

Coastal Grassland Restoration Incentive Program Priority (C-GRIP) Species Programmatic Population Survey

Relationship to Gulf Coast Joint Venture (GCJV) Habitat Conservation:

Priority Species: Loggerhead Shrike (*Lanius ludovicianus*), Mottled Duck (*Anas fulvigula*), Northern Bobwhite (*Colinus virginianus*)

Other Species Being Monitored: Dickcissel (*Spiza americana*), Eastern Meadowlark (*Sturnella magna*), Lark Sparrow (*Chondestes grammacus*), Painted Bunting (*Passerina ciris*), Scissor-tailed Flycatcher (*Tyrannus forficatus*)

Planning Objective: The C-GRIP programmatic objective is to contribute to habitat and population objectives for GCJV grassland priority species.

Type of Monitoring: Population/Vital Rate

Monitoring Metric: The density estimate for Dickcissels, Eastern Meadowlarks, Lark Sparrows, Loggerhead Shrikes, Mottled Ducks, Northern Bobwhites, Painted Buntings, and Scissor-tailed Flycatchers in the C-GRIP focal and control areas.

Monitoring Objective: To evaluate whether or not the C-GRIP program is effective in providing a relative (versus controls) increase in the density (number/acre) of grassland priority species over a 10-year period. To estimate the density for Dickcissels, Eastern Meadowlarks, Lark Sparrows, Loggerhead Shrikes, Mottled Ducks, Northern Bobwhites, Painted Buntings, and Scissor-tailed Flycatchers in the C-GRIP focal area treatments and controls. We are looking to demonstrate whether or not there is a positive impact of the C-GRIP program on grassland birds. Therefore, if the breeding population trend is more positive on the focal treatment areas (relative to controls) or if the focal area trend line is flat or slightly negative, and the control area trend line is significantly more negative over a 10-year period, the C-GRIP program would be considered successful.

Brief Methodology: Twenty survey routes (2 within each of 5 focal areas and 2 outside of each area, serving as controls), located on secondary and tertiary roads were designated in the Texas Mid-Coast Initiative Area of the GCJV. Each route measures 24.5 miles in length and the land cover is similar along all survey routes. Each route has ≥ 30 point count stations separated by ≥ 0.5 mile. We recognize that some routes will experience increased development over time, especially in counties neighboring large population centers such as Houston and Victoria. The plan is to continue to monitor these routes, as long as safety concerns do not increase. If survey personnel feel at risk or are concerned about consistent noise sources making it difficult or impossible to conduct surveys, they should notify the GCJV Monitoring Coordinator. The Surveyor, GCJV Monitoring Coordinator, and GCJV Bird Conservation Specialist will assess the situation and determine the best course of action to keep survey personnel safe and ensure the integrity of the survey.

Surveys take place from 15 May to early June. At each point, a 5-minute point count using methods similar to the Breeding Bird Survey is conducted. Each survey begins at 30 minutes before sunrise and ends by 11:15 am or earlier. Initially, data will be collected for 10 focal species, and distances to approximate bird locations will be measured using range finders. Ambient noise level will be scaled from 0 to 3, with 0 representing silence, 1 as distant noise, 2 as noise levels that occasionally make it difficult to hear, and 3 as constant noise. Similarly, wind will be scaled from 0 to 4, with 0 representing no wind (calm, smoke rises vertically), 1 representing wind speeds 1.0 to 3.0 mph (wind motion visible in smoke), 2 representing 4.0 to 7.0 mph (wind felt on exposed skin, leaves rustle), 3 representing 8.0 to 12.0 mph (leaves and smaller twigs in constant motion), and 4 representing >12.0 mph (dust and loose paper raised, small branches begin to move). No surveys will be conducted if the wind score is greater than 4.

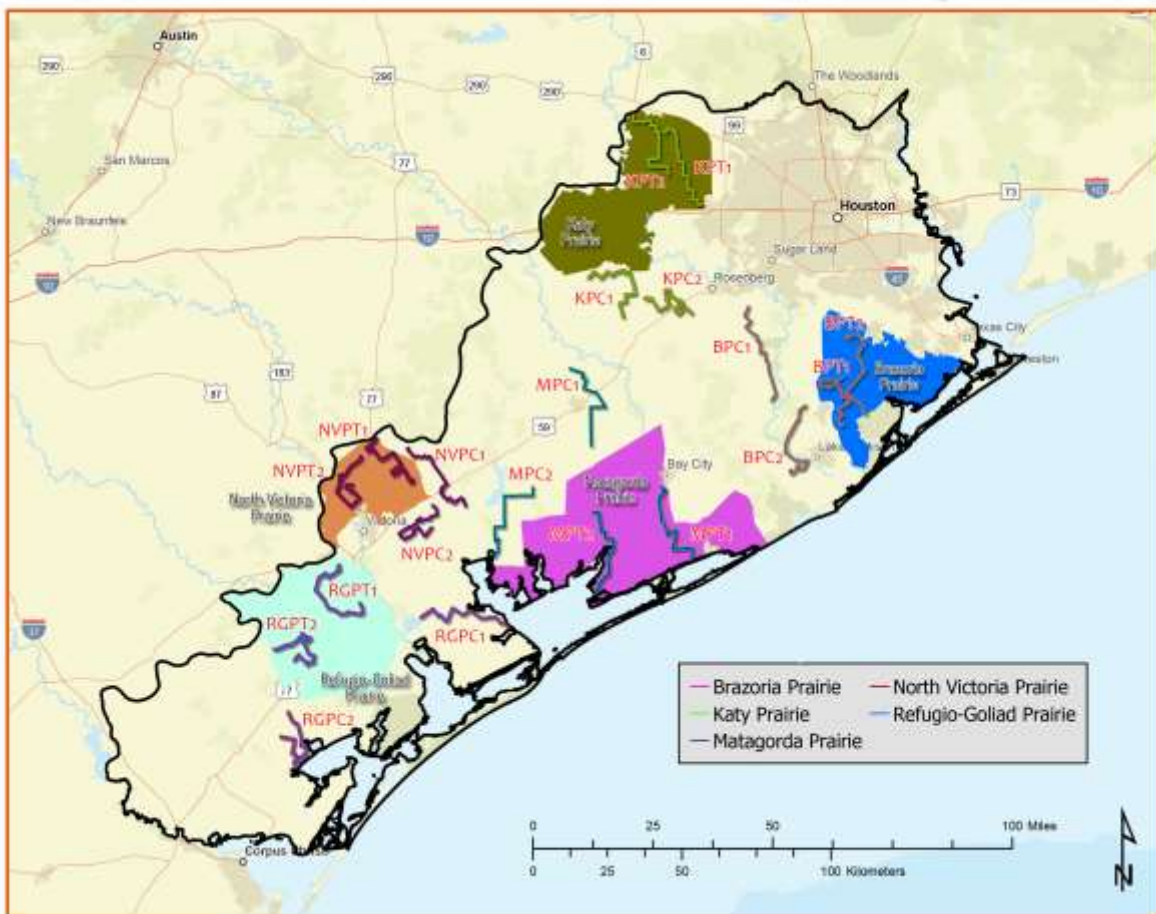


Figure 1. Locations of survey routes for C-GRIP population monitoring inside and outside of C-GRIP focal areas within the GCVJ Texas Mid-Coast Initiative Area. **(NOTE: This is only an example. Final routes have not been selected yet.)**

Monitoring Responsibilities:

Data Collection: Data Collection is coordinated and conducted by GCJV staff and qualified staff from any GCJV partner organization after completing the C-GRIP monitoring training in mid-April.

Data Compilation and Analysis: Survey data are compiled and analyzed to generate density estimates by focal area, treatment, control, and species by the GCJV Monitoring Coordinator.

Report Development: Density estimates and associated measures of variance are compiled by focal area, treatment, control, and species by the GCJV Monitoring Coordinator. Tables and graphs are produced by the GCJV Monitoring Coordinator, with specific comparison to the 10-year trend objective within the focal areas.

Report Distribution: Data, tables, and graphs are made available upon request to the GCJV Monitoring Coordinator. Annually updated tables and graphs may be posted on the GCJV website.

Timing and Frequency:

Observer Training: Training workshop will be conducted annually in mid-April for volunteers conducting surveys with care taken to avoid conflicts with the Spring GCJV Board meeting.

Data Collection: Field data collection is conducted annually May 15 – early June.

Data Analysis: Field data is compiled and analyzed by mid-August, annually.

Report Development: Data, tables, and graphs depict the relationships to GCJV objectives and are updated by mid-September, annually.

Detailed Methodology:

Observer Training

A one-day training workshop will be conducted annually in mid-April for volunteers conducting surveys. Topics for the workshop will include information on safety instruction, survey purpose, survey protocols, conducting a survey, equipment needed, and species identification. Volunteers will also conduct a practice survey the following morning.

Point-transect Surveys

Point-transect surveys are a form of distance sampling that account for imperfect detectability in density estimates (Buckland et al. 2001). Point-count stations are located along a designated

route or transect. Point-transect and point surveys have been used previously for songbirds (Buckland 2006, Reidy et al. 2011).

Twenty survey routes (2 within each of 5 focal areas and 2 outside of each area, serving as controls), located on secondary and tertiary roads were designated in the Texas Mid-Coast Initiative Area of the GCJV. Each route measures 24.5 miles in length and the land cover is similar along all survey routes. Each route has ≥ 30 point count stations separated by ≥ 0.5 mile. We recognize that some routes will experience increased development over time, especially in counties neighboring large population centers such as Houston and Victoria. The plan is to continue to monitor these routes, as long as safety concerns do not increase. If survey personnel feel at risk or are concerned about consistent noise sources making it difficult or impossible to conduct surveys, they should notify the GCJV Monitoring Coordinator. The Surveyor, GCJV Monitoring Coordinator, and GCJV Bird Conservation Specialist will assess the situation and determine the best course of action to keep survey personnel safe and ensure the integrity of the survey.

Survey-Route Selection

Multiple routes were created within each focal area (treatments) and outside of each area (controls). The National Oceanic and Atmospheric Agency (NOAA) Coastal Change and Analysis Program (CCAP) landcover data, combined with Texas Department of Transportation road data, was used to delineate each survey route. To ensure that the percent of landcover classes for each individual route was similar among all routes selected for each focal area. Routes within each focal area were identified first, then control routes similar to the treatment routes were created. This was done by comparing the percentage of each landcover class within a 500-m buffer around each survey route. Landcover classes less than 3 percent were combined in a category called “other”. If the deviation from average for each landcover class between the treatment and control routes was less than 25%, transects were considered similar. Final survey routes were selected after all routes were driven by the GCJV Monitoring Coordinator and Bird Conservation Specialist and evaluated for their survey suitability and safety.

Survey route codes are:

Brazoria Prairie Treatment 1 = BPT1
Brazoria Prairie Treatment 2 = BPT2
Brazoria Prairie Control 1 = BPC1
Brazoria Prairie Control 2 = BPC2

Katy Prairie Treatment 1 = KPT1
Katy Prairie Treatment 2 = KPT2
Katy Prairie Control 1 = KPC1
Katy Prairie Control 2 = KPC2

Matagorda Prairie Treatment 1 = MPT1
Matagorda Prairie Treatment 2 = MPT2
Matagorda Prairie Control 1 = MPC1

Matagorda Prairie Control 2 = MPC2

North Victoria Prairie Treatment 1 = NVPT1

North Victoria Prairie Treatment 2 = NVPT2

North Victoria Prairie Control 1 = NVPC1

North Victoria Prairie Control 2 = NVPC2

Refugio-Goliad Prairie Treatment 1 = RGPT1

Refugio-Goliad Prairie Treatment 2 = RGPT2

Refugio-Goliad Prairie Control 1 = RGPC1

Refugio-Goliad Prairie Control 2 = RGPC2

Surveys take place May 15 – June 10. At each point, a 5-minute point count using methods similar to the Breeding Bird Survey is conducted. Surveys begin at 30 minutes before sunrise and end by 11:15 am or earlier. Data will be recorded on a provided data sheet for each point-count station. Data will be collected for 8 species, and distances to detections will be measured using range finders. No surveys will be conducted if the wind score is greater than 4.

Point-Count Survey Equipment

Binoculars

Compass

Range finder

Vehicle GPS unit (e.g., a Garmin Nuvi) with survey routes and point-count location pre-loaded

Clip board

Pencils

Data sheets

Timer

Safety vest

Vehicle magnetic door decal “Wildlife Surveys”

Data Sheet, Steps for Conducting a Point Count, and Example

The data sheet used for each point count is shown in figure 2.

GCJV C-GRIP Monitoring Data Sheet				TEMP	Clouds %	Vegetation Data				
Date		Focal Area		Wind Code	Noise			Perpendicular Direction	Left side of car	Right side of car
Stop No.		Observer		Wind Code: 0=still / 1 = 1-3mph direction of wind shown by smoke drift / 2 = 4-7 mph, wind felt on face, leaves rustle in wind / 3 = 8-12mph, leaves and twigs in constant motion / 4 = greater than 12mph. Noise: 0 = silent / 1 = distant noise not interfering / 2 = at times difficult to hear / 3 = constant noise. Avoid FOG, DRIZZLE, RAIN and HIGH WINDS			Picture (Y or N)			
End Time		Road Type (Paved, Gravel, Dirt)					Crop field (Y or N)			
							Shrub Cover (%)			
							Grass Cover (%)			
							Woody Cover (%)			
							Vegetation Height (< 8 in. ?)			
							Grass Height (> 8 in. ?)			
							NOTES			
							Hyacinth	Species	Code	
								Dickcissel	DICK	
								Eastern Meadowlark	EAME	
								Gold Finch	GFSP	
								Ring-necked Pheasant	RDPH	
								Mourning Dove	MDOV	
								Northern Bobwhite	NOBO	
								Painted Bunting	PBUN	
								Southern Red-backed Flycatcher	SRBF	

DRAW THE ROAD

Obs	Sp CODE	Dist	Time	A/V
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

Figure 2. Data sheet used for C-GRIP programmatic population monitoring.

Steps for conducting the actual point counts in the field are as follows (from Hamel et al. 1996):

1. Stop vehicle a short distance prior to the stop, being careful not to have the radio playing loudly or slamming the vehicle door when exiting the vehicle. Walk the remaining distance to the location. Note any birds within 50 m (164 ft) of the counting station that are flushed, fly away, or retreat. Record these species in the notes section of the data sheet.
2. Record the road type, vegetation, weather, and noise data (The wind and noise are updated during the survey. For example, before you start the point the wind might be 0 and the noise might be 1, but as you're doing the point count the wind may pick up and a car might drive by. The wind and noise would then be updated to 1 and 2, respectively).
3. Orient the bulls-eye data sheet to a fixed direction, record the wind and cloud cover, date, time, and observer.

4. As soon as possible, start the count. Use a timer to keep track of the 5-minute time interval.
5. Record each priority bird seen or heard with the appropriate species code. Count family groups of juveniles with a single adult as a single bird. It may be useful to note the sex and any other indicator of behavior or breeding status, and keep track of number of juveniles separately from number of adults.
6. Mark birds on the data sheet and use the range finder to estimate the distance; i.e., use the bulls-eye data sheet as a map of the point-count station and determine the approximate azimuth. Record the minute (1, 2, 3, 4, or 5) the bird was detected.
7. Holding the sheet in a fixed position, spend part of the time facing in each of the cardinal directions in order to better detect birds in each.
8. Mark each bird once, using the mapped location to judge whether subsequent songs are from new or already mapped individuals. All flyovers are recorded in the column next to the species codes, under the word "Flyover".
9. Do not record any birds believed to have been counted at previous stations.
10. At the end of 5 minutes, stop recording bird observations. Do not record any new birds seen or heard after the 5 minutes have passed.
11. Proceed to the next point-count station and repeat steps 1 through 10.

A completed example data sheet is shown in figure 3.

GCJV C-GRIP Monitoring Data Sheet					TEMP	Clouds %	Vegetation Data																																																																																							
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Stop No.	Observer	Start Time			Wind Code: 0=still / 1=1-3mph; direction of wind shown by smoke drift / 2=4-7mph, wind felt on face, leaves rustle in wind / 3=8-12mph, leaves and twigs in constant motion / 4=greater than 12mph.																																																																																									
10:01	Gravel				Noise: 0 = silent / 1 = distant noise not interfering / 2 = at times difficult to hear / 3 = constant noise																																																																																									
End Time	Road Type (Paved, Gravel, Dirt)			Avoid FOG, DRIZZLE, RAIN and HIGH WINDS																																																																																										
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Figure 3. An example of a completed C-GRIP population monitoring data sheet.

Data Analysis

Analyses can be conducted using Program Distance 7.3, Release 1 (Thomas et al. 2010). Personnel conducting the data analyses should read the User's Guide Distance 7.3, Release 1 for specifics on data formatting, importing into Program Distance 7.3, Release 1, and conducting the analyses.

Data can be entered into Excel, then converted to a .txt file for import into Program Distance. Data fields and acceptable values include:

- Focal Area – The name of the focal area (Brazoria, Katy, Matagorda, North Victoria, Refugio-Goliad).
- Route Code – The route code from the list above (e.g., RGPT2).
- Stop Number – The point-count station number on a specific route (1, 2, 3, ..., ≥30).
- Observer – The name of the observer.
- Date – The date the survey was conducted.
- Start Time – The time when the 5-minute point count began.

- End Time – The time when the 5-minute point count ended.
- Road Type – The type of road surface (Paved, Gravel, Dirt).
- Temperature – The ambient temperature (°F).
- Cloud – The percent cloud cover (0 to 100%).
- Wind – The wind speed (0=Still; smoke rises vertically / 1 = 1-3mph; direction of wind shown by smoke drift / 2 = 4-7 mph; wind felt on face, leaves rustle in wind / 3 = 8-12 mph; leaves and twigs in constant motion / 4 = >12 mph; dust and loose paper raised, small branches begin to move).
- Noise – The amount of noise at the beginning of the beginning of the survey (0 = silent / 1 = distant noise not interfering / 2 = at times difficult to hear / 3 = constant noise). Noise is defined as anything that is not wildlife or wind. Cows, dogs, running water, peacocks, chickens, cars, voices, electrical hum, etc. all count as noise, but wildlife such as mockingbirds, frogs, cardinals, etc. do not count as noise. A car driving by during a survey would be a noise level of 2.
- Perpendicular Direction Left – The cardinal direction on the left side of the vehicle (North, South, East, West).
- Picture Left – Was a picture taken of the habitat on the left side of the vehicle? (Yes or No).
- Crop Left – Is there a crop field on the left side of the vehicle? (Yes or No).
- Shrub Cover Left – What is the percent of shrub cover on the left side of the vehicle within the 250 yard radius? (0 to 100). Shrubs are defined as less ≤ 2 meters tall and woody cover as > 2 meters tall.
- Grass Cover Left - What is the percent of grass cover on the left side of the vehicle? (0 to 100).
- Woody Cover Left - What is the percent of woody cover on the left side of the vehicle? (0 to 100).
- Vegetation Height Left – Is the vegetation height on the left side of the vehicle ≥ 8 inches? (Yes or No). Vegetation refers to the herbaceous/forb cover that is not grass. Any shrubs or woody cover wouldn't be estimated by this measure.
- Grass Height Left - Is the grass height on the left side of the vehicle ≥ 8 inches? (Yes or No).
- Perpendicular Direction Right – The cardinal direction on the right side of the vehicle (North, South, East, West).
- Picture Right – Was a picture taken of the habitat on the right side of the vehicle? (Yes or No).
- Crop Right – Is there a crop field on the right side of the vehicle? (Yes or No).
- Shrub Cover Right – What is the percent of shrub cover on the right side of the vehicle? (0 to 100).
- Grass Cover Right - What is the percent of grass cover on the right side of the vehicle? (0 to 100).
- Woody Cover Right - What is the percent of woody cover on the right side of the vehicle? (0 to 100).
- Vegetation Height Right – Is the vegetation height on the right side of the vehicle ≥ 8 inches? (Yes or No).
- Grass Height Right - Is the grass height on the right side of the vehicle ≥ 8 inches? (Yes or No).
- Species Code – The AOU species code (e.g., NOBO, LOSH, MODU).
- Distance – The distance to the bird (number of meters).
- Time Interval – The interval when the bird was seen or heard within the 5-minute point count (1,2,3,4, or 5).

- Observation – Was the observation auditory or visual? (A or V).

Data and Report Archival

Y:\Monitor

- Contains a readme.doc file that describes directories and the files within them.

Y:\Monitor\CGRIP\Data

- Contains compiled data (Excel spreadsheets), tables (Word documents), and graphs relating to population monitoring for the C-GRIP program.

Monitoring Related Issues to Consider

May need to increase the number of routes or the number of times a route is run to get the minimum number of observations (~80) for Bobwhites and Loggerhead Shrike (Buckland et al. 2001).

Consider incorporation of monarchs or other pollinators into monitoring protocol.

References

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