

Ecology, behavior and reproduction of an introduced population of Red-vented Bulbuls (*Pycnonotus cafer*) in Houston, Texas

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Red-vented Bulbuls (*Pycnonotus cafer*)

INTRODUCTION

The effects of invasive species upon native species and communities range from unarmful to devastating.

Red-vented Bulbuls (*Pycnonotus cafer*) are native to southern Asia.

- Invasive in
 - Arabia—U.A.E., Kuwait, Qatar, Oman.
 - Polynesia—Fiji, Samoa, Tonga.
 - Oahu, Hawaii.

Failed attempts at introduction:

- Parts of Australia and New Zealand.

Little work has been done with invasive birds in Texas. In June 2008 the Texas Invasive Bird Project was initiated to target six avian species invading the state.

OBJECTIVE:

Elucidate ecology, behavior and reproduction of invasive Red-vented Bulbuls in Houston.

METHODS

QUESTIONNAIRE DESIGN AND CIRCULATION

When designing the questionnaire, care was taken to create non-competitive questions that would elicit honest answers from otherwise competitive bird watchers.

Detailed instructions were provided directly on questionnaire with photographs for identification and questions clearly explained.

When the questionnaire was finalized hard copies were offered at monthly meetings of local bird watching clubs, annual bird watching festivals, circulated on Texas bird watching internet List-Servs, and posted at this website: <http://www.hmns.org/files/invasivebirds.doc>

ANALYSES

Data span June 2008–May 2012, but are still being collected for possible future analyses.

Data for the distribution portion of this study spanned through February 2013.

Older dates preceding the initiation of the study (June 2008) were obtained both from reporters and E-bird reports.

Results were tabularized in respective sections of a database for analyses. Anthropomorphic statements were interpreted, and numerical data were converted to metric.

THE QUESTIONNAIRE

WANTED:

Please note which species you are sending observations for: Egyptian Goose, Mute Swan, Masked Booby, Red-vented Bulbul, Noddy, Masked Booby, Orange Fishery. NOTE: For accuracy, please make sure birds are fully winged and not juveniles (primaries of equal length). You may observe: *Quercus*, *Albizia*, *Albizia*.

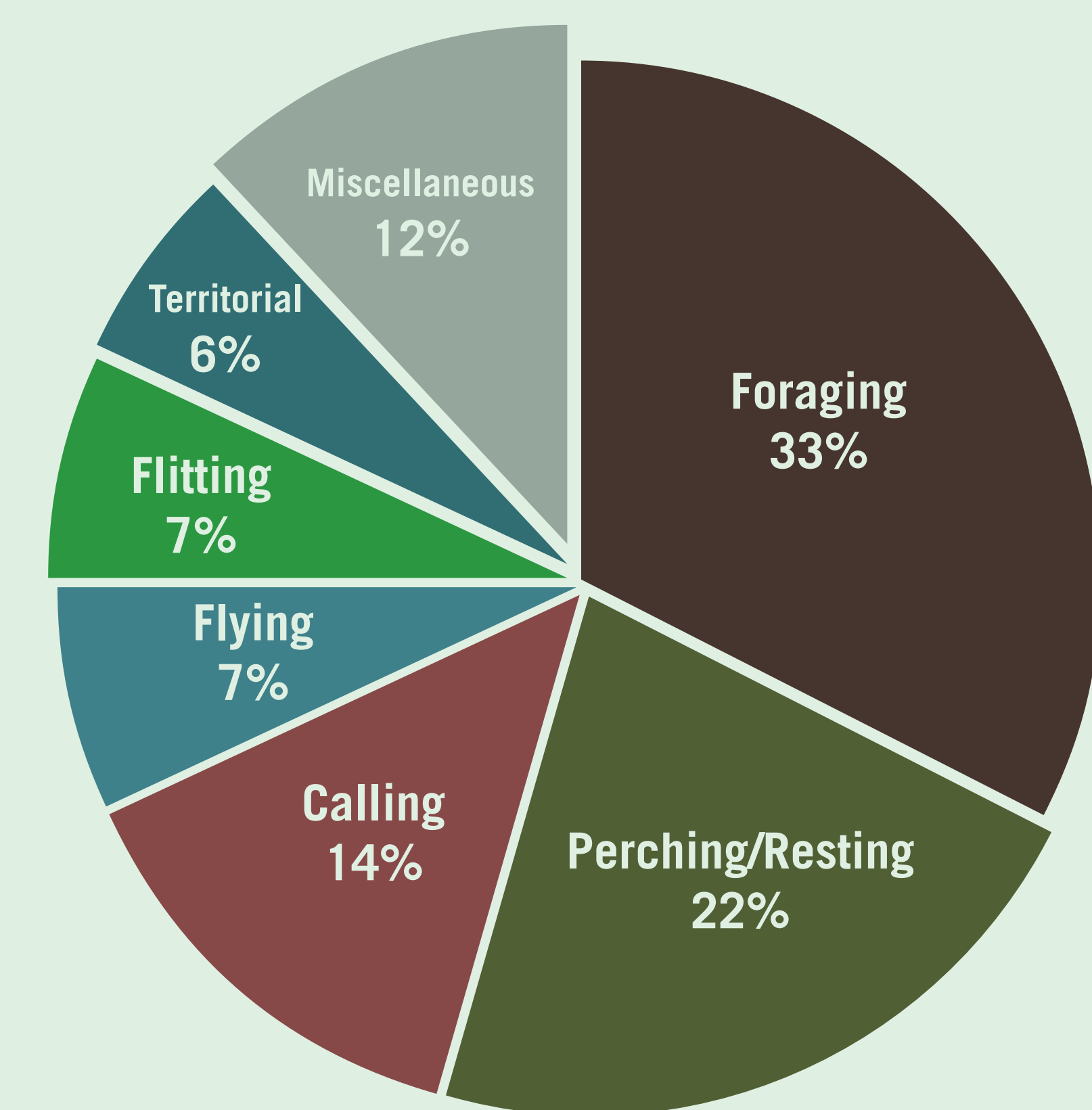
- Your name and e-mail (or other contact info).
- Where you saw it? (GPS is best, but please be as descriptive as possible; for example: Side road off I-10, 1000 N. Houston, Harris Co., TX, 77060).
- When you saw it? (Time of Day).
- What was the habitat? (Please be as descriptive as possible. If possible, also a general description [e.g., mostly drainage ditch, along parkland, creek, etc.], but the more info you can provide on abundance of different plants, size of pond, etc. the better).
- Describe the "architecture" where bird was observed (Height, How large was the body of water? Was it a pond? or artificial body of water? Conditions. What type of vegetation was the bird(s) perched in? How tall was the vegetation? How high off the ground was the bird perched in the vegetation?).
- How large was the flock?
- What was the bird(s) behavior? (e.g., nesting, preening, calling, courting, foraging, loafing, etc.) to indicate what it was doing).
- Did you observe any breeding behavior? (Active nest, nest building/carrying nest material, courtship, etc., and if so please describe in detail).
- What was your observation time? (in minutes and/or seconds).

Kindly e-mail info on the data sheet below for each separate observation to: dbrooks@hmns.org or mail by post to: Dr. Dan Brooks, Chairman of Vertebrate Zoology, Houston Museum of Natural Science, 1 Hermann Circle Dr., Houston, TX 77006-1799

RESULTS

GENERAL ACTIVITY PATTERNS

The most frequent three of the 12 activities were foraging (n = 69), perching or resting (45), and calling (28)



FORAGING ON INSECTS

12 cases of insectivory: Six involved gleaning insects off a plant. Bamboo (*Bambusa sp.*) twice. Once each for fig (*Ficus carica*), Rangoon creeper (*Quisqualis indica*), and tomato (*Solanum lycopersicon*). Tomato plants occupied by Stink bug (*Pentatomidae* or *Coreidae*) prey.

FORAGING ON PLANTS

Consumed berries (n = 8 species), fruits (5), flowers (5), and buds (4). Nine (45%) of the 20 species of plants were exotics found within the bulbul's native range. Six (30%) were exotics found outside the native range. Five (25%) were Texas native plants.

| Species | Latin Name | Berry | Fruit | Flower | Bud | Origin |
|-------------------------------|-------------------------------|-------|-------|--------|-----|--------|
| American beautyberry | <i>Callicarpa americana</i> | 3 | | | | N |
| Campfor | <i>Cinnamomum camphora</i> | | 1 | | | EB |
| Coral bean | <i>Erythrina herbacea</i> | | | 1 | | N |
| Crepe myrtle | <i>Lagerstroemia indica</i> | | 4 | 3 | | EB |
| Fig | <i>Ficus carica</i> | | 10 | | | EB |
| Hibiscus, Chinese | <i>Hibiscus rosa</i> | | | 1 | | EB |
| Hibiscus, Terri's pink mallow | <i>Hibiscus paramutabilis</i> | | | 1 | | EB |
| Japanese Magnolia | <i>Magnolia sp.</i> | | | | 2 | EB |
| Lantana | <i>Lantana camara</i> | 3 | | | | EO |
| Nandina | <i>Nandina domestica</i> | 1 | | | | EB |
| Palm, Mexican fan | <i>Washingtonia robusta</i> | | 1 | 1 | | EO |
| Palm, Parlor | <i>Neanthe sp.</i> | | 1 | | | EO |
| Pear, Ornamental | <i>Pyrus calleryana</i> | | | 1 | | EO |
| Pyracantha | <i>Pyracantha sp.</i> | 1 | | | | EB |
| Red Yucca | <i>Hesperaloe parviflora</i> | 1 | | | | EO |
| Snailseed | <i>Coccoloba canolius</i> | 1 | | | | N |
| Tomato | <i>Solanum lycopersicon</i> | | 1 | | | EO |
| Turk's Cap | <i>Malvaviscus drummondii</i> | 1 | | | | N |
| Weeping Yaupon | <i>Ilex vomitoria</i> | 1 | | | | N |
| White orchid tree | <i>Bauhinia grandiflora</i> | | | 6 | | EB |
| Unidentified | | 1 | 1 | | | |

| Abiotic structure | Numerical data | Relative data |
|---|-----------------|---------------|
| | Perch ht (m) | Low High |
| Bird Feeder | 3 | |
| Water Fountain/Bath | 3 (3) 9 | |
| Vegetable Garden | | 1 |
| Tomatoe Garden Cage | 1.2 | |
| Fence (chain link, decorative, trellis) | 1.5 (0.5–2.3) 7 | |
| Metal Stake | 2 | |
| Phone/Light Pole | | 3 |
| Utility/Phone Wire | 7.2 (6–9.1) 4 | 13 |
| Roof Edge | | 1 |
| Aluminum Window Frame | 6.8 | |

In cases where structure/perch height sample size was >1 data are reported as: mean (range) sample size.

HABITAT

Nearly all (n = 74, 96%) of the 77 reports described residential suburbs as the primary habitat.

Other cases:

Small fragments of secondary growth within a mosaic of urban parkland along White Oak Bayou (n = 2).

An individual flying across the street between parkland habitat and suburbs (1).

PLANT PERCHES

Mean perch height = 6.2 m (r = 1.7–14.5, N = 19). Perched on 37 species of plants.

Most frequently used: bamboo and crepe myrtle (n = 14 each) fig and tallow (12 each).

Perched in 16 different species (44%) of Texas native plants.

15 species (42%) of exotics found within the native range of the bulbul.

Five (14%) species of exotic plants found outside the native range.

| Plant species | Latin name | Perch ht (m) | Low | High | No data | Origin |
|-------------------------------|-------------------------------|-----------------|-----|------|---------|--------|
| American beautyberry | <i>Callicarpa americana</i> | 1.3 | | | 1 | N |
| Azalea | <i>Rhododendron sp.</i> | 5.2 (2.5–10) 8 | | | 6 | EB |
| Bamboo | <i>Bambusa sp.</i> | | | | 2 | EB |
| Campfor | <i>Cinnamomum camphora</i> | 2.7 | | | 1 | N |
| Coral bean | <i>Erythrina herbacea</i> | 3.8 (1.7–6.7) 5 | | | 8 | EB |
| Crepe Myrtle | <i>Lagerstroemia indica</i> | | 1 | | 1 | N |
| Cypress | <i>Taxodium distichum</i> | 3.2 | | | 1 | N |
| Elderberry | <i>Sambucus nigra</i> | | | 1 | | N |
| Elm | <i>Ulmus Americana</i> | 1.5 | | 1 | 10 | EB |
| Fig | <i>Ficus carica</i> | 8 | | | 1 | EB |
| Hackberry | <i>Celtis occidentalis</i> | 2.1 (1.5–2.7) 2 | | | 1 | EB |
| Hibiscus, Chinese | <i>Hibiscus rosa</i> | 1.5 | | | 1 | EB |
| Hibiscus, Terri's pink mallow | <i>Hibiscus paramutabilis</i> | 1.8 | | | 1 | EB |
| Jasmine, Orange | <i>Muraya paniculata</i> | 1 | | | 1 | EB |
| Kumquat | <i>Fortunella sp.</i> | | | | 1 | EO |
| Lantana | <i>Lantana camara</i> | 3.6 (2.7–4.5) 2 | | | 1 | EB |
| Magnolia | <i>Magnolia sp.</i> | 2.4 | | 1 | 1 | EB |
| Mimosa | <i>Albizia julibrissin</i> | | | | 1 | EB |
| Mulberry | <i>Morus alba</i> | | | | 1 | EB |
| Nandina | <i>Nandina domestica</i> | 12.9 (6–28) 4 | | | 2 | N |
| Oak | <i>Quercus sp.</i> | 1.3 | | | 1 | EO |
| Palm, Parlor | <i>Neanthe sp.</i> | | | | 1 | N |
| Passion Flower vine | <i>Passiflora incarnata</i> | 7.6 | | | 1 | N |
| Pear | <i>Pyrus calleryana</i> | 9.4 (5–12.5) 3 | | | 3 | N |
| Pecan | <i>Carya illinoensis</i> | | 1 | | 2 | N |
| Pine | <i>Pinus sp.</i> | | | | 1 | N |
| Pine, Loblolly | <i>Pinus taeda</i> | | | | 1 | N |
| Plum, Mexican | <i>Prunus mexicana</i> | | | | 1 | N |
| Redbud | <i>Cercis canadensis</i> | 2.4 | | | 1 | N |
| Sycamore | <i>Platanus occidentalis</i> | | | | 1 | N |
| Tallow | <i>Sapinum sebiferum</i> | 20.2 (9–35) 6 | | | 2 | EB |
| Trumpet | <i>Campsis radicans</i> | 3 | | | 2 | EB |
| Turks Cap, Mexican | <i>Malvaviscus arboreus</i> | | | | 1 | N |
| Turk's Cap, Native | <i>Malvaviscus drummondii</i> | | | | 1 | N |
| Viburnum | <i>Viburnum cassinii</i> | 1.8 | | | 7 | EB |
| White orchid tree | <i>Bauhinia grandiflora</i> | 2.5 | | | 7 | EB |
| Yucca, Red | <i>Hesperaloe parviflora</i> | | | | 1 | EO |
| Unident. tree/shrub | | 3.4 (0.5–6.1) 7 | | | 1 | 5 |

ABIOTIC PERCHES

Mean perch height = 3.4 m (r = 1.2–9.1, N = 23).

Of the 10 different categories the most frequent were: Phone and utility wires (n = 17 each). Bird baths and water founts (9 each).

| Abiotic structure | Numerical data | Relative data |
|---|-----------------|---------------|
| | Perch ht (m) | Low High |
| Bird Feeder | 3 | |
| Water Fountain/Bath | 3 (3) 9 | |
| Vegetable Garden | | 1 |
| Tomatoe Garden Cage | 1.2 | |
| Fence (chain link, decorative, trellis) | 1.5 (0.5–2.3) 7 | |
| Metal Stake | 2 | |
| Phone/Light Pole | | 3 |
| Utility/Phone Wire | 7.2 (6–9.1) 4 | 13 |
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In cases where structure/perch height sample size was >1 data are reported as: mean (range) sample size.



REPRODUCTIVE PHENOLOGY

18–25 March: Courtship display. 23 March–17 May: Gathering nest material. Nests in crepe myrtle trees (*Lagerstroemia indica*).

Early May nest: 3.3 m high, tightly woven grasses and pliable vegetation.

Mid July nest: 3.0 m high, in center of tree.

Fledgling observations: March: female with fledgling. 21 April: two adults with smaller sub-adult. 24 April: a fledgling admitted to a wildlife rehabilitation clinic.

13–17 July: two fledglings being fed crepe myrtle. 21 July: a mother observed feeding a 7.5 cm high fledgling.

18 August: a fledgling admitted to a wildlife rehabilitation clinic.

1 September: a young bird begging for food.

TERRITORIALITY

Intraspecific territorial behavior involved a male fighting (wing flapping and pecking) its reflection in a window on multiple occasions. The mate would typically watch from a tree, but joined the window attacking once. This behavior has also been observed in congeneric Chinese bulbuls (*P. sinensis*) (D. Brooks, unpubl. data).



DISTRIBUTION

Origin unknown. May have arrived on large cargo barges from southern Asia that docked in Ship Channel along the eastern reaches of Buffalo Bayou. Gradual dispersal west and north along bayou system towards the White Oak Bayou basin.

About half all 117 locations concentrated in the Heights, with plenty of safe urban gardens. Several recent sightings south of Buffalo Bayou suggests expanding range south.

A second population in Greenspoint area (far north, right inset of map).

Smaller than Heights population but present since the mid 1990s.

Two locations midway between the Heights and Greenspoint populations suggesting these two populations may be contiguous in the future.

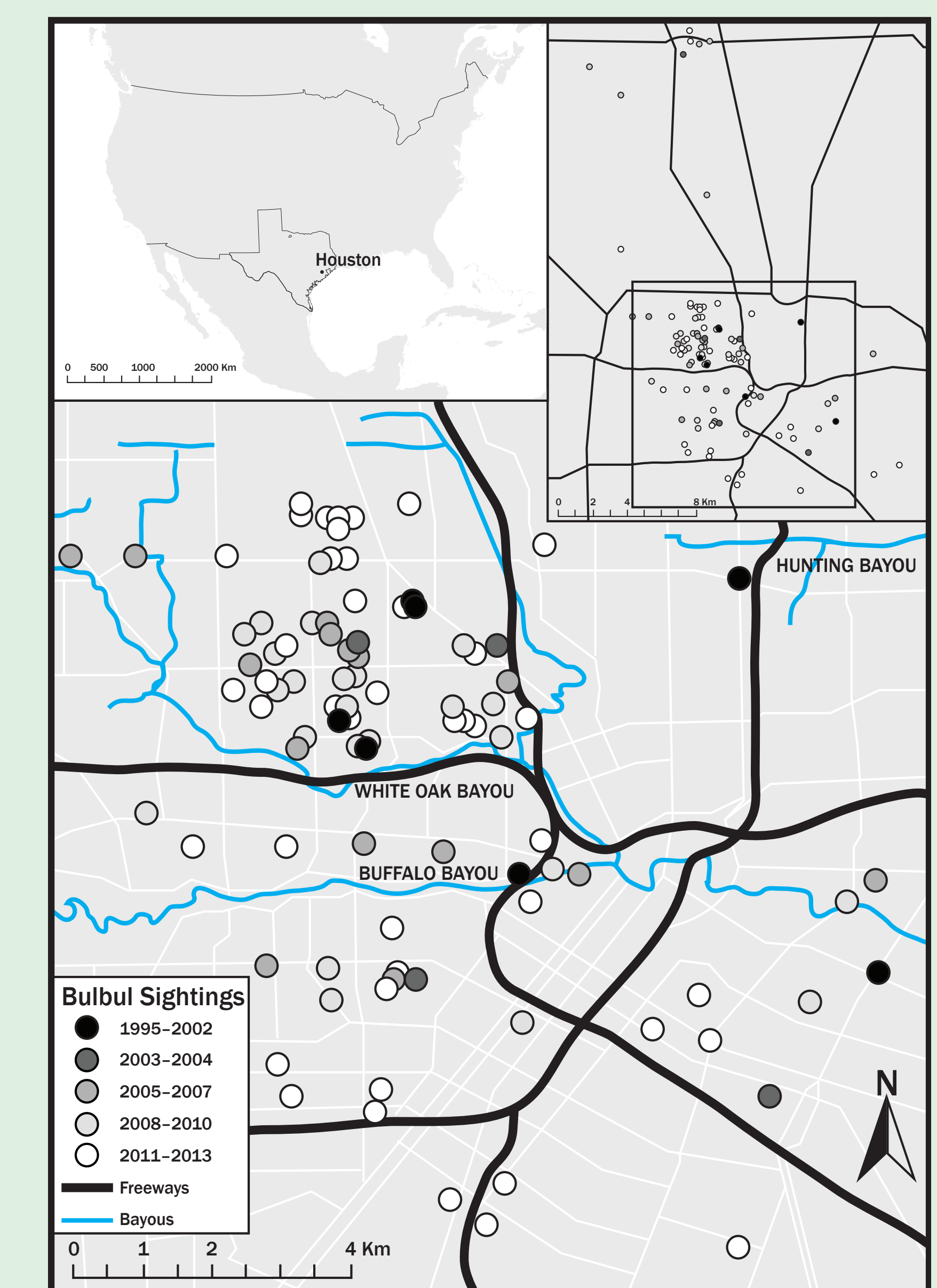
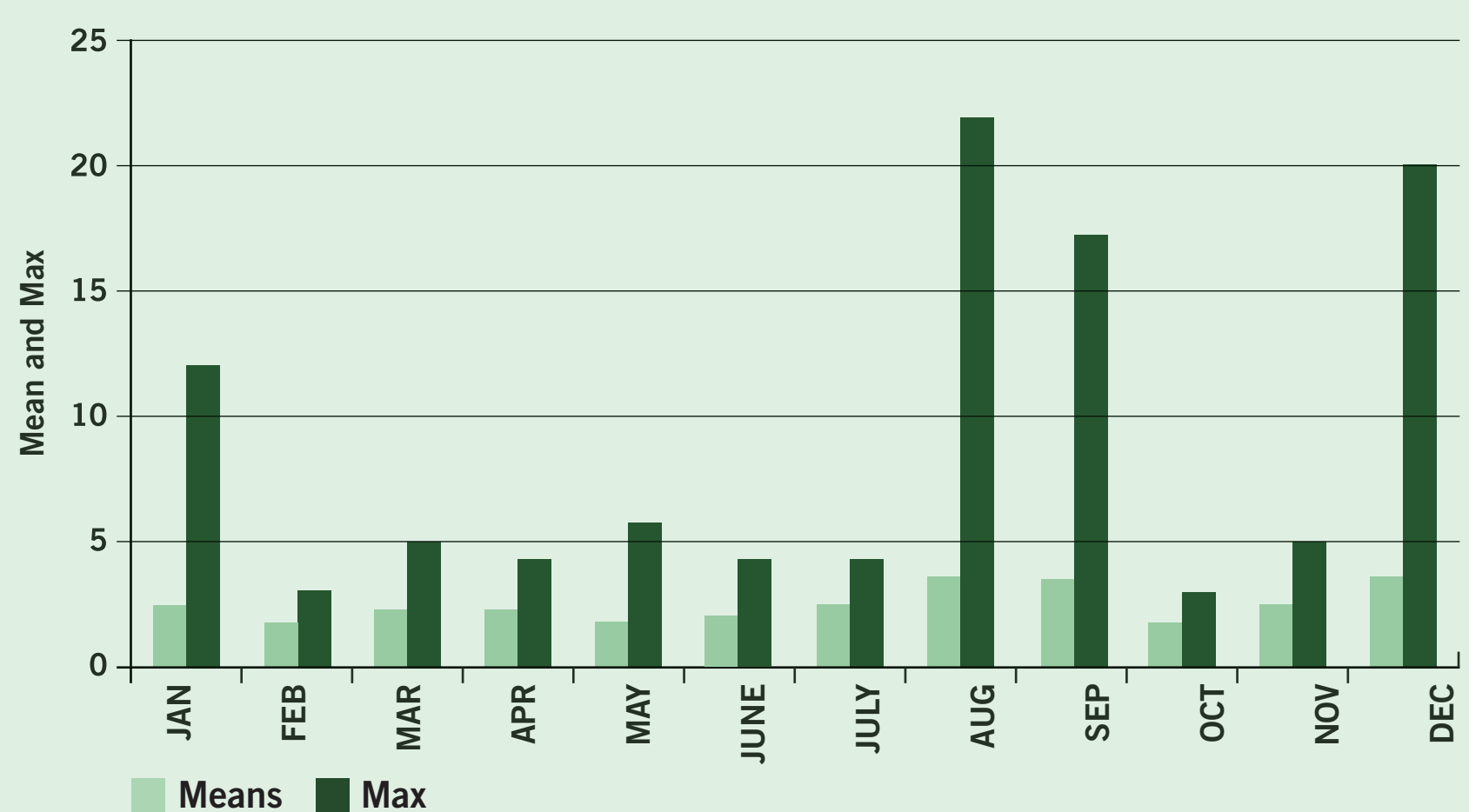
SEASONALITY

Bulbuls are non-migratory residents that are present throughout the year.

The largest flocks (12–22 birds) were August–September and December–January.

The flock of 22 birds in August were lured by the fruits of Mexican fan palm (*Washingtonia robusta*)—when the palm was removed the following day the flock left the area.

Suggests resource blooms influence flock size rather than gregarious behavioral constraints.



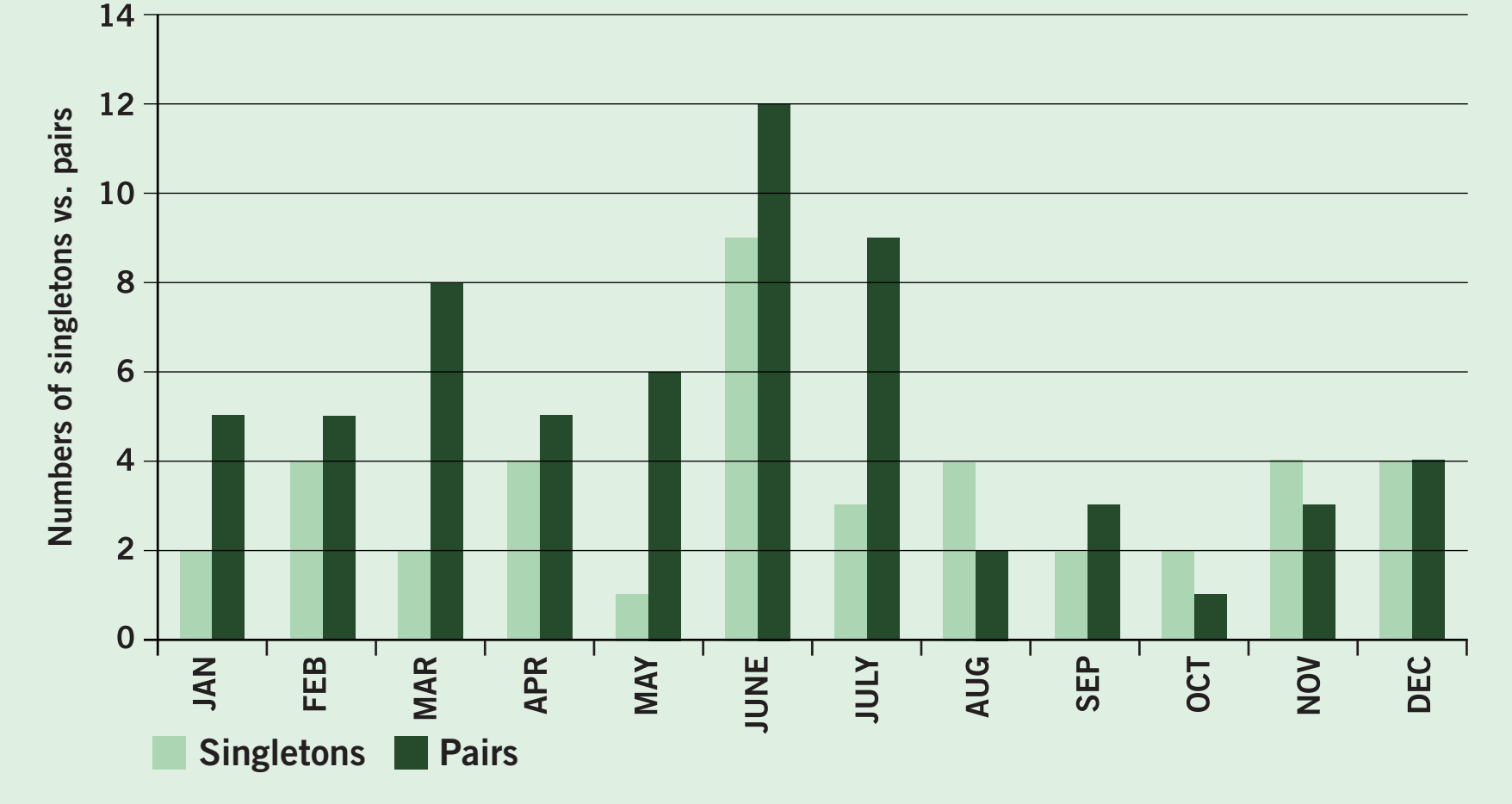
FLOCK DYNAMICS

Flock size averaged 2.28 birds/flock (mode = 2, range = 1–22).

No significant differences between pairs and singletons during any given month except for March (X² = 3.6, d.f. = 1, P = 0.05).

Pairs of birds (n = 63) were significantly more frequent than singletons (n = 40; X² = 5.3, d.f. = 1, P = 0.02).

Singletons more frequent than pairs late summer through fall.



ACKNOWLEDGMENTS

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This report is dedicated to the generous cadre of volunteers who took the time to carefully report their observations, making this research possible.