

Variable Descriptions and Units for “Lyme Study Dataset.csv”

Dataset used in:

Ostfeld, R. S., T. Levi, F. Keesing, K. Oggenfuss, and C. D. Canham. 2018. Tick-borne disease risk in a forest food web. Ecology, in press.

The dataset was compiled from component datasets on (1) climate at the Cary Institute weather station (1988 – 2016); (2) estimates of deer density from the Cary Institute deer management program (1992 – 2015); (3) seed rain at the 6 study sites within the Cary Forest (1992 – 2016); (4) small mammal trapping data at the 6 study sites (1993 – 2015); and (5) data on tick abundance and infection prevalence from the 6 study sites (1991 – 2015).

VARIABLE NAME	DESCRIPTION	UNITS
Year	Year	Year
Grid	2-letter code identifying grid	Alphanumeric Code
tot_days	Total number of days during February, March, and April of that year	Number of days
tot_warm_days	Total number of days during February, March, and April of that year with relative # humidity < 50% and maximum temperature > 15 degrees C	Number of days
feb_apr_warm_days	Fraction of days during February, March, and April of that year with relative # humidity < 50% and maximum temperature > 15 degrees C (i.e. tot_warm_days/tot_days)	Fraction
winter_days	Total number of days during the months of November the previous year through March of the current year	Number of days
cold_winter_days	Fraction of total number of days during winter with daily minimum temperature < -10 degrees C	Fraction
degree_days	Number of degree days (October of previous year through September of current year) with a base of 0 degrees C	Number of degree days
mat	Mean annual temperature for the calendar year	Degrees C
snowfall_cm	Snowfall totals for the winter ending in the given year	Centimeters
DOL	Density of larval blacklegged ticks at peak density for a given grid	#/m2 of drag area
DON	Density of nymphal blacklegged ticks at peak density for a given grid	#/m2 of drag area
DOA	Density of adult blacklegged ticks during fall sampling	#/m2 of drag area

VARIABLE NAME	DESCRIPTION	UNITS
LPM	Larval tick body burden on white-footed mice: average number of larval ticks on mice for a given grid and year, during the August trapping session	Average number of larval ticks per mouse
PL_grid	Jolly-Seber estimate of the number of white-footed mice (<i>Peromyscus leucopus</i>) per trapping grid (2.25 ha), interpolated between trapping sessions to correspond to the Aug 15 larval tick peak	# mice / 2.25 ha grid
PL_ha	Jolly-Seber estimate of the number of white-footed mice (<i>Peromyscus leucopus</i>) per hectare	# mice / hectare
TS_grid	Jolly-Seber estimate of the number of eastern chipmunks (<i>Tamias striatus</i>) per trapping grid (2.25 ha), interpolated between trapping sessions to correspond to the Aug 15 larval tick peak	# chipmunks / 2.25 ha grid
TS_ha	Jolly-Seber estimate of the number of eastern chipmunks (<i>Tamias striatus</i>) per hectare	# chipmunks / hectare
QURU	Average number of mature acorns of red oak (<i>Quercus rubra</i>) per m2 of seed trap area for a given grid and year	# acorns / m2
QUVE	Average number of mature acorns of black oak (<i>Quercus velutina</i>) per m2 of seed trap area for a given grid and year	# acorns / m2
QUAL	Average number of mature acorns of white oak (<i>Quercus alba</i>) per m2 of seed trap area for a given grid and year	# acorns / m2
QUPR	Average number of mature acorns of chestnut oak (<i>Quercus prinus</i>) per m2 of seed trap area for a given grid and year	# acorns / m2
ACSA	Average number of filled samaras of sugar maple (<i>Acer saccharum</i>) per m2 of seed trap area for a given grid and year	# seeds / m2
REDOAK	Average number of mature acorns of red oak and black oak, combined	# acorns / m2
WHITEOAK	Average number of mature acorns of white oak and chestnut oak, combined	# acorns / m2
TOT.MATURE.ACORNS	Average total number of acorns of all 4 oak species per m2 of seed trap area for a given grid and year	# acorns / m2
Ave.Deer.Hr	Total number of different white-tailed deer seen by bowhunters in the Cary Institute deer management program divided by the total number of hours afield during good light conditions for identifying deer	Average # deer / hour of observation
TFA_infected	Number of nymphal blacklegged ticks testing positive for <i>Borrelia burgdorferi</i> using fluorescence analysis	Number of nymphal ticks

VARIABLE NAME	DESCRIPTION	UNITS
TFA_total	Total number of nymphal blacklegged ticks tested using fluorescence analysis	Number of nymphal ticks
PCR_positive	Number of nymphal blacklegged ticks testing positive for <i>Borrelia burgdorferi</i> using PCR	Number of nymphal ticks
PCR_total	Total number of nymphal blacklegged ticks tested using PCR	Number of nymphal ticks
TFA_NIP_CORR	Corrected fraction of nymphal blacklegged ticks infected with <i>Borrelia burgdorferi</i> , based on estimated sensitivity of the fluorescence assay	Fraction of nymphal ticks infected
PCR_NIP	Fraction of nymphal blacklegged ticks that tested positive for <i>Borrelia burgdorferi</i> using PCR (i.e. PCR_positive / PCR_total)	Fraction of nymphal ticks infected
TFA_fraction	Fraction of total number of ticks tested for infection by <i>Borrelia burgdorferi</i> using fluorescence assay	Fraction of tested ticks
PCR_fraction	Fraction of total number of ticks tested for infection by <i>Borrelia burgdorferi</i> using PCR	Fraction of tested ticks
NIP	Weighted average nymphal infection prevalence combining ticks tested using the two different methods when necessary	Fraction of nymphal ticks infected with <i>Borrelia burgdorferi</i>
TOTLAR	Estimated density of larval black-legged ticks combining ticks collected on drag cloths with the estimated density of larval ticks found on white-footed mice on the grid	# larval ticks per m2 ground
grid_year	Character variable combining Grid and Year	Alphanumeric Code
grid_year_tminus1	Character variable combining Grid and Year identifying the grid/year data to be used for variables containing data from the previous year (year t minus 1)	Alphanumeric Code
grid_year_tminus2	Character variable combining Grid and Year identifying the grid/year data to be used for variables containing data from two years prior year (year t minus 2)	Alphanumeric Code
deer_tminus2	Ave.Deer.Hr for the grid/year combination two years prior	Average # deer / hour of observation two years prior
deer_tminus1	Ave.Deer.Hr for the grid/year combination for the previous year	Average # deer / hour of observation one year prior
CDD_tminus2	degree_days for two years prior	Number of degree days 2 years prior
acorns_tminus2	TOT.MATURE.ACORNS from 2 years prior	# acorns / m2 2 years prior
acsa_tminus2	Number of sugar maple seeds (ACSA) from 2 years prior	# seeds / m2 2 years prior

VARIABLE NAME	DESCRIPTION	UNITS
mouse_tminus1	Jolly-Seber estimate of the number of white-footed mice (<i>Peromyscus leucopus</i>) per hectare (PL_ha) from the previous year	# mice / hectare from the previous year
mouse_t	Jolly-Seber estimate of the number of white-footed mice (<i>Peromyscus leucopus</i>) per hectare (PL-ha)	# mice / hectare
chip_tminus1	Jolly-Seber estimate of the number of eastern chipmunks (<i>Tamias striatus</i>) per hectare (TS_ha) from the previous year	# chipmunks / hectare from the previous year
chip_t	Jolly-Seber estimate of the number of eastern chipmunks (<i>Tamias striatus</i>) per hectare (TS_ha)	# chipmunks / hectare
rodents_tminus1	Combined density of mice and chipmunks from the previous year (mouse_tminus1 + chip_tminus1)	# chipmunks and mice / hectare from the previous year
rodents_t	Combined density of mice and chipmunks (mouse_t + chip_t)	# chipmunks and mice / hectare
dol_tminus1	Density of larval blacklegged ticks at peak density for a given grid, from the previous year	# larval ticks / m2 of drag area from the previous year
don	Density of nymphal blacklegged ticks at peak density for a given grid	# nymphal ticks / m2 of drag area
acorns_tminus1	Total number of mature acorns of the 4 oak species per m2 of seed trap, for the previous year	# acorns / m2 for the previous year
redoak_tminus1	Total number of red oak and black oak acorns per m2 of seed trap, for the previous year	# acorns / m2 for the previous year
whiteoak_tminus1	Total number of white oak and chestnut oak acorns per m2 of seed trap, for the previous year	# acorns / m2 for the previous year
redoak_tminus2	Total number of red oak and black oak acorns per m2 of seed trap, for 2 years prior	# acorns / m2 for the 2 years prior
whiteoak_tminus2	Total number of red oak and black oak acorns per m2 of seed trap, for the previous year	# acorns / m2 for the 2 years prior
totlar_tminus1	Estimated density of larval black-legged ticks combining ticks collected on drag cloths with the estimated density of larval ticks found on white-footed mice on the grid (TOTLAR) from the previous year	# larval ticks per m2 ground, for the previous year