

van Dijk, J. G. B., Kleyheeg, E., Soons, M. B., Nolet, B. A., Fouchier, R. A. M. and Klaassen, M. 2015. Weak negative associations between avian influenza virus infection and movement behaviour in a key host species, the mallard *Anas platyrhynchos*. – Oikos doi: 10.1111/oik.01836

Appendix 1

Mean monthly averages of wind speed, temperature and precipitation.

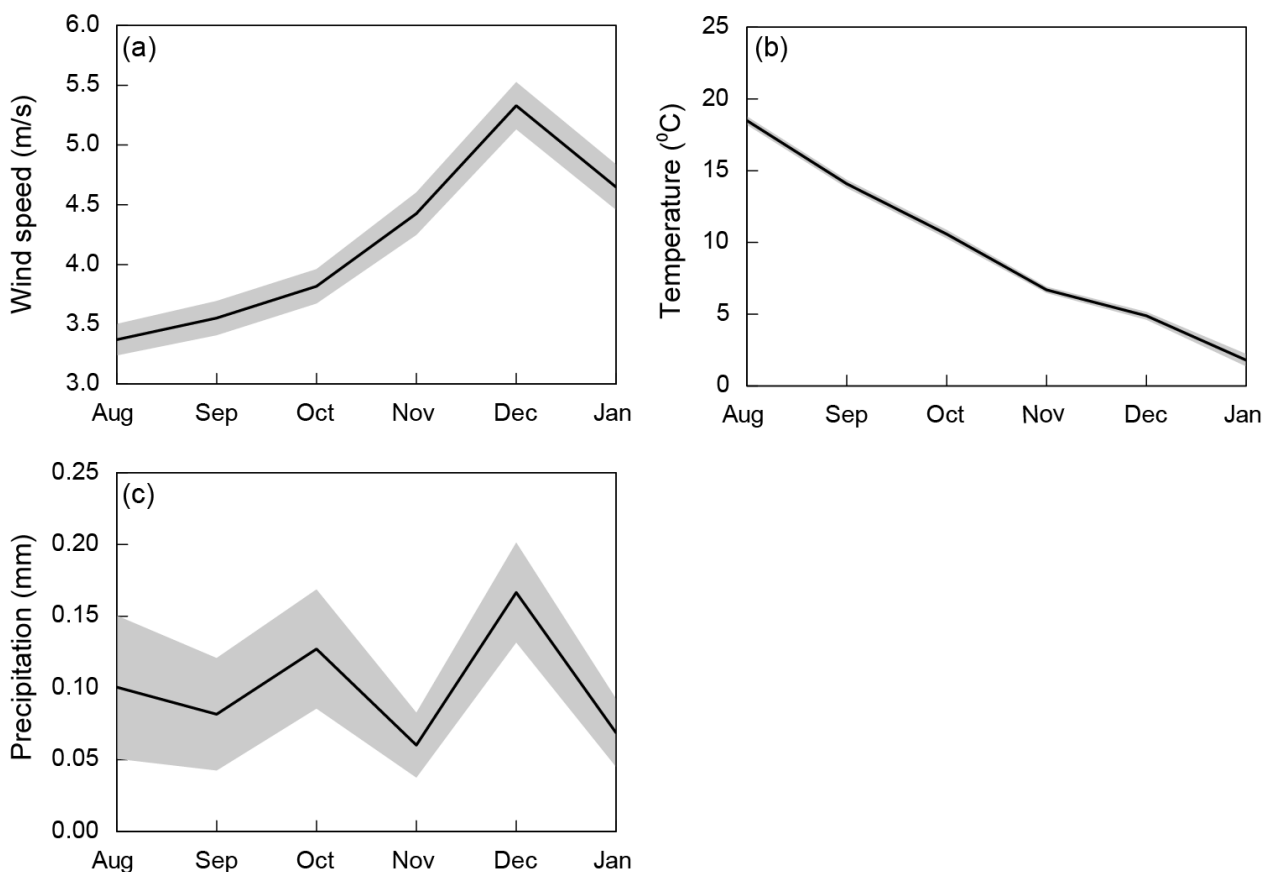


Figure A1. Monthly average weather parameters (\pm 95% CI of the mean; wind speed and temperature were calculated as hourly averages, precipitation as hourly total rainfall) collected by the Royal Netherlands Meteorological Institute (KNMI) at Cabauw (51°57'55"N, 4°53'52"E), the Netherlands, situated 16 km from the study site (i.e. duck decoy near Oud Alblas); (a) wind speed (m s^{-1}), (b) temperature ($^{\circ}\text{C}$) and (c) precipitation (mm).

Appendix 2

Basic data plots of the five movement parameters for individual GPS logged mallards *Anas platyrhynchos*, either infected or non-infected with low pathogenic avian influenza virus (LPAIV).

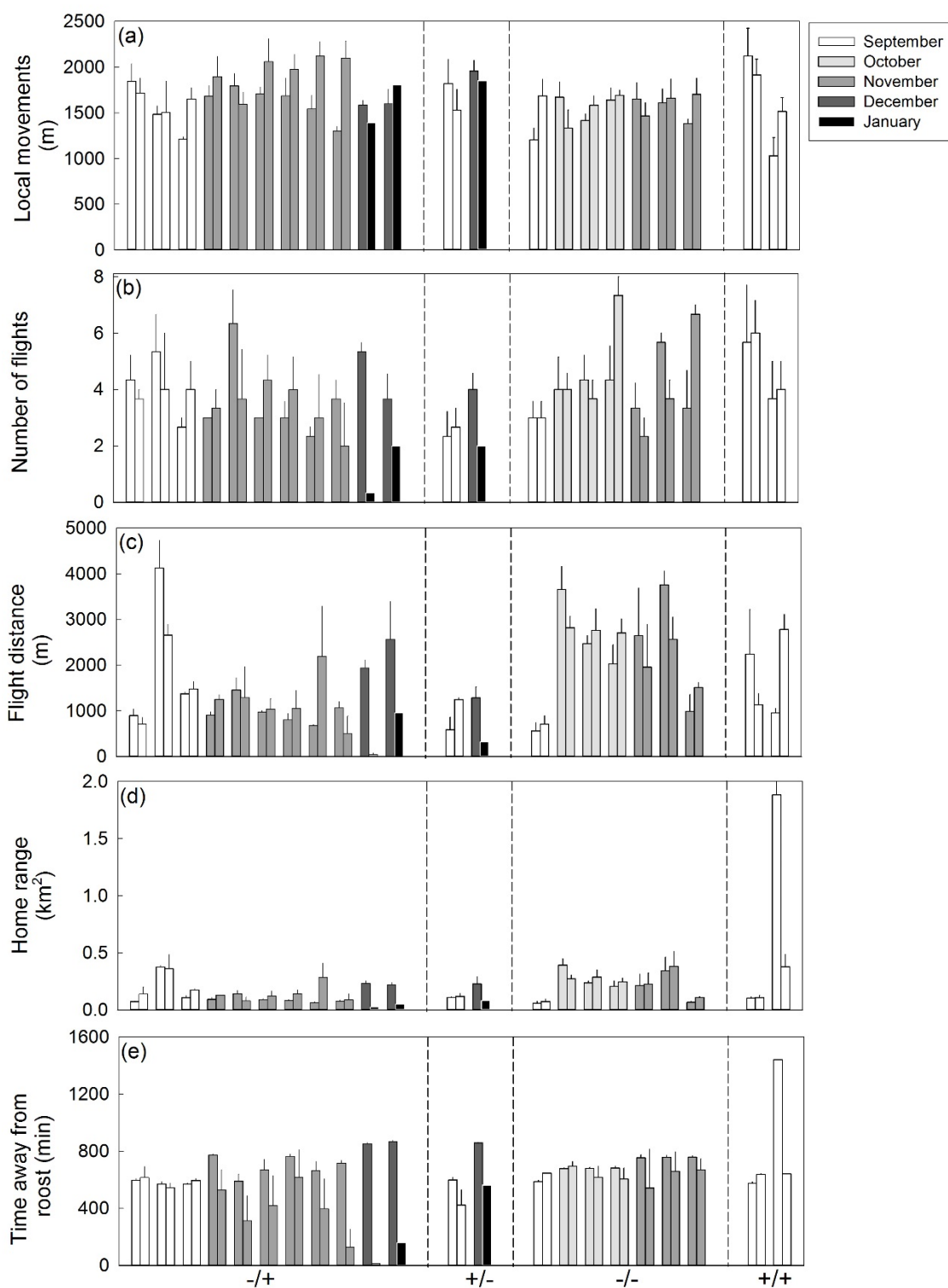


Figure A2. Basic data plot depicting five movement parameters of mallards for which LPAIV infection status was known at the day of GPS logger deployment and at the day prior to logger removal ($n = 22$). For each individual mallard two bars are depicted showing daily averages of the

movement parameters recorded three days after GPS logger deployment (first bar) and three days prior to logger removal (second bar). The five movement parameters are (a) local movements (m), (b) number of flights, (c) flight distance (m), (d) home range (km²), and (e) time away from the roost (i.e. duck decoy; min). Local movements were considered to be within-patch movements of less than 100 m between two positions (a). Regional movements were considered to be movements that exceeded 100 m between two positions, which are mainly flights, but may occasionally involve swimming behaviour (b–e). The x-axis shows LPAIV infection status of birds the day of logger deployment (first bar) and the day of logger removal (second bar); -/+ : non-infected at logger deployment and infected with LPAIV at logger removal, +/- : infected at logger deployment and non-infected at logger removal, -/- : non-infected at both logger deployment and removal, and +/+ : infected at both logger deployment and removal. The colour defines the month of logger deployment and removal.

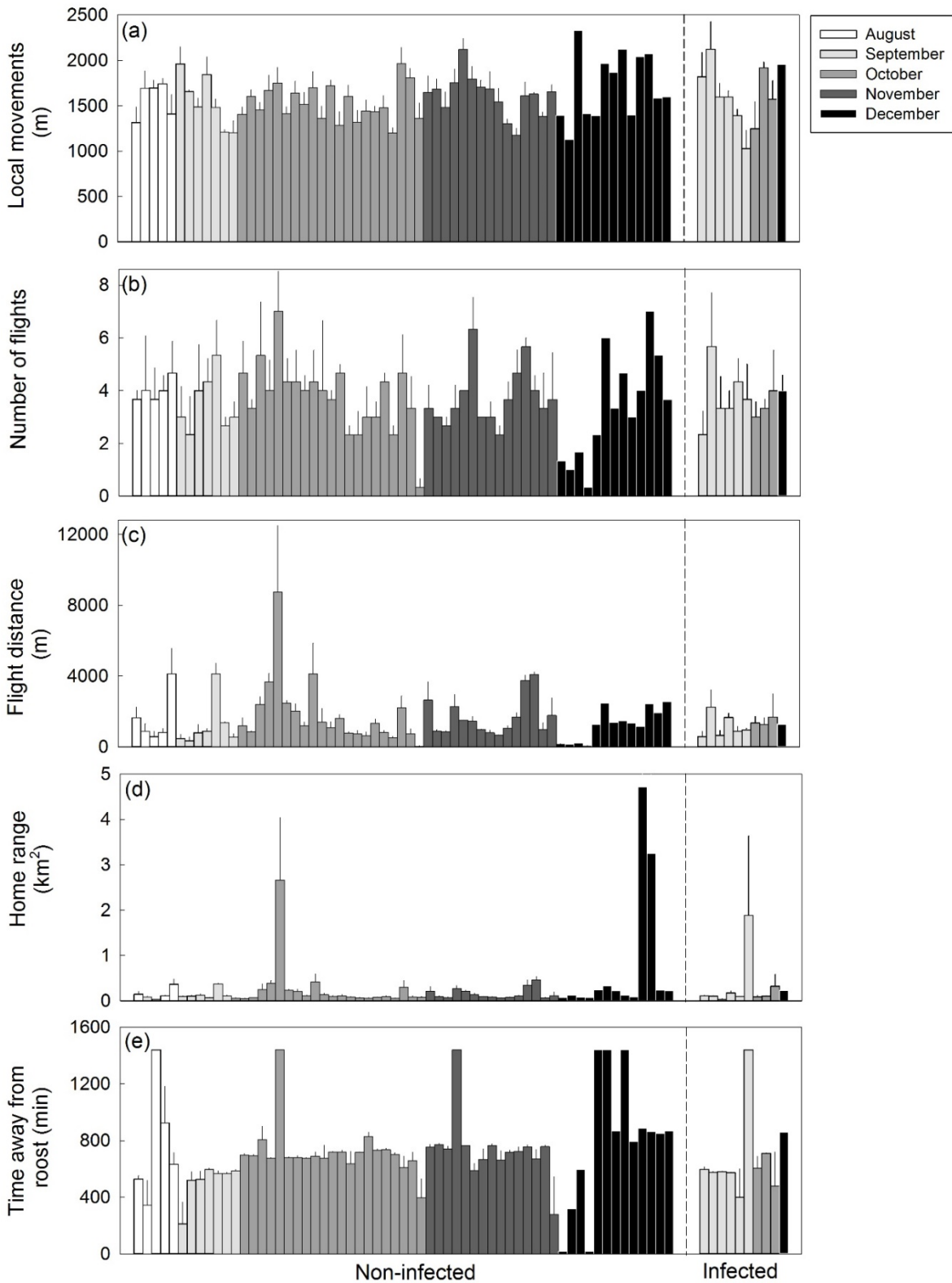


Figure A3. Basic data plot depicting the daily average of five movement parameters recorded three days after GPS logger deployment per individual mallard ($n = 71$) for which LPAIV infection status was known at the day of logger deployment. The five movement parameters are (a) local movements (m), (b) number of flights, (c) flight distance (m), (d) home range (km²), and (e) time away from the roost (i.e. duck decoy; min). The colour defines the month of logger deployment.

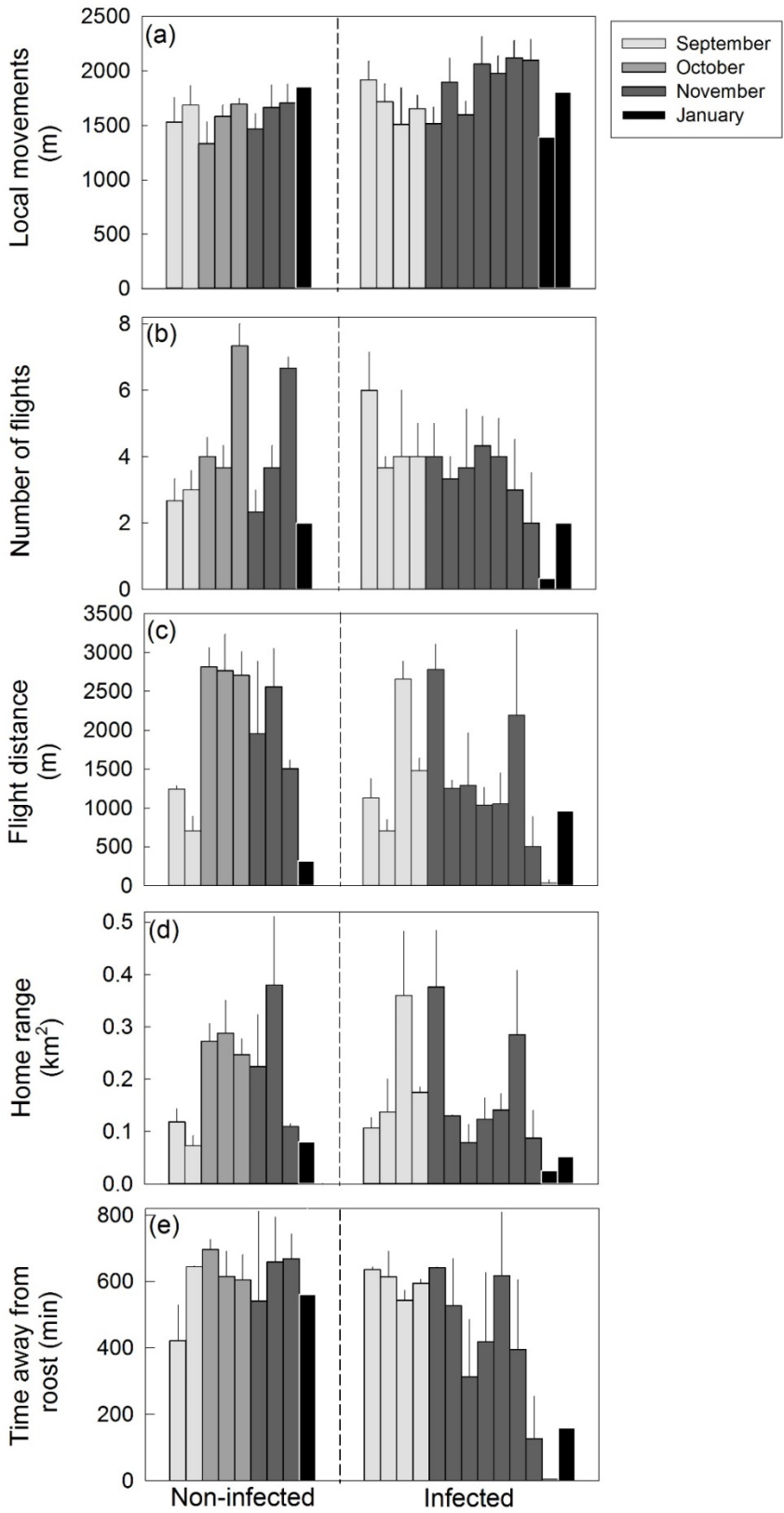


Figure A4. Basic data plot depicting the daily average of five movement parameters recorded three days prior to GPS logger removal per individual mallard ($n = 22$) for which LPAIV infection status was known at day of logger removal. The five movement parameters are (a) local movements (m), (b) number of flights, (c) flight distance (m), (d) home range (km^2), and (e) time away from the roost (i.e. duck decoy; min). The colour defines the month of logger removal.

Appendix 3

Correlation coefficients and factor loadings.

Table A1. Correlation coefficients between the movement parameters calculated from tracking data of free-living adult male mallards fitted with GPS loggers. Data consisted of the first three days after logger deployment of 71 mallards and the last three days before to logger removal of 22 mallards. Parameters that are significantly correlated are depicted in bold. Local movements were retained in the statistical analyses, since the r^2 of the significant correlation with home range was low.

Correlation	DF	r	t-value	p-value	r^2
Local movements × Number of flights	277	0.07	1.186	0.237	0.00
Local movements × Flight distance	277	0.00	0.063	0.950	0.00
Local movements × Home range	277	0.15	2.599	0.010	0.02
Local movements × Time spent away from roost	277	0.02	0.359	0.720	0.00
Number of flights × Flight distance	277	0.84	25.920	<0.001	0.71
Number of flights × Home range	277	0.45	8.452	<0.001	0.20
Number of flights × Time spent away from roost	277	0.53	10.367	<0.001	0.28
Flight distance × Home range	277	0.49	9.475	<0.001	0.24
Flight distance × Time spent away from roost	277	0.54	10.712	<0.001	0.29
Home range × Time spent away from roost	277	0.37	6.698	<0.001	0.14

Table A2. Correlation coefficients between the weather parameters measured at a station of the Royal Netherlands Meteorological Institute (KNMI) close to the roost (i.e. duck decoy) for the first three days after logger deployment of 71 mallards and the last three days before to logger removal of 22 mallards. Parameters that are significantly correlated are depicted in bold.

Correlation	DF	r	t-value	p-value	r^2
Wind speed × Temperature	277	-0.08	-1.385	0.167	0.00
Wind speed × Precipitation	277	0.62	13.245	<0.001	0.38
Temperature × Precipitation	277	-0.08	-1.372	0.171	0.00

Table A3. Factor loadings (i.e. correlation between principal components and variables) of the first principal component (PC1) of three principal-component analyses directed at finding indices for daily regional movements, wind-precipitation and bird size.

PC1	Parameter	Factor loading
Regional movements	No. of flights	0.55
	Flight distance	0.56
	Home range	0.42
	Time away from roost	0.46
Wind-precipitation	Wind speed	0.71
	Precipitation	0.71
Bird size	Tarsus length	0.57
	Head+bill length	0.66
	Wing length	0.50