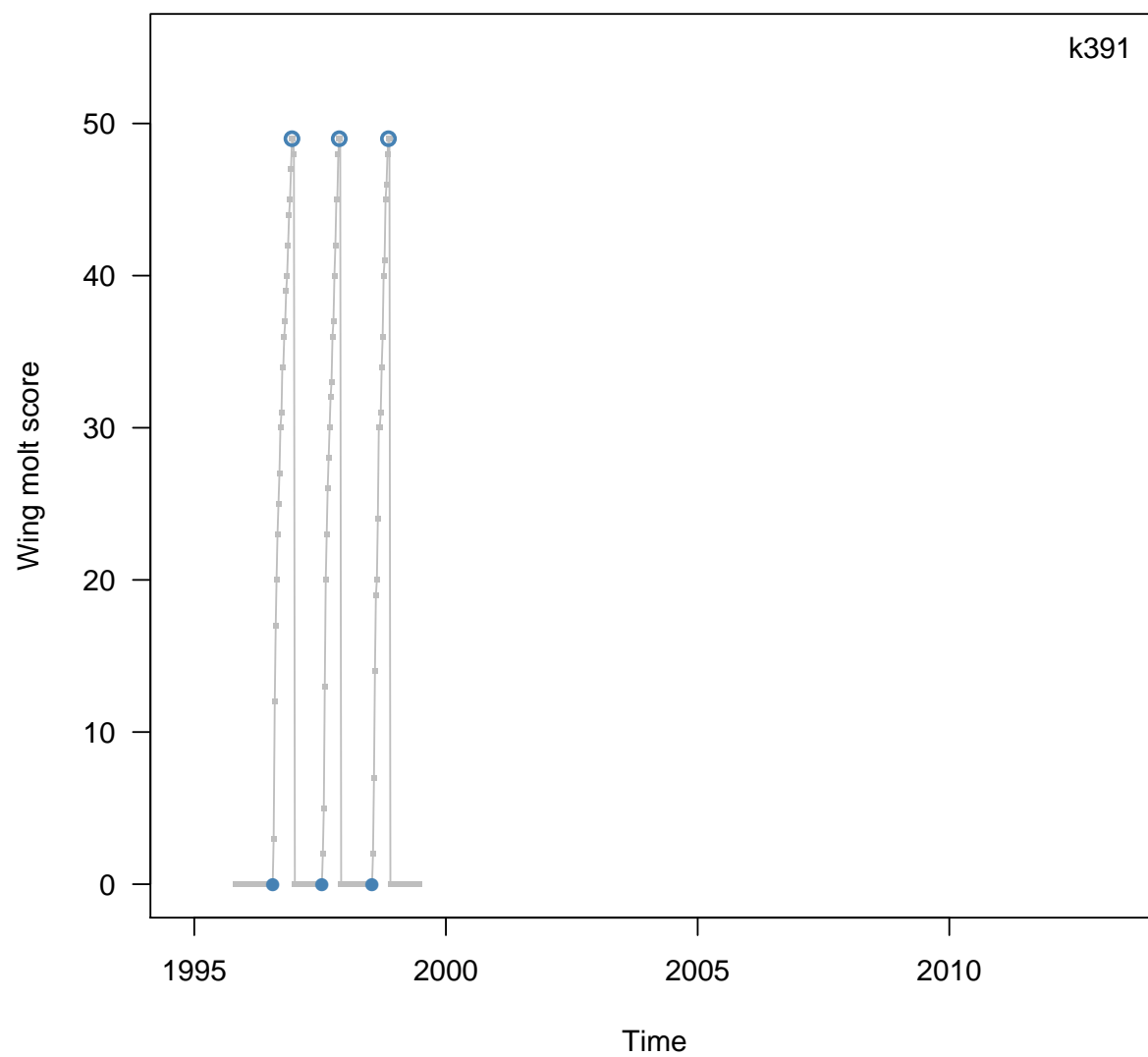


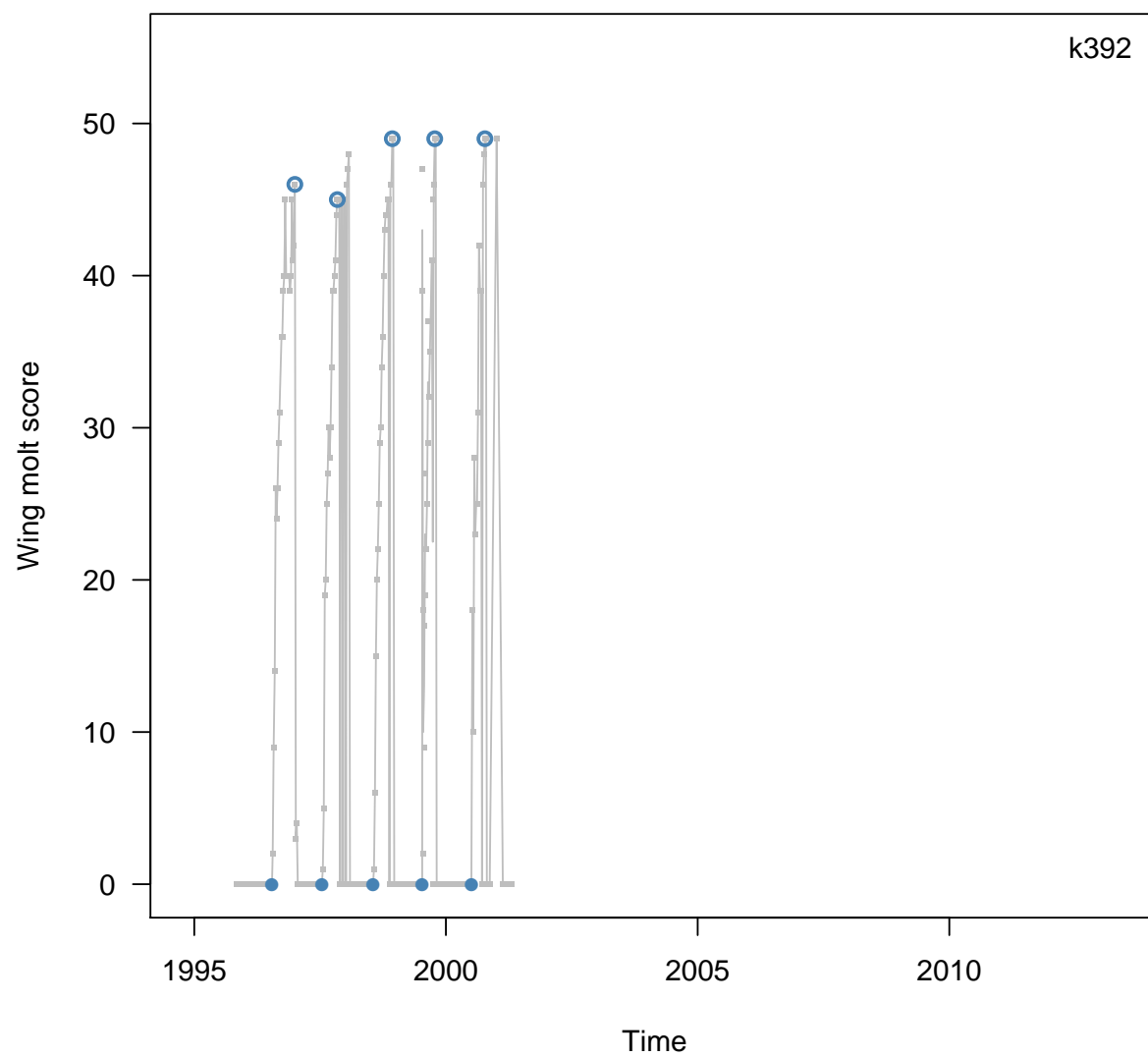


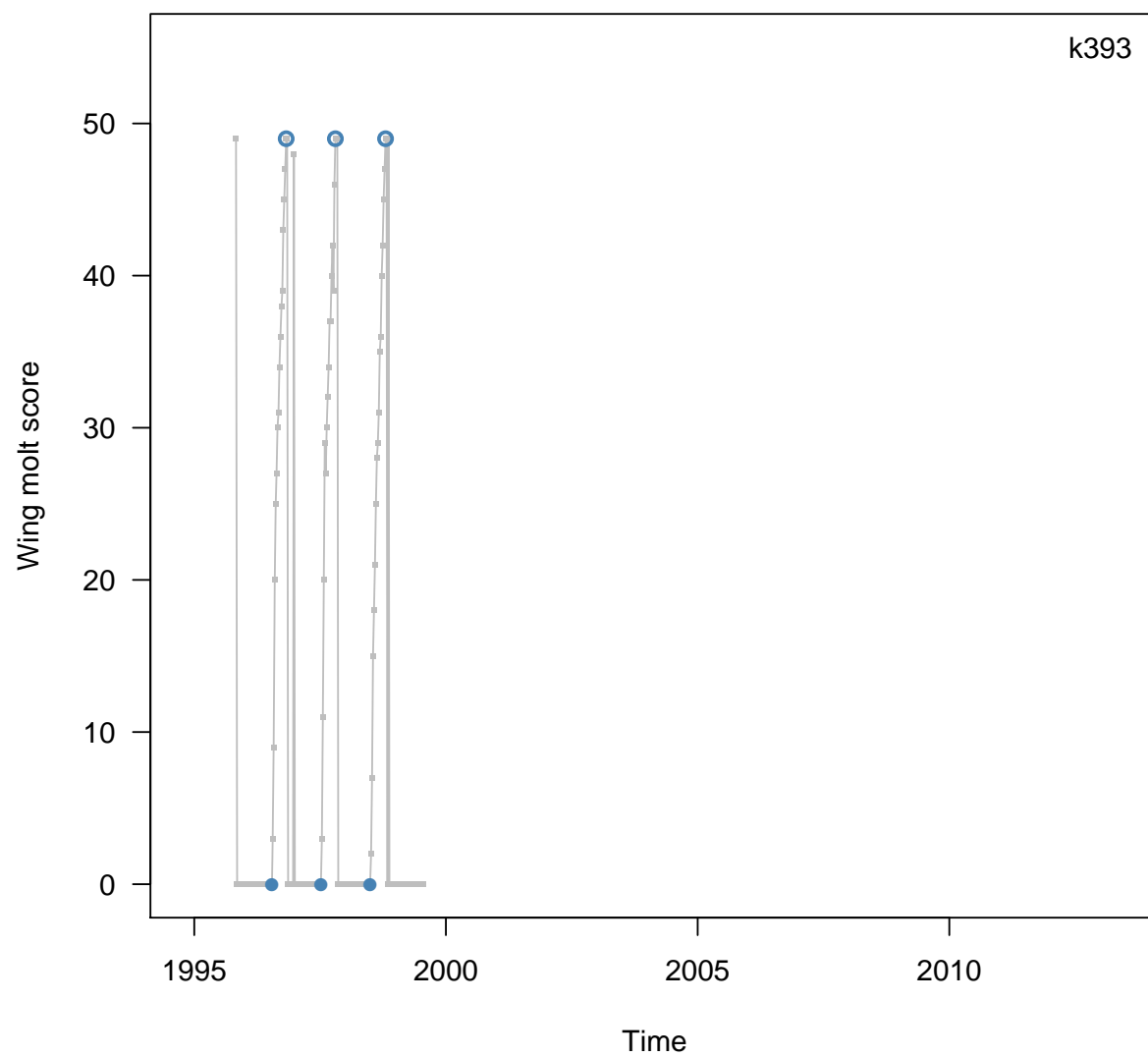


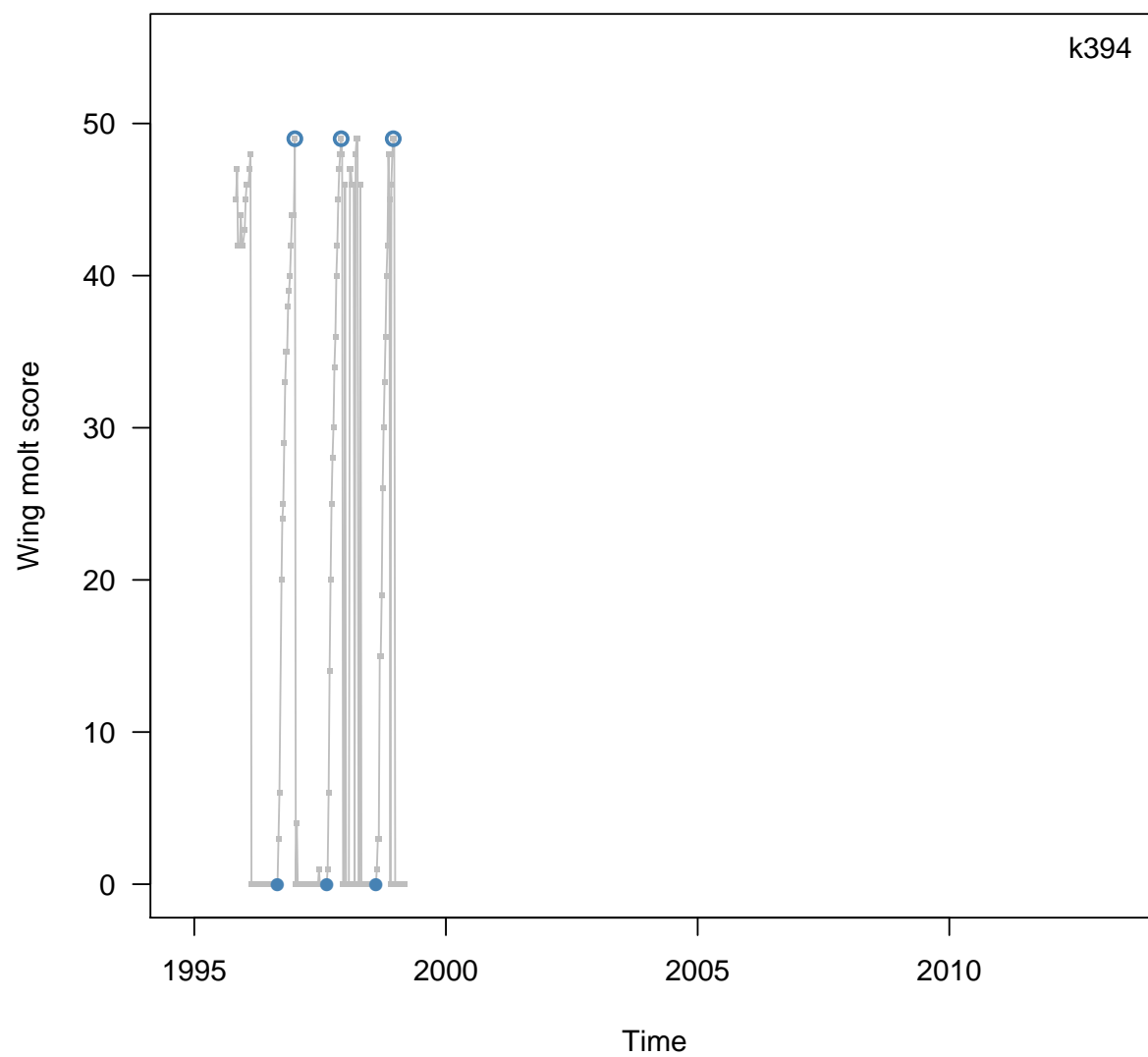


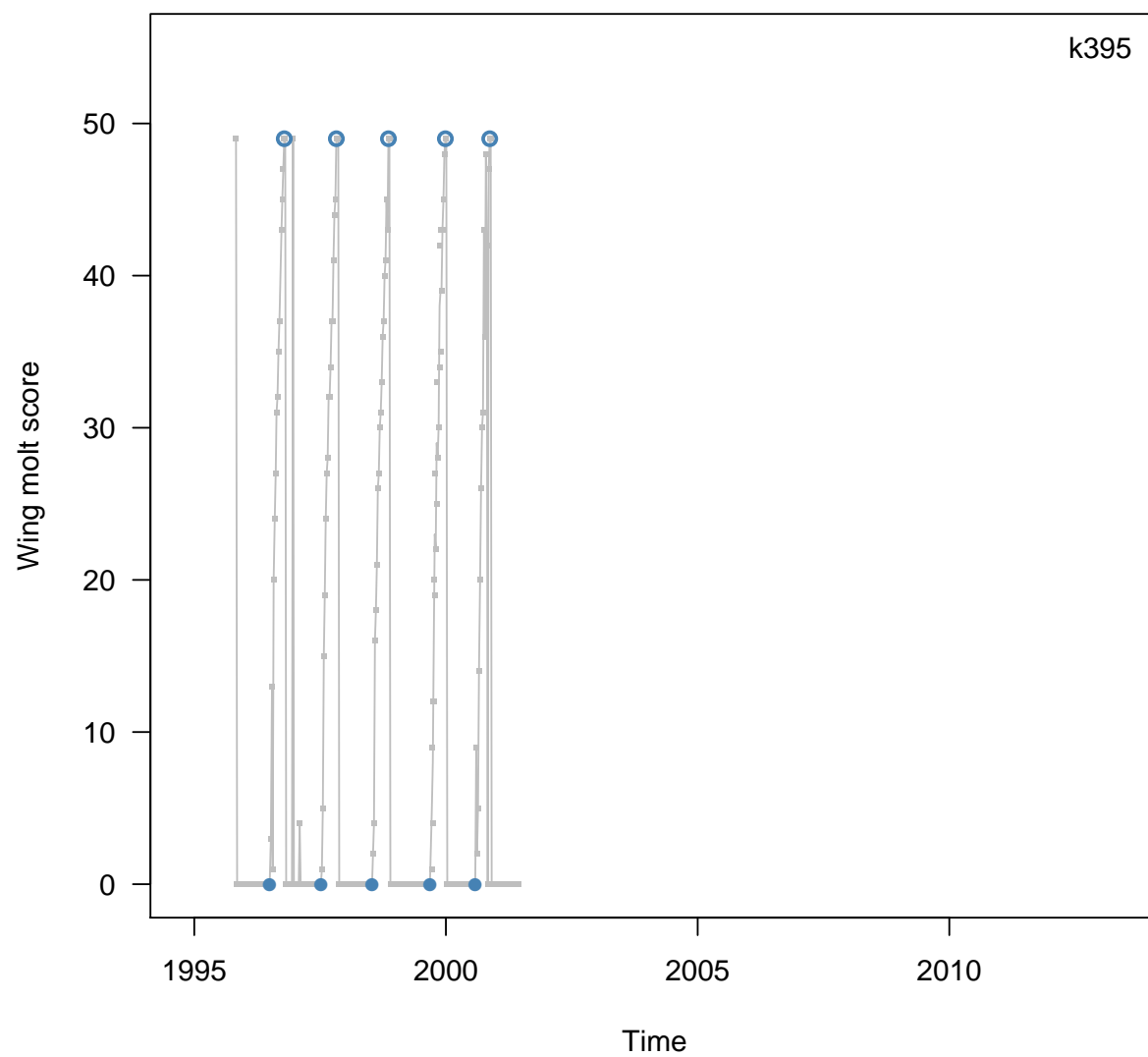


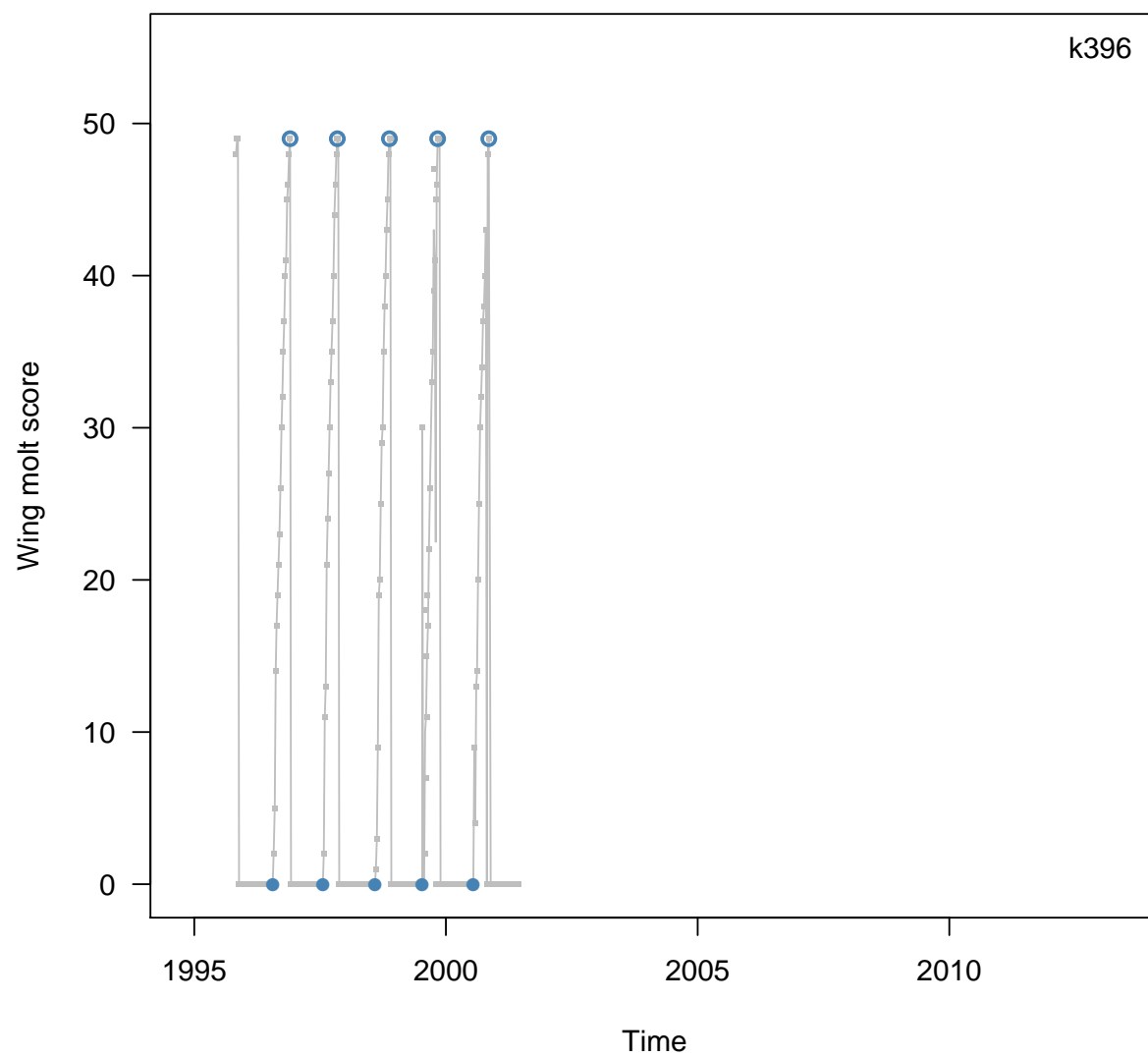


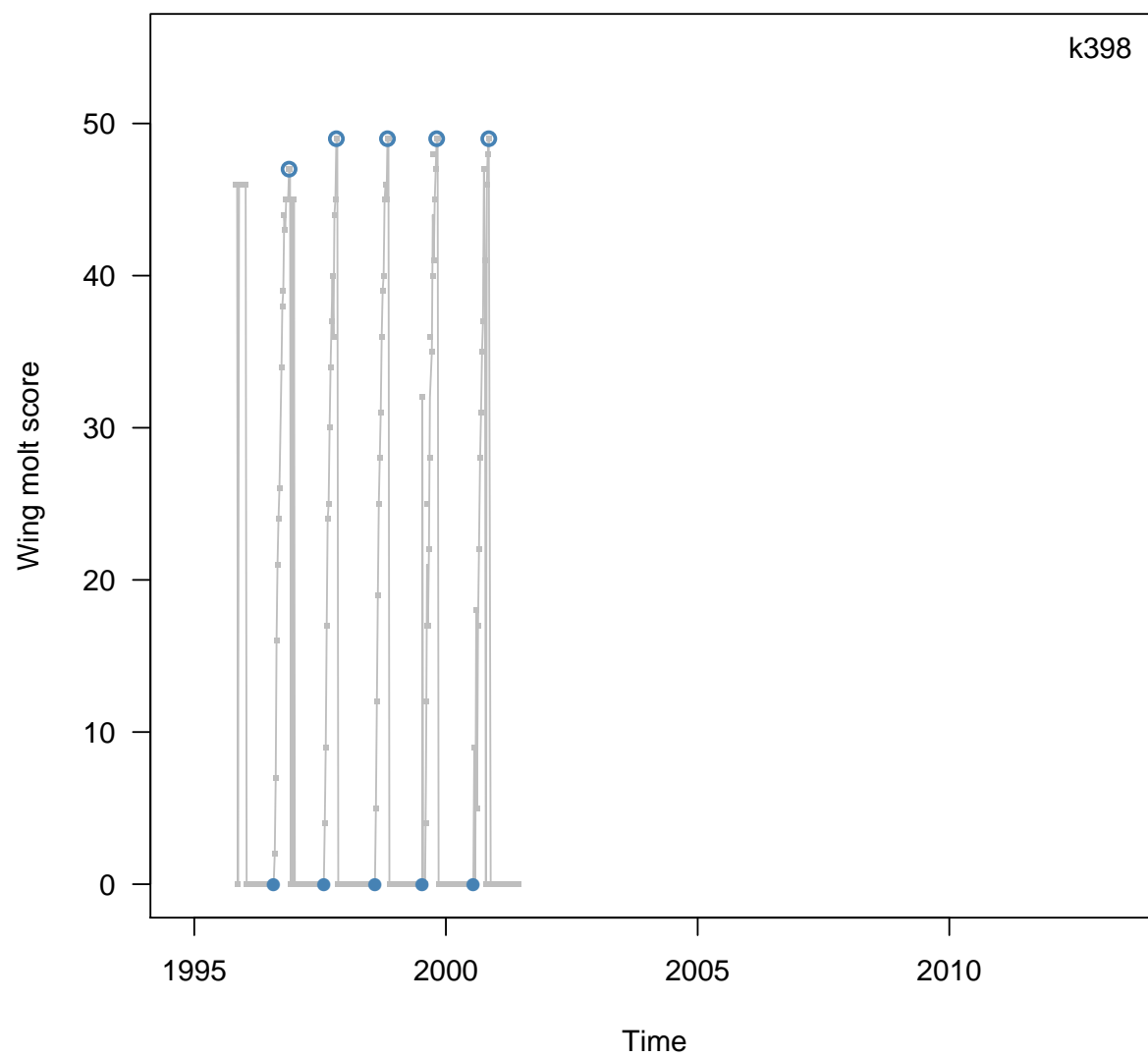












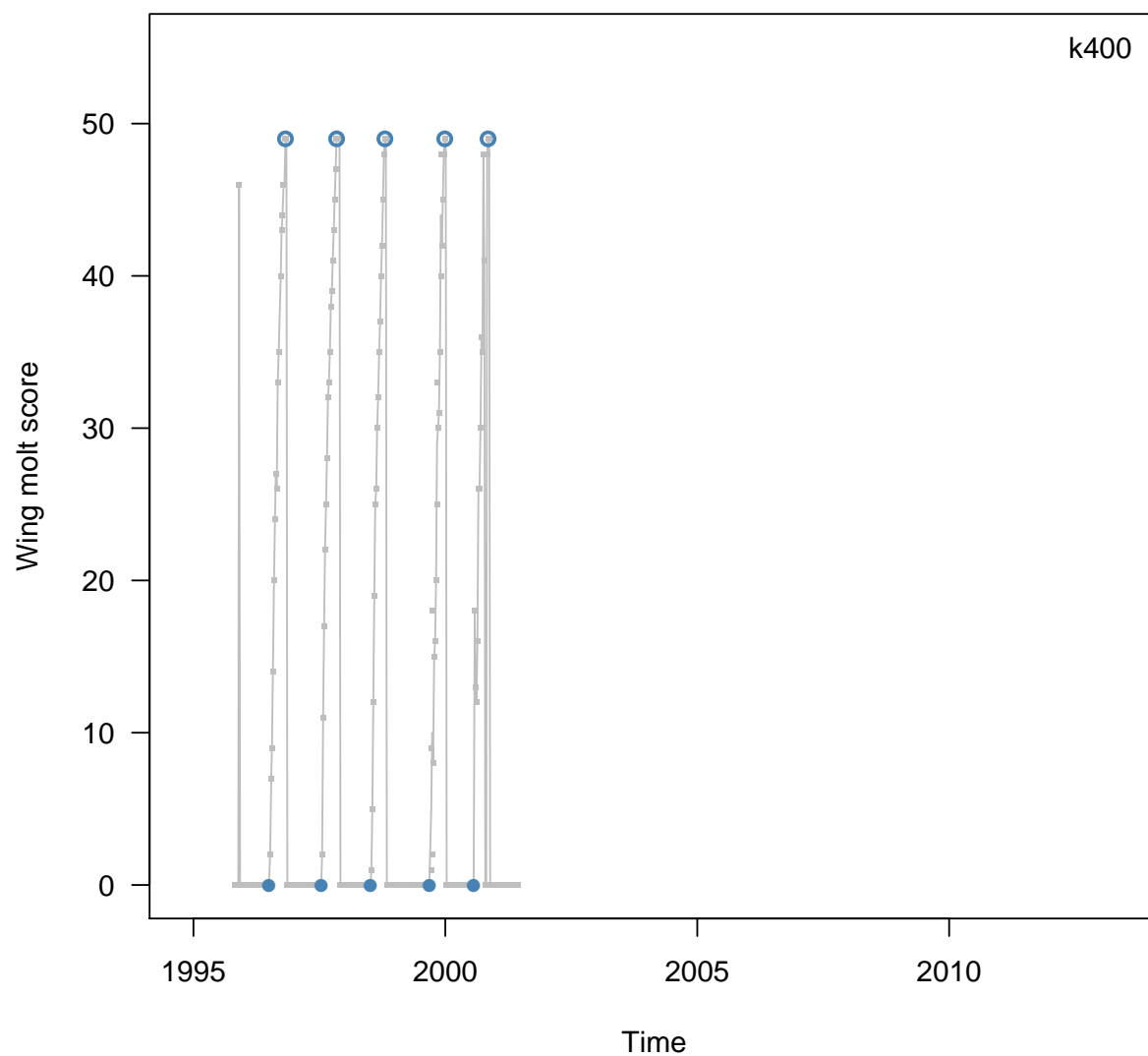


Figure S12. State of wing molt in red knots from Group 4 that stayed in captivity from October 1995 until 3 July 2001. Onsets (closed circles) and offsets open circles) of wing molt are shown in blue.