Annual Project Report for Award 1313703

Report Period - Start Date: 9-01-2013 | End Date: 08-31-2014

Accomplishments

What are the major goals of the project?

The major goals of this project are to (A) determine the extent to which ecological and societal diversity exhibit parallel responses to Katrina-related flooding; and to (B) examine how interventions intended to reduce public health risk factors shape relationships and interactions between ecological and societal diversity. We are achieving these goals by (1) assessing the composition and structure of ecological and human communities across the urban core of New Orleans, which involves GIS analyses of landscape heterogeneity and societal and socioeconomic variation before and after Hurricane Katrina, as well as plot-based inventories of urban tree and understory plant communities according to flooding and socio-demographic stratification. Building on this work, we are also (2) examining the ecology and demography of Norway rats (*Rattus norvegicus*), a habitat-dependent primary reservoir of zoonotic pathogens, to understand human health outcomes of flooding, which involves a trapping-based census; population genetic analysis of rat abundance, distribution, dispersal; and histological analysis of pathogen prevalence. In addition, we are conducting (3) mail surveys and in-person interviews of households proximate to plant inventory and trapping sites, and of households in neighborhoods factorial selected according to income and ethnicity, to determine how perceptions of risk compare to physical measures of exposure risk across the city. Finally, we are (4) uniting information gained from these studies into a spatially-explicit predictive model of Norway rat demography that will be used to assess ecological and human-health outcomes of alternative "control" scenarios reflecting habitat suitability, movement, and risk perceptions.

What was accomplished under these goals?

Assessing rodent habitat suitability and ecological diversity across New Orleans

Major Activities:

Rodent habitat suitability: Progress has been made toward designing, populating, weighting, and launching a GIS-based model of rat habitat suitability. Much of the Year-1 GIS-based work entailed laying the groundwork for rodent trapping efforts as well as examining location-specific and landscape-level socioeconomic and ecological factors for rodent distributions and geography.

Assessment of ecological diversity: A plot-based vegetation inventory has proceeded in parallel with GIS-based analyses of landscape heterogeneity and rodent habitat suitability. Much of Year-1 plot-based work entailed inventorying an existing network of vegetation plots across the urban core of New Orleans. The network is composed of 300 random-stratified plots that were first established and surveyed in 2010 and 2011 as part of the NSF-funded New Orleans ULTRA-X program. An additional 150 plots were added to the network in 2012 through the Socioecological Movements in Urban Ecosystems (MOVE) project funded by the Swedish Research Council FORMAS. In 2013, approximately 150 ULTRA and MOVE plots were re-inventoried.

The network of ULTRA sites offers a spatial coverage of the urban environment at a randomized and evenly dispersed distribution. The network of MOVE sites offers denser spatial coverage of a region of the city referred to as the Bayou Bienvenue drainage basin, which aligns with several focal neighborhoods that are a target of study by the CNH project (see appended Figure 1). However, the existing sampling points were found to have insufficient coverage in some focal study areas for the "CNH" project, which required the generation of new vegetation inventory plots specific to the needs of the project.

Specific Objectives:

Rodent habitat suitability: Three major tasks were targeted for completion during Project Year 1:

1. Translating rodent sampling strategies in to ArcMap GIS and delineating focal neighborhoods via GIS polygons enveloping areas of relative urbanistic and social homogeneity while capturing among them the diversity of human and structural landscape of the city (see appended Figure 1).

2. Acquiring historical Landsat Thematic Mapper imagery dating from 1985, 1995, 2005 before Katrina, then every year after Katrina from 2006 to 2012, and coordinating with a student worker to conduct land cover classifications to reconstruct the temporal history of land cover change across the urban core of New Orleans (the East Bank of Orleans Parish from the Jefferson Parish line to the lowermost edge of the Lower Ninth Ward plus the western part of New Orleans East) and in focal neighborhoods.

3. Devising GIS-based cost surfaces at 30m spatial resolution for layers representing geographical factors influencing the distribution of rats in the city. For initial iterations of the cost-surfaces, each of the 30-meter pixels within the selected layers will be coded on a scale of 1 to 10 according to their conduciveness to rat occupancy, with 1=most attractive/likely and 10=most expensive/unlikely, including likely barriers. The layers selected include: Recent land cover; Distribution of household water distribution mains; Distribution of sewerage mains and piles; Distribution of municipal drainage canals, open and covered; Other fresh water sources; Vacant lots; Distribution of restaurants, food wholesaling and retailing, and alcohol distribution outlets (all of which are related to refuse availability); Pest control requests; and the **Distribution of humanity normalized by year-hours, of residents as well as tourists mapped by where their spend their time.**--*This is a particularly important and interesting undertaking, as we plan to do something that has never been done before: map total human occupancy (not just residential) on a hours-per-year basis, including where time is spent by the roughly 10 million tourists who visit New Orleans annually, all of which affect refuse availability, which is a likely driver of rodent geography.*

These layers have been (1) weighted for their relative importance, and (2) spatially summarized into aggregating units by city blocks and "rat sheds" or other units relevant to the geography of rodents.

Assessment of ecological diversity: In Project Year 1, a subset of approximately 150 ULTRA and MOVE plots (see appended Figure 3 for photos of two representative plots) were re-inventoried to provide canopy and herbaceous layer inventories as well as microhabitat data in support of rodent trapping efforts in focal neighborhoods (see appended Figure 1) and for validation of GIS-based analyses of rodent habitat suitability. New data sheets (two examples appended corresponding to appended Figure 3) were developed to include measures of ecological diversity, rodent habitat and built structural features on the site.

Significant results:

Rodent habitat suitability: Preliminary rodent suitability maps have been generated to reflect individual and combinations of select surface layers. Please refer to the appended Figure 2 for an example of a suitability map based on the location and density of restaurants and alcohol distribution outlets.

Assessment of ecological diversity: Both structural (i.e., diversity) and functional (i.e., trait-based) analyses of plot-based plant assemblage inventories are now underway, though basic summary statistics of the plant assemblage across New Orleans have been calculated, including (1) a total of 168 species were encountered in the surveyed plots; (2) an average of 11 species (SD = ± 7) were encountered per plot; (3) 46% of species were identified as native, 33% of species were identified as non-native, and 21% of species were of unknown geographic origin.

Key outcomes or other achievements: Nothing to report at this time.

Examining the ecology, demography, and genetics of commensal rodents

Major Activities:

Two major activities were undertaken in Project Year 1: (1) inaugural rodent trapping at 8-10 sites in each focal neighborhood except for the Lower Ninth Ward, which was completed during the start of Project Year 2; and (2) preliminary genetic data collection from existing and newly obtained tissues of Norway rats from throughout the urban core of New Orleans.

Specific Objectives:

Rodent trapping was undertaken to obtain quantitative estimates of commensal rodent distributions (i.e., presence / absence of black rats, Norway rats, and house mice, which are the three most prevalent commensal rodent species in New Orleans); assemblage structure (i.e., species co-existence); as well as local population size and demographic attributes of individuals and trapping sites (e.g., age structure, sex ratio, prevalence of pregnant females). Please see the appended site and necropsy data sheets for a comprehensive list of data obtained for trapping sites and trapped individuals. Please also see appended Figure 4 for an example of a trapping site and trap placement at the site.

Preliminary genetic data collection involved extraction of genomic DNA and characterization of multi-locus nuclear microsatellite genotype profiles from archival and newly obtained tissue samples. The intention of this work was to optimize laboratory protocols for genetic data collection and to develop initial assessments of genetic variation within and among trapping sites throughout the study area.

Significant results:

As of the end of July 2014, we completed trapping efforts at 55 of 60 sites in focal neighborhoods (see appended Figure 5), with the expectation that 5 remaining sites would be completed in August 2014 (the beginning of Project Year 2). Similarly, an additional 10 sites in the Lower Ninth Ward were also expected to be completed in August 2014. By the end of July 2014, we had collected tissue samples from 103 individuals: 53 *Rattus rattus* and 50 *Rattus norvegicus*. These samples include lung, liver, kidney, urine and blood samples that will be used for screening for a suite of pathogens, including strains of Bartonella, Hantaviruses and Leptospira. We have also collected tail samples from each individual to use for DNA extraction and genotype analysis.

In addition to the 103 individuals captured so far in our inaugural field survey, we have obtained additional tail tissue samples from 205 *R. norvegicus* and 10 *R. rattus* from the City of New Orleans Mosquito, Termite, Rodent Control Board. These samples were collected from 2012 to early 2014 through targeted trapping done largely in response to reported or known rodent infestations. We have extracted DNA from 164 of the *R. norvegicus* individuals that were trapped by the City of New Orleans. We have also worked to optimize the PCR protocol for amplifying 18 microsatellite loci using published primers for *R. norvegicus*. Beginning in mid to late August 2014, we will begin DNA extraction on all individuals captured in the field survey and also begin genotyping all *R. norvegicus* individuals.

Key outcomes or other achievements: Nothing to report at this time.

Household surveys of risk perception

Major Activities:

We undertook the following major activities for the household social survey component of our project during Project Year 1 and early Project Year 2: (1) Development of the household survey instrument (see appended survey) and cover letter to accompany the household survey; (2) Submission of the survey instrument and cover letter to the Tulane University IRB and Dillard University IRB (and obtaining IRB approval).

Specific Objectives:

In order to be able to accomplish one of the major goals of this project— to develop a socio-ecological model that integrates rodent populations, rodent habitat, rodent movement, and human risk exposure and human perceptions of risk—we must assess how residents of New Orleans perceive a number of types of risk. We are using the following questions to frame this work: (1) How do individual level socio-demographic factors such as age, gender, and housing status relate to flood and disease risk perceptions? (2) Does flood trauma alter perceptions of risks? A third question will guide the way we ultimately utilize the household survey results in concert with the vegetation, rodent, and land-use data: (3) How do perceptions of risk relate to trauma-induced shifts and post-trauma variation in ecological communities (i.e., loss of tree canopy, increased rodent abundance, rodent control)? As part of our strategy to address those questions, we have planned to use mail (paper hardcopy) surveys of households proximate to plant inventory and trapping sites, and of households in neighborhoods factorial selected according to income and ethnicity, to determine how perceptions of risk compare to physical measures of exposure risk across the city. We also plan to carry out in-person interviews after our initial deployment of the household surveys, and after we receive the survey results.

Significant results:

We developed the household survey instrument (including cover letter) over the winter and spring 2014, and finalized it in the early summer. The survey is designed to be short enough to attract completion and a higher rate of return while still addressing all the factors and variables necessary to address our guiding questions outlined above. The survey includes questions about demographics in addition to questions about the previous experiences of the respondents with flooding and exposure to rodents, and their perceptions of their future risks in those areas. In early July 2014, the survey instrument and cover letter were submitted to the Tulane University IRB and were approved. At that point, the instrument then also required approval by the Dillard University IRB, because one of the key collaborators on this portion of the project (Amy Lesen) was a faculty member at Dillard. However, the Dillard IRB did not meet during summer 2014 and was not accepting any submissions until the beginning of the fall 2014 semester (late August), which resulted in delaying the deployment of the surveys. As of September 2014, Lesen is now employed at Tulane University, thus removing the need to obtain any further IRB approvals. We are now aiming to deploy the survey in late fall 2014 in coordination with the next phase of rodent trapping.

Key outcomes or other achievements: Nothing to report at this time.

Spatially-explicit predictive modeling of Norway rat demography and control scenarios

Major Activities:

To explore the population dynamics of Norway rats, we have begun developing a spatially explicit stage-structured metapopulation model. Development of the model for Norway rat dynamics has been guided by the goal of understanding how both ecological factors and factors associated with socioeconomic and

cultural aspects of an urban area can influence the movement and distribution of rodent populations. The basic functional forms and structure of the inaugural model (see appended Figure 6) will be modified as needed over the course of this work, depending on available information and desired output.

Specific Objectives:

In the current working form of the model (see appended Figure 6), we have been considering a single landscape at the scale of one of the neighborhood area designations derived for data collection in the vegetation and rodent trapping studies. The inaugural landscape contains 8-12 subpopulations of rats, or the approximate number of sites that are sampled in a focal neighborhood area. The rat population in each patch is subdivided into two age classes – non-reproductive juveniles (<200g) and adults (≥200g) – which have distinct mortality and migration rates. For a patch k, the differential equations representing the changes in juvenile (J_k) and adult (A_k) population sizes over time are given in appended Figure 6.

The first term in the juvenile equation is a "birth" term that depends on the density of the adult population. The second term represents loss of juveniles to maturation into the adult class at rate s, natural death at rate $\mu_{Jk,}$ and emigration at maximal rate m_{Jk}, scaled by a factor that depends on the total population size in the patch. The third term represents total immigration from other patches, with the probability of migrating from patch l to patch k given by p_{lk}. Individuals migrate with equal probabilities into all adjacent patches. Adult populations increase by acquiring maturing juveniles and immigrants, and decrease through natural death and emigration as juveniles do, though at different (maximal) rates. See appended Table 1 for further parameter definitions and values used for initial exploration.

Significant results:

See appended Figures 7 and 8 for an example of the output of the inaugural model for a 16-patch landscape habitat. Parameter values for exploring model outcomes were chosen randomly for each patch within an ecologically realistic range, with one unit of time representing one month. Through discussions with collaborators, we have developed a working list of measurable geographic and environmental landscape features that may influence either the sustainability of a rat population in a given location or the movement of rats across the landscape, such as railroads, sewer lines, water and food sources, and vegetative cover. These factors are being assessed using GIS-based least-cost surface approaches (as described previously) and will ultimately be used to scale parameter values across locations to specifically tailor the model to the New Orleans landscape.

The construction of the model has required making decisions on the parameter dependencies based on rodent ecology literature, discussions with collaborators on rat behaviors relevant to an urban landscape, and consideration for parameterization to be done with the data we are collecting. Density dependence was included in the model terms based on aspects of rat life history (competition, social behavior, etc.). The migration term in the model plays an important role in predicting spatial population distributions over time. Currently, the rates of migration are functions of source patch density, though we are exploring a range of functional forms that may also depend on the density of the destination patch as well. We are exploring the use of gravity models, circuit models, and other forms of ecological landscape flow models for migration that may be incorporated into and/or complement and contribute to further development of the population dynamics. This aspect of the model will be a key factor in identifying potential natural or man-made corridors and/or barriers to rat dispersal.

Key outcomes or other achievements: Nothing to report at this time.

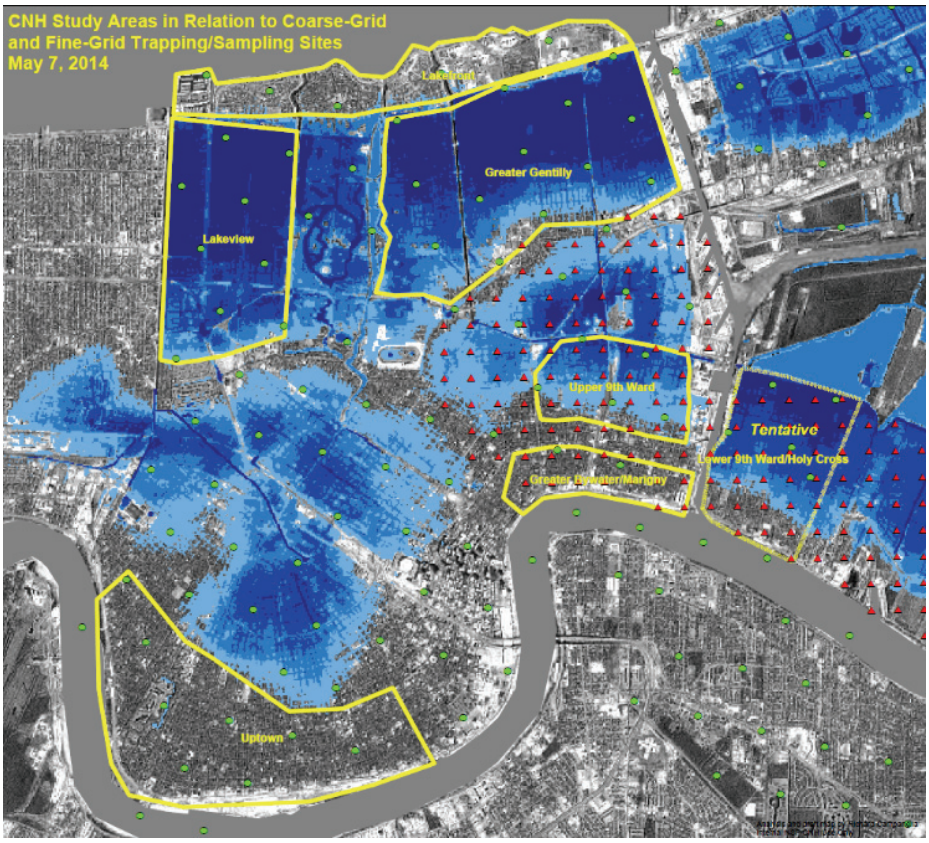


Figure 1: Network of ULTRA (green) and MOVE (red) vegetation survey plots relative to the CNH focal neighborhoods (outlined in yellow). Additional plots (not depicted here) were added to the existing network in two focal neighborhoods: the Greater Bywater/Marigny and Lakeshore.

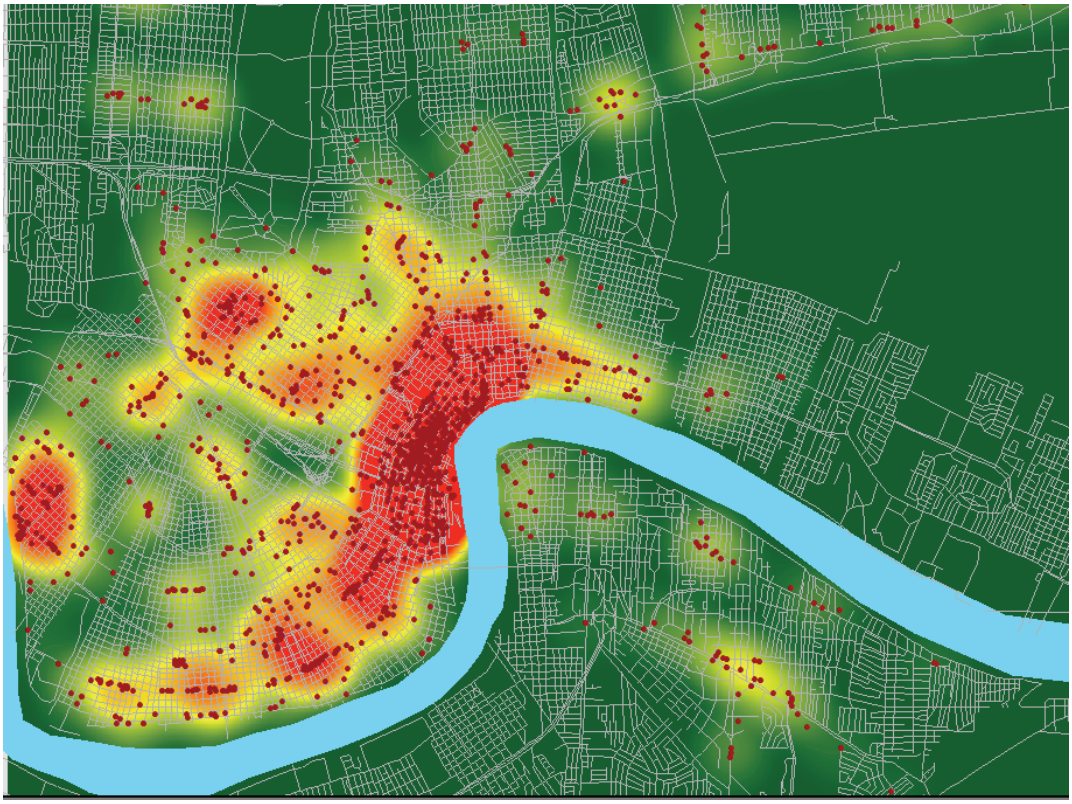


Figure 2: Representative example of rodent habitat suitability surface (red = more favorable; green = less favorable) according to the location of restaurants and alcohol distribution outlets across the urban core of New Orleans.

Figure 3: Photos of vegetation plot #9 (left) and plot #6 (right). Photos of plots correspond to the data sheets provided as examples of data collection efforts for evaluating plant assemblage-level ecological diversity measures and for validating remote-sensing and GIS-based measures of land use and landscape heterogeneity.

Figure 4: Example of rodent trapping site (left) in the Uptown focal neighborhood. The site corresponds to the rear year of a residential property. Example of rodent trap placement at the site (right). Up to 30 traps were deployed at each trapping site. Two Norway rats were captured at this site.

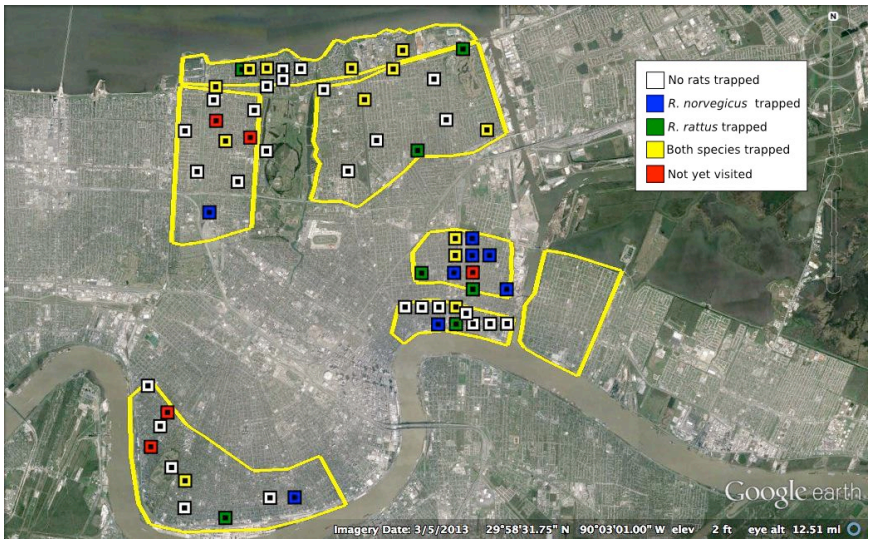


Figure 5: Location of rodent trapping sites in focal neighborhoods. Records of Norway rats (*R. norvegicus*) and black rats (*R. rattus*) at each site based on trapping completed in Project Year 1. Further trapping was undertaken during the start of Project Year 2.

$$\frac{dJ_k}{dt} = \beta_k A_k \exp(-c_k A_k) - \left(s + \mu_{Jk} + m_{Jk} \frac{(J_k + A_k)^2}{m_0^2 + (J_k + A_k)^2} \right) J_k + m_{Jk} \sum_{l \neq k} p_{lk} J_l$$

$$\frac{dA_k}{dt} = s J_k - \left(\mu_{Ak} + m_{Ak} \frac{(J_k + A_k)^2}{m_0^2 + (J_k + A_k)^2} \right) A_k + m_{Ak} \sum_{l \neq k} p_{lk} A_l .$$

Figure 6: For a patch k, the differential equations representing the changes in juvenile (J_k) and adult (A_k) population sizes over time.

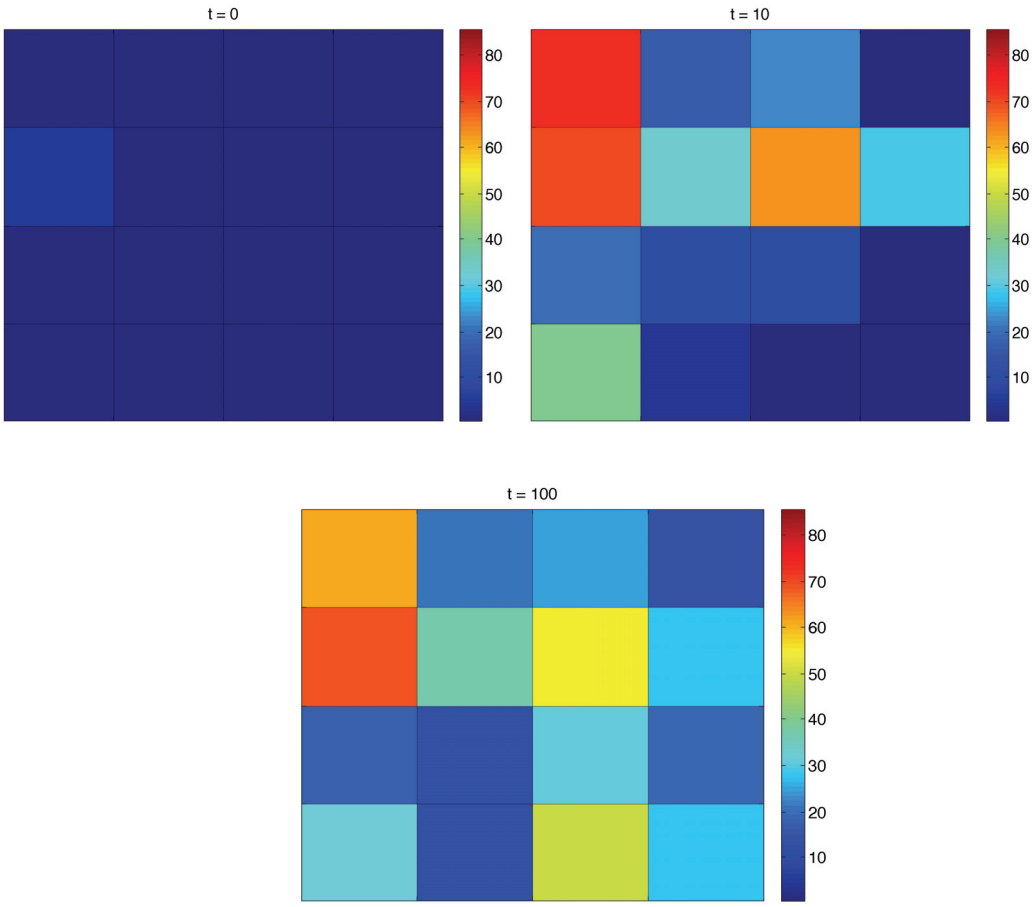


Figure 7: Five adults are introduced into a single patch in an empty 16-patch landscape in an example simulation. Individuals can migrate to adjacent patches only. Snapshots show total population sizes, indicated by color, at 0, 10, and 100 months.

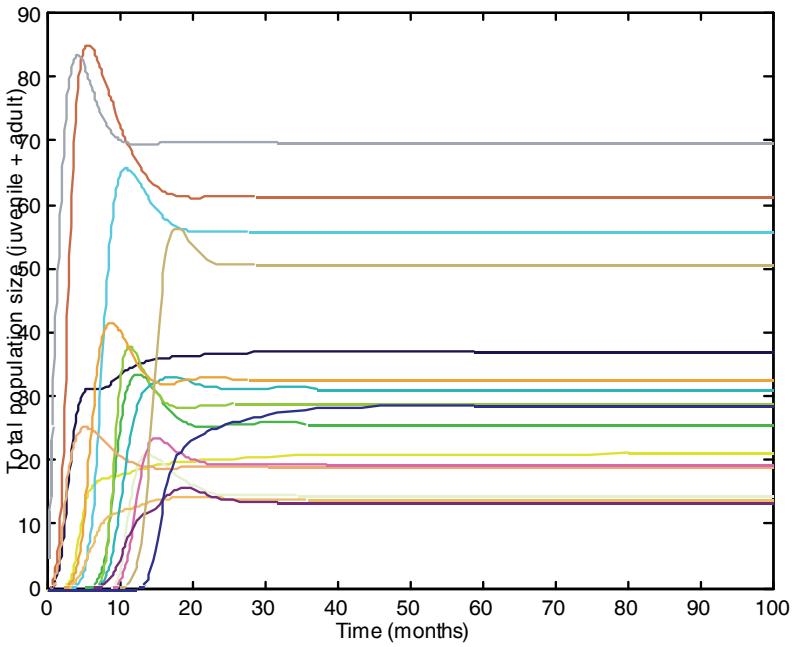


Figure 8: Total population sizes over time for each of the 16 patches in the Figure 1 landscape.

Figure 9: Letterhead for project branding and identification.

Figure 10: Logo for project branding and identification

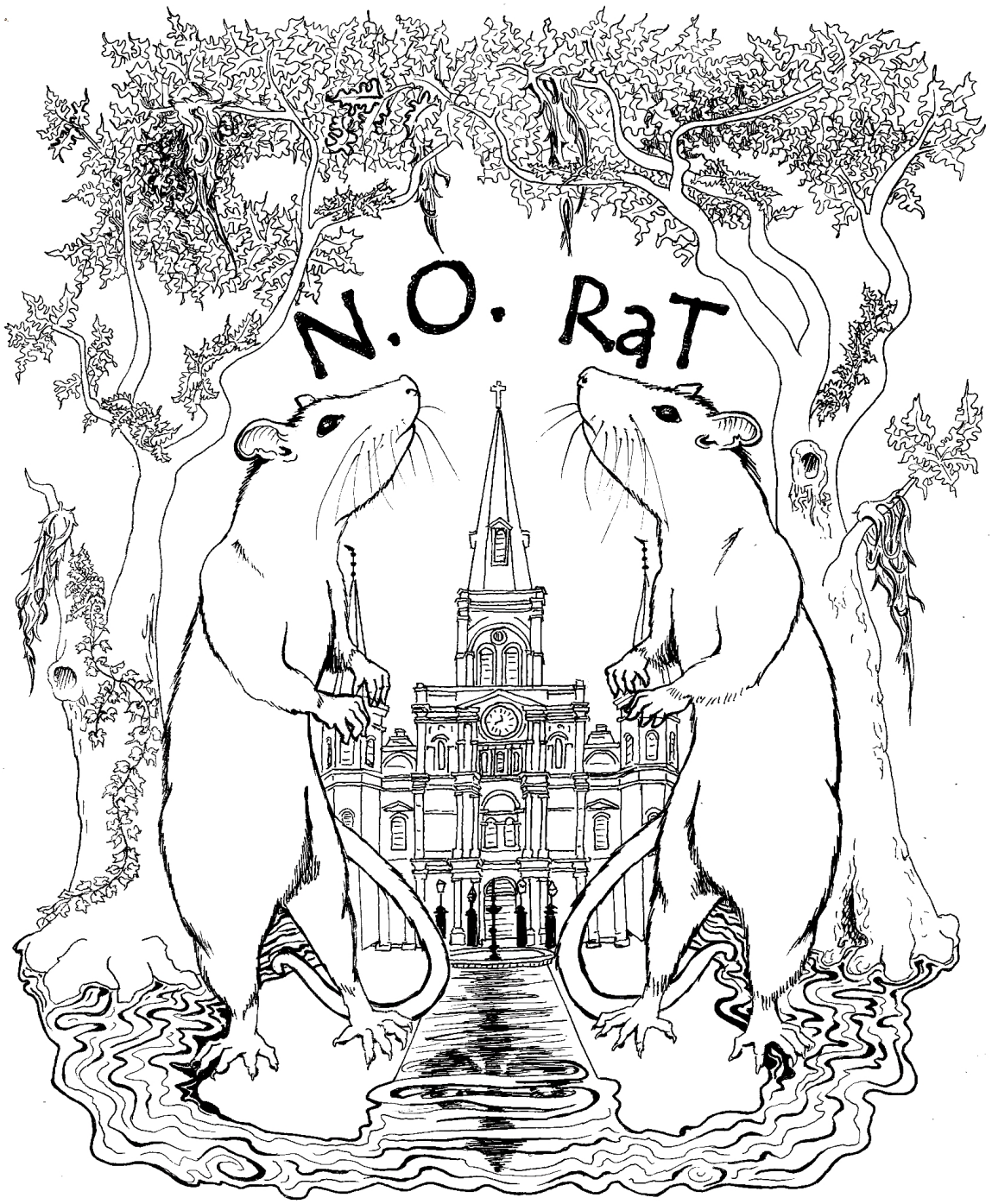


Figure 11: Logo for project branding and identification

Table 1: Parameter definitions for model equations. Subscript *k* denotes a parameter specific to a patch *k*. Parameters for which a range of values is listed are selected randomly for each patch.

Parameter	Definition	Value(s)
β_k	recruitment rate	[3 11]
c_k	adult competition parameter	[0.05 5.5]
s	maturation rate	0.3
m_{Jk}	maximum juvenile migration rate	(0 0.3]
m_{Ak}	maximum adult migration rate	(0 0.1]
m_0	migration half-saturation population	30
μ_{Jk}	juvenile death rate	(0 0.2]
μ_{Ak}	adult death rate	(0 0.3]

2014 New Orleans Urban Forest Inventory

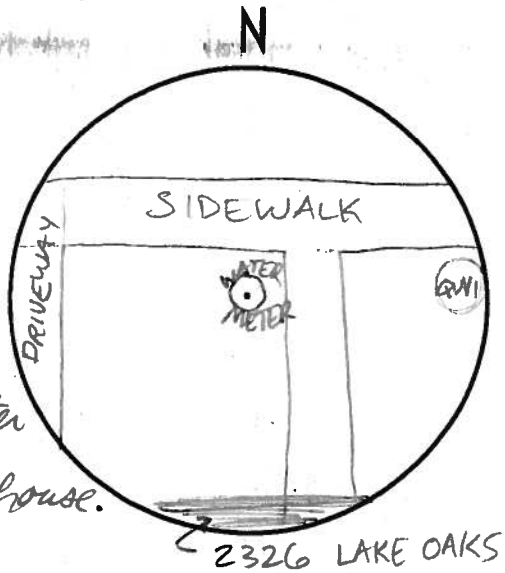
Plot ID:	Date:	Crew:	x 30.02930
CNH 6	10-JUL-14	RFH, DB, SP	y 90.05856

Plot address and context: 2326 LAKE OAKS PKWY

Plot center is on Sewerage & water board water meter at bottom of walkway that leads to front door of house.

Plot Contact Info:

Photos ☑ % Measured: 100



Reference	Object 1 TMP ☐	Object 2 TMP ☐	Object 3 TMP ☐
Description	Storm Drain	Light pole near fire hydrant	—
Distance	11.9	15.0	—
Direction	279°	72°	—

Actual Land Use: R	Percent In: 75		
Actual Land Use: T	Percent In: 25		
Actual Land Use:	Percent In:		
Actual Land Use:	Percent In:		
Tree Cover %: 45	Garbage ☐ N		
Shrub Cover %: 5	Debris ☐ N		
Plantable sp %: 30	Tires ☐ N ☐ ≥5		

	Struct 1	Struct 2	Struct 3	Struct 4
O/V	O			
Slab/Raised	S			
Res/C/Inst/ Other	R			
	Burrows	Runs	Water Source	Storm Drain
Present				(✓)
Absent	✓	✓	✓	

Notes on land use and structures: → Very nearby

%BLDG	%CMNT	%TAR	%ROCK	%SOIL	%DFF/MLCH	%HRB/IVY	%MN GRASS	%UNM GRASS	%WATER
5	55	—	—	—	5	—	35	—	—

Shrub Species	Height	Crown base < 18cm (x)	% Area	% Miss
1. MOCE2	2.2	N	40	35
TLVO	1.0	Y	51	10
ULPA	1.0	Y	3	50
QULA3	1.0	Y	3	50
PRULA5	1.0	Y	3	50

Contact: Wayne Zipperer USFS wzipperer@fs.fed.us Josh Lewis - jlewis9@tulane.edu Rebecca Hazen - rhazen@tulane.edu

Trees & Herbaceous

PLOT ID: CNH 6

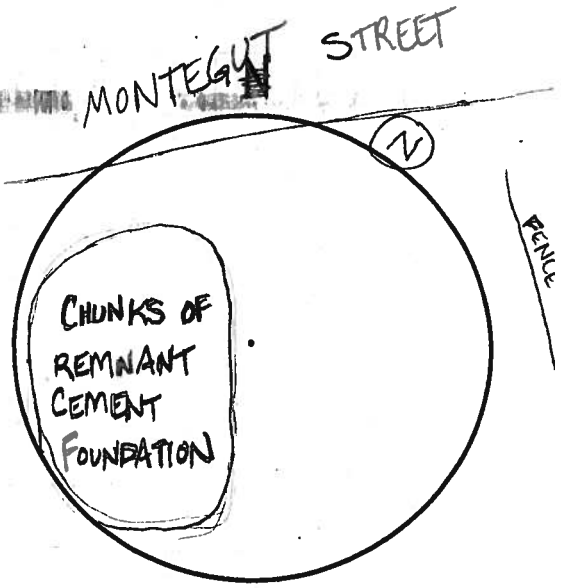
Tree #	STAT	DR	DS	TREE SPECIES	LAND USE	HT DBH	DBH: 1	2	3	4	5	6	HEIGHT: TOT	LIVE TOP	CROWN BASE	CROWN WIDTH: N-S	E-W	CROWN: RATIO	THIN	TRIMP	TRIMSUB	CLE	TREES NEAR BUILDINGS: D1	S1	D2	S2	D3	S3	TREE SITE
1	A	98	7.5	QUVI	R	1.37	71.4						10.3	10.3	3.1	16.3	20.1	10	5	20	0	5							N
2																													
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													

SP CODE	Species ID	MORPHOSPECIES NAME	v1	v2	v3	v4	v5
SSE3	St. Aug grass		100	100	95	100	100
ICA3	Dichondra		<5	—	—	5	—
CYBR	TADA Sedge		+	1	—	<5	1
AMAES*E SP.	Trifoliate Spurge		+	5	—	—	—
OXDI2	Baby Bottom		+	1	—	—	<5

Species ID	v1	v2	v3	v4	v5

Presence/Absence	SP CODE
Round Leaf Mirror	PHUR
Asian Jasmine	TRJA
Wandering Jew	TRPA10
Garnier Nettle	URTICACA SP.
Spurge	CHMA15
YSF	CAVI2
Jade Dondelion	PYCA2
Asparagus Fern	ASPE12
Victory Grass	PANO2

2014 New Orleans Urban Forest Inventory



Plot ID:	Date:	Crew:	x 29.97489
CNH 9	14-JUL-14	RFH, SP, JAL	y 90.04380

Plot address and context: Vacant lot next to 1745 Montegut

Plot Contact Info:

Photos ☑ % Measured: 100

Reference	Object 1 TMP ☐	Object 2 TMP ☐	Object 3 TMP ☐
Description	Utility Pole	Fence along 1745 Montegut @ point aligned w/ westernmost edge of front porch	—
Distance	11.15	14.48	—
Direction	273°	6°	—

Actual Land Use: V	Percent In: 100		
Actual Land Use:	Percent In:		
Actual Land Use:	Percent In:		
Actual Land Use:	Percent In:		
Tree Cover %: 25	Garbage ☑		
Shrub Cover %: 5	Debris ☑		
Plantable sp %: 60	Tires ☑ ≥5 ☐		

	Struct 1	Struct 2	Struct 3	Struct 4
O/V	|	|	|	|
Slab/Raised	|	|	|	|
Res/C/Inst/ Other	|	|	|	|
	Burrows	Runs	Water Source	Storm Drain
Present		✓		
Absent	✓		✓	✓

Notes on land use and structures:

- 9mm bullet casing found on sidewalk

(*) WE ACTUALLY SAW A RAT CLIMBING ON THE TALLOW TREE!

%BLDG	%CMNT	%TAR	%ROCK	%SOIL	%DFF/MLCH	%HRB/IVY	%MN GRASS	%UNM GRASS	%WATER
—	15	—	—	—	—	75	10	—	—

Shrub Species	Height	Crown base < 18cm (x)	% Area	% Miss
CE2	2.5	Y	90	5
Sambucus nigra	1.5	Y	10	0

Contact: Wayne Zipperer USFS wzipperer@fs.fed.us Josh Lewis - jlewis9@tulane.edu Rebecca Hazen - rhazen@tulane.edu

Trees & Herbaceous

PLOT ID: CNH 9

Tree #	STAT	DIR	DIS	TREE SPECIES	LAND USE	HT DBH	DBH: a	b	3	4	5	6	HEIGHT: TOT	LIVE TOP	CROWN BASE	CROWN WIDTH: N-S	E-W	CROWN: RATIO	LOSS	RAMP	MISTLETOE	CLS	TREES NEAR BUILDINGS: Da	Sa	Db	Sb	Dp	Sp	TREE SITE
1	A	256	14.4	TRSE6	V	1.37	19.0						7.6	7.6	1.8	4.5	4.7	20	0	10	0	5					N		
2	A	299	6.5	MOAL	V	0.2	40						4.8	4.8	1.2	4.0	4.0	40	0	15	0	4					N		
3	A	315	10	CE2	V	1.37	2.7	4.0	3.0	2.3			3.7	3.7	1.0	1.0	1.0	50	0	0	10	3					N		
4	A	343	7.5	QUVI	V	1.37	5.2	5.3	3.5	4.5	4.0	4.3	4.8	4.8	0.8	1.7	2.0	25	0	0	30	4					N		
5											2.5	2.1																	
6	A	320	7.5	MOAL	V	1.37	3.2	2.5					3.8	3.8	1.8	1.5	1.5	30	0	0	30	2					N		
7																													
8																													
9																													
10																													
11																													

Species ID MORPHOSPECIES	(SP CODE)	v1	v2	v3	v4	v5
Johnson Grass	(SOHA)	75	75	70	—	—
Rulwa Sp.	(RUSP)	15	—	1	—	—
Ragweed	(AMTR)	80	25	—	—	—
3-leaf Mint	(BIPI)	5	5	15	1	<5
YSL	(CAVI2)	<5	<5	—	—	—
Coontail	(COCA5)	<5	5	5	—	—
Ampelopsis	(AMAR5)	1	—	—	—	—
Pennywort	(HYUM)	—	10	5	5	—
morning glory	(IPLA)	—	5	—	—	1
Ovule Vine	(CUOB)	—	<5	—	—	—
Paddies	(CYDA)	—	—	—	20	—
St. Aug Grass	(ISSE3)	—	—	—	85	95
WB Star	(DIVI3)	—	—	—	15	1
WLSS	(RUNU4)	—	—	—	5	—
Carrot Leaf	(EUCA5)	—	—	—	5	—

Species ID	(SP CODE)	v1	v2	v3	v4	v5
Baby Bottom	(CYSU2)	—	—	—	1	—
TADA Sedge	(KYBR)	—	—	—	—	<5
Dichondra	(DICA3)	—	—	—	—	<5

Presence/Absence

- Johnson Grass (BRCA6)
- Curly Dock (RUCR)
- Van Clover (TRRE3)
- Mimosa (MIST2)

General Information

Site ID: NO 35 VPTOWN

Photos: YES

% Inner Circle visted: 75%

Dates visited: 6/16 - 6/19

Nights trapped: 3

Trap Group: I

Observers: AP, BG, HR

Trapping Description	Trap Area 1	Trap Area 2	Trap Area 3	Trap Area 4	Trap Area 5	Inner Circle	Notes
# Traps set	10	10	10				
Address	3516 Magazine	3508 Magazine	3506 Magazine				

Site Description: Structures/Trash=(count directly adjacent OR within trapped area),Vegetation/Rodent= (ONLY within trapped area)

Rodent Activity	Trap Area 1	Trap Area 2	Trap Area 3	Trap Area 4	Trap Area 5	Inner Circle	Notes
# burrows	0	0	0				
# active burrows	0	0	0				
# runways	0		3				
Feces present (Y/N)	N	N	0				
Cats observed (Y/N)	N	N	N				
Structures	**Trap Area 1**	**Trap Area 2**	**Trap Area 3**	**Trap Area 4**	**Trap Area 5**	**Inner Circle**	**Notes**
# slab buildings	0	0	0				
# elevated buildings	1	2	1				
# unmaintained buildings	0	0	0				
# storm drains	0	1	1				
# other structures present	0		1				shed-slab
Trash/Debris Observations	**Trap Area 1**	**Trap Area 2**	**Trap Area 3**	**Trap Area 4**	**Trap Area 5**	**Inner Circle**	**Notes**
# trash piles	0	0	0				
# debris piles	0	0	0				
Vegetation	**Trap Area 1**	**Trap Area 2**	**Trap Area 3**	**Trap Area 4**	**Trap Area 5**	**Inner Circle**	**Notes**
% unmaintained grass	5%	0	0				
% unmaintained bushes	5%	10 %	15%				
% concrete	90%	40 %	50%				
% bare dirt	0%	10 %	20%				

Other Comments/Notes:

Trap night one: (6/16)

30 traps set

30 recovered

2 positive (both in backyard at 3506 Magazine)

Traps (+): I 26
I 11

Ø sprung/empty

Trap night two (6/17):

30 set

Ø lost

Ø positive

Ø sprung/empty

Trap night three (6/18):

30 set

Ø lost

Ø positive

Ø sprung/empty


Magazine St
Foucher St
NO35
© 2014 Google
Google earth
1998
Imagery Date: 3/5/2013 29°55'19.74" N 90°05'27.41" W elev 6 ft eye alt 632 ft

Necropsy Data Sheet

ID: 595 Date of Pick up: 6/17/14

Collector: Ana (necropsy) Date of Necropsy: 6/17/14

Location: Uptown

Site ID: N035 Lat: Long:

Address: 3516 Magazine St Zip:

Species information:

Species: Norway Trap set: I Trap Number: 11

Sex: ☒ Male
☐ Female ☐ Parous (pregnant/ovary scarring) ☐ Nonparous

Age: ☐ Juvenile
☒ Sexually mature (scrotum visible OR open vagina)

Mortality at pick up: ☐ Dead
☒ Alive

Biometrics:

Body length (cm)	Ear length (cm)	Tail length (cm)	Foot length (cm)
~~244.2~~ 41.1	2.0	19	3.9

Weight (gr): 244.2

Bites/wounds: ☒ Yes ☐ No

Wound Score:
(0) no lesions
(1) Minor Tail wounds
(2) Large tail wounds and small (<.025cm) wounds on rump, tail base or limbs
(3) Large wounds (0.25-0.5cm) on body
(4) Extensive wounds

Capillaria lesions ☐ Yes ☒ No Cysts in liver: ☐ Yes ☒ No Count: Ø

Tissues collected:

☒ Blood A ☒ Lung A ☒ Liver A ☒ Spleen A ☒ Kidney A ☒ Tail A

☒ Blood B ☒ Lung B ☒ Liver B ☒ Spleen B ☒ Kidney B ☒ Tail B

☒ Ectoparasites ☒ Urine ☐ Embryos NO ☐ Other _____

☐ Milk NO ☐ Mammary gland NO ☐ Slides NO ☐ Liver cist NO ☐ Capillaria NO

Comments:

Euthanized w/ Iso