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PLOS | NEGLECTED TROPICAL DISEASES

Key Source Habitats and Potential Dispersal of *Triatoma infestans* Populations in Northwestern Argentina: Implications for Vector Control

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Abstract

Background: *Triatoma infestans* —the principal vector of the infection that causes Chagas disease— defies elimination efforts in the Gran Chaco region. This study identifies the types of human-made or -used structures that are key sources of these bugs in the initial stages of house reinfestation after an insecticide spraying campaign.

Methodology and Principal Findings: We measured demographic and blood-feeding parameters at two geographic scales in 11 rural communities in Figueroa, northwest Argentina. Of 1,297 sites searched in spring, 279 (21.5%) were infested. Bug abundance per site and female fecundity differed significantly among habitat types (ecotopes) and were highly aggregated. Domiciles (human sleeping quarters) had maximum infestation prevalence (38.7%), human-feeding bugs and total egg production, with submaximal values for other demographic and blood-feeding attributes. Taken collectively peridomestic sites were three times more often infested than domiciles. Chicken coops had greater bug abundance, blood-feeding rates, engorgement status, and female fecundity than pig and goat corrals. The host-feeding patterns were spatially structured yet there was strong evidence of active dispersal of late-stage bugs between ecotopes. Two flight indices predicted that female fliers were more likely to originate from kitchens and domiciles, rejecting our initial hypothesis that goat and pig corrals would dominate.

Conclusions and Significance: Chicken coops and domiciles were key source habitats fueling rapid house reinfestation. Focusing control efforts on ecotopes with human-fed bugs (domiciles, storerooms, goat corrals) would neither eliminate the substantial contributions to bug population growth from kitchens, chicken coops, and pig corrals nor stop dispersal of adult female bugs from kitchens. Rather, comprehensive control of the linked network of ecotopes is required to prevent feeding on humans, bug population growth, and bug dispersal simultaneously. Our study illustrates a demographic approach that may be applied to other regions and triatomine species for the design of innovative, improved vector control strategies.

Citation: Gürtler RE, Cecere MC, Fernández MdP, Vazquez-Prokopec GM, Ceballos LA, et al. (2014) Key Source Habitats and Potential Dispersal of *Triatoma infestans* Populations in Northwestern Argentina: Implications for Vector Control. PLoS Negl Trop Dis 8(10): e3238. doi:10.1371/journal.pntd.0003238

Editor: Eric Dumonteil, Universidad Autónoma de Yucatán, Mexico

Received April 18, 2014; **Accepted** September 4, 2014; **Published** October 9, 2014

Data Availability: The authors confirm that all data underlying the findings are fully available without restriction. All relevant data are within the paper and its Supporting Information files.

Funding: This study was supported by awards from the National Institutes of Health/National Science Foundation Ecology of Infectious Disease program award R01TW05836 funded by the Fogarty International Center and the National Institute of Environmental Health Sciences to UK, REG and JEC, Agencia Nacional de Promoción Científica y Tecnológica (PICT and PICTO-Glaxo), and the University of Buenos Aires to REG. REG and MCC are members of CONICET Researcher's Career. JEC acknowledges with thanks the support of U.S. National Science Foundation grants EF-1038337 and DMS-1225529. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing Interests: The authors have declared that no competing interests exist.

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Introduction

Of the approximately 140 species of Triatominae (Heteroptera: Reduviidae) currently recognized, *Triatoma infestans* (Klug) expresses the extreme of an evolutionary trend toward domesticity [1,2]. This adaptation and epidemiological significance as the most important vector of human Chagas disease justified targeting *T. infestans* for elimination in the southern cone countries of South America since 1991 [3]. Insecticide control campaigns reduced infestations but did not interrupt transmission of human *Trypanosoma cruzi* infection in the Gran Chaco region of Argentina, Bolivia and Paraguay for various reasons [4,5].

Inadequate housing and subsistence rural economies facilitate the persistence of *T. infestans* in the Gran Chaco. Rural house compounds there typically include a dwelling house for people and all its associated special-purpose outbuildings [6]. Henceforth '(peri)domestic ecotopes' will refer to human-made or -used ecotopes, either peridomestic or domestic (domestic ecotopes are sometimes called human sleeping quarters or domiciles). (Peri)domestic ecotopes are heterogeneous physically (size, materials) and

Author Summary

The major vectors of Chagas disease are species of triatomine bugs adapted to human sleeping quarters and peridomestic annexes where they feed on humans and domestic or synanthropic mammals or birds. Knowledge of the demography and nutritional status of Triatominae in real-life settings is still fragmentary, and this affects our ability to prevent or reduce house reinfestation after insecticide spraying. In addition to showing where the bugs are likely to live (occupancy and density information), our observations and analysis of flight dispersal provide insights into where bugs are likely to originate. Data on nymphal and adult sex ratios, nutritional status, and female fecundity point to the key ecotopes and sites driving the population growth of the bugs and fueling house reinfestation. Focusing control efforts on the three ecotopes (human sleeping quarters, storerooms, and goat corrals) that housed reactive, human-fed bugs would neither eliminate the substantial contributions to bug population growth from kitchens, chicken coops, and pig corrals nor stop dispersal of adult female bugs from kitchens. Rather, comprehensive control of the linked network of ecotopes in a typical house compound and community is required to prevent feeding on humans, bug population growth, and bug dispersal simultaneously.

demographically, with substantial variations in refuge availability, microclimatic conditions, host species composition, host density, and bug abundance per site [6–12].

The concept of relative habitat suitability is an important research topic that has been neglected in Triatominae. The ranked metrics of infestation prevalence and bug abundance suggested that chicken coops and goat and pig corrals were the most important ecotopes in the dry Chaco [8,10,11,13–15], but most of these surveys did not include domiciles and the one that did include them had a different goal [13]. The current study aims to fill this knowledge gap and identify the types of (peri)domestic structures that function as key sources of bugs at the initial stages of house reinfestation after an insecticide spraying campaign.

The nutritional status of triatomine bugs (indexed by body weight-to-body length ratios, W:L) affects all vital rates, the bugs' propensity to fly substantial distances, and the regulation of bug population size [16,17]. The very few estimates of the blood-feeding frequency of domestic [16,18–20] and peridomestic [8,10] populations of Triatominae were restricted to *T. infestans* and *Rhodnius prolixus* Ståhl. Similarly, the only two studies that assessed variations in the nutritional status or body weight of domestic bug populations included only 3 selected houses infested by *T. infestans* and 1 house highly infested by *R. prolixus* [16,18]. *T. infestans* from chicken coops were in better nutritional status than bug populations from pig and goat corrals [8,10,21], and no comparisons with domestic bug populations were ever made. With one exception [22], there is a striking lack of published information on the distributions of W:L and female fecundity of other species of Triatominae collected in human dwellings. Estimates of female fecundity and body weight of bug populations developing in closed, small experimental huts housing 1–4 chickens [e.g., 23–25] are less informative because variations in conditions and resources differ substantially from those in field bug populations. Whether the combined effects of habitat type and host species composition impinge on the blood-feeding rates, nutritional status and fecundity of (peri)domestic bug populations has not been investigated simultaneously in a well-defined area and is another objective of the current study.

The probability that *T. infestans* bugs initiate flight depends at least on temperature, W:L, and season [17,26–28]. Previous studies based on bug nutritional status and light-trap catches of *T. infestans* versus analysis of spatio-temporal patterns of reinfestation suggested conflicting results regarding the duration and detailed time structure of the dispersal season and subsequent establishment [10,27,29].

The heterogeneity of rural house compounds in the dry Chaco of Santiago del Estero Province in northern Argentina offers unique opportunities to investigate how habitat and host species may affect various population attributes of *T. infestans*. A separate article focused on the human-feeding rates of domestic *T. infestans* in the study area [20]. Here we adopted a demographic approach and measured several fitness components as putative indices of relative habitat suitability for (peri)domestic bug populations in early spring. We considered each site of occurrence of *T. infestans* as the unit of analysis to model variations in response variables. At a geographic scale including 270 houses, we measured infestation and bug abundance per site, stage structure, and host abundance. At a detailed scale including 64 infested sites, we also assessed daily blood-feeding rates, host choices, engorgement and nutritional status, and female fecundity (defined as numbers of chorionated eggs per female, including females with no chorionated eggs). We also investigated whether early spring (September–October) may represent a pulsed dispersal period of *T. infestans* [29] that previous light-trapping experiments did not detect [27].

Partial background evidence suggested that *T. infestans* would be most abundant and productive in chicken coops and other ecotopes associated with chickens (storerooms and open sheds); chicken-associated bugs would feed more often and reach a higher engorgement status, W:L, and female fecundity than bugs from other habitats, and out-migrate much less frequently than those in pig and goat corrals [8,10,21,27]. Although this ranking served as the initial hypothesis of our study, how domestic bugs and other peridomestic populations fare is uncertain given the lack of prior information. We also hypothesized that the host-feeding choices of (peri)domestic bugs should be structured by type of habitat. Testing these hypotheses is important because the current understanding of the population dynamics of Triatominae at meaningful spatial scales is still fragmentary and limits the development of improved vector control tactics.

We summarize quantitatively how the seven main ecotopes herein identified (domicile, storeroom, kitchen, chicken coop, pig corral, goat corral, granary) contribute to quantities that people may wish to control in the interest of public health: (a) the number of bugs that feed on humans (as a surrogate for the risk of human infection in different ecotopes); (b) the egg production of female bugs (as a surrogate for the contribution of different ecotopes to bug population growth); and (c) the number of dispersing females (as a surrogate for the contribution of different ecotopes to bug dispersal and reinfestation of uninfested sites).

Materials and Methods

Study area

Field work was carried out in the austral spring months of October–November 2003 in 11 neighboring rural communities with 270 houses in Figueroa Department (27° 23′S, 63° 29′W), Santiago del Estero Province, Argentina (Figure S1). The study area had been sprayed with pyrethroid insecticides by vector control personnel approximately three years before our fieldwork, and no further interventions were made [14]. Most houses were

made of adobe walls and thatched roofs, with one or two adjacent bedrooms and a front veranda 5–10 m wide (i.e., domestic areas), and had multiple peridomestic structures as described (Text S1). Ecotope is a type of bug habitat with similar physical characteristics, function and resident hosts (e.g., chicken coop). For any house compound, a given ecotope may have more than one bug collection site (e.g., two separate chicken coops at the same house).

Study design

A cross-sectional survey of house infestation was conducted in October–November 2003 before new control interventions [14]. Each house was visited and georeferenced, and the location and type of building material of each (peri)domestic structure were recorded.

Vector surveys

Four teams, each composed of one supervisor and three skilled bug collectors, searched for triatomine bugs in all (peri)domestic sites of 233 inhabited houses using timed manual collections with a dislodging spray (0.2% tetramethrin, Espacial 0.2, Argentina). Two persons searched for bugs in the peridomestic ecotopes usually found infested by using 0.25 person-h on each site. Another person searched in human sleeping quarters during 30 min (0.5 person-h per domicile). On average, one person-h was used for each house compound. The ecotope where each bug was collected was classified as one of 16 types based on its function and main local host (see Results). Searches were usually conducted between 0800 and 1400 hours on non-rainy days, but sometimes searches started later because householders were not available. Weather conditions during the period from 2000 to 0600 hours that preceded every bug collection day were suitable for blood-feeding [20] and mostly so for flight dispersal ($\geq$22°C and wind speed $<$5 km/h [27].

All (peri)domestic sites positive for *T. infestans* among houses inspected from 20 to 27 October 2003 were considered eligible for detailed blood-feeding studies with emphasis on domestic sites. Time constraints for processing the bugs within 8 h of capture dictated that insects from 64 (22.9%) of the candidate sites in 57 house compounds were processed for body measurements, urine color, nutritional status and bloodmeal sources. These 64 sites were all of the sites which satisfied the time constraints, and were not a sample of a larger number of possible sites. In view of host-feeding and fecundity results, we took a supplementary sample (from frozen specimens) including 57 peridomestic sites from 29 other house compounds to increase the sample size of peridomestic bugs and females to approximately 60 and 30 per ecotope, respectively; this supplementary sample lacked data on urine color, engorgement status and W:L.

All triatomine bugs collected were kept in a cooler at 10–12°C until arrival to the field laboratory, and then were identified to species and counted by stage as described [14]. Sex identification in fifth-instar nymphs was based on the presence of an immature female reproductive system on the eighth tergite [30], confirmed via morphological differences in the eighth and ninth tergites [31]. Late-stage bugs were defined as fourth instars, fifth instars, adult females, and adult males. All late-stage bugs were weighed individually in an electronic balance (precision, 0.1 mg, Ohaus, Pine Brooks, NJ) and measured from clypeus to abdominal tip with a hand-held vernier caliber accurate to 0.02 mm. Late stages were individually examined for the presence of colorless urine within 8 h of capture using the method developed by Catalá [23]. The site-specific proportion of *T. infestans* that fed during the preceding night (i.e., daily blood-feeding rate) was estimated as a weighted average of the observed proportion of fourth- and fifth-instar nymphs with colorless urine multiplied by a temperature-dependent correction factor and the (uncorrected) proportion of adult bugs with colorless urine, relative to the number of bugs examined for urine color [23]. The underlying physiological rationale of the method, comparison with other data, estimation details and the exact formula are given elsewhere [20].

The engorgement status (formerly called qualitative nutritional status in [10,32]) of late-stage *T. infestans* was determined by direct observation of a cross-sectional view of the abdomen perpendicular to the long axis of the body to assess the degree of cuticle distension (nymphs) [10] and the volume and shape of the anterior midgut against a flashlight (adults) [33]. Bugs were classified as unfed, little fed, medium fed, and fully fed (i.e., starved, or with scarce, good, or large blood contents). All bugs were kept frozen at −20°C upon arrival to the laboratory in Buenos Aires.

Host-feeding sources

Bugs were dissected and the midgut with the blood meal was extracted into a previously labeled, weighed vial [20,32]. The number of chorionated eggs present in the oviducts was counted. Bloodmeal contents were tested with a direct ELISA assay against human, dog, cat, chicken, pig, goat and murid rodent (rat or mouse) antisera with high sensitivity and specificity values as described [20,32]. We report the proportion of reactive bugs (i.e., those positive against any of the tested antisera) that contained each type of host blood.

Data management and analysis

The data for each house visited were entered in two databases: one for site infestation (Table S3, data sheet Infestation_data) that included a unique identifier code for each of the 1,297 collection sites at 233 inhabited houses, and one for each bug examined for urine color, body weight (W, mg), total body length (L, mm), W:L ratio (mg/mm) and other attributes in a sample of sites (Table S3, data sheet Feeding_fecund_flight_data). The latter database included a total of 769 late-stage insects examined for at least one of these attributes: 544 were examined for transparent urine; 551 for W; 550 for L and engorgement status; 729 for ELISA; 214 fifth instars for sex identification, and 216 females for fecundity. All proportions herein reported have attached standard errors clustered by bug collection site as estimated by Stata 12 [34].

The relative abundance of fifth-instar nymphs (the stage with submaximal reproductive value) was taken an an index of successful development over several months and future recruitment of adult stages (i.e., productivity) in infested sites. Total bug catch per infested site, productivity, and female fecundity were highly overdispersed and no transformation normalized the data. Therefore we used negative binomial regression with robust standard errors to test for ecotope effects on the response variables using Stata 12 [34,35]; relative abundance (RA), relative productivity (RP) and relative fecundity (RF) (labeled in Stata output as 'incidence-rate ratios') and their 95% CI were calculated. Logistic regression with robust standard errors was used to test for ecotope effects on site-specific infestation prevalence.

Daily blood-feeding rate and engorgement status (with unfed and little-fed bugs pooled in one class, and medium- or fully-fed bugs in another) were used as response variables in random-intercept logistic regression models clustered by collection site using Stata 12 [34,35]. Different bug collection sites were assumed independent (i.e., having a domestic site within the same house compound would not affect the blood-feeding rate (or any other demographic parameter) of bugs in the chicken coop of the same

compound). The predictor variables were ecotope (a categorical variable with seven levels), bug stage (a categorical variable with three levels, with fourth- and fifth-instar nymphs pooled, males and females), total bug abundance per unit of catch effort per site, and mean maximum temperature during the night preceding bug catch. Interaction terms were added one by one to the main-effects model and retained in the final model if the coefficients of the interaction terms had $P<0.05$ for a test of the null hypothesis that the coefficient was zero.

We used the allometric equation in log-transformed form ($\log W = \log(a)+b*\log L$) to estimate the parameters a and b for males, females, fourth- and fifth-instar nymphs using random-intercept linear regression analysis [35]. Throughout $\log = \log_e$. Fourth- and fifth-instar log W distributions were bimodal in every ecotope and could be separated visually into an upper (heavier) and lower (lighter) distribution with separation points at 4.1 and 5.2 mg, respectively. The distributions of log L in fourth- and fifth-instar nymphs were also bimodal and could be separated visually into an upper and lower distribution at 2.55 and 2.85 mm, respectively. We ran separate regressions for the lower and upper distributions for fourth- and fifth-instar nymphs, using the log W separation points for each stage to break each stage's distribution into two parts. In a second step we added ecotope and its interaction with log L as independent variables.

Individual adult W:L and the maximum temperature between 2000 and 0600 hours of the night preceding capture were used to estimate an individual probability of flight initiation of adult bugs from a given site using the model described in [17]. In practice, such maxima were always at 2000 hours. At this time in October in the same region, the differences between internal and external temperatures within various (peri)domestic ecotopes were nil [9]; therefore we did not adjust records of external temperature for ecotope-specific dampening effects. Adult *T. infestans* bugs with a probability of flight initiation greater than 0.05 were taken as potential fliers. Mark-recapture experiments with adult *T. infestans* conducted in a salt flat in Cordoba recorded that a small fraction of the bugs that flew did so for just a few meters from the release point [26]. Therefore, we assumed that a small fraction (0.05) of the adult bug population that might fly would travel such short distances that they would not count as dispersers. We also tried trivial flight thresholds of 0.01, 0.05, and 0.10 to see how sensitive the results were to the choice of the threshold.

Quantitative summary of risk indices

(a) The number of bugs that fed on humans. For ecotope i (for example, i = 1 refers to domiciles, i = 2 refers to storerooms), let SI(i) be the number of sites infested with *T. infestans*. Let B(i) be the average number of bugs per infested site of ecotope i. Then the total number of bugs in all sites of ecotope i is $SI(i)*B(i) = TB(i)$. Let PR(i) be the percentage of bugs that were reactive for ELISA (i.e., had an identifiable blood meal). Let PH(i) be the fraction of reactive bugs in ecotope i that fed on humans. Then the number of bugs of ecotope i that were reactive and were fed on humans is $BH(i) = TB(i)*PR(i)*PH(i) = SI(i)*B(i)*PR(i)*PH(i)$.

(b) The egg production of female bugs. Let AF(i) be the fraction of bugs in ecotope i that are adult females (that is, the fraction of bugs in ecotope i that are adults, times the fraction of adult bugs in ecotope i that are females). Let E(i) be the average number of chorionated eggs per adult female. Then the total eggs in ecotope i is $TE(i) = TB(i)*AF(i)*E(i) = SI(i)*B(i)*AF(i)*E(i)$. This quantity TE(i) estimates the contribution of ecotope i to bug population growth, assuming that each egg contributes equally to bug population growth. Data are lacking on the egg production of bugs in granaries.

(c) The number of flight-dispersing females. Let D(i) be the probability that an adult female in ecotope i will disperse by flight in some specified unit of time. Then the total number of flight-dispersing adult females expected per unit of time from ecotope i is $TD(i) = TB(i)*AF(i)*D(i)$. This quantity TD(i) is an estimate of the contribution of ecotope i to the recolonization or reinfestation of uninfested sites by adult female bugs, assuming that each dispersing adult female bug has an equal chance of colonizing an uninfested site. Distance between sites may be relevant when houses are much more sparsely distributed than in the rural villages of Santiago del Estero, where there is a dense network of potential bug habitats. One could define and estimate similar estimates for adult male bugs or for all adult bugs or for all bugs. For goat corrals, for which we had no W:L data, we borrowed spring estimates from a previous study in the same region [10]. Lack of W:L data for granaries did not allow us to estimate flight dispersal probabilities from this ecotope.

To calculate risk indices per site (i.e., structure) for each ecotope, we divided the total index by the number of sites of that ecotope (Table S2).

Results

Population abundance and stage structure

Of 1,297 identified sites searched for triatomine bugs, 279 (21.5%) were positive for *T. infestans* and 2,145 bugs were caught (Table 1). The ecotopes most frequently infested were domiciles (38.7%), granaries (33.3%), chicken coops (30.2%), storerooms (29.5%), goat corrals (26.6%) and pig corrals (23.9%). In absolute numbers, however, domiciles led the ranking (94) followed by storerooms, goat and pig corrals (41–45), and chicken coops (26). These five ecotopes plus kitchens and granaries (the seven main ecotopes) included 274 of the 279 infested sites detected. Using logistic regression analysis, we rejected the null hypothesis of no differences among main ecotopes in infestation prevalence (Wald $\chi^2 = 27.80$; df = 6; $P<0.001$). Domiciles had greater odds of being infested than goat corrals –the reference category (OR = 1.74, CI = 1.13–2.67)– and kitchens were less likely to be infested (OR = 0.43, CI = 0.23–0.79).

Bug abundance was highly overdispersed in every main ecotope (range of variance-to-mean ratios, 5–15) (Figure 1). Using negative binomial regression analysis, the relative abundance of *T. infestans* per infested site differed significantly among the seven main ecotopes (Wald $\chi^2 = 23.58$; df = 6; $P<0.001$). Compared to infested goat corrals, infested granaries (RA = 3.31, CI = 1.52–7.22), kitchens (RA = 2.50, CI = 1.42–4.38), chicken coops (RA = 1.86, CI = 1.18–2.92) and storerooms (RA = 1.73, CI = 1.04–2.87) had significantly larger relative bug abundance. Similarly, in infested sites, productivity was significantly larger in granaries (RP = 4.84, 1.74–13.43), chicken coops (RP = 3.07, 1.71–5.51), kitchens (RP = 2.93, 1.42–6.01) and storerooms (RP = 2.16, 1.17–3.97) than in goat corrals (Wald $\chi^2 = 32.0$; 6 df; $P<0.0001$).

The stage structure of *T. infestans* populations (after pooling first to third instars) differed significantly among the seven main ecotopes ($\chi^2 = 92.0$; df = 24; $P<0.001$) (Figure 2A). Fifth-instar nymphs comprised the largest fraction of the population in chicken coops (38.8%), granaries (36.0%) and storerooms (30.8%) –all ecotopes where chickens were the main or only bloodmeal source– compared with goat corrals (24.7%) or pig corrals (21.2%). The mean percentage of adult females (41.7%) differed marginally significantly among the main ecotopes ($\chi^2 = 11.1$; df = 6; $P = 0.085$), with more females in domiciles (48.9%) and chicken coops (46.2%) than in storerooms (33.6%), pig corrals (35.8%) and

Table 1. Mean prevalence of site infestation with *T. infestans*, daily host-feeding rate and median feeding interval by ecotope type, and total risk indices (a–c).

Ecotope	Number of sites examined (SE)	Number of sites infested (SI)	% infested PI (SI/SE)	Daily feeding rate (%)	Median feeding interval (in days, quartiles)	Mean number of bugs per infested site (B)	Total bugs (TB)	% of bugs that were reactive (PR)	% of reactive bugs fed on humans (PH)	(a) Number of bugs feeding on humans (BH)	% bugs in ecotope i that are adult females (AF)	Mean number of eggs per adult female (E)	(b) Total eggs of adult females (TE)	Probability that adult female will disperse (D)	(c) Total number of dispersing adult females (TD)
Domicile	243	94	38.7	30.1	4.1 (2.4, 7)	5.78	543	94.8	68.2	351	21.2	12.0	1380	0.064	7
Storeroom	139	41	29.5	26.0	3.1 (2.9,6.3)	8.88	364	95.7	2.2	8	12.8	8.6	430	0.000	0
Kitchen	127	17	13.4	26.7	10.2 (2.4,18.0)	12.82	218	94.4	0.0	0	18.4	12.4	496	0.250	10
Chicken coop	86	26	30.2	31.4	2.8 (2.2,>30)	9.54	248	98.9	0.0	0	9.8	14.8	361	0.000	0
Pig corral	180	43	23.9	33.3	4.0 (1.9, 10.0)	6.02	259	94.1	0.0	0	15.1	10.3	402	0.000	0
Goat corral	169	45	26.6			5.13	231	97.4	2.7	6	35.5	7.7	262	0.000	0
Granary	24	8	33.3			17.00	136	80.0	0.0	0	14.0	0.0	0		
Latrine	98	3	3.1				13								
Open shed	29	1	3.4				131								
Horse corral	4	1	25.0				2								
Other[a]	198	0	0.0				0								
Total	1297	279	21.5	29.6	4.0 (2.4, 7)	7.69	2145								

Figueroa, October 2003 (spring).
[a]Including 48 mud ovens, 60 trees with or without chickens, 21 piled materials, 48 cow corrals, 13 nests and 8 miscellaneous structures inspected.
CI, confidence interval.
Blanks indicate no data.
doi:10.1371/journal.pntd.0003238.t001

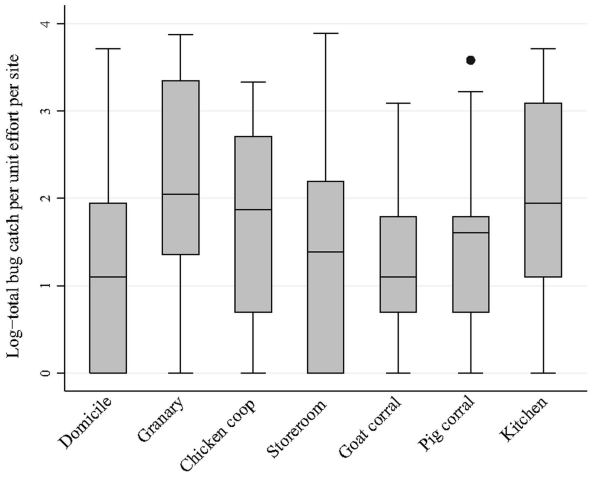

Figure 1. Relative abundance of *T. infestans* per infested site in the 274 infested sites of the seven main ecotopes. Figueroa, October 2003 (spring). In the box-and-whiskers plot, the shaded rectangle spreads from the first to the third quartile, whiskers include up to 1.5 times the interquartile range, and outer dots represent outlying values. Here log = $\log_e$.
doi:10.1371/journal.pntd.0003238.g001

goat corrals (41.5%) (Figure 2B). However, the sex ratio of fifth-instar nymphs (n = 214) was 50% and did not differ significantly between ecotopes ($\chi^2 = 4.84$; df = 4; P = 0.30, excluding granaries and pig corrals) (Figure 2B). Recent apparent colonization attempts were more likely in domestic than peridomestic sites (Text S1).

Blood-feeding rates

Daily blood-feeding rates averaged 29.6% (Table 1). Median feeding interval was 4.0 d across ecotopes and varied widely from 2.8 d in chicken coops to 10.2 d in kitchens; it was the least variable in domiciles. These estimates are derived from data in this paper, except the estimate for domiciles from [20]. Blood-feeding rates were not significantly associated with ecotope and bug stage (Figure S2), bug abundance per site and mean maximum temperatures during the night preceding bug capture using random-intercept logistic multiple regression analysis (Wald $\chi^2 = 8.9$; df = 6; 64 sites with 544 observations; P = 0.354).

Host-feeding indices

Of 729 *T. infestans* tested, 695 (95.1%) had at least one host identification and were considered reactive (Table 2). Of 107 bugs classified as unfed 13 (12.2%) were non-reactive, whereas of 416 bugs classified as fed 7 (1.7%) were non-reactive (Fisher's exact test, P<0.0001, rejecting the null hypothesis that unfed and fed bugs had the same proportion of non-reactive bugs).

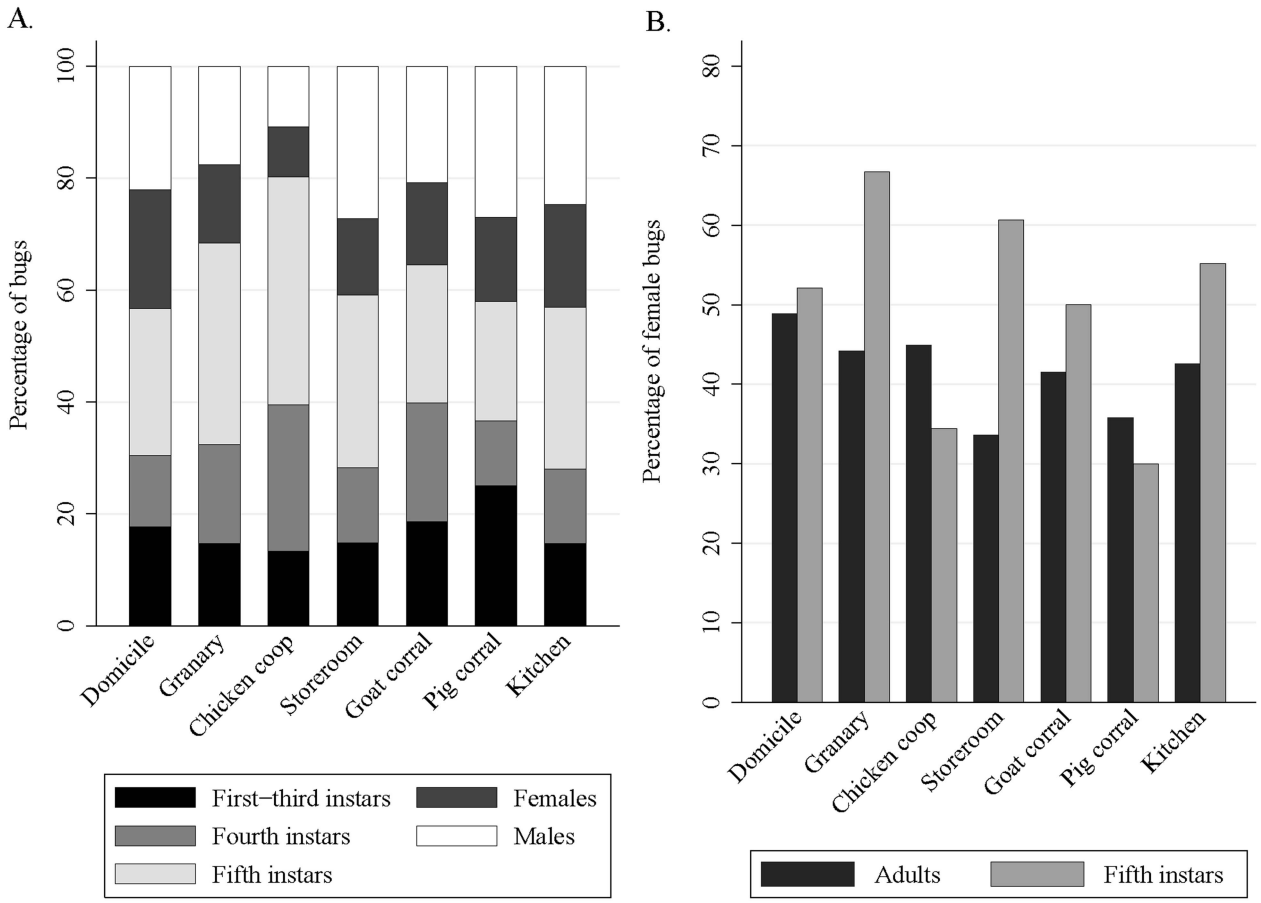

Figure 2. Stage structure of *T. infestans* populations (A) and proportions of adult bugs and fifth-instar nymphs that were female (B) in the 274 infested sites of the seven main ecotopes. Figueroa, October 2003 (spring). Domicile = human sleeping quarters.
doi:10.1371/journal.pntd.0003238.g002

Table 2. Host-feeding patterns of *T. infestans* according to type of ecotope.

	No. of bugs reactive	Blood source (No., %)							All sources	% unmixed
Ecotope	**No. non-reactive**	**Humans**	**Dogs**	**Chickens**	**Cats**	**Goats**	**Pigs**	**Rodent**		
Domicile	289	197	26	63	3	6	4	1	300	96.5
	16	68.2	9.0	21.8	1.0	2.1	1.4	0.3		
Granary	8	0	0	2	3	0	2	1	8	100
	2	0.0	0.0	25.0	37.5	0.0	25.0	12.5		
Chicken coop	86	0	0	86	0	1	0	0	87	98.8
	1	0.0	0.0	100.0	0.0	1.2	0.0	0.0		
Storeroom	89	2	4	73	1	13	0	0	93	96.6
	4	2.2	4.5	82.0	1.1	14.6	0.0	0.0		
Goat corral	74	2	1	6	2	55	16	0	82	90.5
	2	2.7	1.4	8.1	2.7	74.3	21.6	0.0		
Pig corral	64	0	0	0	5	8	52	0	65	98.4
	4	0.0	0.0	0.0	7.8	12.5	81.3	0.0		
Kitchen	85	0	2	82	0	0	2	0	86	98.8
	5	0.0	2.4	96.5	0.0	0.0	2.4	0.0		
Overall	695	201	33	312	14	83	76	2	721	96.7
	34	28.9	4.7	44.9	2.0	11.9	10.9	0.3		

Figueroa, October 2003 (spring).
doi:10.1371/journal.pntd.0003238.t002

The reactive bugs fed mainly on chickens (44.9%) and humans (28.9%), and much less frequently on goats (11.9%), pigs (10.9%), dogs (4.7%), and cats (2.0%) (Table 2). Only two rodent bloodmeals were detected and they occurred in a domicile and a granary. The host-feeding patterns were spatially structured according to habitat type and correlated closely with the main resident host(s). In domiciles, the main bloodmeal sources were humans (68.2%) followed by chickens (21.8%) and dogs (9.0%) [20]. Chicken blood meals prevailed in chicken coops, storerooms and kitchens (range, 82.0–100%), and occurred in all ecotopes except pig corrals. Bugs from pig corrals and from goat corrals were mainly fed on pigs and goats, respectively. Domiciles, storerooms and goat corrals had the largest number of different bloodmeal sources identified, and mixed blood meals were most frequent in storerooms (9.5%). Most bugs with identified sources had unmixed blood meals (96.7%) and very few had fed on two (2.9%) or on three (0.4%) host species. No significant association between the percentage of bugs that fed on a given host and bug stage was detected by separate χ^2 tests.

The occurrence of blood meals from hosts that characteristically did not use certain ecotopes provided clues to bug dispersal events between domestic and peridomestic ecotopes (Text S1).

Engorgement and nutritional status

Fully-fed *T. infestans* declined from 29.6% in chicken coops and 17.7% in domiciles to 8.7% in kitchens and 5.9% in pig corrals, with marginally significant differences among ecotopes ($\chi^2 = 19.3$; df = 12; P = 0.081) (Figure 3A). Conversely, unfed bugs peaked in kitchens (34.8%) and pig corrals (26.5%); they were the fewest in domestic sites (20.2%) and chicken coops (15.5%). Females were more frequently fully or medium engorged than males (Figure 3B). Random-intercept logistic regression analysis of engorgement status showed significant interaction effects ($P<0.05$) between ecotope and bug stage (Wald $\chi^2 = 51.9$; df = 14; $P<0.001$), with female bugs having a six times greater odds of being medium or fully engorged than nymphs (reference category). Engorgement status and W:L ratios were positively and highly significantly ($P<0.001$) related among fourth instars (Spearman's correlation coefficient, $\rho_S = 0.779$), fifth instars ($\rho_S = 0.821$), females ($\rho_S = 0.660$), and males ($\rho_S = 0.526$). The proportion of bugs that fed on the preceding night increased steadily from 4.2% in unfed bugs to 20.7%, 38.0% and 68.8% in successive categories of increasing engorgement ($\chi^2 = 119.6$; df = 3; $P<0.001$).

We investigated the relationship between log W and log L and whether it varied with bug stage and ecotope using random-effects multiple linear regression (Table S1). Log W increased highly significantly with log L among the lower and upper distributions of fourth and fifth instars and in females, but not in males (Figure 4). When ecotope effects were added to these models, significant interaction effects ($P<0.05$) were detected for lighter fourth instars (with greater increase in log W per unit of log L in domiciles relative to kitchens –the reference category); lighter fifth instars (with lower increase in pig corrals), and heavier fifth instars (with lower increase in storerooms).

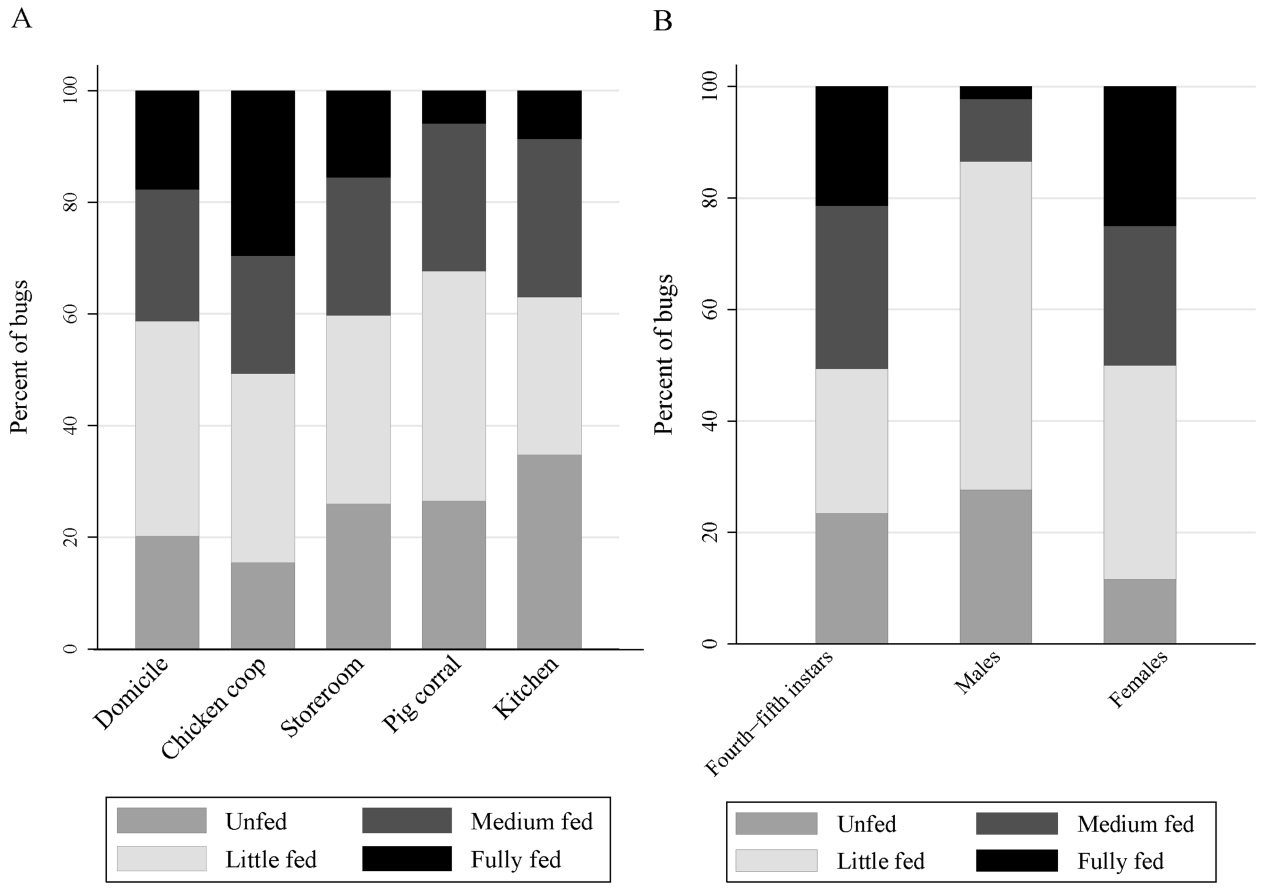

Figure 3. Engorgement status of *T. infestans* by type of ecotope (A) and bug stage (B). Figueroa, October 2003 (spring).
doi:10.1371/journal.pntd.0003238.g003

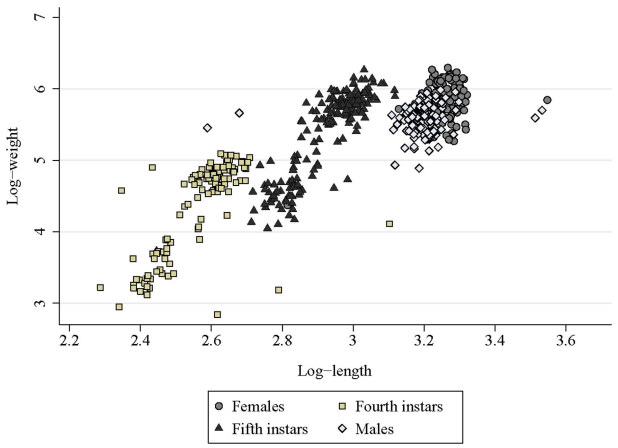

Figure 4. Relationship between log-weight (W) and log-length (L) in different stages of *T. infestans* collected in (peri)domestic ecotopes. Figueroa, October 2003 (spring). Here log = $\log_e$. Four outlier values for males (with log-length <2.7 and >3.5 mm) and three for females (with log-length <3.2 and >3.5 mm) were excluded from the graph and regression model.
doi:10.1371/journal.pntd.0003238.g004

Female fecundity

Most females (81%) were gravid (Table 3). Females with no eggs occurred much more frequently in pig corrals and goat corrals (31–32%) than in chicken coops and kitchens (<8%). The fraction of gravid females differed significantly among ecotopes ($\chi^2 = 11.8$; df = 5; P = 0.038, excluding granaries). The frequency distribution of chorionated eggs per female (including females who were not gravid) was substantially and significantly over-dispersed overall and at every ecotope. The mean number of chorionated eggs per female increased from 7.7–8.6 in goat corrals and storerooms to 14.8 in chicken coops (Table 3). Bugs from goat corrals (RF = 0.62, CI, 0.40–0.97) and storerooms (RF = 0.69, CI, 0.51–0.94) had a significantly lower fecundity than those from kitchens (reference category) using negative binomial regression clustered by site (Wald $\chi^2 = 14.9$; df = 5; P< 0.011; n = 214 females). The number of chorionated eggs per female correlated positively and strongly (r = 0.516; P<0.001) with W:L (Figure S3).

Flight dispersal

The percentage of all female adults that were potential fliers predicted by the model [17] peaked in kitchens (25.0%) and domestic sites (6.4%) and was very low in storerooms, chicken coops and pig corrals in early spring (Figure 5). Potential male fliers outnumbered females at every ecotope and declined from 60.0% in chicken coops and 58.3% in pig corrals to 30.8% in kitchens, 25.0% in domiciles, and 20% in storerooms. Ecotopes ranked differently by sex. The use of a trivial flight threshold of 0.01 (instead of 0.05) yielded a similar qualitative ranking of ecotopes favorable for flight among females (25.0%, 6.4%, 0%, 0% and 0%, respectively) and males (50.0%, 58.3%, 30.8%, 16.7%, and 6.7%, respectively). Nor did higher thresholds (0.1 and 0.15) modify the patterns observed with a threshold of 0.05.

Using the W:L ranges of observed fliers (females, 5.9–11.1 mg/mm; males, 3.6–10.3 mg/mm) in light-trapping surveys of *T. infestans* [27], we estimated that 17.0% (19 of 112) of all females and 38.8% (52 of 134) of all males measured for W:L qualified as potential fliers under adequate weather conditions.

Quantitative summary of risk indices

Table 1 column (a) shows that domiciles had, in total, 351 bugs that were reactive and fed on humans. Storerooms had 8 reactive, human-fed bugs and goat corrals 6. None of the other ecotopes had any reactive, human-fed bugs. The per-site risk index also shows that the overwhelming majority of human-vector feeding contacts occurred in domiciles (Table S2).

Table 1 column (b) shows that the six principal ecotopes other than granaries all produced substantial numbers of eggs. Domiciles had almost three times as many eggs as the next-ranked ecotope, kitchens, followed by storerooms and pig corrals. Goat corrals, though ranked last among the six ecotopes, had about half as many eggs as chicken coops. All six of these ecotopes contributed substantially to bug population growth. Per site, however, chicken coops contributed nearly 50% more eggs than domiciles and 2–4 times more than any other ecotope (Table S2, column b).

Table 1 column (c) shows that the total number of flight-dispersing adult females (per unit effort) expected from kitchens was 10 and from domiciles 7, with no contributions from other main ecotopes. However, flight-dispersing females per kitchen site were expected to be 2.6 times more frequent than flight-dispersing females per domicile site (Table S2).

Table 3. Frequency of female *T. infestans* with chorionated eggs and number of eggs per female (including females with no eggs), by ecotope.

	No. of females		No. of eggs per female		Variance-to-mean ratio
Ecotope	**examined**	**% with eggs**	**Mean**	**95% CI**	
Domicile	71	85	12.0	10.1–13.9	5.3
Storerooms	30	83	8.6	6.1–11.0	5.0
Kitchens	28	93	12.4	8.8–16.0	6.9
Chicken coop	25	92	14.8	11.4–18.3	4.7
Pig corral	31	68	10.3	6.8–13.8	9.0
Goat corral	29	69	7.7	3.2–12.2	18.0
Granary	2	0	0.0		
Total	216	81	11.0	9.7–12.2	7.3

Figueroa, October 2003 (spring). CI, confidence interval.
doi:10.1371/journal.pntd.0003238.t003

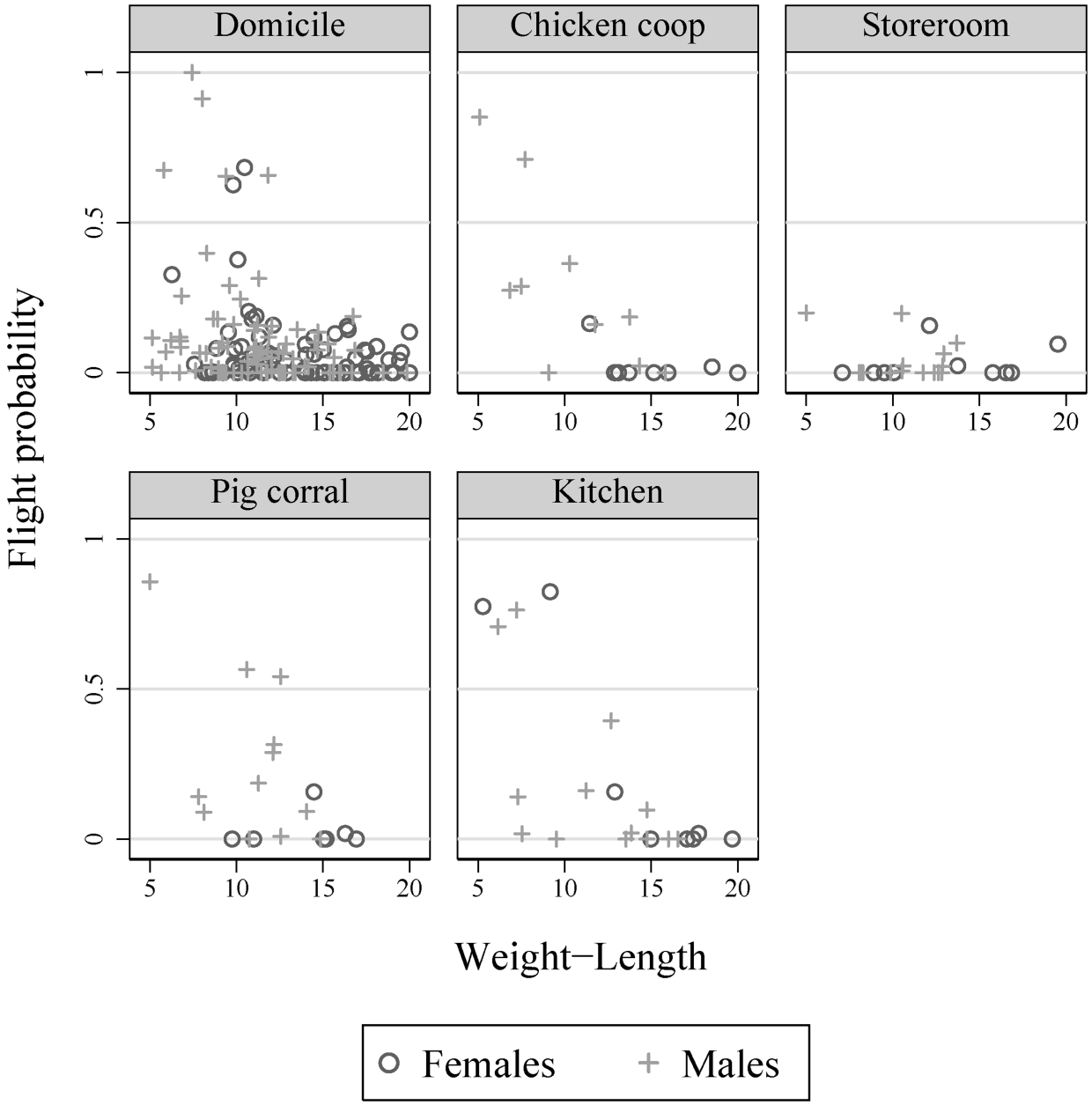

Figure 5. Predicted probability of flight initiation of *T. infestans* by W:L ratio for adult female (o) and male (+) bugs in domestic sites, chicken coops, storerooms, pig corrals, and kitchens. Figueroa, October 2003 (spring).
doi:10.1371/journal.pntd.0003238.g005

Discussion

Our study shows that (peri)domestic populations of *T. infestans* occupying distinct habitats differed substantially and consistently in various fitness-related measures, with chicken coops and domiciles leading the ranking of key habitats. In addition to the characteristic aggregation of bug abundance, we show that female fecundity was also aggregated across ecotopes. Both metrics indicate that bug population growth and abundance were concentrated in a small fraction of very productive, high-quality sites. Our observations pertain to early spring, when bugs achieve maximum rates of population growth [24], temperatures were nearly optimal (reviewed in [9]), and to the third year post-spraying, when the rate of house reinfestation also peaks in the Gran Chaco [4]. Although our data describe a cross-sectional sample for early spring and comparison with other seasons is not possible, the data do challenge the idea that flight dispersal could hardly occur in spring. Both the flight index and host-feeding data support that early spring may represent a pulsed dispersal period of *T. infestans* [29] that our more limited light-trapping experiments did not detect [27]. The flight indices also show that chicken coops, goat and pig corrals were not the only sources of bugs for reinfestation of other structures, with domiciles and kitchens having a prime role in spring. A major strength of the current research effort is the integration of multiple pieces of demographic evidence from all known bug habitats at an unprecedented geographic scale, with special emphasis on habitat suitability and domestic bug populations.

Human sleeping quarters had maximum infestation prevalence rate (38.7%), human-feeding bugs and total egg production, with submaximal values for other demographic and blood-feeding attributes including flight indices. Domestic infestations were high considering the relatively recent insecticide spraying campaign; the fact that professional residual spraying with pyrethroids is known to suppress domestic infestations with *T. infestans* but fails to do so in peridomestic structures [13,14]; and the local absence of pyrethroid resistance [13,14]. The much higher apparent recolonization of domiciles relative to peridomestic sites (Text S1) may have been driven by bugs dispersing from peridomestic residual foci attracted to white lights [36,37]. Then the bugs found suitable refuges in the cracked mud walls and thatched roofs which dampen environmental extremes and have near-optimum average temperatures ranging from 22 to 27°C [9]. These results show again that in the absence of effective vector surveillance and control actions, in this region domestic recolonization progresses rapidly fueled by peridomestic residual foci [4,11,13,38]. The high, least variable blood-feeding rate of domestic bugs was reflected in submaximal engorgement and nutritional status. Because the vector-borne transmission of *T. cruzi* occurs with much more intensity in human sleeping quarters [39], the reduced starvation levels of domestic bugs imply that they are more likely to harbor greater *T. cruzi* densities (including the infectious trypomastigote stage) than other bugs subject to blood-feeding restrictions [40].

Bug populations from chicken coops had several features indicating a high-quality habitat: maximal blood-feeding rates, engorgement status, female fecundity, bug abundance and productivity, and a much lower tendency to disperse by flight than bugs from other habitats in spring, as in previous studies [8,10,21]. The higher feeding frequency and engorgement on chickens most likely compensated for the lower nutritional quality of bird versus mammalian blood, with chickens having much lower hematocrit, hemoglobin and plasma protein than mammals [41]. Consistent with this pattern, female *T. infestans* experimentally fed on guinea pigs had higher fecundity and fertility than pigeon-fed bugs [42].

Key regional husbandry practices underlying the observed patterns include that chickens are the most prevalent and abundant domestic host; they are rarely enclosed in a fixed structure; nesting peaks in spring and early summer, and constant nesting locations favor bug feeding on chickens [7,8,10]. The transient occupation of chicken nests implies that local bugs may disperse when hosts move away. Bug populations from other ecotopes associated with chickens (granaries, storerooms and kitchens) shared some of the features shown by chicken-coop bug populations though at lower levels, probably because these ecotopes had lower host occupation and density.

Bug populations from pig and goat corrals had lower feeding rates, engorgement status, and W:L (in lighter fifth instars) than bugs from chicken coops, as before [10,27]. Here we additionally show that corrals had a much lower proportion of gravid females and female fecundity than bugs from chicken coops, as predicted. Although goat corrals on average had the largest host abundance per site, blood-feeding and nutritional status of bugs were relatively poorer. Pigs are rarely enclosed in corrals, whereas goats may or may not be enclosed at night depending on local husbandry practices and access to the limited grass available in the dry Chaco [10]. In general, the joint action of these factors determines the stability of host supply at the site level, host exposure and host-vector contact rates.

Granaries and chicken coops had greater average bug abundance and productivity than pig or goat corrals, and were therefore of greater relative relevance to Chagas disease. Yet a few sites had disproportionately greater bug abundance than most sites from the same ecotopes, and hence may function as key sources. For example, granaries were frequently infested and had large bug abundance, but they were a very small fraction of all existing sites. The occurrence of granaries depends on local agricultural practices: notoriously absent in a nearby rural area where local peasants did not grow corn [14,15], they were closely related to human infection with *T. cruzi* elsewhere in the same province [43]. The presence of corn and grain sheds were significantly associated with house or peridomestic infestation with *Triatoma pallidipennis* in Mexico and *R. prolixus* in Colombia [44,45].Vector control personnel frequently reported to us that householders did not allow granaries to be sprayed with insecticides when loaded with corn, and would not empty them for treatment. In consequence, granaries frequently remained infested after insecticide spraying campaigns, and may contribute disproportionately to vector persistence at certain times of the year. In addition to prevalence of infestation, bug abundance, frequency of occurrence, and likelihood of serving as a source of dispersing bugs (all reflected in the flight indices), the susceptibility and access of a given ecotope to control interventions also determines its relative importance for vector suppression efforts.

The median feeding interval of *T. infestans* was very short (4.0 d) and varied more widely across ecotopes than in studies covering a limited habitat range [8,10,19]. Bugs from chicken coops fed substantially more often (every 2.8 d) than bugs from other habitats, as predicted by earlier studies. This high feeding frequency is consistent with experimental work showing that when offered daily access to a live rabbit, *T. infestans* and *R. prolixus* females would feed every three days [46], and *T. infestans* females from experimental chicken huts would feed every 1.9 days [23]. In our study, blood-feeding rates were not significantly associated with any of the factors investigated, including overnight temperatures preceding bug catches, unlike in longer experimental studies with more variable temperatures [23]. Female bugs fed much more often than other stages (Figure S2) and apparently had a larger degree of engorgement in chicken coops, partly because they held many eggs.

The fecundity of female populations of *T. infestans* was submaximal and least variable in domestic sites, where total egg production was maximal, and was strongly and positively related to W:L. These novel findings are partly connected to the absence of previous estimates of fecundity across a wide diversity of habitats and bug populations from a well-defined area. The only published field study on the W:L distribution of domestic *T. infestans* did not detect a significant association between W:L on capture and female fecundity measured over the next 30 days [16], perhaps because the sample size was limited (n = 46 females). In bug populations from chicken coops elsewhere, both the weight and female fecundity of *T. infestans* (n = 78) varied little between seasons until the end-of-summer peak of emergence of virgin females [8], implying a weak or nonsignificant relation between W:L and female fecundity.

The host-feeding patterns of *T. infestans* were spatially structured according to habitat type and correlated closely with the main resident host(s) in each ecotope, as predicted, yet bug mobility between ecotopes was greater than expected. The human-fed bugs detected in peridomestic structures and the pig- or goat-fed bugs in human sleeping quarters are strong evidence of flight or walking dispersal of late-stage nymphs and adults of *T. infestans* in both directions (Text S1). The alternative hypotheses (i.e., some humans used peridomestic structures as nocturnal resting sites; goats and pigs were stationed transiently in domiciles

for protection) were highly unlikely; both practices were neither reported by householders nor ever recorded by us during site searches for bugs. Host-feeding results [47], spatial analysis of reinfestation patterns [15] and W:L distributions [10,21,27] consistently support that pig and goat corrals are important sources of bugs that invade domestic habitats. Because corrals or chicken coops with flimsy structure have little capacity to dampen extreme climatic variations [9], bugs at these sites are exposed to increased risks of hyperthermia and desiccation that may trigger bugs' dispersal in search of a blood meal.

Flight-dispersing triatomine bugs nearly always include unfed insects [17,26,27,48,49], and in consequence their previous blood meals are rarely observable with current methods. This fact, combined with limited samples of tested *T. infestans* and seasonality in flight dispersal intensity [29], may explain the marginal occurrence of human blood meals (range, 1–6%) in peridomestic bugs and of goat-fed bugs (range, <1–4%) in domiciles [8,47,50–52]. Mobility of *T. infestans* between (peri)-domestic structures was also underestimated by limited mark-recapture experiments conducted when temperatures were not favorable for active dispersal [53]. Conversely, *T. infestans* sustained tethered flights for at least 20 min at speeds of 2 m/s [54], suggesting its flight range may exceed 2,400 m. Light-trap sampling, microsatellite markers and wing geometric morphometry also suggested frequent active dispersal of *T. infestans* among neighboring house compounds in this region [27,55–57].

Walking dispersal of nymphs and adult bugs may also play a substantial role in house reinfestation at a finer scale [27,49,58]. Fourth- and fifth-instar nymphs of *T. infestans* that walked 8–42 m toward light traps had W:L values of 2.51 and 6.6–16.67 mg/mm, respectively [27]. Based on the wide range of W:L recorded here, we infer that a large fraction of late-stage nymphs may disperse actively under suitable conditions and contribute to the spatial aggregation of infestation recorded within or between neighboring house compounds [15,29,58]. Active dispersal of triatomine bugs links the network of patches at a local scale to a much greater extent than has usually been assumed [1,3,53].

Imbalanced sex ratios may affect insect population dynamics [59]. Sex-biased flight dispersal may contribute to the imbalanced sex ratios among ecotopes, with female bugs outnumbering males in domestic sites and chicken coops. Males outnumbered females in storerooms and pig or goat corrals, as in other surveys [8,10,27]. In contrast, females of *Triatoma dimidiata* predominated across (peri)domestic and sylvatic habitats throughout most of the year [22]. In general, variations in standing adult sex ratios depend on the sex ratio at birth, sex-specific survivorship schedules and timing of adult emergence, sex-biased adult dispersal, and the timing of such dispersal [59]. Our results rule out differential sex ratios in fifth-instar nymphs as a contributing cause of imbalanced adult sex ratios. Because males tend to emerge later and survive better than female *T. infestans* in the insectary, the adult sex ratio is expected to be skewed toward males. We estimate the stationary sex ratio in this species as 38% females (calculated from the ratio between life expectancies of each sex in the insectary [1], multiplied by the sex-ratio at birth, assumed to be 1). This estimate is very close to the 37.5% of live *T. infestans* females recorded after house demolition [60]. In our study, however, there was at least a 10% relative excess of adult females in domestic sites relative to the expected stationary sex ratio, and to the observed adult sex ratio in some peridomestic ecotopes.

The hypothesis of female-biased adult dispersal is supported by field observations of individually marked adult *T. infestans* in open chicken coops with many chickens [61] and microsatellite-based genetic studies [22,55,57]. Conversely, timed manual catches with a tetramethrin-based dislodgant spray were not male-biased [62]. Therefore, the observed deviations from stationary adult sex ratios may be tentatively attributed to: 1) increased survival of females in domiciles; 2) female-biased out-migration from suboptimal peridomestic habitats, or 3) both. Carefully designed experiments are needed to distinguish between these hypotheses, and to clarify whether reproductive and engorgement status may modify the response of adult bugs to the dislodging spray.

Another novel, unexpected study finding is that the predicted number of potential female fliers per unit of capture effort peaked in kitchens and domestic sites relative to goat or pig corrals, thus rejecting our hypothesis. The disagreement may be explained by the fact that previous studies focused on flight probabilities did not include domestic sites and kitchens for comparison; and did not consider ecotope- and sex-specific variations in adult bug abundance to estimate the number of potential fliers.

In support of current predictions, light-trap experiments revealed repeated flight dispersal events of *T. cruzi*-infected *T. infestans* out of human sleeping quarters during late summer, and that male fliers outnumbered female fliers [27]. Bugs from kitchens may be also pushed to disperse by the repellant effects of smoke. Predictions were not affected by assumptions on the trivial flight threshold even though the model underestimates the observed proportions of potential fliers and does not consider adult sex and wind effects [17,28]. Although female *T. infestans* from our study area had flight muscles more often than males and more proneness to initiate flight [28], they had greater W:L and thus were predicted to initiate flight substantially less often than males in spring. Male *R. prolixus* bugs increased substantially their take-off activity in response to female pheromones but the reverse did not occur [63].

Some aspects of our study limit the interpretation of results. To measure female fecundity, we counted the total number of chorionated eggs in the females' reproductive tract rather than recording the rate of oviposition on arrival to the laboratory, based on the assumption that both metrics would be closely correlated. The great majority (91–100%) of *T. infestans* females collected in the dry Argentine Chaco in October–December had sperm in their spermatheca [8,49], and of the thousands of eggs collected after demolishing a rural house only 5% were non-viable [60]. Even if females had mated, there is a chance that the chorionated eggs would not be fertilized subsequently. How much this may modify the estimates of female fecundity is unclear.

The direct ELISA test is a cost-effective option for processing a sizable number of bugs exposed to a well-known range of domestic host species; its advantages and shortcomings relative to molecular methods were discussed elsewhere [20]. We have not assessed the links between blood-feeding rates, host choices, habitats and vector infection with *T. cruzi*, yet bug infection is restricted to domiciles, kitchens and storerooms [39]. *T. cruzi* is considered to be subpathogenic to triatomine bugs, with infection affecting minimally their vital rates (but not the excretion rates) only under prolonged starvation [40,64]. Whether infection with *T. cruzi* enhances, inhibits, or does not affect the dispersal of triatomine bugs [65,66] and specifically of *T. infestans* is crucial for modeling parasite transmission and appears to be unknown.

Host occupancy per site is variable over days to months (especially for chickens, kitchens and storerooms) and difficult to assess precisely [7,10,32], which limits our understanding of host-feeding choices and related metrics. The classification of sites according to the local presence or absence of hosts (past and current) or by local host abundance is as important as the classification according to ecotope but presents special challenges in some peridomestic sites (Text S1).

The three summary indices in this analysis (number of bugs fed on humans, total eggs, and total number of dispersing adult females, by ecotope) depend on the mean number of bugs per infested site, B(i), which is assumed to be proportional to the mean absolute bug population size in ecotope i [67]. Clearly B(i) depends on the time and effort devoted to sampling. These summary indices are relative measures useful for comparing ecotopes approximately, but not for comparing studies with different levels or techniques of bug sampling. The total and per-site risk estimates are useful for different purposes; the latter, for example, may be used to compare villages that differ in their relative number of sites per ecotope.

The quantitative comparisons in Table 1 must be treated as approximate, for several reasons. B(i) depends on two assumptions: infested sites of every ecotope have the same probability of being detected as infested, and a bug in an infested site has an equal probability of being counted for all ecotopes, i.e., a bug in an infested kitchen is as likely to be seen as a bug in an infested domicile. The observed infestation indices were most likely underestimated since timed manual bug collections fail to detect very low-density infestations [12,67,68]. We used the same search effort in each peridomestic site, 0.25 person-hours, so bug abundance was measured on the same scale for every peridomestic ecotope. Relative to each peridomestic site, we used twice as much search effort, 0.5 person-hours, in each domestic site. Because of differences in size and complexity, we have assumed that estimates of the prevalence of infestation were roughly equivalent between domestic and peridomestic sites (Text S1).

Implications for vector control and disease transmission

Our study illustrates a demographic approach to identifying key source habitats which may be applied to other seasons, regions, and species of triatomine bugs. For nearly all of them there is a very limited quantity and quality of demographic data that may assist in understanding their population dynamics and response to vector control actions. This information is vital for the design of innovative, improved vector control actions in key ecotopes where bugs achieve maximum fitness. We anticipate that our framework is relevant for the control of *Triatoma brasiliensis* in Brazil, *T. pallidipennis* in Mexico, and *T. dimidiata* in parts of Central America, all of which have extensive peridomestic bug populations that tend to invade human sleeping quarters [69–71].

Domestic sites and chicken coops provide higher-quality habitats than other ecotopes, and are therefore involved in the rapid recovery of *T. infestans* populations after control interventions. Human sleeping quarters would serve as prime targets of dispersant bugs after insecticide spraying campaigns that do not achieve community-wide vector elimination, and then would become productive habitats and sources for bug propagation. This dual functioning of human sleeping quarters (as targets and as sources) and its early role in reinfestation has been overlooked in the past.

Domiciles outnumbered each type of peridomestic ecotope in the absolute and relative frequencies of infested sites, but taken collectively peridomestic structures outnumbered infested domestic sites by a factor of three. Various lines of evidence consistently indicate that peridomestic foci bolster vector persistence after insecticide spraying and increase the risk of domestic invasion and recolonization in the Argentinean Chaco [7,11–13,15,38]. Some structures such as goat corrals may serve as productive habitats at certain times depending on local host supply, refuge availability and weather, and then become sources when conditions become harsh. We propose that the mosaic of suitable patches in peridomestic areas would shift over seasons, whereas human sleeping quarters provide more stable habitats and near-optimum conditions with a more stable supply of suitable hosts.

This article demonstrates that focusing control efforts on the three ecotopes (domiciles, storerooms, and goat corrals) that housed reactive, human-fed bugs would neither eliminate the substantial contributions to bug population growth from kitchens, chicken coops, and pig corrals nor stop dispersal of adult female bugs from kitchens. Rather, comprehensive control of the linked network of ecotopes in a typical house compound and community is required to prevent feeding on humans, bug population growth, and bug dispersal simultaneously.

For the elimination of *T. infestans* and sustained interruption of parasite transmission, one of the worst things vector control programs can do during the attack phase is to restrict the residual application of insecticides to human sleeping quarters and exclude peridomestic structures; or to replace full-coverage insecticide spraying with selective treatments that have little or no residuality (fumigant canisters, pour-on insecticides) and whose effectiveness at a public health scale has weak or no support, as some of them did to reduce costs and increase apparent coverage albeit with much lower quality and impact [5,72]. For example, vector control programs that did not spray insecticide on peridomestic structures but used pour-on insecticides on dogs, goats and chickens did not suppress peridomestic infestations [49, p. 233]. There is often a large difference between standard recommendations to vector control programs [73] and the realities of vector control during recent decades, in conjunction with the increasing decentralization of health services and reduced operational capacity in the field. Good practices in vector control need to be further promoted [74]. For elimination purposes in high-risk areas such as the Gran Chaco, improved vector control at present should include full-coverage, professional application of a double dose of suspension concentrate pyrethroid insecticides to main peridomestic ecotopes and single (standard) doses to domiciles and other lower-quality habitats [13], with additional re-treatment of key ecotopes at defined time intervals. For more sustainable vector and disease control, however, improved vector control needs to be combined with long-term investment in improved housing and appropriate animal husbandry [4,6,73,75] in the frame of broad social participation and education.

Supporting Information

Figure S1 Map of the study area. Inset shows locations of Santiago del Estero Province within Argentina. The study communities (white dots) included were: (1) Tres Pozos, (2) Barrio San Francisco, (3) Cardón Esquina, (4) Barrio Nueva Esperanza, (5) Barrio Guadalupe, (6) Barrio Sagrada Familia, (7) La Loma, (8) Invernada Norte, (9) Vaca Huañuna, (10) Bajo Sequeira, (11) El Chañar, Figueroa, October 2003.
(TIF)

Figure S2 Daily host-feeding rate of *T. infestans* according to type of ecotope and bug stage. Figueroa, October 2003 (spring).
(TIF)

Figure S3 Chorionated eggs per individual female of *T. infestans* according to her W:L ratio and ecotope. Figueroa, October 2003 (spring). Excludes one outlier with W:L = 24 mg/mm and 62 eggs.
(TIF)

Table S1 Random-intercept regression equations for the relationship between $\log_e$-weight (W) and $\log_e$-length

(L) in different stages of *T. infestans* collected in (peri)domestic ecotopes. Figueroa, October 2003 (spring).
(DOCX)

Table S2 Per-site risk indices of the number of bugs that fed on humans, egg production and number of flight-dispersing females. Figueroa, October 2003 (spring).
(DOCX)

Table S3 Infestation and stage-specific bug abundance per site; blood-feeding, nutritional and engorgement status and bloodmeal identification results of (peri)domestic *T. infestans*. Figueroa, October 2003 (spring).
(XLSX)

Text S1 Description of ecotopes, host abundance and site occupancy, recent colonizations and evidence of bug mobility between ecotopes.
(DOC)

Acknowledgments

In memory of Joaquín Zárate, head of the National Vector Control Program at Tucumán. We thank Leonardo Lanati and Natalia Machiaverna for providing active support; Padre Sergio, Sara and Tuki family of Bandera Bajada for field accommodation; Silvana Ferreyra for technical assistance, and Heinrich zu Dohna for helpful comments on a prior version of this paper. J.E.C. thanks the assistance of Priscilla K. Rogerson, and the hospitality of the family of William T. Golden during this work.

Author Contributions

Conceived and designed the experiments: REG MCC LAC GMVP JEC. Performed the experiments: MCC MdPF GMVP LAC JMG. Analyzed the data: REG MdPF GMVP UK JEC. Contributed reagents/materials/analysis tools: REG MCC GMVP MdPF JMG UK JEC. Wrote the paper: REG JEC.

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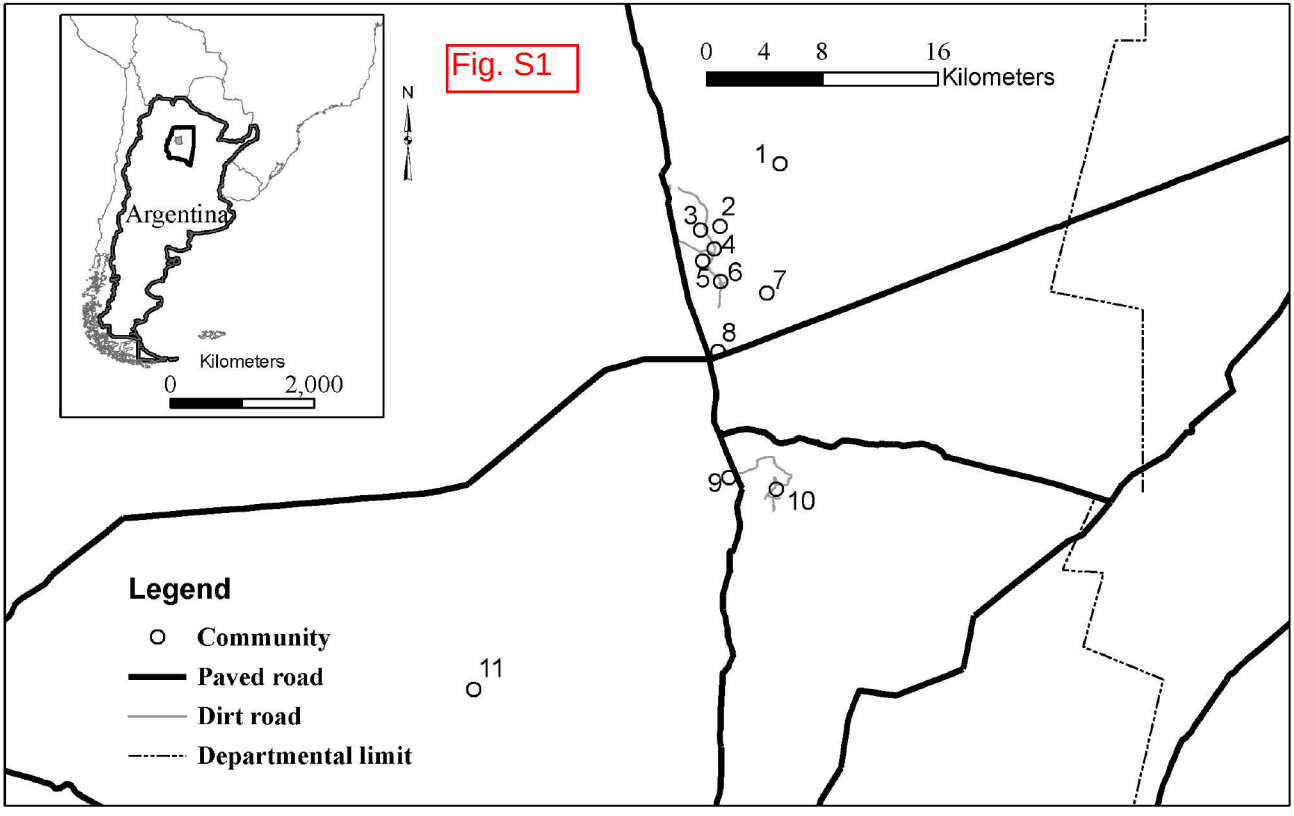
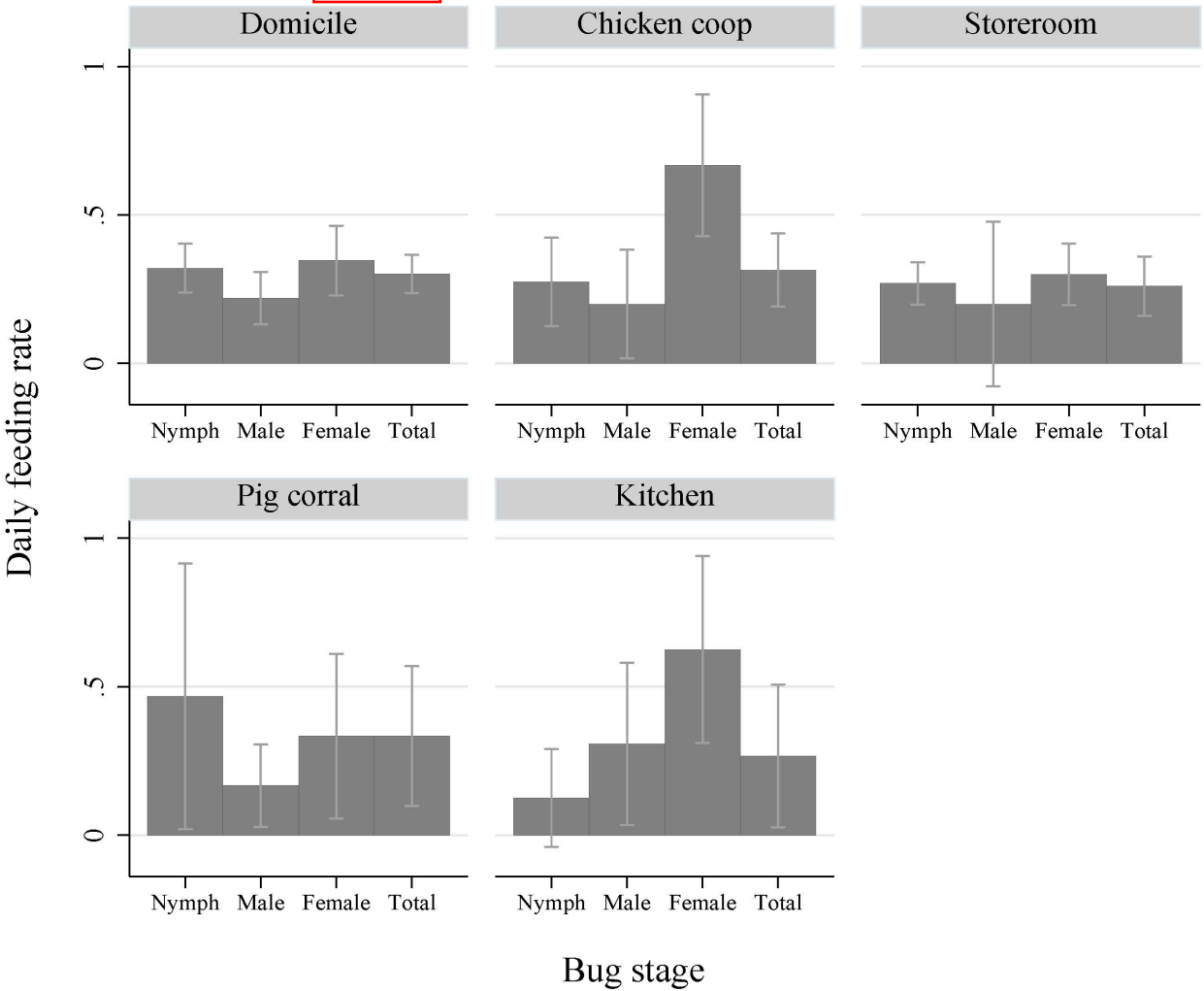


Fig. S1
Argentina
Kilometers
0 2,000
N
0 4 8 16
Kilometers
1
2
3
4
5
6
7
8
9
10
11
Legend
Community
Paved road
Dirt road
Departmental limit

Fig. S2


Domicile
Chicken coop
Storeroom
Pig corral
Kitchen
Daily feeding rate
0
.5
1
Nymph
Male
Female
Total
Bug stage
Mean
95% confidence interval

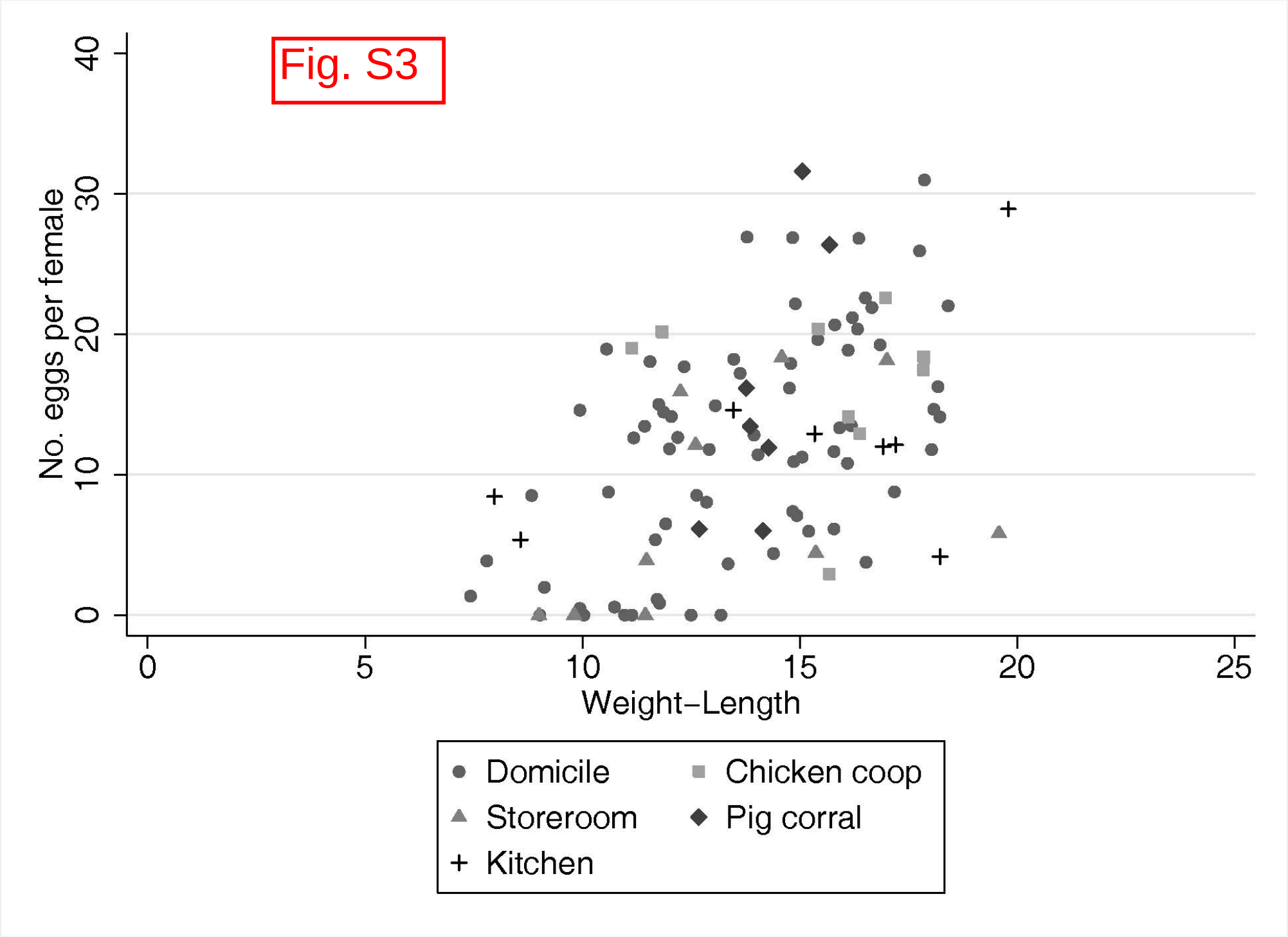


Fig. S3
No. eggs per female
0
10
20
30
40
0
5
10
15
20
25
Weight−Length
Domicile
Chicken coop
Storeroom
Pig corral
Kitchen

Table S1 Random-intercept regression equations for the relationship between $\log_e$-weight (W) and $\log_e$-length (L) in different stages of *T. infestans* collected in (peri)domestic ecotopes. Figueroa, October 2003 (spring).

	No. of bugs measured		Regression coefficients		Wald χ^2 test
Stage	(No. of collection sites)	Intercept (SE)	Slope (SE)	R^2	P
Male	130 (43)	-0.5741 (1.5813)	1.9204 (0.4947)	0.060	<0.001
Female	109 (44)	2.3472 (2.9750)	1.0806 (0.9115)	0.016	>0.2
V lower	60 (24)	-2.6741 (1.1442)	2.5878 (0.4068)	0.418	<0.001
V upper	127 (35)	-0.4728 (0.7378)	2.0859 (0.2471)	0.354	<0.001
IV lower	37 (17)	1.1247 (0.7931)	0.9532 (0.3217)	0.113	<0.01
IV upper	79 (27)	0.5080 (0.8417)	1.6228 (0.3220)	0.277	<0.001

IV upper distribution had weight ≥ 4.2 mg and <5.2 mg.
IV lower distribution had weight <4.2 mg.
V upper distribution had weight ≥5.2 mg.
V lower distribution had weight <5.2 mg.
Females included had length >3.15 cm and <3.5 cm.
Males included had length >3 cm and <3.4 cm.

Table S2 Per-site risk indices of the number of bugs that fed on humans, egg production and number of flight-dispersing females. Figueroa, October 2003 (spring).

Ecotope	number of sites examined SE	(A) number of bugs feeding on humans BH per site	Relative ratio (A)	(B) eggs of adult females TE per site	Relative ratio (B)	(C) number of dispersing adult females TD per site	Relative ratio (C)
Domicile	243	1.44	40.2	13	3.0	0.07	1.0[a]
Storeroom	140	0.06	1.7	8	1.8	0.00	
Kitchen	127	0.00		9	2.1	0.18	2.6
Chicken coop	86	0.00		19	4.4	0.00	
Pig corral	180	0.00		5	1.2	0.00	
Goat corral	169	0.04	1.0[a]	4	1.0[a]	0.00	
Granary	24	0.00		0	0.0	ND	

[a] Reference category.

siteid	houseid	ecotcat	stageMa	stageFe	stageV	stageIV	stageIII	stageII	stageI
1	1	pig corral	2	2	0	1	0	0	1
2	1	domicile	2	2	9	0	0	1	0
3	1	granary	2	2	1	0	0	0	0
4	2	domicile	0	0	0	0	0	0	0
5	2	chicken coop	0	0	0	0	0	0	0
6	3	goat corral	0	1	0	1	1	0	0
7	3	goat corral	0	0	0	0	0	0	0
8	3	pig corral	2	1	3	0	0	0	0
9	3	pig corral	2	1	0	0	1	29	3
10	3	kitchen	0	0	0	0	0	0	2
11	3	domicile	0	0	1	0	0	0	0
12	3	domicile	0	0	0	1	0	0	0
13	3	open shed	0	0	0	0	0	0	0
14	4	kitchen	0	0	0	0	0	0	0
15	4	domicile	6	1	4	1	1	1	2
16	5	domicile	0	2	0	1	0	1	0
17	5	chicken coop	0	0	0	0	0	0	0
18	6	tree with chickens	0	0	0	0	0	0	0
19	6	goat corral	0	0	0	0	0	0	0
20	6	kitchen	0	0	0	0	0	0	0
21	6	storeroom	0	0	0	0	0	0	0
22	6	domicile	0	0	0	0	0	0	0
23	6	chicken coop	0	0	0	0	0	0	0
24	7	latrine	0	0	0	0	0	0	0
25	7	goat corral	0	0	0	0	0	0	0
26	7	storeroom	0	0	0	0	0	0	0
27	7	domicile	1	0	9	4	9	9	0
28	7	nest	0	0	0	0	0	0	0
29	8	goat corral	1	1	0	0	0	0	0
30	8	pig corral	4	1	5	5	1	1	1
31	8	storeroom	0	0	0	0	0	0	0
32	8	domicile	1	0	1	0	0	0	0
33	8	chicken coop	0	0	0	0	0	0	0
34	8	granary	0	0	0	0	0	0	0
35	9	latrine	0	0	0	0	0	0	0
36	9	goat corral	0	0	2	0	1	0	0
37	9	pig corral	1	0	1	0	0	0	0
38	9	kitchen	0	0	0	0	0	0	0
39	9	storeroom	0	1	0	1	0	0	0
40	9	domicile	3	3	0	0	0	0	0
41	9	oven	0	0	0	0	0	0	0
42	9	piled material	0	0	0	0	0	0	0
43	10	tree with chickens	0	0	0	0	0	0	0
44	10	goat corral	0	0	0	0	0	0	0

45	10	pig corral	0	0	0	0	0	0	0
46	10	pig corral	0	0	0	0	0	0	0
47	10	storeroom	0	3	2	1	0	0	0
48	10	domicile	2	5	2	1	1	0	2
49	11	goat corral	0	0	0	0	0	0	0
50	11	pig corral	0	0	0	0	0	0	0
51	11	kitchen	13	14	8	0	4	2	0
52	11	horse corral	0	0	0	0	0	0	0
53	11	domicile	0	1	2	0	0	0	0
54	11	domicile	0	0	0	0	0	0	0
55	11	chicken coop	1	0	1	0	0	3	1
56	11	open shed	0	0	0	0	0	0	0
57	12	latrine	0	0	0	0	0	0	0
58	12	goat corral	0	1	7	2	0	0	0
59	12	pig corral	0	0	0	0	0	0	0
60	12	storeroom	0	1	1	1	1	0	0
61	12	domicile	0	0	0	0	0	0	0
62	12	chicken coop	0	0	3	0	0	0	0
63	13	domicile	0	0	0	0	0	0	0
64	14	pig corral	0	0	0	0	0	0	0
65	14	kitchen	0	0	0	0	0	0	0
66	14	storeroom	0	0	2	0	0	0	0
67	14	domicile	0	0	0	0	0	0	0
68	15	kitchen	0	2	2	2	0	0	0
69	15	domicile	3	1	0	0	0	0	0
70	16	goat corral	1	0	1	1	0	0	0
71	16	pig corral	0	0	0	0	0	0	0
72	16	kitchen	0	0	0	0	0	0	0
73	16	domicile	0	0	0	0	0	0	0
74	17	latrine	0	0	0	0	0	0	0
75	17	goat corral	4	1	6	0	0	0	0
76	17	pig corral	0	0	0	0	0	0	0
77	17	kitchen	0	0	0	0	0	0	0
78	17	domicile	1	0	0	0	0	0	0
79	18	goat corral	0	0	0	0	0	0	0
80	18	pig corral	0	0	0	0	0	0	0
81	18	kitchen	0	0	0	0	0	0	0
82	18	domicile	0	0	3	1	0	0	0
83	18	domicile	8	8	2	0	0	0	0
84	18	chicken coop	0	0	0	0	0	0	0
85	18	open shed	0	0	0	0	0	0	0
86	19	tree with chickens	0	0	0	0	0	0	0
87	19	goat corral	0	0	0	0	0	0	0
88	19	pig corral	0	0	0	0	0	0	0
89	19	cow corral	0	0	0	0	0	0	0
90	19	storeroom	0	0	0	0	0	1	0
91	19	domicile	2	2	0	1	0	0	0

92	19	oven	0	0	0	0	0	0	0
93	19	granary	0	0	0	0	0	0	0
94	20	goat corral	4	2	0	0	0	0	0
95	20	pig corral	0	0	0	0	0	0	0
96	20	storeroom	8	3	10	6	5	12	5
97	20	domicile	0	0	0	0	0	0	0
98	20	chicken coop	0	1	5	2	0	0	0
99	20	oven	0	0	0	0	0	0	0
100	21	latrine	0	0	0	0	0	0	0
101	21	goat corral	0	0	0	2	0	1	0
102	21	pig corral	0	0	0	0	0	0	0
103	21	kitchen	4	0	3	1	0	0	0
104	21	cow corral	0	0	0	0	0	0	0
105	21	domicile	1	0	1	0	0	0	0
106	21	chicken coop	0	1	3	1	1	0	0
107	22	goat corral	0	0	0	1	1	1	0
108	22	pig corral	0	0	0	0	0	0	0
109	22	pig corral	0	0	0	0	0	0	0
110	22	kitchen	0	0	0	0	0	0	0
111	22	domicile	0	0	0	0	0	0	0
112	23	latrine	0	0	0	0	0	0	0
113	23	goat corral	0	0	0	0	0	0	0
114	23	pig corral	0	0	0	0	0	0	0
115	23	kitchen	0	0	0	0	0	0	0
116	23	horse corral	0	0	0	0	0	0	0
117	23	cow corral	0	0	0	0	0	0	0
118	23	storeroom	4	1	4	0	0	0	0
119	23	storeroom	15	5	12	2	1	0	0
120	23	domicile	0	0	1	0	0	0	0
121	23	chicken coop	0	0	0	0	0	0	0
122	23	chicken coop	2	3	6	3	2	2	0
123	24	domicile	0	0	0	0	0	0	0
124	25	goat corral	0	0	0	0	0	0	0
125	25	kitchen	0	0	0	0	0	0	0
126	25	domicile	0	0	0	0	0	0	0
127	25	open shed	3	3	12	10	25	72	6
128	26	goat corral	0	0	0	0	0	0	0
129	26	pig corral	0	0	0	0	0	0	0
130	26	domicile	0	0	0	0	0	0	0
131	27	tree with chickens	0	0	0	0	0	0	0
132	27	latrine	0	0	0	0	0	0	0
133	27	goat corral	0	0	0	0	0	0	0
134	27	pig corral	0	0	0	0	0	0	0
135	27	storeroom	0	0	0	0	0	0	0
136	27	storeroom	0	0	1	0	0	0	0
137	27	domicile	0	0	0	0	0	0	0
138	27	oven	0	0	0	0	0	0	0

139	28	tree with chickens	0	0	0	0	0	0	0
140	28	latrine	0	0	0	0	0	0	0
141	28	goat corral	0	0	0	0	0	0	0
142	28	goat corral	0	0	1	1	0	1	1
143	28	pig corral	0	0	0	0	0	0	0
144	28	domicile	0	0	0	0	0	0	0
145	28	oven	0	0	0	0	0	0	0
146	29	kitchen	0	0	0	0	0	0	0
147	29	domicile	0	0	0	0	0	0	0
148	30	domicile	0	0	0	0	0	0	0
149	31	latrine	0	0	0	0	0	0	0
150	31	goat corral	0	0	0	0	0	0	0
151	31	pig corral	0	0	0	0	0	0	0
152	31	storeroom	0	0	0	0	0	0	0
153	31	domicile	0	0	0	0	0	0	0
154	32	domicile	4	0	12	8	6	1	0
155	33	latrine	0	0	0	0	0	0	0
156	33	goat corral	0	0	0	0	0	0	4
157	33	pig corral	0	0	0	0	0	0	0
158	33	pig corral	0	0	0	0	0	0	0
159	33	storeroom	0	0	0	0	0	0	0
160	33	domicile	2	0	0	0	0	0	0
161	33	chicken coop	0	0	0	0	0	0	0
162	34	latrine	0	0	0	0	0	0	0
163	34	kitchen	0	0	0	0	0	0	0
164	34	storeroom	0	0	0	0	0	0	0
165	34	storeroom	0	0	0	0	0	0	0
166	34	domicile	0	0	0	0	0	0	0
167	34	chicken coop	0	2	2	9	0	0	0
168	34	chicken coop	0	0	0	0	0	0	0
169	35	tree with chickens	0	0	0	0	0	0	0
170	35	goat corral	6	4	4	3	0	0	0
171	35	pig corral	0	0	0	0	0	0	0
172	35	pig corral	1	0	3	1	0	0	0
173	35	kitchen	0	0	0	0	0	0	0
174	35	cow corral	0	0	0	0	0	0	0
175	35	storeroom	0	1	0	0	0	0	0
176	35	domicile	0	0	0	0	0	0	0
177	35	fireplace	0	0	0	0	0	0	0
178	35	chicken coop	0	0	0	0	0	0	0
179	35	granary	0	0	0	0	0	0	0
180	36	latrine	0	0	0	0	0	0	0
181	36	goat corral	0	0	0	0	0	0	0
182	36	pig corral	0	0	0	0	0	0	0
183	36	kitchen	0	0	0	0	0	0	0
184	36	domicile	0	0	0	0	0	0	0
185	36	nest	0	0	0	0	0	0	0

186	37	latrine	0	0	0	0	0	0	0
187	37	goat corral	0	0	0	0	0	0	0
188	37	goat corral	0	0	0	0	0	0	0
189	37	pig corral	0	0	0	0	0	0	0
190	37	kitchen	0	0	0	0	0	0	0
191	37	storeroom	1	0	0	0	0	0	0
192	37	storeroom	0	0	0	0	0	0	0
193	37	domicile	0	1	0	0	0	0	0
194	38	tree with chickens	0	0	0	0	0	0	0
195	38	latrine	0	0	0	0	0	0	0
196	38	goat corral	0	0	1	0	1	0	0
197	38	pig corral	0	0	0	0	0	0	0
198	38	pig corral	0	0	0	0	0	0	0
199	38	kitchen	0	0	0	0	0	0	0
200	38	storeroom	0	0	0	0	0	0	0
201	38	domicile	0	0	0	0	0	0	0
202	38	chicken coop	0	0	0	0	0	0	0
203	38	granary	0	0	0	0	0	0	0
204	39	latrine	0	0	0	0	0	0	0
205	39	pig corral	0	0	0	0	0	0	0
206	39	kitchen	0	0	0	0	0	0	0
207	39	cow corral	0	0	0	0	0	0	0
208	39	storeroom	0	0	0	0	0	0	0
209	39	storeroom	0	0	0	0	0	0	0
210	39	domicile	0	0	0	0	0	0	0
211	39	chicken coop	0	0	0	0	0	0	0
212	39	oven	0	0	0	0	0	0	0
213	39	open shed	0	0	0	0	0	0	0
214	40	domicile	0	0	0	0	0	0	0
215	41	goat corral	0	0	0	0	0	0	0
216	41	goat corral	0	0	0	0	0	0	0
217	41	pig corral	0	0	0	0	0	0	0
218	41	domicile	2	2	0	0	0	5	2
219	41	oven	0	0	0	0	0	0	0
220	41	open shed	0	0	0	0	0	0	0
221	41	granary	7	7	16	8	2	1	4
222	42	domicile	0	0	0	0	0	0	0
223	43	tree with chickens	0	0	0	0	0	0	0
224	43	pig corral	0	0	0	0	0	0	0
225	43	cow corral	0	0	0	0	0	0	0
226	43	domicile	0	0	0	0	0	0	0
227	44	kitchen	0	0	0	0	0	0	0
228	44	domicile	0	0	0	0	0	0	0
229	45	goat corral	0	0	0	0	0	0	0
230	45	goat corral	0	0	0	0	0	0	0
231	45	pig corral	0	0	0	0	0	0	0
232	45	domicile	1	1	0	0	0	0	3

233	45	chicken coop	0	0	0	0	0	1	0
234	45	chicken coop	0	0	0	0	0	0	0
235	46	tree with chickens	0	0	0	0	0	0	0
236	46	latrine	0	0	0	0	0	0	0
237	46	goat corral	0	0	0	0	0	0	0
238	46	pig corral	0	0	0	0	0	0	0
239	46	domicile	0	0	0	0	0	0	0
240	46	fireplace	0	0	0	0	0	0	0
241	47	latrine	0	0	0	0	0	0	0
242	47	goat corral	0	0	0	0	0	0	0
243	47	pig corral	0	0	0	0	0	0	0
244	47	kitchen	0	0	0	0	0	0	0
245	47	storeroom	0	0	0	0	0	0	0
246	47	domicile	0	0	0	0	0	0	0
247	47	chicken coop	0	0	0	0	0	0	0
248	47	chicken coop	0	0	0	0	0	0	0
249	48	latrine	0	0	0	0	0	0	0
250	48	pig corral	0	0	0	0	0	0	0
251	48	pig corral	1	0	0	0	0	0	0
252	48	pig corral	0	0	0	0	0	0	0
253	48	kitchen	0	0	0	0	0	0	0
254	48	chicken coop	0	0	0	0	0	0	0
255	49	domicile	0	0	0	0	0	0	0
256	50	domicile	2	0	0	0	0	0	0
257	51	domicile	2	0	0	0	0	0	0
258	52	goat corral	0	0	0	0	0	0	0
259	52	pig corral	0	0	0	4	4	0	0
260	52	kitchen	0	0	0	0	0	0	0
261	52	cow corral	0	0	0	0	0	0	0
262	52	storeroom	1	0	0	2	0	1	0
263	52	domicile	0	0	0	0	0	0	0
264	52	chicken coop	1	4	0	0	0	1	0
265	52	oven	0	0	0	0	0	0	0
266	53	domicile	0	0	0	0	0	0	0
267	53	granary	0	2	1	3	0	0	0
268	54	latrine	0	0	0	0	0	0	0
269	54	goat corral	0	0	0	0	0	0	0
270	54	pig corral	0	0	0	0	0	0	0
271	54	domicile	0	0	0	0	0	0	0
272	54	oven	0	0	0	0	0	0	0
273	54	open shed	0	0	0	0	0	0	0
274	55	tree with chickens	0	0	0	0	0	0	0
275	55	latrine	0	0	0	0	0	0	0
276	55	pig corral	0	0	0	0	0	0	0
277	55	domicile	0	0	0	0	0	0	0
278	56	tree with chickens	0	0	0	0	0	0	0
279	56	latrine	0	0	0	0	0	0	0

280	56	goat corral	0	0	0	0	0	0	0
281	56	kitchen	0	0	0	0	0	0	0
282	56	cow corral	0	0	0	0	0	0	0
283	56	domicile	0	0	0	0	0	0	0
284	57	domicile	0	0	0	0	0	0	0
285	58	goat corral	1	0	0	2	0	1	0
286	58	pig corral	0	0	0	0	0	2	0
287	58	pig corral	0	0	0	0	0	2	0
288	58	storeroom	2	2	3	1	0	0	0
289	58	storeroom	1	0	0	2	0	1	0
290	58	domicile	0	0	0	0	0	0	0
291	58	chicken coop	0	0	0	0	0	0	0
292	59	latrine	0	0	0	0	0	0	0
293	59	goat corral	0	1	0	0	0	0	0
294	59	pig corral	0	0	0	0	0	0	0
295	59	pig corral	0	0	0	0	0	0	0
296	59	kitchen	0	0	0	0	0	0	0
297	59	cow corral	0	0	0	0	0	0	0
298	59	cow corral	0	0	0	0	0	0	0
299	59	storeroom	0	0	0	0	0	0	0
300	59	storeroom	0	0	0	0	0	0	0
301	59	storeroom	0	0	0	0	0	0	0
302	59	domicile	0	0	0	0	0	0	0
303	59	fireplace	0	0	0	0	0	0	0
304	59	chicken coop	1	2	8	7	4	0	0
305	60	latrine	0	0	0	0	0	0	0
306	60	goat corral	1	1	1	1	0	0	0
307	60	pig corral	0	0	0	0	0	0	0
308	60	kitchen	0	0	0	0	0	0	0
309	60	cow corral	0	0	0	0	0	0	0
310	60	storeroom	0	0	0	0	0	0	0
311	60	domicile	3	4	1	3	1	0	0
312	61	goat corral	0	0	0	0	0	0	0
313	61	kitchen	0	0	0	0	0	0	0
314	61	domicile	0	0	0	0	0	0	0
315	62	pig corral	4	3	1	0	0	0	0
316	62	storeroom	0	0	0	0	0	0	0
317	62	domicile	0	0	0	0	0	0	0
318	62	chicken coop	0	0	3	4	0	0	0
319	62	oven	0	0	0	0	0	0	0
320	63	pig corral	1	0	0	0	0	0	0
321	63	domicile	2	4	1	0	0	0	0
322	63	open shed	0	0	0	0	0	0	0
323	64	latrine	0	0	0	0	0	0	0
324	64	goat corral	0	0	0	1	1	0	1
325	64	pig corral	0	0	0	0	0	0	0
326	64	kitchen	0	0	0	0	0	0	0

327	64	storeroom	0	0	0	0	0	0	0
328	64	domicile	0	0	0	0	0	0	0
329	65	latrine	0	0	0	0	0	0	0
330	65	goat corral	0	1	0	0	0	0	0
331	65	goat corral	0	0	0	0	0	0	0
332	65	pig corral	0	0	0	0	0	0	0
333	65	kitchen	0	0	0	0	0	0	0
334	65	domicile	0	0	0	0	0	0	0
335	65	chicken coop	3	1	12	7	2	0	1
336	65	chicken coop	0	0	0	0	0	0	0
337	65	oven	0	0	0	0	0	0	0
338	66	latrine	1	2	4	0	0	0	0
339	66	goat corral	0	0	0	0	0	0	0
340	66	kitchen	0	0	0	0	0	0	0
341	66	storeroom	0	0	0	0	0	0	0
342	66	domicile	0	0	0	0	0	0	0
343	67	tree with chickens	0	0	0	0	0	0	0
344	67	goat corral	0	1	1	0	0	0	0
345	67	pig corral	2	3	0	0	0	0	0
346	67	kitchen	0	0	0	0	0	0	0
347	67	storeroom	0	0	0	0	0	0	0
348	67	domicile	0	0	0	0	0	0	0
349	67	chicken coop	0	0	0	0	0	0	0
350	67	chicken coop	0	0	0	1	0	0	0
351	67	oven	0	0	0	0	0	0	0
352	67	nest	0	0	0	0	0	0	0
353	67	granary	0	0	0	0	0	0	0
354	68	latrine	0	0	0	0	0	0	0
355	68	goat corral	0	0	0	0	0	0	0
356	68	pig corral	0	0	0	0	0	0	0
357	68	kitchen	0	0	0	0	0	0	0
358	68	storeroom	0	0	0	0	0	0	0
359	68	storeroom	0	0	0	0	0	0	0
360	68	domicile	0	0	0	0	0	0	0
361	68	chicken coop	0	0	0	0	0	0	0
362	69	pig corral	0	0	0	0	0	0	0
363	69	kitchen	0	0	0	0	0	0	0
364	69	storeroom	1	0	1	0	0	0	0
365	69	domicile	0	0	0	0	0	0	0
366	70	tree with chickens	0	0	0	0	0	0	0
367	70	latrine	0	0	0	0	0	0	0
368	70	pig corral	0	0	0	0	0	0	0
369	70	kitchen	7	5	4	2	3	1	0
370	70	domicile	1	0	0	0	0	0	0
371	70	oven	0	0	0	0	0	0	0
372	71	latrine	0	0	0	0	0	0	0
373	71	goat corral	0	0	0	0	0	0	0

374	71	goat corral	0	0	0	0	0	0	0
375	71	pig corral	2	1	0	0	1	4	2
376	71	kitchen	0	0	0	0	0	0	0
377	71	storeroom	0	0	0	0	0	0	0
378	71	domicile	0	0	0	0	0	0	0
379	71	chicken coop	0	0	0	0	0	0	0
380	72	tree with chickens	0	0	0	0	0	0	0
381	72	latrine	0	0	0	0	0	0	0
382	72	goat corral	0	0	0	0	0	0	0
383	72	domicile	0	1	0	0	0	0	0
384	72	chicken coop	0	0	0	0	0	0	0
385	72	oven	0	0	0	0	0	0	0
386	73	domicile	5	4	5	4	0	2	2
387	74	pig corral	0	0	0	0	0	0	0
388	74	kitchen	0	0	0	0	0	0	0
389	74	storeroom	1	0	0	0	0	0	0
390	74	domicile	0	0	0	0	0	0	0
391	74	chicken coop	1	0	4	0	0	0	2
392	74	chicken coop	0	0	0	0	0	0	0
393	75	tree with chickens	0	0	0	0	0	0	0
394	75	goat corral	12	2	6	2	0	0	0
395	75	pig corral	0	0	0	0	0	0	0
396	75	kitchen	0	0	0	0	0	0	0
397	75	cow corral	0	0	0	0	0	0	0
398	75	storeroom	0	0	0	0	0	0	0
399	75	domicile	0	1	0	0	0	0	0
400	76	goat corral	0	0	0	0	0	0	0
401	76	pig corral	0	0	0	0	0	0	0
402	76	pig corral	0	1	1	0	0	0	0
403	76	kitchen	0	0	0	0	0	0	0
404	76	domicile	1	0	0	1	0	0	0
405	77	tree with chickens	0	0	0	0	0	0	0
406	77	pig corral	0	0	0	0	0	0	0
407	77	kitchen	0	0	0	0	0	0	0
408	77	storeroom	1	0	0	1	0	0	0
409	77	domicile	0	0	0	0	0	0	0
410	77	chicken coop	1	2	4	6	2	0	0
411	77	piled material	0	0	0	0	0	0	0
412	77	open shed	0	0	0	0	0	0	0
413	78	tree with chickens	0	0	0	0	0	0	0
414	78	goat corral	0	0	0	0	0	0	0
415	78	pig corral	0	0	0	1	0	0	0
416	78	kitchen	0	0	0	0	0	0	0
417	78	domicile	0	0	0	0	0	0	0
418	78	oven	0	0	0	0	0	0	0
419	79	latrine	0	0	0	0	0	0	0
420	79	pig corral	0	0	0	0	0	0	0

421	79	kitchen	0	0	0	0	0	0	0
422	79	domicile	0	0	0	0	0	0	0
423	79	piled material	0	0	0	0	0	0	0
424	80	goat corral	0	0	0	0	0	0	0
425	80	goat corral	0	0	0	0	0	0	0
426	80	pig corral	0	0	0	0	0	0	0
427	80	kitchen	0	0	0	0	0	0	0
428	80	cow corral	0	0	0	0	0	0	0
429	80	storeroom	0	0	0	0	0	0	0
430	80	domicile	0	1	0	0	0	0	0
431	81	latrine	0	0	0	0	0	0	0
432	81	goat corral	0	0	0	0	0	0	0
433	81	pig corral	0	0	0	0	0	0	0
434	81	kitchen	0	0	0	0	0	0	0
435	81	domicile	0	0	0	0	0	0	1
436	82	domicile	0	0	0	0	0	0	0
437	83	tree with chickens	0	0	0	0	0	0	0
438	83	kitchen	0	0	1	0	0	0	0
439	83	domicile	1	0	0	0	0	0	0
440	83	open shed	0	0	0	0	0	0	0
441	84	domicile	2	0	1	1	0	0	1
442	84	domicile	1	0	0	0	0	0	0
443	85	latrine	0	0	0	0	0	0	0
444	85	goat corral	0	0	0	0	0	0	0
445	85	goat corral	0	0	0	0	0	0	0
446	85	pig corral	0	0	0	0	0	0	0
447	85	cow corral	0	0	0	0	0	0	0
448	85	storeroom	0	0	0	0	0	0	0
449	85	domicile	0	0	0	0	0	0	0
450	86	goat corral	0	0	0	0	0	0	0
451	86	pig corral	0	0	0	0	0	0	0
452	86	domicile	0	1	0	0	0	0	0
453	86	oven	0	0	0	0	0	0	0
454	87	domicile	0	1	3	3	0	0	0
455	87	chicken coop	0	1	3	3	0	0	0
456	88	domicile	0	0	0	0	0	0	0
457	88	oven	0	0	0	0	0	0	0
458	89	domicile	0	0	0	0	0	0	0
459	90	goat corral	0	0	0	0	0	0	0
460	90	pig corral	0	0	0	0	0	0	0
461	90	kitchen	0	0	0	0	0	0	0
462	90	domicile	0	0	0	0	0	0	0
463	90	chicken coop	0	0	0	0	0	0	0
464	91	latrine	0	0	0	0	0	0	0
465	91	goat corral	0	0	0	0	0	0	0
466	91	kitchen	0	0	0	0	0	0	0
467	91	storeroom	0	0	0	0	0	0	0

468	91	domicile	0	0	1	0	0	0	0
469	92	goat corral	0	0	0	0	0	0	0
470	92	pig corral	1	1	3	0	0	1	0
471	92	storeroom	4	0	1	1	0	0	0
472	92	domicile	0	0	0	0	0	0	0
473	92	oven	0	0	0	0	0	0	0
474	93	latrine	0	0	0	0	0	0	0
475	93	goat corral	0	0	0	0	0	0	0
476	93	pig corral	0	0	0	0	0	0	0
477	93	kitchen	0	0	0	0	0	0	0
478	93	storeroom	0	0	0	0	0	0	0
479	93	domicile	0	0	0	0	0	0	0
480	93	chicken coop	0	0	0	0	0	0	0
481	93	oven	0	0	0	0	0	0	0
482	93	nest	0	0	0	0	0	0	0
483	93	nest	0	0	0	0	0	0	0
484	94	tree with chickens	0	0	0	0	0	0	0
485	94	latrine	0	0	0	0	0	0	0
486	94	goat corral	0	0	0	0	0	0	0
487	94	pig corral	0	0	0	0	0	0	0
488	94	kitchen	0	0	0	0	0	0	0
489	94	cow corral	0	0	0	0	0	0	0
490	94	storeroom	0	0	0	0	0	0	0
491	94	domicile	0	1	0	0	0	0	0
492	94	chicken coop	4	2	14	0	0	0	0
493	95	goat corral	0	0	0	0	0	0	0
494	95	pig corral	1	0	0	4	1	0	0
495	95	pig corral	0	1	0	0	0	0	0
496	95	storeroom	0	0	0	0	0	0	0
497	95	domicile	1	0	0	0	3	0	3
498	95	chicken coop	1	0	2	1	1	0	0
499	96	tree with chickens	0	0	0	0	0	0	0
500	96	latrine	0	0	0	0	0	0	0
501	96	goat corral	0	0	0	0	0	0	0
502	96	pig corral	0	0	0	0	1	0	0
503	96	pig corral	0	0	0	0	0	0	0
504	96	storeroom	0	0	0	0	0	0	0
505	96	domicile	5	6	12	6	0	0	0
506	97	goat corral	0	0	0	0	1	0	0
507	97	goat corral	0	0	0	0	0	0	0
508	97	pig corral	6	0	0	0	0	0	0
509	97	kitchen	0	0	0	0	0	0	0
510	97	horse corral	0	0	0	0	0	0	0
511	97	storeroom	15	9	11	4	0	0	0
512	97	domicile	0	0	0	0	0	0	0
513	97	oven	0	0	0	0	0	0	0
514	98	latrine	0	0	0	0	0	0	0

515	98	pig corral	0	0	0	0	0	0	0
516	98	pig corral	0	0	0	0	0	0	0
517	98	kitchen	0	0	0	0	0	0	0
518	98	storeroom	0	0	0	0	0	0	0
519	98	storeroom	0	0	0	0	0	0	0
520	98	domicile	0	0	0	0	0	0	0
521	98	open shed	0	0	0	0	0	0	0
522	99	pig corral	0	0	0	0	0	0	0
523	99	storeroom	0	1	0	0	0	0	0
524	99	domicile	0	0	0	0	0	0	0
525	100	pig corral	0	0	0	0	0	0	0
526	100	kitchen	0	0	0	0	0	0	0
527	100	domicile	0	0	0	0	0	0	0
528	100	chicken coop	0	0	0	0	0	0	0
529	101	latrine	0	0	0	0	0	0	0
530	101	latrine	0	0	0	0	0	0	0
531	101	goat corral	0	0	0	0	0	0	0
532	101	pig corral	0	0	0	0	0	0	0
533	101	kitchen	0	0	0	0	0	0	0
534	101	storeroom	0	0	0	0	0	0	0
535	101	storeroom	0	0	0	0	0	0	0
536	101	storeroom	0	0	0	0	0	0	0
537	101	domicile	0	0	0	0	0	0	0
538	101	chicken coop	0	0	0	0	0	0	0
539	101	oven	0	0	0	0	0	0	0
540	101	piled material	0	0	0	0	0	0	0
541	101	nest	0	0	0	0	0	0	0
542	101	nest	0	0	0	0	0	0	0
543	101	granary	0	0	0	0	0	0	0
544	102	latrine	0	0	0	0	0	0	0
545	102	kitchen	1	1	1	2	1	1	0
546	102	domicile	0	0	0	0	0	0	0
547	102	piled material	0	0	0	0	0	0	0
548	103	goat corral	0	0	0	0	0	0	0
549	103	goat corral	1	1	1	1	0	0	0
550	103	goat corral	0	0	0	0	0	0	0
551	103	pig corral	2	0	0	1	0	1	2
552	103	kitchen	9	4	16	3	1	1	0
553	103	domicile	3	4	1	0	0	0	0
554	103	domicile	0	0	0	0	0	0	0
555	103	granary	0	0	1	0	0	0	0
556	104	tree with chickens	0	0	0	0	0	0	0
557	104	tree with chickens	0	0	0	0	0	0	0
558	104	goat corral	0	0	0	0	0	0	0
559	104	goat corral	0	0	0	0	0	0	0
560	104	pig corral	0	0	0	0	0	0	0
561	104	kitchen	5	3	1	3	4	0	0

562	104	storeroom	0	0	0	0	0	0	0
563	104	domicile	0	0	0	0	0	0	0
564	105	tree with chickens	0	0	0	0	0	0	0
565	105	latrine	0	0	0	0	0	0	0
566	105	goat corral	0	0	0	0	0	0	0
567	105	pig corral	2	1	2	2	0	0	0
568	105	pig corral	1	2	2	0	0	0	0
569	105	kitchen	0	0	0	0	0	0	0
570	105	cow corral	0	0	0	0	0	0	0
571	105	storeroom	0	0	0	0	0	0	0
572	105	domicile	0	0	0	0	0	0	0
573	105	chicken coop	0	0	0	0	0	0	0
574	106	tree with chickens	0	0	0	0	0	0	0
575	106	latrine	0	0	0	0	0	0	0
576	106	kitchen	0	0	1	0	0	0	0
577	106	storeroom	0	0	0	0	0	0	0
578	106	domicile	0	0	0	0	0	0	0
579	106	chicken coop	0	0	0	0	0	0	0
580	107	tree with chickens	0	0	0	0	0	0	0
581	107	latrine	0	0	0	0	0	0	0
582	107	goat corral	0	0	0	0	0	0	0
583	107	pig corral	0	0	0	0	0	0	0
584	107	kitchen	0	0	0	0	0	0	0
585	107	cow corral	0	0	0	0	0	0	0
586	107	storeroom	0	0	0	0	0	0	0
587	107	domicile	0	0	1	0	0	0	0
588	107	chicken coop	0	0	1	0	0	0	0
589	108	tree with chickens	0	0	0	0	0	0	0
590	108	goat corral	0	0	0	0	0	0	0
591	108	domicile	0	0	0	1	0	7	2
592	108	chicken coop	0	0	0	0	0	0	0
593	108	oven	0	0	0	0	0	0	0
594	109	tree with chickens	0	0	0	0	0	0	0
595	109	kitchen	0	0	0	0	0	0	0
596	109	cow corral	0	0	0	0	0	0	0
597	109	domicile	0	0	0	0	0	0	0
598	109	piled material	0	0	0	0	0	0	0
599	110	goat corral	0	0	0	0	0	0	0
600	110	kitchen	0	0	0	0	0	0	0
601	110	cow corral	0	0	0	0	0	0	0
602	110	domicile	0	0	0	0	0	0	0
603	110	granary	0	0	0	0	0	0	0
604	111	goat corral	0	0	0	0	0	0	0
605	111	goat corral	0	0	0	0	0	0	0
606	111	pig corral	0	0	0	0	0	0	0
607	111	kitchen	0	0	0	0	0	0	0
608	111	storeroom	0	0	0	0	0	0	0

609	111	domicile	0	0	0	0	0	0	0
610	111	oven	0	0	0	0	0	0	0
611	112	latrine	0	0	0	0	0	0	0
612	112	goat corral	0	0	0	0	0	0	0
613	112	pig corral	0	0	0	0	0	0	0
614	112	kitchen	0	0	0	0	0	0	0
615	112	cow corral	0	0	0	0	0	0	0
616	112	domicile	0	0	0	0	0	0	0
617	112	oven	0	0	0	0	0	0	0
618	113	tree with chickens	0	0	0	0	0	0	0
619	113	latrine	0	0	0	0	0	0	0
620	113	goat corral	0	0	0	0	0	0	0
621	113	pig corral	0	0	0	0	0	0	0
622	113	pig corral	0	0	0	0	0	0	0
623	113	pig corral	0	0	0	0	0	0	0
624	113	kitchen	0	0	0	0	0	0	0
625	113	cow corral	0	0	0	0	0	0	0
626	113	storeroom	0	0	0	0	0	0	0
627	113	domicile	0	0	0	0	0	0	0
628	113	oven	0	0	0	0	0	0	0
629	113	open shed	0	0	0	0	0	0	0
630	114	tree with chickens	0	0	0	0	0	0	0
631	114	latrine	0	0	0	0	0	0	0
632	114	pig corral	0	0	0	0	0	0	1
633	114	kitchen	0	0	0	0	0	0	0
634	114	domicile	1	0	1	0	0	0	0
635	114	open shed	0	0	0	0	0	0	0
636	115	tree with chickens	0	0	0	0	0	0	0
637	115	pig corral	0	0	0	0	0	0	0
638	115	cow corral	0	0	0	0	0	0	0
639	115	domicile	0	0	0	0	0	0	0
640	116	latrine	0	0	0	0	0	0	0
641	116	goat corral	0	0	0	0	0	0	0
642	116	pig corral	0	0	0	0	0	0	0
643	116	kitchen	0	0	0	0	0	0	0
644	116	domicile	0	0	0	0	0	0	0
645	116	chicken coop	0	0	0	0	0	0	0
646	117	goat corral	1	0	0	2	2	1	2
647	117	pig corral	1	0	1	1	1	0	0
648	117	storeroom	0	0	0	0	0	0	0
649	117	domicile	2	0	4	1	1	0	0
650	117	chicken coop	3	0	2	17	3	0	0
651	117	open shed	0	0	0	0	0	0	0
652	118	pig corral	0	0	0	0	0	0	0
653	118	horse corral	0	2	0	0	0	0	0
654	118	storeroom	0	0	0	0	0	0	0
655	118	domicile	0	0	0	0	0	0	0

656	118	chicken coop	0	0	0	0	0	0	0
657	119	domicile	3	0	3	4	0	0	0
658	120	latrine	0	0	0	0	0	0	0
659	120	goat corral	1	1	0	1	0	1	0
660	120	goat corral	0	0	0	0	0	0	0
661	120	pig corral	0	0	5	1	1	2	0
662	120	kitchen	0	0	0	0	0	0	0
663	120	cow corral	0	0	0	0	0	0	0
664	120	cow corral	0	0	0	0	0	0	0
665	120	storeroom	0	0	0	0	0	0	0
666	120	domicile	0	1	2	1	0	0	0
667	120	chicken coop	0	0	0	0	0	0	0
668	121	goat corral	0	0	0	0	0	0	0
669	121	pig corral	0	0	0	0	0	0	0
670	121	storeroom	0	0	0	0	0	0	0
671	121	domicile	0	2	2	0	0	0	0
672	121	chicken coop	0	0	0	0	0	0	0
673	122	latrine	0	0	0	0	0	0	0
674	122	goat corral	0	0	0	0	0	0	0
675	122	kitchen	0	0	0	0	0	0	0
676	122	domicile	0	0	0	0	0	0	0
677	123	latrine	0	0	0	0	0	0	0
678	123	pig corral	0	0	0	0	0	0	0
679	123	kitchen	0	0	0	0	0	0	0
680	123	storeroom	0	0	0	0	0	0	0
681	123	domicile	0	0	0	0	0	0	0
682	124	tree with chickens	0	0	0	0	0	0	0
683	124	goat corral	0	0	0	0	0	0	0
684	124	pig corral	0	0	0	0	0	0	0
685	124	kitchen	0	0	0	0	0	0	0
686	124	storeroom	0	1	0	0	0	0	0
687	124	storeroom	2	1	2	0	0	0	0
688	124	domicile	0	1	1	1	0	0	0
689	125	latrine	0	0	0	0	0	0	0
690	125	pig corral	1	1	2	0	0	0	0
691	125	kitchen	4	3	6	15	1	0	0
692	125	cow corral	0	0	0	0	0	0	0
693	125	storeroom	0	0	0	0	0	0	0
694	125	domicile	2	0	1	0	0	0	0
695	125	oven	0	0	0	0	0	0	0
696	125	piled material	0	0	0	0	0	0	0
697	126	latrine	0	0	0	0	0	0	0
698	126	goat corral	0	0	0	0	0	0	0
699	126	pig corral	4	4	0	0	0	0	0
700	126	cow corral	0	0	0	0	0	0	0
701	126	domicile	0	0	0	0	0	0	0
702	126	chicken coop	6	1	14	2	2	3	0

703	126	open shed	0	0	0	0	0	0	0
704	126	granary	0	0	0	0	0	0	0
705	127	domicile	0	0	0	0	0	0	0
706	128	latrine	1	0	4	0	0	0	0
707	128	goat corral	2	3	2	5	0	1	2
708	128	storeroom	0	0	1	1	1	0	0
709	128	domicile	6	6	4	0	0	0	0
710	128	chicken coop	0	0	0	0	0	0	0
711	128	open shed	0	0	0	0	0	0	0
712	129	domicile	0	0	0	0	0	0	0
713	130	pig corral	0	0	0	0	0	0	0
714	130	storeroom	6	1	14	10	1	2	1
716	130	domicile	1	0	0	0	0	0	0
717	130	chicken coop	1	0	0	0	0	0	0
718	131	tree with chickens	0	0	0	0	0	0	0
719	131	latrine	0	0	0	0	0	0	0
720	131	goat corral	0	0	0	0	0	0	0
721	131	pig corral	0	0	0	0	0	0	0
722	131	kitchen	0	0	0	0	0	0	0
723	131	domicile	0	0	0	0	0	0	0
724	131	chicken coop	0	0	0	0	0	0	0
725	131	open shed	0	0	0	0	0	0	0
726	131	open shed	0	0	0	0	0	0	0
727	132	goat corral	0	0	0	0	0	0	0
728	132	pig corral	0	0	1	0	0	0	0
729	132	storeroom	0	0	0	0	0	0	0
730	132	domicile	0	0	0	0	0	0	0
731	132	domicile	0	0	0	0	0	0	0
732	133	domicile	0	0	0	0	0	0	0
733	134	goat corral	0	0	0	0	0	0	0
734	134	pig corral	0	0	0	0	0	0	0
735	134	domicile	0	0	0	0	0	0	0
736	134	chicken coop	0	0	0	0	0	0	0
737	135	latrine	0	0	0	0	0	0	0
738	135	goat corral	0	0	0	0	0	0	0
739	135	pig corral	0	0	0	0	0	0	0
740	135	kitchen	0	0	0	0	0	0	0
741	135	storeroom	0	0	0	0	0	0	0
742	135	storeroom	0	0	0	0	0	0	0
743	135	domicile	0	2	0	0	0	0	0
744	135	oven	0	0	0	0	0	0	0
745	136	latrine	0	0	0	0	0	0	0
746	136	kitchen	0	0	0	0	0	0	0
747	136	domicile	1	1	0	0	0	0	0
748	136	chicken coop	0	0	0	0	0	0	0
749	137	latrine	0	0	0	0	0	0	0
750	137	goat corral	0	0	0	0	0	0	0

751	137	goat corral	0	0	0	0	0	0	0
752	137	goat corral	0	0	0	0	0	0	0
753	137	pig corral	0	0	0	0	0	0	0
754	137	pig corral	0	0	0	0	0	0	0
755	137	kitchen	0	0	0	0	0	0	0
756	137	cow corral	0	0	0	0	0	0	0
757	137	storeroom	0	0	0	0	0	0	0
758	137	domicile	0	1	0	0	0	0	0
759	137	chicken coop	0	0	0	0	0	0	0
760	138	latrine	0	0	0	0	0	0	0
761	138	pig corral	0	0	0	0	0	0	0
762	138	domicile	0	0	0	0	0	0	0
763	138	open shed	0	0	0	0	0	0	0
764	138	granary	0	0	0	0	0	0	0
765	139	domicile	0	0	0	0	0	0	0
766	139	chicken coop	0	0	0	0	0	0	0
767	140	domicile	0	0	0	0	0	0	0
768	141	tree with chickens	0	0	0	0	0	0	0
769	141	latrine	0	0	0	0	0	0	0
770	141	pig corral	0	0	0	0	0	0	0
771	141	kitchen	0	0	0	0	0	0	0
772	141	storeroom	0	0	0	0	0	0	0
773	141	storeroom	0	0	0	0	0	0	0
774	141	domicile	0	0	0	0	0	0	0
775	142	tree with chickens	0	0	0	0	0	0	0
776	142	goat corral	0	0	0	0	0	0	0
777	142	pig corral	0	0	0	0	0	0	0
778	142	storeroom	0	0	0	0	0	0	0
779	142	domicile	2	3	17	6	13	0	0
780	142	fireplace	0	0	0	0	0	0	0
781	143	tree with chickens	0	0	0	0	0	0	0
782	143	latrine	0	0	0	0	0	0	0
783	143	goat corral	0	0	0	0	0	0	0
784	143	goat corral	1	0	0	0	0	1	0
785	143	pig corral	0	0	0	0	0	0	0
786	143	pig corral	0	0	0	0	0	0	0
787	143	kitchen	0	0	0	0	0	0	0
788	143	kitchen	0	0	0	0	0	0	0
789	143	storeroom	0	0	0	0	0	0	0
790	143	domicile	0	0	0	0	0	0	0
791	143	chicken coop	0	0	0	0	0	0	0
792	144	latrine	0	0	0	0	0	0	0
793	144	pig corral	0	0	0	0	0	0	0
794	144	kitchen	0	0	0	0	0	0	0
795	144	domicile	0	0	0	0	0	0	0
796	145	goat corral	0	0	0	0	0	0	0
797	145	kitchen	0	0	0	0	0	0	0

798	145	cow corral	0	0	0	0	0	0	0
799	145	storeroom	0	0	0	0	0	0	0
800	145	storeroom	0	0	0	0	0	0	0
801	145	storeroom	0	0	0	0	0	0	0
802	145	domicile	0	0	0	0	0	0	0
803	146	goat corral	0	0	1	0	0	0	0
804	146	pig corral	0	0	3	2	0	0	0
805	146	kitchen	0	0	0	0	0	0	0
806	146	storeroom	0	0	0	0	0	0	0
807	146	domicile	0	1	0	1	0	0	0
808	146	chicken coop	0	0	0	0	0	0	0
809	146	granary	0	0	0	0	0	0	0
810	147	goat corral	4	0	2	1	0	0	0
811	147	kitchen	0	0	0	0	0	0	0
812	147	storeroom	0	0	1	0	0	0	0
813	147	domicile	0	0	0	0	0	0	0
814	148	tree with chickens	0	0	0	0	0	0	0
815	148	goat corral	0	0	0	0	0	0	0
816	148	pig corral	0	0	0	0	0	0	0
817	148	kitchen	0	0	0	0	0	0	0
818	148	storeroom	0	0	0	0	0	0	0
819	148	domicile	0	0	0	0	0	0	0
820	148	chicken coop	0	0	0	1	0	0	0
821	148	open shed	0	0	0	0	0	0	0
822	149	domicile	0	0	0	0	0	0	0
823	150	pig corral	0	0	0	0	0	0	0
824	150	kitchen	0	0	0	0	0	0	0
825	150	cow corral	0	0	0	0	0	0	0
826	150	domicile	0	3	1	0	0	0	0
827	150	open shed	0	0	0	0	0	0	0
828	151	latrine	0	0	0	0	0	0	0
829	151	storeroom	0	0	0	0	0	0	0
830	151	storeroom	0	0	0	0	0	0	0
831	151	domicile	0	0	0	0	0	0	0
832	151	granary	0	0	0	0	0	0	0
833	152	latrine	0	0	0	0	0	0	0
834	152	domicile	0	0	0	0	0	0	0
835	152	oven	0	0	0	0	0	0	0
836	153	latrine	0	0	0	0	0	0	0
837	153	goat corral	0	0	0	0	0	0	0
838	153	pig corral	0	0	0	0	0	0	0
839	153	kitchen	0	0	0	0	0	0	0
840	153	storeroom	0	0	0	0	0	0	0
841	153	storeroom	0	0	0	0	0	0	0
842	153	storeroom	0	0	0	0	0	0	0
843	153	domicile	0	0	0	0	0	0	0
844	153	chicken coop	0	0	0	0	0	0	0

845	154	tree with chickens	0	0	0	0	0	0	0
846	154	goat corral	2	1	3	1	1	0	0
847	154	pig corral	0	0	0	0	0	0	0
848	154	kitchen	0	0	0	0	0	0	0
849	154	storeroom	0	0	0	0	0	0	0
850	154	domicile	1	2	6	1	0	0	0
851	154	granary	0	0	0	0	0	0	0
852	155	latrine	0	0	0	0	0	0	0
853	155	goat corral	0	0	0	0	0	0	0
854	155	kitchen	0	0	0	0	0	0	0
855	155	storeroom	0	0	0	0	0	0	0
856	155	domicile	0	0	0	0	0	0	0
857	156	domicile	0	0	0	0	0	0	0
858	157	kitchen	0	0	0	0	0	0	0
859	157	domicile	0	0	0	0	0	0	0
860	158	domicile	0	0	0	0	0	0	0
861	159	tree with chickens	0	0	0	0	0	0	0
862	159	goat corral	0	0	0	0	0	0	0
863	159	pig corral	0	0	0	0	0	0	0
864	159	kitchen	0	0	0	0	0	0	0
865	159	domicile	3	1	0	0	0	0	0
866	160	latrine	0	0	0	0	0	0	0
867	160	goat corral	1	0	2	0	0	0	0
868	160	pig corral	0	0	0	0	0	0	0
869	160	kitchen	0	0	0	0	0	0	0
870	160	cow corral	0	0	0	0	0	0	0
871	160	storeroom	0	0	0	0	0	0	0
872	160	storeroom	0	0	0	0	0	0	0
873	160	domicile	0	0	0	0	0	0	0
874	160	domicile	0	1	0	0	0	0	0
875	160	oven	0	0	0	0	0	0	0
876	160	open shed	0	0	0	0	0	0	0
877	160	granary	0	0	0	0	0	0	0
878	161	tree with chickens	0	0	0	0	0	0	0
879	161	pig corral	0	0	0	0	0	0	0
880	161	domicile	0	0	1	0	0	0	0
881	161	oven	0	0	0	0	0	0	0
882	161	piled material	0	0	0	0	0	0	0
883	162	tree with chickens	0	0	0	0	0	0	0
884	162	latrine	0	0	0	0	0	0	0
885	162	goat corral	0	0	1	1	0	0	0
886	162	goat corral	0	0	0	0	0	0	0
887	162	pig corral	0	0	0	0	0	0	0
888	162	cow corral	0	0	0	0	0	0	0
889	162	storeroom	0	0	0	0	0	0	0
890	162	domicile	0	0	0	0	0	0	0
891	163	goat corral	0	0	0	0	0	0	0

892	163	pig corral	0	0	0	0	0	0	0
893	163	kitchen	1	0	0	0	0	0	0
894	163	storeroom	0	0	2	1	3	1	0
895	163	domicile	2	2	0	1	0	0	0
896	164	tree with chickens	0	0	0	0	0	0	0
897	164	pig corral	0	0	0	0	0	0	0
898	164	kitchen	0	0	0	0	0	0	0
899	164	storeroom	0	0	0	0	0	0	0
900	164	domicile	0	0	0	0	0	0	0
901	164	chicken coop	1	0	1	0	0	0	0
902	165	latrine	0	0	0	0	0	0	0
903	165	goat corral	0	2	3	0	0	0	0
904	165	domicile	0	1	2	0	0	0	0
905	165	domicile	1	2	0	0	0	0	0
906	165	granary	0	0	2	1	0	0	0
907	166	latrine	0	0	0	0	0	0	0
908	166	goat corral	0	0	0	0	0	0	0
909	166	pig corral	3	1	2	0	0	0	0
910	166	kitchen	0	0	0	0	0	0	0
911	166	cow corral	0	0	0	0	0	0	0
912	166	storeroom	2	1	0	1	0	0	0
913	166	domicile	2	1	4	2	0	0	0
914	167	goat corral	0	0	0	0	0	0	0
915	167	pig corral	0	0	0	0	0	0	0
916	167	kitchen	0	0	0	0	0	0	0
917	167	domicile	3	0	1	1	1	0	0
918	167	chicken coop	0	0	0	0	0	0	0
919	168	pig corral	0	0	0	0	0	0	0
920	168	pig corral	0	0	0	0	0	0	0
921	168	kitchen	0	0	0	0	0	0	0
922	168	domicile	0	1	0	0	0	0	0
923	168	oven	0	0	0	0	0	0	0
924	169	latrine	0	0	0	0	0	0	0
925	169	goat corral	0	0	0	0	0	0	0
926	169	pig corral	2	2	2	0	0	0	0
927	169	domicile	4	3	0	0	0	0	0
928	169	fireplace	0	0	0	0	0	0	0
929	169	chicken coop	0	0	0	0	0	0	0
930	169	piled material	0	0	0	0	0	0	0
931	169	open shed	0	0	0	0	0	0	0
932	170	goat corral	0	0	0	0	0	1	0
933	170	pig corral	3	1	0	0	0	0	0
934	170	storeroom	0	0	0	0	0	0	0
935	170	domicile	1	1	0	0	1	3	0
936	170	chicken coop	0	0	0	0	0	0	0
937	170	oven	0	0	0	0	0	0	0
938	170	granary	3	1	2	3	3	0	6

939	171	goat corral	0	0	0	0	2	2	0
940	171	pig corral	0	0	0	0	0	0	0
941	171	kitchen	0	1	0	1	0	1	6
942	171	storeroom	5	0	5	2	5	0	0
943	171	storeroom	3	1	1	0	0	0	0
944	171	domicile	0	0	0	0	0	1	0
945	171	chicken coop	0	0	0	0	0	0	0
946	172	goat corral	0	0	0	0	0	0	0
947	172	pig corral	0	0	0	0	0	0	0
948	172	kitchen	0	0	0	0	0	0	0
949	172	domicile	0	0	0	0	0	0	0
950	172	oven	0	0	0	0	0	0	0
951	173	tree with chickens	0	0	0	0	0	0	0
952	173	goat corral	0	0	0	0	0	0	0
953	173	goat corral	0	0	0	0	0	0	0
954	173	domicile	0	0	1	0	0	0	0
955	174	latrine	0	0	0	0	0	0	0
956	174	goat corral	0	0	0	0	0	0	0
957	174	goat corral	0	0	0	0	0	0	0
958	174	pig corral	0	0	0	0	0	0	0
959	174	kitchen	0	0	0	0	0	0	0
960	174	storeroom	1	0	1	0	0	0	0
961	174	domicile	0	2	0	0	0	0	0
962	174	open shed	0	0	0	0	0	0	0
963	175	tree with chickens	0	0	0	0	0	0	0
964	175	latrine	0	0	0	0	0	0	0
965	175	goat corral	0	0	0	0	0	0	0
966	175	pig corral	0	0	0	0	0	0	0
967	175	kitchen	0	0	0	0	0	0	0
968	175	domicile	0	0	0	0	0	0	0
969	175	piled material	0	0	0	0	0	0	0
970	176	domicile	2	1	1	1	0	0	0
971	177	pig corral	0	0	0	0	0	0	0
972	177	kitchen	0	0	0	0	0	0	0
973	177	domicile	0	0	0	0	0	0	0
974	178	pig corral	6	6	9	3	1	0	0
975	178	kitchen	0	0	0	0	0	0	0
976	178	storeroom	0	0	0	0	0	0	0
977	178	domicile	0	0	0	0	0	0	0
978	178	oven	0	0	0	0	0	0	0
979	178	open shed	0	0	0	0	0	0	0
980	179	goat corral	0	0	0	0	0	0	0
981	179	pig corral	0	0	0	0	0	0	0
982	179	kitchen	0	0	0	0	0	0	0
983	179	domicile	0	0	0	0	0	0	0
984	179	piled material	0	0	0	0	0	0	0
985	180	domicile	0	0	0	0	0	0	0

986	181	domicile	0	0	0	0	0	0	0
987	182	latrine	0	0	0	0	0	0	0
988	182	goat corral	0	0	0	0	0	0	0
989	182	kitchen	0	0	0	0	0	0	0
990	182	domicile	0	0	0	0	0	0	0
991	183	tree with chickens	0	0	0	0	0	0	0
992	183	latrine	0	0	0	0	0	0	0
993	183	pig corral	0	0	0	0	0	0	0
994	183	storeroom	0	0	0	0	0	0	0
995	183	domicile	0	0	0	0	0	0	0
996	183	oven	0	0	0	0	0	0	0
997	184	goat corral	0	0	0	0	1	0	0
998	184	pig corral	0	0	0	0	0	0	0
999	184	domicile	0	0	0	0	0	0	0
1000	184	open shed	0	0	0	0	0	0	0
1001	185	tree with chickens	0	0	0	0	0	0	0
1002	185	goat corral	0	0	0	0	0	0	0
1003	185	pig corral	0	0	0	0	0	0	0
1004	185	cow corral	0	0	0	0	0	0	0
1005	185	storeroom	0	0	0	0	0	0	0
1006	185	storeroom	0	0	0	0	0	0	0
1007	185	domicile	0	0	0	0	0	0	0
1008	186	latrine	0	0	0	0	0	0	0
1009	186	goat corral	0	0	1	0	0	0	0
1010	186	pig corral	3	2	1	0	0	0	0
1011	186	kitchen	0	0	0	0	0	0	0
1012	186	cow corral	0	0	0	0	0	0	0
1013	186	storeroom	0	1	1	0	0	0	0
1014	186	domicile	0	3	0	1	1	1	0
1015	186	open shed	0	0	0	0	0	0	0
1016	187	tree with chickens	0	0	0	0	0	0	0
1017	187	latrine	0	0	0	0	0	0	0
1018	187	kitchen	0	0	0	0	0	0	0
1019	187	storeroom	0	0	0	0	0	0	0
1020	187	storeroom	0	0	0	0	0	0	0
1021	187	domicile	0	0	0	0	0	0	0
1022	187	chicken coop	0	0	11	1	1	1	0
1023	187	piled material	0	0	0	0	0	0	0
1024	188	goat corral	0	0	0	0	0	0	0
1025	188	pig corral	0	0	0	0	0	0	0
1026	188	cow corral	0	0	0	0	0	0	0
1027	188	storeroom	0	0	0	0	0	0	0
1028	188	domicile	0	1	0	1	1	0	0
1029	188	chicken coop	0	0	0	0	0	0	0
1030	189	latrine	0	0	0	0	0	0	0
1031	189	goat corral	0	0	2	0	0	0	0
1032	189	pig corral	1	1	0	0	0	0	0

1033	189	kitchen	0	0	0	0	0	0	0
1034	189	kitchen	0	0	0	0	0	0	0
1035	189	domicile	0	2	0	0	0	0	0
1036	189	domicile	3	2	3	1	3	0	0
1037	189	oven	0	0	0	0	0	0	0
1038	189	open shed	0	0	0	0	0	0	0
1039	190	tree with chickens	0	0	0	0	0	0	0
1040	190	latrine	0	0	0	0	0	0	0
1041	190	pig corral	0	0	0	0	0	0	0
1042	190	domicile	0	0	0	0	0	0	0
1043	190	chicken coop	0	0	0	0	0	0	0
1044	190	piled material	0	0	0	0	0	0	0
1045	191	tree with chickens	0	0	0	0	0	0	0
1046	191	latrine	0	0	0	0	0	0	0
1047	191	goat corral	0	0	0	0	0	0	0
1048	191	pig corral	0	0	0	0	0	0	0
1049	191	cow corral	0	0	0	0	0	0	0
1050	191	storeroom	1	0	0	0	0	0	0
1051	191	storeroom	1	0	0	0	0	0	0
1052	191	domicile	0	0	0	0	0	0	0
1053	192	goat corral	0	0	0	0	3	0	0
1054	192	kitchen	0	1	2	0	0	0	0
1055	192	storeroom	0	0	0	0	0	0	0
1056	192	domicile	0	1	0	0	0	0	0
1057	192	chicken coop	0	0	0	0	0	0	0
1058	192	other	0	0	0	0	0	0	0
1059	193	goat corral	0	0	0	0	0	0	0
1060	193	pig corral	0	0	0	0	0	0	0
1061	193	kitchen	0	1	2	0	0	0	0
1062	193	cow corral	0	0	0	0	0	0	0
1063	193	storeroom	2	0	0	0	0	0	0
1064	193	domicile	0	0	0	0	0	0	0
1065	194	tree with chickens	0	0	0	0	0	0	0
1066	194	latrine	0	0	0	0	0	0	0
1067	194	goat corral	0	0	0	0	0	0	0
1068	194	pig corral	0	0	0	0	0	0	0
1069	194	domicile	0	0	0	0	0	0	0
1070	194	piled material	0	0	0	0	0	0	0
1071	195	goat corral	0	0	0	0	0	0	0
1072	195	cow corral	0	0	0	0	0	0	0
1073	195	storeroom	0	0	0	0	0	0	0
1074	195	storeroom	4	3	3	3	1	0	0
1075	195	domicile	0	0	0	0	0	0	0
1076	195	domicile	2	0	0	0	0	0	0
1077	195	chicken coop	0	0	0	0	0	0	0
1078	196	latrine	0	0	0	0	0	0	0
1079	196	goat corral	0	0	0	0	0	0	0

1080	196	pig corral	0	0	0	0	0	0	0
1081	196	kitchen	0	0	0	0	0	0	0
1082	196	storeroom	0	0	0	0	0	0	0
1083	196	domicile	0	0	0	0	0	0	0
1084	196	oven	0	0	0	0	0	0	0
1085	196	piled material	0	0	0	0	0	0	0
1086	197	tree with chickens	0	0	0	0	0	0	0
1087	197	goat corral	0	0	0	0	0	0	0
1088	197	pig corral	0	0	0	0	0	0	0
1089	197	storeroom	0	0	0	0	0	0	0
1090	197	storeroom	0	0	0	0	0	0	0
1091	197	domicile	0	0	0	0	0	0	0
1092	197	chicken coop	0	0	0	0	0	0	0
1093	197	chicken coop	0	0	0	0	0	0	0
1094	198	latrine	0	0	0	0	0	0	0
1095	198	goat corral	0	0	0	0	0	0	0
1096	198	goat corral	0	0	0	0	0	0	0
1097	198	pig corral	0	0	0	0	0	0	0
1098	198	kitchen	0	0	0	0	0	0	0
1099	198	domicile	0	0	0	0	0	0	0
1100	199	tree with chickens	0	0	0	0	0	0	0
1101	199	goat corral	0	0	0	0	0	0	0
1102	199	pig corral	1	0	1	0	0	0	0
1103	199	cow corral	0	0	0	0	0	0	0
1104	199	domicile	0	0	1	0	0	0	0
1105	199	fireplace	0	0	0	0	0	0	0
1106	199	oven	0	0	0	0	0	0	0
1107	200	goat corral	0	0	0	0	0	0	0
1108	200	domicile	0	1	0	0	0	0	0
1109	201	goat corral	0	0	0	0	0	0	0
1110	201	pig corral	0	0	0	0	0	0	0
1111	201	pig corral	0	0	0	0	0	0	0
1112	201	pig corral	0	0	0	0	0	0	0
1113	201	cow corral	0	0	0	0	0	0	0
1114	201	storeroom	2	2	9	5	2	0	4
1115	201	domicile	0	0	0	0	0	0	0
1116	201	chicken coop	0	0	0	0	0	0	0
1117	202	goat corral	0	0	1	0	0	0	1
1118	202	kitchen	0	0	0	0	0	0	0
1119	202	storeroom	0	0	0	0	0	0	0
1120	202	domicile	0	1	0	0	0	0	0
1121	202	chicken coop	0	1	1	0	0	0	0
1122	203	goat corral	0	0	0	0	0	0	0
1123	203	goat corral	0	0	0	0	0	0	0
1124	203	pig corral	3	0	2	1	0	0	0
1125	203	kitchen	0	0	0	0	0	0	0
1126	203	cow corral	0	0	0	0	0	0	0

1127	203	storeroom	0	0	0	0	0	0	0
1128	203	domicile	0	0	0	0	0	0	0
1129	203	chicken coop	0	0	0	0	0	0	0
1130	203	piled material	0	0	0	0	0	0	0
1131	204	latrine	0	0	0	0	0	0	0
1132	204	goat corral	0	0	0	0	0	0	0
1133	204	kitchen	0	0	0	0	0	0	0
1134	204	domicile	4	0	2	1	0	0	0
1135	205	latrine	0	0	0	0	0	0	0
1136	205	goat corral	0	0	0	0	0	0	0
1137	205	pig corral	1	1	1	0	0	0	0
1138	205	kitchen	0	0	0	0	0	0	0
1139	205	domicile	0	0	0	0	0	0	0
1140	205	chicken coop	0	0	0	0	0	0	0
1141	205	granary	5	0	2	0	0	1	2
1142	206	latrine	0	0	0	0	0	0	0
1143	206	cow corral	0	0	0	0	0	0	0
1144	206	storeroom	0	0	0	0	0	0	0
1145	206	oven	0	0	0	0	0	0	0
1146	207	pig corral	0	0	0	0	0	0	0
1147	207	domicile	0	0	0	0	0	0	0
1148	208	latrine	0	0	0	0	0	0	0
1149	208	goat corral	0	0	0	0	0	0	0
1150	208	pig corral	0	0	0	0	1	0	0
1151	208	storeroom	0	0	0	0	0	0	0
1152	208	domicile	0	0	0	0	0	0	0
1153	208	chicken coop	0	0	0	0	0	0	0
1154	209	tree with chickens	0	0	0	0	0	0	0
1155	209	latrine	0	0	0	0	0	0	0
1156	209	goat corral	0	0	0	0	0	0	0
1157	209	pig corral	0	0	0	0	0	0	0
1158	209	kitchen	0	0	0	0	0	0	0
1159	209	domicile	1	2	4	1	0	0	0
1160	210	tree with chickens	0	0	0	0	0	0	0
1161	210	latrine	0	0	0	0	0	0	0
1162	210	goat corral	0	0	0	0	0	0	0
1163	210	pig corral	0	0	0	0	0	0	0
1164	210	kitchen	0	0	0	0	0	0	0
1165	210	storeroom	0	0	0	0	0	0	0
1166	210	domicile	0	0	0	0	0	0	0
1167	210	chicken coop	0	0	0	0	0	0	0
1168	211	domicile	0	0	0	0	0	0	0
1169	212	goat corral	0	0	1	0	1	0	0
1170	212	pig corral	0	0	0	0	0	0	0
1171	212	pig corral	4	2	2	3	0	0	0
1172	212	cow corral	0	0	0	0	0	0	0
1173	212	domicile	0	0	0	0	0	0	3

1174	212	open shed	0	0	0	0	0	0	0
1175	212	granary	0	0	0	0	0	0	0
1176	213	tree with chickens	0	0	0	0	0	0	0
1177	213	latrine	0	0	0	0	0	0	0
1178	213	goat corral	0	0	0	0	0	0	0
1179	213	pig corral	0	0	0	0	0	0	0
1180	213	storeroom	0	0	0	0	0	0	0
1181	213	domicile	0	0	0	0	0	0	0
1182	213	chicken coop	0	0	0	0	0	0	0
1183	214	domicile	0	0	0	0	0	0	0
1184	215	goat corral	0	0	0	0	0	0	0
1185	215	goat corral	2	1	4	12	0	0	0
1186	215	pig corral	0	0	0	0	0	0	0
1187	215	pig corral	2	0	2	0	0	0	0
1188	215	cow corral	0	0	0	0	0	0	0
1189	215	storeroom	3	2	2	0	0	1	0
1190	215	domicile	0	0	0	0	0	0	0
1191	215	granary	7	7	24	9	1	0	0
1192	216	tree with chickens	0	0	0	0	0	0	0
1193	216	latrine	0	0	0	0	0	0	0
1194	216	goat corral	0	8	0	2	2	0	0
1195	216	pig corral	0	0	0	0	0	0	0
1196	216	cow corral	0	0	0	0	0	0	0
1197	216	domicile	2	1	3	6	0	1	0
1198	216	oven	0	0	0	0	0	0	0
1199	216	piled material	0	0	0	0	0	0	0
1200	216	granary	0	0	0	0	0	0	0
1201	217	latrine	0	0	0	0	0	0	0
1202	217	goat corral	3	1	3	5	1	0	0
1203	217	storeroom	0	0	0	0	0	0	0
1204	217	domicile	0	0	0	0	0	0	0
1205	218	tree with chickens	0	0	0	0	0	0	0
1206	218	goat corral	0	0	0	0	0	0	0
1207	218	pig corral	0	0	0	0	0	0	0
1208	218	kitchen	9	5	14	0	1	2	0
1209	218	cow corral	0	0	0	0	0	0	0
1210	218	domicile	0	1	3	1	0	0	0
1211	218	oven	0	0	0	0	0	0	0
1212	218	piled material	0	0	0	0	0	0	0
1213	219	goat corral	0	0	0	0	0	0	0
1214	219	storeroom	4	0	2	1	5	0	0
1215	219	domicile	2	0	0	0	0	0	0
1216	219	oven	0	0	0	0	0	0	0
1217	220	goat corral	0	0	0	0	0	0	0
1218	220	pig corral	0	0	0	0	0	0	0
1219	220	kitchen	0	0	0	0	0	0	0
1220	220	storeroom	0	0	0	0	0	0	0

1221	220	domicile	0	0	0	0	0	0	0
1222	221	goat corral	0	0	0	0	0	0	0
1223	221	goat corral	0	0	0	0	0	0	0
1224	221	domicile	0	0	0	0	0	0	0
1225	222	tree with chickens	0	0	0	0	0	0	0
1226	222	pig corral	0	0	0	0	0	0	0
1227	222	cow corral	0	0	0	0	0	0	0
1228	222	storeroom	0	0	0	0	0	0	0
1229	222	domicile	0	0	0	0	0	0	0
1230	222	fireplace	0	0	0	0	0	0	0
1231	222	oven	0	0	0	0	0	0	0
1232	222	piled material	0	0	0	0	0	0	0
1233	223	pig corral	0	0	0	0	0	0	0
1234	223	domicile	0	0	0	0	0	0	0
1235	224	goat corral	0	0	0	0	0	0	0
1236	224	kitchen	0	0	0	0	0	0	0
1237	224	kitchen	0	0	0	0	0	0	0
1238	224	storeroom	0	0	0	0	0	0	0
1239	224	domicile	0	0	0	0	0	0	0
1240	224	chicken coop	1	1	1	0	0	0	0
1241	224	piled material	0	0	0	0	0	0	0
1242	225	latrine	0	0	0	0	0	0	0
1243	225	goat corral	0	0	0	1	0	0	0
1244	225	pig corral	0	0	0	0	0	0	0
1245	225	kitchen	0	0	0	0	0	0	0
1246	225	storeroom	0	1	0	0	0	0	0
1247	225	domicile	0	0	0	0	0	0	0
1248	225	oven	0	0	0	0	0	0	0
1249	225	piled material	0	0	0	0	0	0	0
1250	225	nest	0	0	0	0	0	0	0
1251	225	nest	0	0	0	0	0	0	0
1252	225	nest	0	0	0	0	0	0	0
1253	226	latrine	0	0	0	0	0	0	0
1254	226	goat corral	0	0	0	0	0	0	0
1255	226	pig corral	0	0	0	0	0	0	0
1256	226	kitchen	0	0	0	0	0	0	0
1257	226	storeroom	5	7	15	3	0	0	0
1258	226	domicile	0	0	0	0	0	0	0
1259	226	chicken coop	0	0	0	0	0	0	0
1260	226	oven	0	0	0	0	0	0	0
1261	226	nest	0	0	0	0	0	0	0
1262	226	nest	0	0	0	0	0	0	0
1263	226	nest	0	0	0	0	0	0	0
1264	226	granary	0	0	0	0	0	0	0
1265	227	latrine	0	0	0	0	0	0	0
1266	227	goat corral	0	0	0	0	0	2	0
1267	227	pig corral	0	0	0	0	0	0	0

1268	227	cow corral	0	0	0	0	0	0	0
1269	227	storeroom	0	0	0	0	0	0	0
1270	227	domicile	0	0	0	0	0	0	0
1271	227	oven	0	0	0	0	0	0	0
1272	228	latrine	0	0	0	0	0	0	0
1273	228	goat corral	0	0	0	0	0	0	0
1274	228	pig corral	0	0	0	0	0	0	0
1275	228	kitchen	1	0	2	0	1	0	0
1276	228	storeroom	0	0	0	0	0	0	0
1277	228	domicile	0	0	0	0	0	0	0
1278	228	domicile	0	3	0	0	0	0	0
1279	228	oven	0	0	0	0	0	0	0
1280	229	tree with chickens	0	0	0	0	0	0	0
1281	229	tree with chickens	0	0	0	0	0	0	0
1282	229	pig corral	0	0	0	0	0	0	0
1283	229	pig corral	0	0	0	0	0	0	0
1284	229	domicile	0	1	2	0	0	0	0
1285	229	domicile	1	0	0	0	0	0	0
1286	229	chicken coop	0	0	0	0	0	0	0
1287	230	tree with chickens	0	0	0	0	0	0	0
1288	230	latrine	0	0	0	0	0	0	0
1289	230	pig corral	0	0	0	0	0	0	0
1290	230	kitchen	0	0	0	0	0	0	0
1291	230	storeroom	4	2	5	0	0	0	0
1292	230	domicile	0	0	0	0	0	0	0
1293	231	domicile	0	0	0	0	0	0	0
1294	232	domicile	0	0	0	0	0	0	0
1295	233	latrine	1	0	0	0	0	0	0
1296	233	kitchen	0	0	0	0	0	0	0
1297	233	domicile	0	0	0	0	0	0	0
1298	233	oven	0	0	0	0	0	0	0

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Variables	Definition
siteid	Bug collection site identification number
houseid	House identification number
ecotcat	Ecotope type (categorical) *17 categories:* domicile, kitchen, storeroom, goat corral, pig corral, chicken coop, granary, cow corral, horse corral, nest, tree with chicken, piled material, latrine, fireplace, oven, open shed, other
stageMa	Number of male bugs
stageFe	Number of female bugs
stageV	Number of fifth-instar nymphs
stageIV	Number of fourth-instar nymphs
stageIII	Number of third-instar nymphs
stageII	Number of second-instar nymphs
stageI	Number of first-instar nymphs
dvsite	Total number of live *T. infestans* captured in the site (count)
infested	House infestation by *T. infestans* (binary) *0: not infested* *1: infested*
mainecot	Main ecotopes (binary) *0: No main ecotope* (cow corral, horse corral, nest, tree with chicken, piled material, latrine, fireplace, oven, open shed, other) *1: Main ecotopes* (domicile, kitchen, storeroom, goat corral, pig corral, chicken coop, granary)

Variables	Definition
idsite	Bug collection site identification number
id_house_n	House identification number
idbug	*T. infestans* identification number
tempmax20h	Maximum temperature between 2000 and 0600 hours of the night preceding bug capture
ecotcat	Main ecotope (categorical) *7 categories:* domicile, kitchen, storeroom, goat corral, pig corral, chicken coop, granary
dvsite	Total number of live *T. infestans* captured per site (count)
stagecat	Bug developmental stage (late-stage bugs only; categorical) *4 categories :* male, female, V- and IV-instar nymphs
stage3	Bug developmental stage (late-stage bugs only; categorical) *0: IV- and V-instar nymphs* *1: males* *2: females*
sexstageV	Sex of fifth-instar nymphs (categorical) *2 categories* : female, male
orinacorr	Presence of colorless urine adjusted for overnight temperature (binar *0: No* *1: Yes*
nutricat	Engorgement status (categorical) *4 categories :* unfed, little-, medium-, fully-fed bugs
nutribin	Engorgement status (binary) *0: unfed and little-fed bugs*

	1: medium- and fully-fed bugs
weight	Total body weight (mg)
length	Total body length (mm)
gravid	Presence of chorionated eggs in female bugs (binary) *0: No chorionated eggs* *1: At least one chorionated egg*
noeggs	Number of chorionated eggs in female bugs
bloodmeal identification:	
human	Bloodmeal on human (binary)
chicken	Bloodmeal on chicken (binary)
dog	Bloodmeal on dog (binary)
cat	Bloodmeal on cat (binary)
goat	Bloodmeal on goat (binary)
pig	Bloodmeal on pig (binary)
rodent	Bloodmeal on rodent (binary)
react	Reactive bugs (positive against any of the tested antisera in the ELISA assay; binary)
unmixed	Single bloodmeal source (positive against only one of the antisera tested; binary)
	For all of these variables: *0: No* *1: Yes*
logitpflight	Individual probability of flight initiation of adult bugs using the logistic regression model described in [17]
flier5	Potential fliers (adult *T. infestans* bugs with a probability of flight initiation greater than 0.05; binary) *0: No*

1: Yes

idsite	id_house_n	idbug	tempmax20h	ecotcat	dvsite	stagecat	stage3	sexstageV
1	2	95	26.9	Domicile	2	Males	1	
1	2	493	26.9	Domicile	2	Females	2	
2	7	5	26.9	Domicile	16	Females	2	
2	7	18	26.9	Domicile	16	Males	1	
2	7	80	26.9	Domicile	16	Fifth instars	0	
2	7	123	26.9	Domicile	16	Males	1	
2	7	154	26.9	Domicile	16	Fifth instars	0	Female
2	7	185	26.9	Domicile	16	Males	1	
2	7	223	26.9	Domicile	16	Males	1	
2	7	287	26.9	Domicile	16	Males	1	
2	7	317	26.9	Domicile	16	Females	2	
2	7	325	26.9	Domicile	16	Females	2	
2	7	341	26.9	Domicile	16	Females	2	
2	7	369	26.9	Domicile	16	Males	1	
2	7	374	26.9	Domicile	16	Fifth instars	0	Female
2	7	394	26.9	Domicile	16	Fifth instars	0	Female
2	7	395	26.9	Domicile	16	Females	2	
2	7	486	26.9	Domicile	16	Females	2	
3	8	29	32.5	Domicile	3	Females	2	
3	8	162	32.5	Domicile	3	Females	2	
3	8	372	32.5	Domicile	3	Females	2	
4	12	15	28.9	Domicile	32	Fourth instars	0	
4	12	47	28.9	Domicile	32	Fifth instars	0	Male
4	12	62	28.9	Domicile	32	Fifth instars	0	Male
4	12	84	28.9	Domicile	32	Fourth instars	0	
4	12	117	28.9	Domicile	32	Males	1	
4	12	149	28.9	Domicile	32	Fifth instars	0	Male
4	12	182	28.9	Domicile	32	Fifth instars	0	Female
4	12	183	28.9	Domicile	32	Fourth instars	0	
4	12	295	28.9	Domicile	32	Fifth instars	0	Male
4	12	357	28.9	Domicile	32	Fourth instars	0	
4	12	455	28.9	Domicile	32	Fifth instars	0	Male
4	12	475	28.9	Domicile	32	Fifth instars	0	Male
4	12	487	28.9	Domicile	32	Fifth instars	0	Female
4	12	541	28.9	Domicile	32	Fifth instars	0	Female
5	13	17	28.9	Domicile	22	Fifth instars	0	Female
5	13	44	28.9	Domicile	22	Males	1	
5	13	140	28.9	Domicile	22	Males	1	
5	13	143	28.9	Domicile	22	Females	2	
5	13	175	28.9	Domicile	22	Fourth instars	0	
5	13	177	28.9	Domicile	22	Females	2	
5	13	189	28.9	Domicile	22	Fifth instars	0	Male
5	13	350	28.9	Domicile	22	Fifth instars	0	
5	13	351	28.9	Domicile	22	Fourth instars	0	

5	13	356	28.9	Domicile	22	Fourth instars	0	
5	13	375	28.9	Domicile	22	Females	2	
5	13	419	28.9	Domicile	22	Males	1	
5	13	435	28.9	Domicile	22	Fifth instars	0	Female
5	13	437	28.9	Domicile	22	Males	1	
5	13	447	28.9	Domicile	22	Females	0	
5	13	511	28.9	Domicile	22	Males	1	
5	13	525	28.9	Domicile	22	Males	1	
5	13	537	28.9	Domicile	22	Fourth instars	0	
6	14	289	32.5	Domicile	1	Females	2	
7	15	198	32.5	Domicile	1	Females	2	
8	16	7	28.9	Domicile	12	Fourth instars	0	
8	16	56	28.9	Domicile	12	Males	1	
8	16	194	28.9	Domicile	12	Females	2	
8	16	209	28.9	Domicile	12	Fifth instars	0	
8	16	220	28.9	Domicile	12	Males	1	
8	16	282	28.9	Domicile	12	Fourth instars	0	
8	16	306	28.9	Domicile	12	Fourth instars	0	
8	16	313	28.9	Domicile	12	Females	2	
8	16	365	28.9	Domicile	12	Females	2	
8	16	379	28.9	Domicile	12	Males	1	
8	16	485	28.9	Domicile	12	Males	1	
9	19	39	28.9	Domicile	4	Males	2	
9	19	88	28.9	Domicile	4	Males	1	Male
9	19	371	28.9	Domicile	4	Males	1	Male
9	19	613	28.9	Domicile	4	Males	1	
10	20	30	26.9	Domicile	8	Females	2	
10	20	174	32.5	Domicile	8	Fifth instars	0	Male
10	20	181	32.5	Domicile	8	Females	2	
10	20	195	32.5	Domicile	8	Fifth instars	0	Female
10	20	397	32.5	Domicile	8	Fifth instars	0	Male
10	20	402	32.5	Domicile	8	Fifth instars	0	Female
10	20	504	32.5	Domicile	8	Fourth instars	0	
10	20	548	26.9	Domicile	8	Males	1	
12	25	9	32.5	Kitchen	31	Fifth instars	0	Female
12	25	10	32.5	Kitchen	31	Females	2	
12	25	11	32.5	Kitchen	31	Fifth instars	0	
12	25	55	32.5	Kitchen	31	Males	1	
12	25	68	32.5	Kitchen	31	Males	1	
12	25	120	32.5	Kitchen	31	Males	1	
12	25	121	32.5	Kitchen	31	Males	1	
12	25	141	32.5	Kitchen	31	Females	2	
12	25	165	32.5	Kitchen	31	Fifth instars	0	Female
12	25	168	32.5	Kitchen	31	Fifth instars	0	Female
12	25	187	32.5	Kitchen	31	Fifth instars	0	Female
12	25	192	32.5	Kitchen	31	Fifth instars	0	Female
12	25	243	32.5	Kitchen	31	Males	1	

12	25	244	32.5	Kitchen	31	Fifth instars	0	Male
12	25	247	32.5	Kitchen	31	Males	1	
12	25	265	32.5	Kitchen	31	Fifth instars	0	Female
12	25	316	32.5	Kitchen	31	Fifth instars	0	Female
12	25	352	32.5	Kitchen	31	Females	2	
12	25	465	32.5	Kitchen	31	Fifth instars	0	Female
12	25	476	32.5	Kitchen	31	Fifth instars	0	Male
12	25	478	32.5	Kitchen	31	Males	1	Male
12	25	483	32.5	Kitchen	31	Fifth instars	0	Male
12	25	496	32.5	Kitchen	31	Fifth instars	0	Male
12	25	512	32.5	Kitchen	31	Females	2	
12	25	515	32.5	Kitchen	31	Males	1	
12	25	526	32.5	Kitchen	31	Females	2	
12	25	527	32.5	Kitchen	31	Males	1	
12	25	546	32.5	Kitchen	31	Fifth instars	0	Male
13	25	91	32.5	Domicile	5	Fifth instars	0	Male
13	25	98	32.5	Domicile	5	Fourth instars	0	
13	25	158	32.5	Domicile	5	Fifth instars	0	Female
13	25	186	32.5	Domicile	5	Females	2	
13	25	443	32.5	Domicile	5	Fifth instars	0	Male
14	28	14	28.9	Domicile	9	Fifth instars	0	Male
14	28	26	28.9	Domicile	9	Males	1	
14	28	61	28.9	Domicile	9	Fifth instars	0	Female
14	28	166	28.9	Domicile	9	Fourth instars	0	
14	28	359	28.9	Domicile	9	Fourth instars	0	
14	28	454	28.9	Domicile	9	Males	1	
14	28	494	28.9	Domicile	9	Fifth instars	0	Male
14	28	506	28.9	Domicile	9	Fifth instars	0	Male
14	28	510	28.9	Domicile	9	Males	1	
15	29	380	28.9	Domicile	2	Males	1	
15	29	488	28.9	Domicile	2	Males	1	
16	32	3	28.9	Storeroom	45	Fifth instars	0	Female
16	32	8	28.9	Storeroom	45	Fifth instars	0	Female
16	32	21	28.9	Storeroom	45	Fifth instars	0	Male
16	32	70	28.9	Storeroom	45	Fifth instars	0	
16	32	102	28.9	Storeroom	45	Females	2	
16	32	111	28.9	Storeroom	45	Fifth instars	0	Male
16	32	113	28.9	Storeroom	45	Females	2	
16	32	122	28.9	Storeroom	45	Fourth instars	0	
16	32	148	28.9	Storeroom	45	Fourth instars	0	
16	32	157	28.9	Storeroom	45	Fourth instars	0	
16	32	172	28.9	Storeroom	45	Fourth instars	0	
16	32	173	28.9	Storeroom	45	Fifth instars	0	Female
16	32	216	28.9	Storeroom	45	Fifth instars	0	Female
16	32	222	28.9	Storeroom	45	Fifth instars	0	
16	32	224	28.9	Storeroom	45	Males	1	
16	32	249	28.9	Storeroom	45	Fourth instars	0	

16	32	251	28.9	Storeroom	45	Females	2	
16	32	274	28.9	Storeroom	45	Females	2	
16	32	314	28.9	Storeroom	45	Fourth instars	0	
16	32	322	28.9	Storeroom	45	Males	1	
16	32	323	28.9	Storeroom	45	Fifth instars	0	Female
16	32	343	28.9	Storeroom	45	Fifth instars	0	
16	32	368	28.9	Storeroom	45	Males	1	
16	32	391	28.9	Storeroom	45	Fifth instars	0	Male
16	32	415	28.9	Storeroom	45	Fifth instars	0	Female
16	32	429	28.9	Storeroom	45	Females	2	
16	32	430	28.9	Storeroom	45	Males	1	
16	32	436	28.9	Storeroom	45	Fifth instars	0	
16	32	442	28.9	Storeroom	45	Fourth instars	0	
16	32	449	28.9	Storeroom	45	Fifth instars	0	Male
16	32	462	28.9	Storeroom	45	Females	2	
16	32	467	28.9	Storeroom	45	Fifth instars	0	Female
16	32	471	28.9	Storeroom	45	Males	1	
16	32	477	28.9	Storeroom	45	Fifth instars	0	
16	32	479	28.9	Storeroom	45	Males	1	
16	32	480	28.9	Storeroom	45	Fourth instars	0	
16	32	482	28.9	Storeroom	45	Females	2	
16	32	521	28.9	Storeroom	45	Males	1	
17	33	144	32.5	Domicile	5	Females	2	
17	33	203	32.5	Domicile	5	Males	1	
17	33	237	32.5	Domicile	5	Males	1	
17	33	393	32.5	Domicile	5	Fourth instars	0	
18	34	159	28.9	Domicile	3	Females	2	
18	34	230	28.9	Domicile	3	Fifth instars	0	Female
18	34	473	28.9	Domicile	3	Fifth instars	0	Male
19	35	57	28.9	Domicile	10	Fourth instars	0	
19	35	259	28.9	Domicile	10	Fifth instars	0	Female
19	35	318	28.9	Domicile	10	Fifth instars	0	
19	35	335	28.9	Domicile	10	Fifth instars	0	Male
19	35	387	28.9	Domicile	10	Females	2	
19	35	403	28.9	Domicile	10	Males	1	
19	35	503	28.9	Domicile	10	Fifth instars	0	Female
20	38	43	32.5	Domicile	14	Fourth instars	0	
20	38	45	32.5	Domicile	14	Fourth instars	0	
20	38	78	32.5	Domicile	14	Fifth instars	0	Female
20	38	115	32.5	Domicile	14	Fourth instars	0	
20	38	124	32.5	Domicile	14	Fourth instars	0	
20	38	204	32.5	Domicile	14	Fifth instars	0	Female
20	38	302	32.5	Domicile	14	Males	1	
20	38	305	32.5	Domicile	14	Fourth instars	0	
20	38	420	32.5	Domicile	14	Fourth instars	0	
20	38	422	32.5	Domicile	14	Males	1	
20	38	463	32.5	Domicile	14	Females	2	

20	38	550	32.5	Domicile	14	Fifth instars	0	Female
20	38	551	32.5	Domicile	14	Fifth instars	0	
21	39	472	32.5	Domicile	1	Females	2	
22	43	32	26.9	Domicile	13	Females	2	
22	43	46	26.9	Domicile	13	Females	2	
22	43	130	26.9	Domicile	13	Females	2	
22	43	218	26.9	Domicile	13	Males	1	
22	43	277	26.9	Domicile	13	Fourth instars	0	
22	43	331	26.9	Domicile	13	Females	2	
22	43	342	26.9	Domicile	13	Fifth instars	0	Male
22	43	358	26.9	Domicile	13	Fifth instars	0	Female
22	43	363	26.9	Domicile	13	Males	1	
22	43	399	26.9	Domicile	13	Females	2	
23	40	12	32.5	Domicile	29	Females	2	
23	40	20	32.5	Domicile	29	Females	2	
23	40	23	32.5	Domicile	29	Males	1	
23	40	69	32.5	Domicile	29	Fifth instars	0	Female
23	40	77	32.5	Domicile	29	Fifth instars	0	Female
23	40	83	32.5	Domicile	29	Females	2	
23	40	128	32.5	Domicile	29	Fifth instars	0	Female
23	40	133	32.5	Domicile	29	Males	1	
23	40	137	32.5	Domicile	29	Males	1	
23	40	150	32.5	Domicile	29	Fourth instars	0	
23	40	151	32.5	Domicile	29	Females	2	
23	40	167	32.5	Domicile	29	Fourth instars	0	
23	40	184	32.5	Domicile	29	Fourth instars	0	
23	40	202	32.5	Domicile	29	Fifth instars	0	Female
23	40	238	32.5	Domicile	29	Fifth instars	0	Male
23	40	248	32.5	Domicile	29	Fourth instars	0	
23	40	261	32.5	Domicile	29	Fifth instars	0	Male
23	40	288	32.5	Domicile	29	Fourth instars	0	
23	40	291	32.5	Domicile	29	Fifth instars	0	Female
23	40	310	32.5	Domicile	29	Fifth instars	0	Male
23	40	339	32.5	Domicile	29	Fifth instars	0	Female
23	40	345	32.5	Domicile	29	Fifth instars	0	Male
23	40	366	32.5	Domicile	29	Fourth instars	0	
23	40	418	32.5	Domicile	29	Females	2	
23	40	424	32.5	Domicile	29	Males	1	
23	40	425	32.5	Domicile	29	Males	1	
23	40	490	32.5	Domicile	29	Fifth instars	0	Male
23	40	492	32.5	Domicile	29	Fifth instars	0	Male
23	40	532	32.5	Domicile	29	Females	2	
24	45	607	32.5	Domicile	1	Females	2	
25	46	31	34.4	Domicile	41	Fifth instars	0	Female
25	46	34	34.4	Domicile	41	Fifth instars	0	Female
25	46	52	34.4	Domicile	41	Fifth instars	0	Male
25	46	53	34.4	Domicile	41	Fifth instars	0	Female

25	46	75	34.4	Domicile	41	Fourth instars	0	
25	46	109	34.4	Domicile	41	Fifth instars	0	Female
25	46	116	34.4	Domicile	41	Females	2	
25	46	156	34.4	Domicile	41	Fourth instars	0	
25	46	170	34.4	Domicile	41	Fifth instars	0	Male
25	46	176	34.4	Domicile	41	Fourth instars	0	
25	46	180	34.4	Domicile	41	Fifth instars	0	Female
25	46	208	34.4	Domicile	41	Fourth instars	0	
25	46	279	34.4	Domicile	41	Fifth instars	0	Female
25	46	293	34.4	Domicile	41	Females	2	
25	46	301	34.4	Domicile	41	Fifth instars	0	Female
25	46	307	34.4	Domicile	41	Fifth instars	0	Male
25	46	327	34.4	Domicile	41	Fifth instars	0	Male
25	46	332	34.4	Domicile	41	Fifth instars	0	Male
25	46	364	34.4	Domicile	41	Fifth instars	0	Male
25	46	408	34.4	Domicile	41	Fifth instars	0	Female
25	46	411	34.4	Domicile	41	Fifth instars	0	Male
25	46	460	34.4	Domicile	41	Fourth instars	0	
25	46	481	34.4	Domicile	41	Fifth instars	0	Male
25	46	507	34.4	Domicile	41	Fifth instars	0	Male
25	46	513	34.4	Domicile	41	Males	1	
25	46	531	34.4	Domicile	41	Males	1	
25	46	535	34.4	Domicile	41	Fourth instars	0	
25	46	552	34.4	Domicile	41	Females	2	
26	47	67	34.4	Chicken coop	13	Fourth instars	0	
26	47	188	34.4	Chicken coop	13	Fourth instars	0	
26	47	226	34.4	Chicken coop	13	Fourth instars	0	
26	47	229	34.4	Chicken coop	13	Fourth instars	0	
26	47	231	34.4	Chicken coop	13	Females	2	
26	47	268	34.4	Chicken coop	13	Fourth instars	0	
26	47	285	34.4	Chicken coop	13	Fourth instars	0	
26	47	319	34.4	Chicken coop	13	Fifth instars	0	Male
26	47	370	34.4	Chicken coop	13	Fourth instars	0	
26	47	384	34.4	Chicken coop	13	Fifth instars	0	Female
26	47	468	34.4	Chicken coop	13	Fourth instars	0	
26	47	474	34.4	Chicken coop	13	Fourth instars	0	
26	47	529	34.4	Chicken coop	13	Females	2	
27	48	36	26.8	Domicile	18	Females	2	
27	48	76	26.8	Domicile	18	Females	2	
27	48	89	26.8	Domicile	18	Females	2	
27	48	196	26.8	Domicile	18	Males	1	
27	48	215	26.8	Domicile	18	Males	1	Male
27	48	246	26.8	Domicile	18	Females	2	
27	48	269	26.8	Domicile	18	Females	2	
27	48	300	26.8	Domicile	18	Fifth instars	0	Male
27	48	321	26.8	Domicile	18	Fifth instars	0	Female
27	48	396	26.8	Domicile	18	Males	1	

27	48	398	26.8	Domicile	18	Females	2	
27	48	401	26.8	Domicile	18	Males	1	
27	48	426	26.8	Domicile	18	Males	1	
27	48	428	26.8	Domicile	18	Males	1	Female
27	48	451	26.8	Domicile	18	Males	1	
27	48	456	26.8	Domicile	18	Males	1	
27	48	539	26.8	Domicile	18	Females	2	
27	48	540	26.8	Domicile	18	Females	2	
28	50	49	26.8	Domicile	16	Fifth instars	0	Male
28	50	79	26.8	Domicile	16	Males	1	
28	50	108	26.8	Domicile	16	Males	1	
28	50	155	26.8	Domicile	16	Males	1	
28	50	232	26.8	Domicile	16	Males	1	
28	50	270	26.8	Domicile	16	Males	1	
28	50	281	26.8	Domicile	16	Females	2	
28	50	348	26.8	Domicile	16	Fifth instars	0	Female
28	50	427	26.8	Domicile	16	Males	1	
28	50	433	26.8	Domicile	16	Fifth instars	0	Female
28	50	470	26.8	Domicile	16	Fourth instars	0	
28	50	497	26.8	Domicile	16	Fifth instars	0	Male
29	53	25	26.8	Storeroom	35	Fifth instars	0	Male
29	53	54	26.8	Storeroom	35	Fourth instars	0	
29	53	92	26.8	Storeroom	35	Fifth instars	0	Male
29	53	114	26.8	Storeroom	35	Fourth instars	0	
29	53	119	26.8	Storeroom	35	Males	1	
29	53	139	26.8	Storeroom	35	Fourth instars	0	
29	53	178	26.8	Storeroom	35	Fifth instars	0	Male
29	53	199	26.8	Storeroom	35	Fifth instars	0	Female
29	53	200	26.8	Storeroom	35	Fifth instars	0	Male
29	53	234	26.8	Storeroom	35	Fifth instars	0	Female
29	53	242	26.8	Storeroom	35	Fourth instars	0	
29	53	253	26.8	Storeroom	35	Fourth instars	0	
29	53	256	26.8	Storeroom	35	Fifth instars	0	Female
29	53	262	26.8	Storeroom	35	Fourth instars	0	
29	53	297	26.8	Storeroom	35	Males	1	
29	53	326	26.8	Storeroom	35	Fourth instars	0	
29	53	334	26.8	Storeroom	35	Males	1	
29	53	340	26.8	Storeroom	35	Fifth instars	0	Female
29	53	353	26.8	Storeroom	35	Males	1	
29	53	355	26.8	Storeroom	35	Fifth instars	0	Male
29	53	413	26.8	Storeroom	35	Fourth instars	0	
29	53	421	26.8	Storeroom	35	Males	1	
29	53	431	26.8	Storeroom	35	Males	1	
29	53	432	26.8	Storeroom	35	Fifth instars	0	Female
29	53	434	26.8	Storeroom	35	Fifth instars	0	Female
29	53	452	26.8	Storeroom	35	Females	2	
29	53	459	26.8	Storeroom	35	Fifth instars	0	Female

29	53	464	26.8	Storeroom	35	Fifth instars	0	Male
29	53	469	26.8	Storeroom	35	Fourth instars	0	
29	53	524	26.8	Storeroom	35	Fourth instars	0	
29	53	528	26.8	Storeroom	35	Fifth instars	0	Female
30	55	97	26.8	Domicile	5	Males	1	
30	55	160	26.8	Domicile	5	Females	2	
30	55	328	26.8	Domicile	5	Males	1	
30	55	438	26.8	Domicile	5	Females	2	
30	55	441	26.8	Domicile	5	Fourth instars	0	
31	56	103	32.5	Domicile	5	Females	2	
31	56	518	32.5	Domicile	5	Males	1	
32	57	99	32.5	Domicile	8	Females	2	
32	57	129	32.5	Domicile	8	Females	2	
32	57	145	32.5	Domicile	8	Males	1	
32	57	250	32.5	Domicile	8	Fifth instars	0	Female
32	57	264	32.5	Domicile	8	Females	2	
32	57	404	32.5	Domicile	8	Females	2	
32	57	406	32.5	Domicile	8	Males	1	
32	57	445	32.5	Domicile	8	Males	1	
33	58	28	32.5	Domicile	4	Females	2	
33	58	315	32.5	Domicile	4	Females	2	
33	58	346	32.5	Domicile	4	Fifth instars	0	Female
33	58	417	32.5	Domicile	4	Females	2	
34	60	72	34.4	Domicile	7	Females	2	
34	60	206	34.4	Domicile	7	Females	2	
34	60	227	34.4	Domicile	7	Fifth instars	0	Male
34	60	286	34.4	Domicile	7	Males	1	
34	60	311	34.4	Domicile	7	Females	2	
34	60	416	34.4	Domicile	7	Females	2	
34	60	457	34.4	Domicile	7	Males	1	
35	62	86	32.5	Domicile	6	Females	2	
35	62	193	32.5	Domicile	6	Females	2	
35	62	201	32.5	Domicile	6	Females	2	
35	62	333	32.5	Domicile	6	Males	1	
35	62	367	32.5	Domicile	6	Males	1	
35	62	543	32.5	Domicile	6	Males	1	
36	68	50	34.4	Domicile	8	Fifth instars	0	Female
36	68	236	34.4	Domicile	8	Fourth instars	0	
36	68	255	34.4	Domicile	8	Fifth instars	0	Male
36	68	276	34.4	Domicile	8	Males	1	
36	68	296	34.4	Domicile	8	Fifth instars	0	Female
36	68	400	34.4	Domicile	8	Fifth instars	0	Female
36	68	522	34.4	Domicile	8	Males	1	
37	68	51	34.4	Domicile	37	Fourth instars	0	
37	68	58	34.4	Domicile	37	Fourth instars	0	
37	68	59	34.4	Domicile	37	Males	1	
37	68	66	34.4	Domicile	37	Fourth instars	0	

37	68	105	34.4	Domicile	37	Fourth instars	0	
37	68	147	34.4	Domicile	37	Fourth instars	0	
37	68	197	34.4	Domicile	37	Fourth instars	0	Female
37	68	205	34.4	Domicile	37	Fourth instars	0	
37	68	225	34.4	Domicile	37	Fourth instars	0	
37	68	260	34.4	Domicile	37	Fourth instars	0	
37	68	280	34.4	Domicile	37	Fifth instars	0	Male
37	68	312	34.4	Domicile	37	Fourth instars	0	
37	68	330	34.4	Domicile	37	Males	1	
37	68	344	34.4	Domicile	37	Fifth instars	0	Female
37	68	361	34.4	Domicile	37	Fourth instars	0	
37	68	376	34.4	Domicile	37	Fourth instars	0	
37	68	377	34.4	Domicile	37	Fourth instars	0	
37	68	392	34.4	Domicile	37	Fourth instars	0	
37	68	458	34.4	Domicile	37	Fourth instars	0	
37	68	508	34.4	Domicile	37	Fourth instars	0	
37	68	547	34.4	Domicile	37	Fourth instars	0	
37	68	553	34.4	Domicile	37	Males	1	
38	69	110	34.4	Domicile	2	Fourth instars	0	
38	69	498	34.4	Domicile	2	Males	1	
39	70	73	34.4	Storeroom	20	Females	2	
39	70	125	34.4	Storeroom	20	Females	2	
39	70	161	34.4	Storeroom	20	Fifth instars	0	Female
39	70	191	34.4	Storeroom	20	Fifth instars	0	Female
39	70	241	34.4	Storeroom	20	Males	1	
39	70	338	34.4	Storeroom	20	Males	1	
39	70	466	34.4	Storeroom	20	Fourth instars	0	
39	70	489	34.4	Storeroom	20	Fifth instars	0	Male
40	71	74	37.2	Domicile	7	Fourth instars	0	
40	71	82	37.2	Domicile	7	Fifth instars	0	Male
40	71	112	37.2	Domicile	7	Fourth instars	0	
40	71	169	37.2	Domicile	7	Females	2	
40	71	211	37.2	Domicile	7	Fourth instars	0	
40	71	298	37.2	Domicile	7	Fifth instars	0	Male
40	71	336	37.2	Domicile	7	Fifth instars	0	Female
41	71	608	37.2	Chicken coop	12	Fifth instars	0	
41	71	609	37.2	Chicken coop	12	Fourth instars	0	
41	71	610	37.2	Chicken coop	12	Fifth instars	0	Male
41	71	611	37.2	Chicken coop	12	Males	1	
42	72	127	37.2	Domicile	7	Fifth instars	0	Female
42	72	263	37.2	Domicile	7	Males	1	
42	72	284	37.2	Domicile	7	Fourth instars	0	
42	72	303	37.2	Domicile	7	Females	2	
42	72	448	37.2	Domicile	7	Fifth instars	0	Female
42	72	514	37.2	Domicile	7	Males	1	
42	72	536	37.2	Domicile	7	Males	1	
43	73	38	37.2	Kitchen	33	Males	1	

43	73	40	37.2	Kitchen	33	Fifth instars	0	Male
43	73	64	37.2	Kitchen	33	Fourth instars	0	
43	73	81	37.2	Kitchen	33	Males	1	
43	73	107	37.2	Kitchen	33	Fifth instars	0	Male
43	73	134	37.2	Kitchen	33	Females	2	
43	73	163	37.2	Kitchen	33	Fifth instars	0	
43	73	164	37.2	Kitchen	33	Fifth instars	0	Male
43	73	171	37.2	Kitchen	33	Females	2	
43	73	258	37.2	Kitchen	33	Fifth instars	0	Female
43	73	292	37.2	Kitchen	33	Fourth instars	0	
43	73	360	37.2	Kitchen	33	Fourth instars	0	
43	73	388	37.2	Kitchen	33	Males	1	
43	73	389	37.2	Kitchen	33	Males	1	
43	73	410	37.2	Kitchen	33	Fourth instars	0	
43	73	523	37.2	Kitchen	33	Fourth instars	0	
43	73	534	37.2	Kitchen	33	Fourth instars	0	
43	73	606	37.2	Kitchen	33	Females	2	
43	73	625	37.2	Kitchen	33	Fourth instars	0	
43	73	627	37.2	Kitchen	33	Fourth instars	0	
43	73	631	37.2	Kitchen	33	Fourth instars	0	
43	73	635	37.2	Kitchen	33	Fourth instars	0	
43	73	636	37.2	Kitchen	33	Fourth instars	0	
43	73	637	37.2	Kitchen	33	Fourth instars	0	
43	73	641	37.2	Kitchen	33	Fourth instars	0	
43	73	642	37.2	Kitchen	33	Fourth instars	0	
43	73	643	37.2	Kitchen	33	Fourth instars	0	
43	73	644	37.2	Kitchen	33	Fifth instars	0	
44	73	19	37.2	Domicile	3	Males	1	
44	73	254	37.2	Domicile	3	Males	1	
44	73	405	37.2	Domicile	3	Fifth instars	0	Male
45	74	2	37.2	Pig corral	18	Males	1	
45	74	6	37.2	Pig corral	18	Females	2	
45	74	24	37.2	Pig corral	18	Fourth instars	0	
45	74	37	37.2	Pig corral	18	Fifth instars	0	Male
45	74	132	37.2	Pig corral	18	Fifth instars	0	Male
45	74	213	37.2	Pig corral	18	Fourth instars	0	
45	74	235	37.2	Pig corral	18	Fourth instars	0	
45	74	239	37.2	Pig corral	18	Fourth instars	0	
45	74	240	37.2	Pig corral	18	Males	1	
45	74	275	37.2	Pig corral	18	Fifth instars	0	Male
45	74	283	37.2	Pig corral	18	Fifth instars	0	Female
45	74	294	37.2	Pig corral	18	Males	1	
45	74	349	37.2	Pig corral	18	Fifth instars	0	
45	74	382	37.2	Pig corral	18	Males	1	
45	74	409	37.2	Pig corral	18	Fourth instars	0	
46	74	60	37.2	Domicile	2	Males	1	
46	74	502	37.2	Domicile	2	Fifth instars	0	Female

47	75	505	37.2	Domicile	1	Males	1	
48	75	304	37.2	Domicile	2	Fifth instars	0	Female
49	76	407	37.2	Domicile	3	Fourth instars	0	
49	76	450	37.2	Domicile	3	Females	2	
50	77	106	37.2	Domicile	2	Fourth instars	0	
50	77	266	37.2	Domicile	2	Females	2	
51	78	604	37.2	Domicile	2	Males	1	
51	78	605	37.2	Domicile	2	Males	1	
52	79	93	37.2	Domicile	7	Males	1	
52	79	152	37.2	Domicile	7	Males	1	
52	79	252	37.2	Domicile	7	Females	2	
52	79	272	37.2	Domicile	7	Males	1	
52	79	290	37.2	Domicile	7	Females	2	
52	79	299	37.2	Domicile	7	Males	1	
52	79	533	37.2	Domicile	7	Females	2	
53	80	267	37.2	Domicile	1	Fifth instars	0	Male
54	81	228	37.2	Domicile	1	Fifth instars	0	Female
55	82	100	37.2	Domicile	1	Fourth instars	0	
56	83	16	37.2	Pig corral	8	Females	2	
56	83	35	37.2	Pig corral	8	Males	1	
56	83	42	37.2	Pig corral	8	Females	2	
56	83	87	37.2	Pig corral	8	Males	1	
56	83	126	37.2	Pig corral	8	Females	2	
56	83	271	37.2	Pig corral	8	Males	1	
56	83	385	37.2	Pig corral	8	Females	2	
56	83	386	37.2	Pig corral	8	Males	1	
57	83	27	37.2	Chicken coop	28	Males	1	
57	83	71	37.2	Chicken coop	28	Fifth instars	0	Female
57	83	96	37.2	Chicken coop	28	Females	2	
57	83	101	37.2	Chicken coop	28	Fifth instars	0	Male
57	83	104	37.2	Chicken coop	28	Males	1	
57	83	142	37.2	Chicken coop	28	Fifth instars	0	Male
57	83	146	37.2	Chicken coop	28	Fifth instars	0	Male
57	83	153	37.2	Chicken coop	28	Males	1	
57	83	233	37.2	Chicken coop	28	Fourth instars	0	
57	83	245	37.2	Chicken coop	28	Fifth instars	0	Female
57	83	273	37.2	Chicken coop	28	Fifth instars	0	
57	83	324	37.2	Chicken coop	28	Fifth instars	0	Male
57	83	354	37.2	Chicken coop	28	Males	1	
57	83	412	37.2	Chicken coop	28	Fourth instars	0	
57	83	439	37.2	Chicken coop	28	Fifth instars	0	Male
57	83	453	37.2	Chicken coop	28	Fifth instars	0	Male
57	83	484	37.2	Chicken coop	28	Males	1	
57	83	491	37.2	Chicken coop	28	Fifth instars	0	Male
57	83	495	37.2	Chicken coop	28	Fifth instars	0	Male
57	83	499	37.2	Chicken coop	28	Fifth instars	0	Female
57	83	520	37.2	Chicken coop	28	Fifth instars	0	Male

57	83	545	37.2	Chicken coop	28	Fifth instars	0	Female
57	83	645	37.2	Chicken coop	28	Males	1	
57	83	844		Chicken coop		Females	2	
57	83	845		Chicken coop		Females	2	
57	83	846		Chicken coop		Females	2	
57	83	847		Chicken coop		Females	2	
58	84	65	37.2	Chicken coop	18	Females	2	
58	84	94	37.2	Chicken coop	18	Females	2	
58	84	320	37.2	Chicken coop	18	Males	1	
58	84	516	37.2	Chicken coop	18	Females	2	
58	84	544	37.2	Chicken coop	18	Females	2	
59	85	1	37.2	Chicken coop	14	Fifth instars	0	Male
59	85	90	37.2	Chicken coop	14	Fourth instars	0	
59	85	138	37.2	Chicken coop	14	Fifth instars	0	Female
59	85	210	37.2	Chicken coop	14	Fifth instars	0	Male
59	85	309	37.2	Chicken coop	14	Fifth instars	0	Female
59	85	329	37.2	Chicken coop	14	Fifth instars	0	Male
59	85	381	37.2	Chicken coop	14	Fifth instars	0	Male
59	85	383	37.2	Chicken coop	14	Fifth instars	0	Male
59	85	444	37.2	Chicken coop	14	Fifth instars	0	Male
59	85	446	37.2	Chicken coop	14	Fifth instars	0	Male
59	85	519	37.2	Chicken coop	14	Fifth instars	0	Female
59	85	612	37.2	Chicken coop	14	Fifth instars	0	Male
60	86	136	37.2	Pig corral	13	Fourth instars	0	
60	86	179	37.2	Pig corral	13	Males	1	
60	86	212	37.2	Pig corral	13	Females	2	
60	86	221	37.2	Pig corral	13	Fifth instars	0	Male
60	86	278	37.2	Pig corral	13	Females	2	
60	86	373	37.2	Pig corral	13	Males	1	
60	86	440	37.2	Pig corral	13	Males	1	
60	86	501	37.2	Pig corral	13	Fourth instars	0	
60	86	517	37.2	Pig corral	13	Fourth instars	0	
60	86	530	37.2	Pig corral	13	Fifth instars	0	Female
60	86	549	37.2	Pig corral	13	Males	1	
61	63	190	34.4	Domicile	2	Females	2	
61	63	461	34.4	Domicile	2	Females	2	
62	64	118	34.4	Domicile	2	Females	2	
62	64	414	34.4	Domicile	2	Females	2	
63	65	13	34.4	Chicken coop	17	Females	2	
63	65	41	34.4	Chicken coop	17	Fourth instars	0	
63	65	85	34.4	Chicken coop	17	Fourth instars	0	
63	65	207	34.4	Chicken coop	17	Females	2	
63	65	219	34.4	Chicken coop	17	Fourth instars	0	
63	65	257	34.4	Chicken coop	17	Fifth instars	0	Female
63	65	337	34.4	Chicken coop	17	Males	1	
63	65	347	34.4	Chicken coop	17	Fourth instars	0	
63	65	378	34.4	Chicken coop	17	Fourth instars	0	

63	65	390	34.4	Chicken coop	17	Fourth instars	0	
63	65	423	34.4	Chicken coop	17	Fifth instars	0	Male
63	65	509	34.4	Chicken coop	17	Fifth instars	0	Female
63	65	542	34.4	Chicken coop	17	Fifth instars	0	Female
64	66	131	34.4	Domicile	2	Fifth instars	0	Male
64	66	217	34.4	Domicile	2	Males	1	
65	87	33	34.4	Chicken coop	2	Fifth instars	0	Male
65	87	500	34.4	Chicken coop	2	Males	1	
66	1	646		Kitchen		Fifth instars	0	Female
66	1	647		Kitchen		Females	2	
66	1	648		Kitchen		Males	1	
66	1	649		Kitchen		Females	2	
66	1	650		Kitchen		Fifth instars	0	Male
66	1	651		Kitchen		Fifth instars	0	Female
66	1	652		Kitchen		Fourth instars	0	
66	1	653		Kitchen		Fourth instars	0	
66	1	654		Kitchen		Fourth instars	0	
66	1	655		Kitchen		Fourth instars	0	
66	1	656		Kitchen		Females	2	
66	1	657		Kitchen		Fifth instars	0	Male
66	1	658		Kitchen		Females	2	
66	1	659		Kitchen		Females	2	
67	3	660		Pig corral		Females	2	
68	4	661		Goat corral		Fourth instars	0	
68	4	662		Goat corral		Fifth instars	0	Female
69	21	663		Goat corral		Males	1	
69	21	664		Goat corral		Males	1	
69	21	665		Goat corral		Females	2	
70	5	669		Pig corral		Females	2	
70	5	670		Pig corral		Females	2	
71	6	672		Goat corral		Fifth instars	0	Male
71	6	673		Goat corral		Females	2	
71	6	674		Goat corral		Fifth instars	0	Male
71	6	675		Goat corral		Males	1	
71	6	676		Goat corral		Males	1	
71	6	677		Goat corral		Males	1	
72	7	678		Goat corral		Females	2	
72	7	679		Goat corral		Females	2	
72	7	680		Goat corral		Females	2	
72	7	681		Goat corral		Males	1	
72	7	682		Goat corral		Males	1	
72	7	683		Goat corral		Fifth instars	0	Female
72	7	684		Goat corral		Fifth instars	0	Male
72	7	685		Goat corral		Fourth instars	0	
72	7	686		Goat corral		Fourth instars	0	
72	7	687		Goat corral		Fourth instars	0	
72	7	688		Goat corral		Fourth instars	0	

72	7	689	Goat corral	Females	2	
72	7	690	Goat corral	Females	2	
72	7	691	Goat corral	Females	2	
72	7	692	Goat corral	Females	2	
72	7	693	Goat corral	Females	2	
72	7	694	Goat corral	Females	2	
72	7	695	Goat corral	Females	2	
72	7	696	Goat corral	Females	2	
72	7	697	Goat corral	Females	2	
72	7	698	Goat corral	Females	2	
72	7	699	Goat corral	Females	2	
73	8	700	Kitchen	Females	2	
74	9	702	Chicken coop	Females	2	
74	9	703	Chicken coop	Females	2	
74	9	704	Chicken coop	Females	2	
75	10	705	Goat corral	Fourth instars	0	
76	11	711	Goat corral	Females	2	
77	16	712	Goat corral	Females	2	
78	17	713	Goat corral	Females	2	
78	17	714	Goat corral	Females	2	
78	17	715	Goat corral	Fifth instars	0	Male
79	18	719	Pig corral	Females	2	
80	22	720	Goat corral	Males	1	
80	22	722	Goat corral	Males	1	
80	22	723	Goat corral	Females	2	
80	22	724	Goat corral	Females	2	
80	22	725	Goat corral	Females	2	
80	22	726	Goat corral	Males	1	
80	22	727	Goat corral	Females	2	
80	22	728	Goat corral	Fifth instars	0	Female
80	22	729	Goat corral	Fifth instars	0	Male
81	34	730	Goat corral	Females	2	
81	34	731	Goat corral	Females	2	
81	34	732	Goat corral	Fifth instars	0	Male
81	34	733	Goat corral	Fifth instars	0	Male
81	34	734	Goat corral	Fifth instars	0	Male
82	35	735	Goat corral	Fifth instars	0	Female
82	35	736	Goat corral	Females	2	
82	35	737	Goat corral	Fourth instars	0	
83	23	738	Goat corral	Males	1	
83	23	739	Goat corral	Males	1	
83	23	740	Goat corral	Fourth instars	0	
83	23	741	Goat corral	Fourth instars	0	
83	23	742	Goat corral	Males	1	
84	24	743	Pig corral	Fifth instars	0	Male
84	24	744	Pig corral	Males	1	
85	26	747	Goat corral	Females	2	

86	27	748	Pig corral	Males	1	
86	27	749	Pig corral	Fifth instars	0	Male
86	27	750	Pig corral	Fifth instars	0	Female
86	27	751	Pig corral	Fifth instars	0	Male
86	27	752	Pig corral	Females	2	
87	30	753	Pig corral	Females	2	
87	30	754	Goat corral	Fourth instars	0	
88	31	755	Goat corral	Fourth instars	0	
88	31	756	Goat corral	Males	1	
88	31	757	Goat corral	Fourth instars	0	
88	31	758	Goat corral	Fourth instars	0	
88	31	759	Goat corral	Males	1	
89	36	762	Storeroom	Females	2	
89	36	763	Storeroom	Females	2	
89	36	764	Storeroom	Females	2	
90	41	765	Pig corral	Females	2	
90	41	766	Pig corral	Females	2	
90	41	767	Pig corral	Females	2	
91	42	768	Granary	Females	2	
92	43	769	Storeroom	Females	2	
92	43	770	Storeroom	Females	2	
92	43	771	Storeroom	Females	2	
93	37	772	Goat corral	Females	2	
93	37	773	Goat corral	Males	1	
93	37	774	Goat corral	Fifth instars	0	Female
93	37	775	Goat corral	Males	1	
93	37	776	Goat corral	Fifth instars	0	Female
94	44	777	Granary	Males	1	
94	44	778	Granary	Males	1	
94	44	779	Granary	Males	1	
94	44	780	Granary	Females	2	
94	44	781	Granary	Fifth instars	0	Female
94	44	782	Granary	Fifth instars	0	Female
94	44	783	Granary	Fourth instars	0	
94	44	784	Granary	Fourth instars	0	
95	49	785	Goat corral	Fifth instars	0	Female
95	49	786	Goat corral	Fifth instars	0	Female
96	51	788	Kitchen	Females	2	
97	52	789	Kitchen	Females	2	
97	52	790	Kitchen	Males	1	
97	52	791	Kitchen	Females	2	
97	52	792	Kitchen	Females	2	
97	52	793	Kitchen	Females	2	
97	52	794	Kitchen	Males	1	
97	52	795	Kitchen	Females	2	
97	52	796	Kitchen	Females	2	
97	52	797	Kitchen	Fifth instars	0	Female

97	52	798	Kitchen	Females	2	
97	52	799	Kitchen	Females	2	
97	52	800	Kitchen	Fifth instars	0	Male
97	52	801	Kitchen	Fifth instars	0	Female
97	52	802	Kitchen	Fifth instars	0	Male
97	52	803	Kitchen	Fifth instars	0	Female
97	52	804	Kitchen	Females	2	
97	52	805	Kitchen	Females	2	
97	52	806	Kitchen	Females	2	
97	52	807	Kitchen	Females	2	
98	54	808	Pig corral	Females	2	
98	54	809	Pig corral	Males	1	
98	54	810	Pig corral	Males	1	
99	55	811	Kitchen	Males	1	
100	59	812	Kitchen	Females	2	
100	59	813	Kitchen	Males	1	
100	59	814	Kitchen	Fifth instars	0	Female
100	59	815	Kitchen	Fourth instars	0	
100	59	816	Kitchen	Fourth instars	0	
101	67	817	Pig corral	Females	2	
101	67	818	Pig corral	Males	1	
101	67	819	Pig corral	Males	1	
101	67	820	Chicken coop	Females	2	
101	67	821	Chicken coop	Females	2	
101	67	822	Chicken coop	Females	2	
101	67	823	Chicken coop	Females	2	
101	67	824	Pig corral	Females	2	
101	67	825	Pig corral	Females	2	
101	67	826	Pig corral	Females	2	
101	67	827	Pig corral	Females	2	
101	67	828	Pig corral	Females	2	
101	67	829	Pig corral	Females	2	
101	67	830	Pig corral	Females	2	
101	67	831	Pig corral	Females	2	
102	68	832	Goat corral	Males	1	
103	69	833	Pig corral	Females	2	
103	69	834	Pig corral	Females	2	
104	69	835	Pig corral	Fourth instars	0	
105	71	839	Pig corral	Females	2	
106	73	840	Pig corral	Females	2	
107	74	841	Granary	Fifth instars	0	Male
108	77	842	Pig corral	Fourth instars	0	
108	77	843	Pig corral	Fourth instars	0	
109	69	836	Storeroom	Females	2	
109	69	837	Storeroom	Females	2	
109	69	838	Storeroom	Females	2	
110	84	848	Storeroom	Females	2	

111	61	849	Pig corral	Females	2	
112	21	666	Storeroom	Females	2	
112	21	667	Storeroom	Females	2	
112	21	668	Storeroom	Females	2	
113	5	671	Storeroom	Females	2	
114	9	701	Storeroom	Females	2	
115	10	706	Kitchen	Males	1	
115	10	707	Kitchen	Fifth instars	0	Female
115	10	708	Kitchen	Males	1	
115	10	709	Kitchen	Males	1	
116	10	710	Chicken coop	Females	2	
117	17	716	Chicken coop	Females	2	
117	17	717	Chicken coop	Females	2	
117	17	718	Chicken coop	Females	2	
118	22	721	Storeroom	Females	2	
119	24	745	Storeroom	Females	2	
119	24	746	Storeroom	Females	2	
120	31	760	Storeroom	Females	2	
120	31	761	Storeroom	Females	2	
121	49	787	Chicken coop	Females	2	

orinacorr	nutricat	nutribin	weight	length	gravid	noeggs	human	chicken	dog	cat	goat	pig
0	Little fed	0	279.2	25.42			1	0	0	0	0	0
0	Little fed	0	501.7	27.26	1	31	1	0	0	0	0	0
0	Little fed	0	327.2	26.3	1	15	1	0	0	0	0	0
1	Little fed	0	256.8	24.38			1	0	0	0	0	0
	Medium fed	1	378.8	21.32			1	0	0	0	0	0
0	Little fed	0	241.7	24.42			1	0	0	0	0	0
0	Little fed	0	280.1	20.32			1	0	0	0	0	0
0	Medium fed	1	236.7	24.82			1	0	0	0	0	0
0	Medium fed	1	310.6	25.1			1	0	0	0	0	0
0	Medium fed	1	292.6	24.48			1	0	0	0	0	0
0	Fully fed	1	381.8	26.42	1	16	1	1	0	0	0	0
1	Medium fed	1	349.9	27	0	0	1	0	0	0	0	0
0	Medium fed	1	366.5	26.42	1	28	1	0	0	0	0	0
1	Little fed	0	270.2	23.62			1	0	0	0	0	0
0	Unfed	0	107.5	16.48			1	0	0	0	0	0
1	Fully fed	1	482.2	22			1	0	0	0	0	0
0	Medium fed	1	431.6	26.38	1	19	1	0	0	0	0	0
0	Little fed	0	429.5	26.6	1	23	1	0	0	0	0	0
1	Little fed	0	387.2	26.18	1	5	1	0	0	0	0	0
1	Medium fed	1	290.2	25.64	0	0	1	0	0	0	0	0
0	Medium fed	1	382.9	25.08	1	18	1	0	0	0	0	0
0	Unfed	0	23.3	10.82			0	1	0	0	0	0
1	Medium fed	1		18.48			0	1	0	0	0	0
0	Little fed	0	113.7	17.44			0	1	0	0	0	0
0	Little fed	0	76.7	12.38			0	1	0	0	0	0
0	Unfed	0	252.5	24.52			0	1	0	0	0	0
0	Medium fed	1	168.6	19.26			0	1	0	0	0	0
1	Fully fed	1	376.1	20.86			0	1	0	0	0	0
0	Fully fed	1	126.7	13.46			0	1	0	0	0	0
0	Medium fed	1	353.8	19.56			0	1	0	0	0	0
0	Unfed	0	110.7	13.4			0	1	0	0	0	0
1	Fully fed	1	106.8	19.48			0	1	0	0	0	0
0	Little fed	0	146.7	16.7			0	1	0	0	0	0
0	Little fed	0	279.1	17.76			0	1	0	0	0	0
0	Unfed	0	348.9	17.36			0	1	0	0	0	0
0	Unfed	0	77.2	16.42			0	1	0	0	0	0
0	Little fed	0	303.2	26.58			0	0	0	0	1	0
0	Little fed	0	264	23.68			0	0	0	0	0	0
0	Unfed	0	239.2	25.16	0	0	0	1	0	0	0	0
1	Fully fed	1	115.5	13.68			0	1	0	0	0	0
0	Little fed	0	293.1	26.68	0	0	0	1	0	0	0	0
0	Medium fed	1	384.5	21.18			0	1	0	0	0	0
0	Unfed	0	89	16.72								
0	Unfed	0	30.6	12								

0	Unfed	0	29.7	11.18			0	1	0	0	0	0
0	Little fed	0	310.3	26.58	1	13	0	1	0	0	0	0
0	Unfed	0	227.6	24.44			0	0	1	0	0	0
0	Unfed	0	111.9	17.06			0	0	1	0	0	0
0	Unfed	0	203.1	24.58								
0	Unfed	0	81.8	16.18			0	1	0	0	0	0
0	Little fed	0	341.6	25.4			1	0	0	0	0	0
0	Unfed	0	206.2	24.12			0	1	0	0	0	0
0	Medium fed	1	106.3	13.88			0	1	0	0	0	0
1	Medium fed	1	407	27.6	1	7	1	0	0	0	0	0
0	Medium fed	1	227.9	25.38	0	0	0	0	0	0	0	0
1	Little fed	0	74.4	12.16								
0	Medium fed	1	342.6	26			1	0	0	0	0	0
0	Medium fed	1	348.1	25.74	1	3	1	0	0	0	0	0
0	Medium fed	1	305.3	19.6			1	0	0	0	0	0
0	Little fed	0	215.3	23.88			1	0	0	0	0	0
1	Fully fed	1	110.7	13.3			1	0	0	0	0	0
0	Little fed	0	26.5	10.08								
0	Little fed	0	247.2	25.46	1	14	1	0	0	0	0	0
1	Medium fed	1	437.1	26.06	1	23	1	0	0	0	0	0
1	Little fed	0	283.6	23.94			1	0	0	0	0	0
1	Little fed	0	311.4	24.4			1	0	0	0	0	0
0	Little fed	0	315.7	24.96			1	0	0	0	0	0
0	Little fed	0	323	26.28			1	0	0	0	0	0
1	Fully fed	1	395.1	25.96			1	0	0	0	0	0
0	Unfed	0	221.5	25.72								
1	Fully fed	1	314.3	19.2			1	0	0	0	0	0
0	Little fed	0	364.4	26.28	1	19	0	0	1	0	0	0
0	Unfed	0	143.5	17.6			0	0	1	0	0	0
1	Fully fed	1	365.7	19.4			1	0	0	0	1	0
0	Little fed	0	168.5	17.42			1	0	0	0	1	0
1	Fully fed	1	115.5	13.8			0	0	0	0	1	0
0	Unfed	0	141.3	23.32								
0	Medium fed	1	323.4	19.22			0	1	0	0	0	0
0	Medium fed	1	303.5	23.14	1	15	0	1	0	0	0	0
0	Medium fed	1	343.5	19.42			0	1	0	0	0	0
0	Little fed	0	290.2	24.36			0	1	0	0	0	0
1	Little fed	0	364.8	25			0	1	0	0	0	0
1	Little fed	0	351.9	24.6			0	1	0	0	0	0
0	Little fed	0	238.1	22.7			0	1	0	0	0	0
1	Fully fed	1	525.8	26.44	1	30	0	1	0	0	0	0
0	Little fed	0	301.4	19.64			0	1	0	0	0	0
0	Little fed	0	348	20.82			0	1	0	0	0	0
	Medium fed	1	352.7	22.18			0	1	0	0	0	0
0	Medium fed	1	278.1	20.22			0	1	0	0	0	0
0	Medium fed	1	264.3	23.06			0	1	0	0	0	0

1	Medium fed	1	327.6	18.62			0	1	0	0	0	0
1	Unfed	0	317.7	25.2			0	1	0	0	0	0
0	Medium fed	1	341.2	22			0	1	0	0	0	0
0	Unfed	0	109.2	17.1			0	1	0	0	0	0
1	Fully fed	1	451.8	25.88	1	12	0	1	0	0	0	0
1	Medium fed	1	479.5	20.76			0	1	0	0	0	0
0	Little fed	0	301.4	19.56			0	1	0	0	0	0
1	Little fed	0	289.2	24.12			0	1	0	0	0	0
1	Medium fed	1	353.9	19.94			0	1	0	0	0	0
0	Little fed	0	321.1	19.96			0	1	0	0	0	0
1	Fully fed	1	459.1	26.08	1	13	0	1	0	0	0	0
0	Unfed	0	287.4	24.08			0	1	0	0	0	0
1	Fully fed	1	476.7	26.6	1	4	0	1	0	0	0	0
0	Little fed	0	266.9	23.14			0	1	0	0	0	0
0	Medium fed	1	347.9	19.88			0	1	0	0	0	0
1	Little fed	0	300.2	19.12			0	1	0	0	0	0
0	Fully fed	1	135.6	13.94			0	1	0	0	0	0
0	Medium fed	1	314.2	19.34			0	1	0	0	0	0
1	Fully fed	1	444	25.36	1	12	0	1	0	0	0	0
0	Little fed	0	288.7	19.52			0	1	0	0	0	0
0	Unfed	0	107.5	16.12			0	0	0	0	0	1
0	Unfed	0	254	25.16								
0	Unfed	0	81.1	16.38			0	0	1	0	0	0
1	Medium fed	1	17.1	13.66			1	0	0	0	0	0
0	Unfed	0	96.5	10.34			0	0	0	0	0	0
0	Little fed	0	220.9	24.2			0	0	0	0	0	0
0	Unfed	0	90.5	16.34			0	0	1	0	0	0
0	Unfed	0	80.8	15.94			0	0	1	0	0	0
0	Unfed	0	190.4	26.2			0	0	1	0	0	0
0	Unfed	0	243.4				0	0	1	0	1	0
0	Little fed	0	316.3	24.48			0	0	0	0	0	1
0	Unfed	0	91.4	16.78			0	1	0	0	0	0
0	Medium fed	1	313.9	19.82			0	1	0	0	0	0
1	Fully fed	1	410.3	20.34			0	1	0	0	0	0
0	Little fed	0	220.2	19.72								
0	Little fed	0	248.4	26.04	0	0	0	0	0	0	1	0
0	Medium fed	1	346.2	20			0	1	0	0	0	0
1	Fully fed	1	440.4	26.38	1	18	0	1	0	0	0	0
1	Fully fed	1	147.7	13.66			0	1	0	0	0	0
0	Fully fed	1	125.9	13.88			0	1	0	0	0	0
0	Medium fed	1	120.7	14.96			0	1	0	0	0	0
1	Fully fed	1	122.9	13.98			0	0	0	0	1	0
0	Little fed	0	289.6	19.88			0	1	0	0	0	0
1	Medium fed	1	365.9	20.26			0	0	0	0	1	0
0	Unfed	0	90.6	16.08								
1	Unfed	0	253.5	24.72			0	1	0	0	0	0
1	Fully fed	1	135.9	14.2			0	1	0	0	0	0

0	Medium fed	1	397.6	26.26	1	5	0	0	0	0	1	0
0	Little fed	0	331	25.46	1	13	0	1	0	0	0	0
1	Fully fed	1	148.7	15.12			0	1	0	0	0	0
0	Little fed	0	267.1	24.26			0	0	0	0	1	0
0	Little fed	0	329.5	20.66			0	0	0	0	1	0
0	Fully fed	1	438.8	21.3			0	1	0	0	0	0
0	Unfed	0	163.7	24.26			0	1	0	0	0	0
0	Medium fed	1	327.5	20.2			0	0	0	0	1	0
0	Unfed	0	92.5	17.1			0	1	0	0	0	0
0	Unfed	0	319.1	25.86	1	17	0	1	0	0	0	0
0	Unfed	0	222.6	25.28			0	1	0	0	0	0
0	Little fed	0	92.7	16.1								
0	Unfed	0	29.1	11.38			0	1	1	0	1	0
1	Medium fed	1	283.5	18.98			0	0	0	0	1	0
1	Little fed	0	377.5	25.82	1	17	0	1	0	0	0	0
0	Medium fed	1	384.1	20.38			0	1	0	0	0	0
0	Unfed	0	257.7	23.5			0	1	0	0	0	0
0	Little fed	0	260.7	18.9								
1	Little fed	0	314.1	25.5			0	0	0	0	1	0
0	Little fed	0	42.3	11.24			0	0	0	0	1	0
0	Little fed	0	245.7	26	0	0	0	1	0	0	1	0
1	Little fed	0	270.2	24.88			0	1	0	0	1	0
0	Medium fed	1	358.6	26.46	1	11	0	1	0	0	0	0
0	Medium fed	1	301	24.16			0	1	0	0	0	0
0	Unfed	0	263.2	23.4			0	1	0	0	0	0
0	Little fed	0	95.8	14.1			0	1	0	0	0	0
0	Medium fed	1	376.3	26	1	13	1	0	0	0	0	0
0	Medium fed	1	264.1	19.3			1	0	0	0	0	0
1	Little fed	0	210.7	17.26			1	0	0	0	0	0
0	Little fed	0	97.6	13.8			1	0	0	0	0	0
0	Medium fed	1	274	18.78			0	1	1	0	1	0
0	Little fed	0	212.8	17.9								
0	Medium fed	1	220.8	17.6			0	0	1	0	0	0
0	Unfed	0	299	25.4	1	18	1	0	0	0	0	1
0	Unfed	0	209.8	23.1			1	0	0	0	0	0
1	Medium fed	1	228.8	18.48			0	0	1	0	0	0
1	Fully fed	1	135.1	13.86			0	0	1	0	0	0
0	Medium fed	1	149	15			0	1	0	0	0	0
0	Little fed	0	258.1	20			0	1	0	0	0	0
0	Medium fed	1	138.7	14.8			0	1	0	0	0	0
0	Little fed	0	51.2	12.22			0	0	1	0	0	0
0	Little fed	0	235.7	19.06			0	1	0	0	0	0
1	Little fed	0	339.7	25.02			0	1	0	0	0	0
0	Fully fed	1	119.8	13.94			0	1	0	0	0	0
0	Little fed	0	107.6	13.76			0	1	0	0	0	0
0	Unfed	0	212.2	24.5			0	1	0	0	0	0
0	Unfed	0	330.3	26.98	1	15	0	1	0	0	0	0

0	Unfed	0	40.7	11.6			1	0	0	0	0	0
0	Unfed	0	94.9	17.3								
0	Little fed	0	371	26								
1	Medium fed	1	401.3	26.16	1	11	1	0	0	0	0	0
0	Little fed	0	279.5	26.7	0	0	0	0	1	0	0	0
0	Medium fed	1	417.9	26	1	7	1	0	0	0	0	0
0	Little fed	0	279.2	25.1			1	0	0	0	0	0
0	Medium fed	1	140.5	14.2			1	0	0	0	0	0
0	Little fed	0	406.1	25.3	1	13	1	0	0	0	0	0
0	Medium fed	1	284.6	18.74			0	0	1	0	0	0
1	Medium fed	1	328.5	24.26			1	0	0	0	0	0
1	Little fed	0	295.6	23.84			1	0	0	0	0	0
1	Little fed	0	435.6	26.88	1	26	1	0	0	0	0	0
0	Fully fed	1	376	25.32	1	7	1	0	0	0	0	0
0	Medium fed	1	368.7	25.24	1	21	1	0	0	0	0	0
0	Medium fed	1	281.7	25.22			1	0	0	0	0	0
1	Medium fed	1	330.3	20.3			1	0	0	0	0	0
1	Fully fed	1	375.4	19.12			1	0	0	0	0	0
0	Little fed	0	304.1	26.06			1	0	0	0	0	0
0	Medium fed	1	410.2	21.48			1	0	0	0	0	0
0	Little fed	0	235	23.98								
0	Little fed	0	343.9	25.4			1	0	0	0	0	0
0	Unfed	0	50.6	12.76			1	0	0	0	0	0
1	Medium fed	1	374.7	25.88	1	12	1	0	0	0	0	0
0	Little fed	0	44.4	11.16			0	0	1	0	0	0
0	Fully fed	1	140.6	14.06			1	0	0	0	0	0
1	Medium fed	1	243.3	18.46			1	0	0	0	0	0
0	Unfed	0	86.5	15.3			0	1	0	0	0	0
0	Unfed	0	25	11			0	0	0	0	0	0
0	Medium fed	1	335.5	19.72			1	0	0	0	0	0
0	Unfed	0	37.7	12.1			0	0	1	0	0	0
1	Medium fed	1	369.9	19.86			1	0	0	0	0	0
0	Little fed	0	153.8	17.9			1	0	0	0	0	0
0	Little fed	0	333.8	20.78			1	0	0	0	0	0
0	Unfed	0	100	15.74			0	0	1	0	0	0
0	Unfed	0	31	11.36								
0	Little fed	0	311.5	25.24	1	12	1	0	0	0	0	0
0	Little fed	0	307.6	25.14			1	0	0	0	0	0
1	Medium fed	1	286.4	24.1			1	0	0	0	0	0
0	Little fed	0	147.2	15.9			1	0	0	0	0	0
1	Medium fed	1	281.5	18.2			1	0	0	0	0	0
0	Medium fed	1	314.1	27.34	0	0	1	0	0	0	0	0
0	Fully fed	1	474.2	25.86								
1	Fully fed	1	409.8	21			1	0	0	0	0	0
1	Fully fed	1	348.1	20.08			1	0	0	0	0	0
1	Fully fed	1	382.4	19.26			1	0	0	0	0	0
1	Little fed	0	240.1	18.24			1	0	0	0	0	0

0	Medium fed	1	127.2	14.26			1	0	0	0	0	0
0	Little fed	0	175.4	17.86			1	0	0	0	0	0
0	Little fed	0	437.3	26.38	1	18	1	0	0	0	0	0
1	Little fed	0	114.7	13.24			1	0	0	0	0	0
1	Medium fed	1	341.7	18.92			1	0	0	0	0	0
0	Fully fed	1	146.5	14.4			1	0	0	0	0	0
1	Fully fed	1	495.7	21.18			1	0	0	0	0	0
0	Medium fed	1	108.6	14.08			1	0	0	0	0	0
1	Medium fed	1	378	20.66			1	0	0	0	0	0
1	Little fed	0	380.7	26.4	1	7	1	0	0	0	0	0
0	Little fed	0	298.4	20.58			1	0	0	0	0	0
0	Little fed	0	326	19.68			1	0	0	0	0	0
1	Fully fed	1	342.1	18.44			1	0	0	0	0	0
0	Medium fed	1	364.2	19.6			1	0	0	0	0	0
1	Fully fed	1	332.1	20.22			1	0	0	0	0	0
0	Medium fed	1	363.5	19.78			1	0	0	0	0	0
1	Medium fed	1	321.2	18.46			1	0	0	0	0	0
0	Little fed	0	108.2	14.28			1	0	0	0	0	0
1	Fully fed	1	361.3	20.1			1	0	0	0	0	0
0	Fully fed	1	409.3	19.4			1	0	0	0	0	0
1	Fully fed	1	429.5	24.72			1	0	0	0	0	0
0	Unfed	0	204.5	24.5			1	0	0	0	0	0
0	Medium fed	1	113.2	13.88			1	0	0	0	0	0
0	Fully fed	1	106.1	13.34			0	1	0	0	0	0
0	Medium fed	1	100.2	13.58			0	1	0	0	0	0
1	Fully fed	1	110.5	13.5			0	1	0	0	0	0
1	Fully fed	1	127	13.94			0	1	0	0	0	0
0	Little fed	0	312	26.74	1	19	0	1	0	0	0	0
1	Medium fed	1	103.3	13.36			0	1	0	0	0	0
0	Medium fed	1	106.6	13.42			0	1	0	0	0	0
0	Little fed	0	289.1	19.9			0	1	0	0	0	0
	Medium fed	1	108.1	13.14			0	1	0	0	0	0
0	Little fed	0	311.2	20.22			0	1	0	0	0	0
0	Fully fed	1	130.1	14.42			0	1	0	0	0	0
1	Fully fed	1	129.5	13.88			0	1	0	0	0	0
1	Little fed	0	447.4	26.94	1	23	0	1	0	0	0	0
1	Medium fed	1	412.2	26.74	1	11	0	1	0	0	0	0
0	Little fed	0	276.1	26.48	0	0	0	0	1	0	0	0
1	Little fed	0	411.4	26.52	1	18	1	0	0	0	0	0
0	Little fed	0	344.6	24.82			1	0	0	0	0	0
0	Unfed	0	244.9	25.18			0	1	0	0	0	0
1	Medium fed	1	318.4	26.08	0	0	1	0	0	0	0	0
0	Medium fed	1	294.2	26.26	0	0	0	1	0	0	0	0
1	Little fed	0	195.8	17.88			1	1	0	0	0	0
0	Little fed	0	277.8	19.26			0	0	0	0	0	0
1	Medium fed	1	259.3	23.86			0	0	0	0	0	0

1	Unfed	0	341	26.56	1	18	0	1	0	0	0	0
0	Unfed	0	223.1	24.64			0	1	0	0	0	0
1	Little fed	0	260.4	23.9			0	1	0	0	0	0
0	Unfed	0	215	24.84			1	0	0	0	0	0
0	Little fed	0	291.4	24.48			0	1	0	0	0	0
0	Little fed	0	321.3	25.22			1	0	0	0	0	0
0	Little fed	0	234.8	26.94	1	2	0	0	0	0	0	0
1	Fully fed	1	411.6	25.1	1	13	0	1	0	0	0	0
1	Little fed	0	214.6	18.08			1	0	0	0	0	0
0	Little fed	0	237.1	24.72			1	0	0	0	0	0
0	Unfed	0	206.9	25.04			0	0	0	0	0	0
0	Little fed	0	244.4	24.32			1	0	0	0	0	0
0	Unfed	0	192.4	25.14			1	0	0	0	0	0
0	Unfed	0	202.6	25.68			1	0	0	0	0	0
0	Little fed	0	250.8	24.66								
0	Unfed	0	89.1	16.3			1	0	0	0	0	0
1	Little fed	0	289	25.14			1	0	0	0	0	0
0	Medium fed	1	358.4	20.32			1	0	0	0	0	0
0	Little fed	0	45.1	12.14			1	0	0	0	0	0
1	Little fed	0	346.2	20.64			1	0	0	0	0	0
1	Medium fed	1	293	19.86			0	1	0	0	0	0
0	Medium fed	1	92.4	12.62			0	1	0	0	0	0
0	Unfed	0	100.5	16.7			0	1	0	0	0	0
0	Medium fed	1	107.3	13.48			0	1	0	0	0	0
0	Little fed	0	287.2	25.02			1	0	0	0	0	0
0	Fully fed	1	111.4	13.72			0	1	0	0	0	0
0	Medium fed	1	322.8	20.22			0	1	0	0	0	0
0	Unfed	0	77.4	16.4			0	1	0	0	0	0
1	Fully fed	1	360.8	20.1			0	1	0	0	0	0
0	Medium fed	1	355	19.82			0	1	0	0	0	0
0	Unfed	0	31	10.94			0	1	0	0	0	0
0	Medium fed	1	118.3	13.94			0	1	0	0	0	0
0	Little fed	0	292.9	20.44			0	1	0	0	0	0
1	Medium fed	1	124.3	14.52			0	1	0	0	0	0
0	Medium fed	1	270.2	23.4			0	1	0	0	0	0
0	Medium fed	1	125.9	14.58			0	1	0	0	0	0
0	Unfed	0	241.6	25.16			0	1	0	0	0	0
0	Little fed	0	304.8	20.46			0	1	0	0	0	0
0	Unfed	0	273.1	24.32			0	1	0	0	0	0
0	Little fed	0	254.1	18.8			0	1	0	0	0	0
0	Little fed	0	39.3	11.5			0	1	0	0	0	0
0	Unfed	0	233.4	24.72			0	1	0	0	0	0
0	Unfed	0	203	24.48			0	1	0	0	0	0
0	Little fed	0	296.6	19.76			0	1	0	0	0	0
0	Little fed	0	298.7	20.24			0	1	0	0	0	0
0	Little fed	0	315	26.36	1	4	0	1	0	0	0	0
0	Medium fed	1	330.2	20.34			0	1	0	0	0	0

1	Little fed	0	313.7	19.74			0	1	0	0	0	0
0	Unfed	0	38.8	11.74			0	1	0	0	0	0
0	Fully fed	1	81	12.5			0	1	0	0	0	0
1	Little fed	0	351.3	21.34			0	1	0	0	0	0
1	Fully fed	1	302.8	23.76			1	0	0	0	0	0
1	Fully fed	1	428.9	25.92	1	18	1	0	1	0	0	0
1	Little fed	0	318.4	24.52			1	0	0	0	0	0
1	Fully fed	1	498.7	27.04	1	22	1	0	0	0	0	0
0	Medium fed	1	104.5	13.7			1	0	0	0	0	0
0	Fully fed	1	447	26.72	1	21	1	0	0	0	0	0
1	Little fed	0	301.7	25.36			1	0	0	0	0	0
1	Fully fed	1	449.9	25.56	1	14	1	0	0	0	0	0
1	Fully fed	1	461.3	25.96	1	14	1	0	0	0	0	0
0	Little fed	0	338.9	25.18			1	0	0	0	0	0
1	Fully fed	1	497	20.56			1	0	0	0	0	0
1	Medium fed	1	458.5	26.54	1	26	1	0	0	0	0	0
0	Fully fed	1	447.7	25.84	1	9	1	0	0	0	0	0
0	Medium fed	1	298.5	24.2			1	0	0	0	0	0
0	Little fed	0	324	25.16			1	0	0	0	0	0
0	Unfed	0	295.3	26.62	1	19	0	0	0	0	0	0
1	Medium fed	1	427.8	25.92	1	10	1	0	0	0	0	0
1	Fully fed	1	439.9	20.9			0	0	1	0	0	0
0	Unfed	0	231.5	26.8	1	7	0	0	0	0	0	0
0	Little fed	0	283.3	24.66	1	14	1	0	0	0	0	0
1	Medium fed	1	431.7	26.14	1	5	1	0	0	0	0	0
0	Little fed	0	303	20.5			1	0	0	0	0	0
0	Little fed	0	254.5	25.36			1	0	0	0	0	0
0	Little fed	0	336.7	26.06	1	15	1	0	0	0	0	0
0	Unfed	0	197.2	26.46	0	0	0	1	0	0	0	0
0	Little fed	0	272.3	24.98			0	0	1	0	0	0
0	Little fed	0	311.5	25.7	1	5	1	0	0	0	0	0
0	Little fed	0	343.2	26.94								
0	Unfed	0	291.9	26.96	1	12	1	0	0	0	0	0
0	Little fed	0	278.4	24.02			0	1	0	0	0	0
0	Little fed	0	295.4	24.8			1	0	0	0	0	0
0	Little fed	0	262.5	23.82			1	0	0	0	0	0
0	Little fed	0	315.4	19.94			1	1	0	0	0	0
0	Fully fed	1	116.4	13.74			1	0	0	0	0	0
1	Medium fed	1	290.3	19.1			1	0	0	0	0	0
0	Little fed	0	232.3	23.88			1	0	0	0	0	0
0	Medium fed	1	354.2	19.9			1	0	0	0	0	0
0	Little fed	0	133.4	16.96			1	0	0	0	0	0
1	Little fed	0	295.7	23.94			1	0	0	0	0	0
1	Fully fed	1	172	13.76			1	0	0	0	0	0
1	Fully fed	1	123.8	12.74			1	0	0	0	0	0
0	Unfed	0	133.3	24.98			0	0	0	1	0	0
0	Unfed	0	37.5	11.76			0	0	0	0	0	0

1	Fully fed	1	77	13.86			1	0	0	0	0	0
1	Fully fed	1	113.4	14.4			1	0	0	0	0	0
0	Unfed	0	22.4	15.86			0	0	0	0	0	0
0	Medium fed	1	123.9	13.82			1	0	0	0	0	0
1	Little fed	0	55.3	22.5			1	0	0	0	0	0
0	Little fed	0	127.7	11.58			1	0	0	0	0	0
0	Unfed	0	65.3	16.54			0	0	0	0	0	0
0	Fully fed	1	113.4	13.66			1	0	0	0	0	0
0	Unfed	0	150.5	24.14			0	0	1	1	0	0
	Unfed	0	122.3	19.24			0	1	0	0	0	0
0	Unfed	0	23.4	11.06								
0	Medium fed	1	111	13.82			1	0	0	0	0	0
1	Fully fed	1	122	13.28			1	0	0	0	0	0
0	Fully fed	1	93.8	13.34			1	0	0	0	0	0
0	Fully fed	1	125.5	13.34			1	0	0	0	0	0
0	Unfed	0	29.9	11.22			0	0	0	0	0	0
1	Little fed	0	24.4	10.68			0	0	0	0	0	1
0	Unfed	0	22.7	10.88								
0	Little fed	0	309.9	23.96			1	0	0	0	0	0
0	Little fed	0	319.7	27	0	0	0	0	1	0	0	0
1	Fully fed	1	482.7	25.24	1	5	0	1	0	0	0	0
0	Unfed	0	76	16			0	0	1	0	0	0
1	Medium fed	1	310.7	19.72			0	1	0	0	0	0
0	Unfed	0	291.5	25.46			0	1	0	0	0	0
0	Little fed	0	253.8	23.64			0	1	0	0	0	0
1	Little fed	0	35.8	10.52			0	1	0	0	0	0
0	Unfed	0	57.4	16.74			0	0	0	0	0	0
1	Fully fed	1	154.1	13.66			1	0	0	0	0	0
1	Fully fed	1	397.1	19.88			1	0	0	0	0	0
0			26	11.16			0	1	0	0	0	0
0	Little fed	0	390.1	26.44	1	28	1	0	0	0	0	0
0	Fully fed	1	150.5	14.58			1	0	0	0	0	0
0	Little fed	0	292.4	19.88			1	0	0	0	0	0
1	Fully fed	1	411	19.76			1	0	0	0	0	0
0	Medium fed	1	394.8	20.5			0	1	0	0	0	0
1	Medium fed	1	99.5	13.52			0	1	0	0	0	0
1	Medium fed	1	336.9	20.66			0	1	0	0	0	0
0	Little fed	0	278.7	34.68			0	1	0	0	0	0
0	Unfed	0	82.2	16.2			1	0	0	0	0	0
0	Little fed	0	291.3	24.68			1	0	0	0	0	0
1	Fully fed	1	163.6	14.28			1	0	0	0	0	0
0	Little fed	0	330.4	26.54	1	8	1	0	0	0	0	0
0	Medium fed	1	329	20.14			1	0	0	0	0	0
0	Little fed	0	245.5	24.66			1	0	0	0	0	0
0	Little fed	0	263.3	22.9			1	0	0	0	0	0
0	Little fed	0	269.7	25.34			0	1	0	0	0	0

0	Unfed	0	75.7	15.46			0	1	0	0	0	0
0	Unfed	0	26.5	11.38			0	1	0	0	0	0
0	Medium fed	1	247.4	24.76			0	1	0	0	0	0
0	Unfed	0	74.8	16.36			0	1	0	0	0	0
0	Little fed	0	226.8	26.34	1	4	0	1	0	0	0	0
0	Unfed	0	90.1	17.02								
0	Unfed	0	107	17.3			0	1	0	0	0	0
1	Unfed	0	204	26.32	1	9	0	0	0	0	0	0
0	Unfed	0	61.4	15.56			0	0	0	0	0	0
0	Unfed	0	50.9	12.86			0	1	0	0	0	0
0	Unfed	0	40.7	12.14			0	1	0	0	0	0
0	Unfed	0	189.6	24.44			0	1	0	0	0	0
0	Little fed	0	211.8	24.64			0	1	0	0	0	0
0	Unfed	0	20.1	10.42			0	0	0	0	0	0
0	Unfed	0	27	11.68			0	1	0	0	0	0
0	Unfed	0	33.2	12.08			0	1	0	0	0	0
0	Medium fed	1	414.4	26.2	1	13	0	1	0	0	0	0
0	Little fed	0	242	24.24			0	1	0	0	0	0
0	Little fed	0	214.6	23.24			0	1	0	0	0	0
0	Little fed	0	235.5	18.74			0	1	0	0	0	0
0	Unfed	0	188.8	23.4								
1	Medium fed	1	384.3	26.16	1	6	0	0	0	0	1	0
1	Medium fed	1	118.4	13.46			0	0	0	0	0	1
1	Medium fed	1	261.6	18.72			0	0	0	0	0	1
1	Little fed	0	155.3	16.32			0	0	0	0	0	1
1	Medium fed	1	89.4	13.26			0	0	0	0	1	0
0	Little fed	0	67.9	13.02			0	0	0	0	1	0
0	Little fed	0	73	12.82			0	0	0	0	0	1
0	Little fed	0	238.1	24.52			0	0	0	0	0	1
1	Medium fed	1	285.7	18.64			0	0	0	0	0	1
1	Medium fed	1	334.4	20.22			0	0	0	0	1	0
0	Unfed	0	243	23.84			0	0	0	0	0	1
0	Unfed	0	77.7	16.16								
0	Little fed	0	277.7	24.64								
1	Medium fed	1	98.5	13.9			0	0	0	0	0	1
	Little fed	0	234	24.46			0	0	1	0	0	0
0	Medium fed	1	284.2	18.66			1	0	0	0	0	0

0	Little fed	0	239.6	13.74			1	0	0	0	0	0
0	Unfed	0	62.3	16.1			0	0	0	0	0	0
0	Medium fed	1	115.6	13.26			1	0	0	0	0	0
1	Medium fed	1	409.7	26.3	1	20	1	0	0	0	0	0
1	Fully fed	1	138.1	13.8			1	0	0	0	0	0
0	Medium fed	1	313.2	25.86	1	5	1	0	0	0	0	0
1	Little fed	0	277	23.9			0	0	0	0	0	0
0	Little fed	0	282.4	23.82			0	0	1	0	0	0
0	Little fed	0	242.8	25.04			1	0	0	0	0	0
0	Little fed	0	282.7	24.1			1	0	0	0	0	0
0	Little fed	0	357.1	26.7	1	18	1	0	0	0	0	0
0	Little fed	0	305.2	24.18			1	0	0	0	0	0
0	Little fed	0	311.7	26.78	1	13	1	0	0	0	0	0
	Little fed	0	308.2	25.28			1	0	0	0	0	0
1	Fully fed	1	492.1	26.94	1	16	1	0	0	0	0	0
0	Unfed	0	82.5	16.2			0	1	0	0	0	0
0	Medium fed	1	335.5	20.7			1	0	0	0	0	0
0	Fully fed	1	118.2	13.06			1	0	0	0	0	0
0	Little fed	0	376.7	26.22	1	13	0	0	0	0	0	1
0	Medium fed	1	248.3	24.16			0	0	0	0	0	1
0	Unfed	0	349.4	25.96	1	16	0	0	0	0	0	1
0	Unfed	0	253.1	25.48			0	0	0	0	0	1
0	Fully fed	1	372.7	25.36	1	32	0	0	0	0	0	1
0	Little fed	0	283.1	24.34			0	0	0	0	0	1
1	Fully fed	1	326.3	24.94	1	7	0	0	0	0	0	1
1	Little fed	0	279	24.28			0	0	0	0	0	1
0	Little fed	0	284	24.6			0	1	0	0	0	0
0	Little fed	0	99.3	15.9			0	1	0	0	0	0
1	Fully fed	1	401	34.82	1	20	0	1	0	0	0	0
0	Unfed	0	89.4	16.84			0	1	0	0	0	0
0	Little fed	0	276.7	33.54			0	1	0	0	0	0
1	Medium fed	1	323.2	19.68			0	1	0	0	0	0
0	Little fed	0	101.8	16.32			0	1	0	0	0	0
0	Little fed	0	283.8	26			0	1	0	0	0	0
0	Little fed	0	108.2	13.72			0	1	0	0	0	0
0	Medium fed	1	385.3	20.72			0	1	0	0	0	0
0	Little fed	0	118.9	17.26								
0	Little fed	0	149.9	17.08			0	1	0	0	0	0
1	Little fed	0	306.1	24.66			0	1	0	0	0	0
0	Fully fed	1	134.3	13.82			0	1	0	0	0	0
0	Unfed	0	82.8	15.66			0	1	0	0	0	0
0	Little fed	0	88.6	16.34			0	1	0	0	0	0
1	Medium fed	1	325.3	23.96			0	1	0	0	0	0
1	Fully fed	1	401.3	20.36			0	1	0	0	0	0
0	Fully fed	1	328.5	19.2			0	1	0	0	0	0
0	Medium fed	1	356.1	19.98			0	1	0	0	0	0
1	Fully fed	1	338.3	18.84			0	1	0	0	0	0

1	Medium fed	1	337	20.04			0	1	0	0	0	0
0	Little fed	0	238.8	24.02			0	1	0	0	0	0
					1	29	0	1	0	0	0	0
					1	16	0	1	0	0	0	0
					1	11	0	1	0	0	0	0
					1	23	0	1	0	0	0	0
0	Fully fed	1	470.3	26.7	1	18	0	1	0	0	0	0
1	Fully fed	1	419.1	25.46	1	14	0	1	0	0	0	0
0	Little fed	0	241.4	23.72			0	1	0	0	0	0
1	Fully fed	1	423.7	25.66	1	15	0	1	0	0	0	0
0	Fully fed	1	471	26.34	1	17	0	1	0	0	0	0
0	Little fed	0	110.9	17.22			0	1	0	0	0	0
0	Unfed	0	31.9	11.88			0	1	0	0	0	0
0	Unfed	0	195.6	19.7			0	1	0	0	0	0
0	Little fed	0	301	20.2			0	1	0	0	0	0
0	Little fed	0	124.8	17.46			0	1	0	0	0	0
0	Unfed	0	309.6	20.26			0	1	0	0	0	0
0	Unfed	0	110.6	16.92			0	1	0	0	0	0
0	Unfed	0	95.4	16.9			0	1	0	0	0	0
0	Unfed	0	93.9	16.66			0	1	0	0	0	0
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0	Unfed	0	225.1	24.5			0	0	0	0	0	1
0	Little fed	0	347.5	25.5	1	14	0	0	0	0	0	1
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0	Little fed	0	258.2	24.44			0	0	0	0	0	1
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1	Little fed	0	324.6	24.9	1	7	1	0	0	0	0	0
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0	Fully fed	1	148.8	15.04			0	1	0	0	0	0
1	Fully fed	1	419.4	25.96	1	3	0	1	0	0	0	0
0	Medium fed	1	100.8	13.06			0	1	0	0	0	0
0	Little fed	0	293.7	19.72			0	1	0	0	0	0
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1	Medium fed	1	91.5	13.36			0	1	0	0	0	0
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Text S1

Description of ecotopes, host abundance and site occupancy

Storerooms and kitchens (mean area, 12 m^2) were built similarly to human habitations and were 5-15 m distant from them. Kitchens always had a cooking fire using wood or charcoal ("fogón"). Most chicken coops (0.5 to 25 m^2 in size, 5 to 50 m from the domicile) had walls of wood sticks or mud bricks and thatched or wood-stick roofs; only a few chicken coops had chicken-wire fencing. Other structures made for sitting chickens (with two or three layers of bricks arranged in a small square or circle) were included in the class 'chicken coops'. Goat corrals (mean size, 80 m^2) usually had a fence made with piled thorny shrubs and vertical posts, and a small thatched enclosure for kids. Pig corrals (mean size, 7 m^2) usually had solid walls and roofs of wooden planks or trunks, sometimes thatched roofs, and usually were the farthest-away peridomestic structures. Granaries ("trojas", mean size, 4 m^2) were wooden structures used for storage of corn and frequently had sitting chickens associated. Most houses had chickens (99%), dogs (95%), goats (90%), pigs (88%), and fewer had horses or mules (60%), cats (57%) and cows (28%); a median study household had 5 people (first-third quartiles, 4-8), 2 dogs (2-3), 0.5 cat (0-1), 15 chickens (7-22), 11 goats (0-29), 2 pigs (1-6) and 2 horses or mules (0-4); very young chickens were recorded in 71% of houses.

Nearly all of the study houses were permanently inhabited and therefore had the usual domestic animals in their respective structures. The great majority of the bugs were collected from sites used by some bird or mammal host. Although we recorded the occurrence of host species in particular sites (e.g., chickens nesting) on the sketch map or questionnaire during bug searches, domestic animals frequently were wandering around or in the forest during the daytime and assessing current (or past) site occupancy by given host species was rather uncertain. Bugs deprived of hosts (especially late-stage nymphs) may survive for weeks or months in houses or structures left vacant and may disperse. Abandoned houses are sometimes used for shelter by goats and other domestic hosts and the residual bug populations may persist indefinitely.

Recent colonizations

Twenty-one (7.5%) infested sites only had 1-2 male *T. infestans* collected and 23 (8.2%) only 1-2 females. In the context of growing reinfestation after an insecticide spraying campaign, most of these sites likely represented recent colonization attempts. These assumed newly colonized sites constituted 27.7% of the 94 infested domiciles detected and 9.7% of the 186 infested peridomestic sites (Fisher's exact test, $P < 0.0001$), rejecting the null hypothesis of no difference in the proportion of assumed new colonizations between infested domiciles and infested peridomestic sites. Relative to uninfested sites, the odds of a site being newly colonized was 8.42 (CI, 4.31-16.70) times greater in domiciles (14.9% of 175) than in peridomestic sites (2.0% of 887, Fisher's exact test, $P < 0.0001$).

Evidence of bug mobility between ecotopes

Four human-fed bugs (2 males, 1 female, 1 fifth instar) were detected in storerooms and goat corrals. Four pig-fed bugs (from each late stage) occurred in domiciles from four different houses that had 1-3 pigs, two of which had an infested pig corral. Six (26%) goat-fed bugs (2 males and 4 fourth or fifth instars) occurred in four domiciles; four of these bugs also had fed on human, dog or chicken. All of these bugs qualified as apparent dispersants. Thirteen late nymphal or adult stages with goat blood meals were detected in a heavily infested storeroom 60 m from an uninfested corral that housed 170 goats; another goat-fed female bug occurred in a chicken coop of a house with >30 goats. All goat-fed bugs occurred in households with goats reported, whereas three pig-fed bugs occurred in two houses having no pigs at the time of the survey.

Comparison of catch efficiency between and within ecotopes

Even different sites within each ecotope are subject to some variation; for example, some houses have smooth, plastered walls, so bugs are in the beds or roofs. It is much easier to catch a bug from a small chicken coop that can be dismantled than

from a thatched roof in the interior of a dark place such as a bedroom or storeroom. A human bed is very close to a chicken nest in terms of catch efficiency, and the thick, thorn fences of goat corrals are more difficult places to search for and catch bugs. Bug collectors know of bug preferences for certain spots, and therefore direct their search efforts as a predator, using fecal smears as clues of where bugs are.