

A good example of the effect that the hurricanes had on the logistics of the Christmas Bird Counts is demonstrated by some of the pre-count communications. Area birders who earlier in the year had expressed an interest in participating in the always-productive Sabine National Wildlife Refuge (N.W.R.) count in southwestern Louisiana were sent a message by the compiler, Martin Guidry, as the December CBC season approached. Some excerpts from that planning message follow:

We are scheduling the Sabine N.W.R. CBC for Saturday, December 17, 2005, as previously announced. As a result of Hurricane Rita, Cameron Parish is currently closed to the public; however, we are working to secure permission to conduct the Sabine N.W.R. CBC there on December 17th. Don Norman with FEMA is helping us secure permission to bird and also to gain access to several areas in the parish. We believe at this time that we will have access to East Jetty, possibly the East Jetty Woods area, the area behind the Courthouse, possibly West Jetty, Holly Beach (only the beach remains), Hackberry, and Highway 27 between Holly Beach and Hackberry (although birding will be very limited there because of traffic). Let me know of other areas that we should check into.

We have several restrictions placed on us during the day for safety reasons and because the parish is closed at this time.

** We'll be limited to only a few birders—probably 10 maximum (preferably 8)—and we must bird in at least two-man parties. No single birders allowed.*

** We will need to check in at noon and at the end of the day to ensure everyone is accounted for and safe. The parties on the west side of the ferry will probably be able to phone in at noon.*

At this time only Cingular phones are working in Cameron Parish. No other cell phones are able to call or receive within the lower area of the parish. I have a Cingular phone and would like to know who else does.

As you may anticipate, lodging in southeast Texas and southwest Louisiana area is almost nonexistent. I attempted to secure lodging for December 16th from Sulphur to Jennings and found only one motel even accepting reservations and that was in Jennings.... Also, you'll need to bring whatever you want to eat and drink during the day. Chaisson's Grocery is open, but has limited supplies.

Cameron Parish has lost significant habitat including many, many trees. Don says he does not see many birds when he is out. It should be interesting to see what species and numbers we locate this year compared to previous counts. I am not attempting to secure permission from private landowners as in the past. They have enough problems without worrying about us and our safety on their property.

A word of caution—conditions in Cameron Parish require extreme caution. Heavy trucks are moving on the highways so we must not block the roads. There are a lot of downed trees, rubble, and hazardous materials where we usually expect none. We need to be very careful and attentive throughout the day.¹

Methods

In retrospect, this description of the conditions in Southwestern Louisiana inspired us to analyze the Louisiana and Mississippi CBC data from the past decade to assess the impact, if any, that hurricanes Rita and Katrina in the fall of 2005 had on the CBCs from the 2005–2006 season (the 106th count). We also wanted to assess what recovery, if needed, had occurred as measured by the CBC data from the following 2006–2007 season (107th count).

The analysis includes basic factors: the number of CBC areas that had counts compared to other years, the number of species identified (both in total and per party hour), the number of birds (both in total and per party hour), the number of participants, and the number of party hours. Correlations are calculated for

latitude and longitude for each count with the basic CBC results.

We chose to look back to count 100, from the winter of 1999–2000, and to use the six seasonal counts from 100 to 105 to establish baseline values for the count area variables. These baseline values could then be compared to the results of the 106th count, which occurred soon after the 2005 hurricane season, to assess the immediate impact of the hurricanes on the Louisiana and Mississippi CBCs. The baseline values and the hurricane-affected season values could also be compared to the values from the 107th count to assess what, if any, “recovery” was needed or had occurred.

In establishing a baseline it was important to identify CBC areas that occurred consistently throughout the eight years of consideration. Count areas

were included that were conducted for at least four of the six baseline years in Louisiana, and for at least three of the baseline years in Mississippi. This filter produced 22 count areas in Louisiana and 16 count areas in Mississippi. For the two subsequent years, three of the count areas in Louisiana (Creole, Johnson's Bayou, and Lacassine) were not conducted in the hurricane-affected year (106th count), and one count area (Lacassine) was not conducted in the recovery year (107th count). Consequently, even though a baseline could be established for the Lacassine area, it was not able to be included in either subsequent analysis. For the 16 counts included in the analysis in Mississippi, only one count area, Tupelo, was not conducted in one of the post-hurricane years, the 107th count.

The baseline values for number of species, party hours, participants, and species per party hour were determined by a simple arithmetic average; the baseline value for number of birds was determined by calculating a geometric average. This was done to modulate the effect of tremendously high counts resulting from large numbers of black-birds and geese on a few of the count areas, e.g., Pine Prairie on count 105, with 12,033,076 birds, compared to the 14.7 million birds recorded in all of Louisiana that count season, and compared to the 3.6 million birds in Pine Prairie the prior year. In Mississippi, for example, the Eagle Lake count area had 2.1 million birds counted in the 104th count; for the other seven years its highest number of birds was just under 60,000. For some of the analyses, the extremely high outlier values were excluded, as is indicated. These outliers complicated the process of determining baseline averages. On the other hand, these atypical, exceptionally high bird numbers are usually based on the influx of one species—Common Grackles or Red-winged Blackbirds, for example—and as such are tantalizing sources for further evaluation.

Results

Louisiana

In general, there were measurable impacts on the results and effort of the 106th and 107th counts. In total, the composite Louisiana values for the considered variables compared to baseline (Table 1) were as follows.

Three of the counts that had been able to generate baseline values were not conducted in the 106th count: Creole, Johnson's Bayou, and Lacassine. As mentioned above, the Lacassine count had not been conducted in the 105th count and was also not conducted in the 107th count, so it seems to be in a hiatus. When the extreme southwestern locations of the Creole (29.8 N, 93.1 W) and Johnson's Bayou (29.8 N, 93.72 W) counts are considered, it is not surprising that they were not conducted.

Table 1: Overall Values for 106th and 107th Counts in Louisiana as a Percentage of Baseline Values.

	106th	107th
Number of Species	95.7	94.6
Number of Birds	63.0#	81.0
Number of Party Hours	72.7	63.1
Number of Participants	73.4	68.4
Number of Species Per Party Hour	112.6*	138.5*
Number of Birds Per Party Hour	63.4	77.4

The average is the combined average of each count area with a few high outliers left out.

* An increase from baseline because the number of party hours decreased proportionally more than the number of species.

Table 2: Number of Species Identified in Louisiana as a Percent of the Baseline.

CBC Area	106th	107th	Change
Baton Rouge	96	91*	-5
Bossier	103	92*	-11
Catahoula	87*	101	+14
Cheneyville-Lecompte	102	94	-8
Creole	—	95	—
Crowley	94	98	+4
D'Arbonne	105	96	-9
Grand Isle	104	104	0
Johnson's Bayou	—	87	—
Lafayette	99	102	+3
Natchitoches	109	103	-6
New Orleans	91	93	+2
Northshore-Slidell	92*	91*	-1
Pine Prairie	87	77*	-10
Reserve-Bonnet	108	95	-13
Sabine N.W.R.	66*	87*	+21
Shreveport	104	105	+1
St. Tammany Parish	94*	87*	-7
Tensas River N.W.R.	105	105	0
Thibodaux	104	—	—
Venice	69*	91*	+22

* Indicates a count number that was less than the value for any of its six baseline count years (100-105).

The Sabine N.W.R. count from above is centered close to Creole and Johnson's Bayou at 29.85 N and 93.38 W.

On the other hand, when individual areas and individual variables are considered, there are some surprises.

Species

For the hurricane-affected year, the number of species compared to baseline ranged from 66 percent (Sabine) to 108.6 percent (Natchitoches), with nine of the 19 areas having more than 100 percent of baseline (see Table 2). The average for all the count areas is a respectable 95.7 percent. (Those 19 count areas have a baseline sum of

species of 2360, and for the 106th count year they totaled 2317, compared to a baseline average of 2810.) Two of the areas, Sabine (66 percent) and Venice (69.3 percent) were far more affected than the others in number of species reported.

Actually, if a plus or minus 15 to 20 percent range is considered the usual range of variation, only Sabine and Venice fell out of the range for the immediate hurricane-affected year, and only Pine Prairie was below it for the follow-up year. The rebound in number of species for Sabine (87 percent) and Venice (91 percent) in the follow-up 107th count is encouraging.

Number of Birds

The numbers of birds reported were decreased far more than the number of species (Table 3). The lowest percentage was 23.8 percent at Pine Prairie, which was no doubt influenced by the exceptionally high counts often reported from this area and its comparably high baseline value. The Sabine N.W.R. count was similarly decreased at 27.8 percent. In contrast, the Lafayette count had 776 percent of baseline and Bossier-Caddo-Bienville (Bossier) reported 451 percent of baseline. It is interesting to consider the large relative increases in these two count areas. The Lafayette count had a baseline number of species of 131.8 and a baseline number of birds of 178,000. For the hurricane-affected year, these values were 131 and 2,279,153. The Bossier area had baseline values of 126.8 species and 73,238 birds counted. These values for the 106th count were 131 and 329,937. The Lafayette count area located at 30.2 N and 92.1 W may have benefited from a relocation of some of the birds that would normally have been in the Pine Prairie area, centered not too far away at 30.6 N and 92.75 W, or at the Crowley area at 30.13 N and 92.37 W. The average values for Pine Prairie are 129.3 species and 4.44 million birds, and for Crowley, 145.5 and 1.61 million. It is harder to explain a relocation effect for the much farther north Bossier count area at 32.3 N and 97.48 W. In general, this “relocation” phenomenon, if it does exist, is ripe for analysis, and the Christmas Bird Counts provide a unique insight into it.

For the 106th count, 11 areas fell below the arbitrary 80 percent variation cutoff. Of those 11, nine were still below 80 percent in the 107th count. Two areas (Crowley and Grand Isle) recovered well, five areas (Bossier, D’Arbonne, Lafayette, Natchitoches, and Tensas River) dropped below 80 percent, and one (Johnson’s Bayou) of the three areas that were not conducted in the 106th count came in below 80 percent in the 107th.

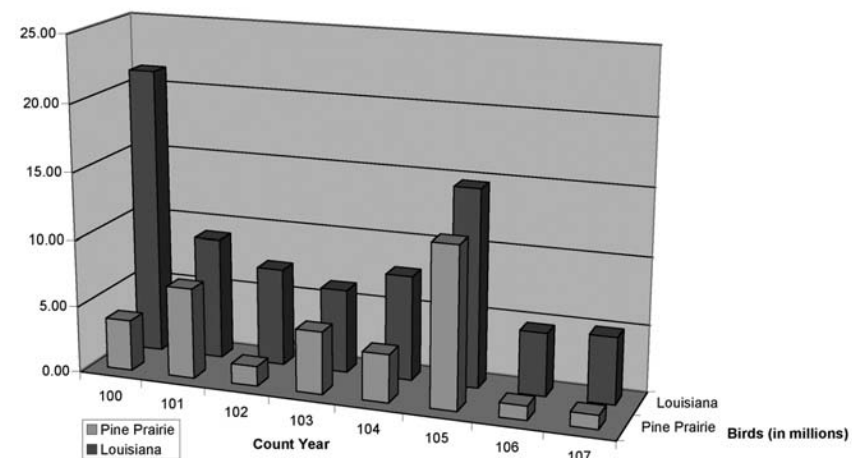
For the 106th count, 5 of the 19 circles had greater than 100 percent of baseline (Lafayette at 776 percent,

Table 3: Numbers of Birds Counted in Louisiana as a Percentage of Baseline.

CBC Area	Baseline (thousands)	106th	107th	Change
Baton Rouge	57	64 *	56*	-8
Bossier	73	451	58	-393
Catahoula	62	114	190	+76
Cheneyville-Lecompte	62	72	45	-27
Creole	31	—	104	—
Crowley	1610	41	201	+160
D’Arbonne	16	103	48*	-55
Grand Isle	13	49 *	114	+65
Johnson’s Bayou	21	—	61	—
Lafayette	293	776	61	-715
Natchitoches	38	90	52	-38
New Orleans	43	37 *	61	+24
Northshore-Slidell	23	52 *	62 *	+10
Pine Prairie	4440	24 *	23 *	-1
Reserve-Bonnet	24	59	68	+9
Sabine N.W.R.	45	28 *	52 *	+24
Shreveport	52	98	174	+76
St. Tammany Parish	27	57	63	+6
Tensas River N.W.R.	21	133	59	-74
Thibodaux	10	82	—	—
Venice	15	47 *	50*	+3

* Indicates count totals that were less than those for any of the six baseline years (100-105).

Graph 1: Total Birds for Louisiana and Pine Prairie for Count Years 100-107.



Bossier at 451 percent, Tensas River N.W.R. at 133 percent, Catahoula at 114 percent, and D’Arbonne at 103 percent.) The 14 other counts had values less than 100 percent (Shreveport at 98 percent, Natchitoches at 90 percent, Thibodaux at 82 percent, Cheneyville at 72 percent, Baton Rouge at 64 percent, Venice at 61 percent, Reserve-Bonnet at 59 percent, St. Tammany Parish at 57 percent, Northshore-Slidell at 52 percent, Grand Isle at 49 percent, Crowley at 41 percent, New Orleans at 37 per-

cent, Sabine N.W.R. at 28 percent, and Pine Prairie at 24 percent).

The percent averages for number of birds for the 106th count of 68 percent (if the outliers Lafayette and Bossier are excluded) and for the 107th count of 81 percent (including the not-as-extreme outliers of Catahoula, Crowley, and Shreveport, but 62 percent if they are excluded) are of some concern.

Graph 1 illustrates the number of birds tallied for all the Louisiana circles, and for the Pine Prairie circle for the eight

Table 4: Participants and Party Hours in Louisiana as a Percentage of Baseline Values.

CBC Area	Party Hours		Participants	
	106th	107th	106th	107th
Baton Rouge	70	54	101	99
Bossier	105	47	74	56
Catahoula	74	76	81	90
Cheneyville-Lecompte	86	77	103	69
Creole	—	56	—	36
Crowley	67	65	98	76
D'Arbonne	170	86	104	59
Grand Isle	117	97	106	85
Johnson's Bayou	—	38	—	34
Lafayette	85	122	113	100
Natchitoches	121	101	108	108
New Orleans	74	64	45	67
Northshore-Slidell	49	64	58	67
Pine Prairie	78	52	105	57
Reserve-Bonnet	113	89	83	70
Sabine N.W.R.	28	32	43	52
Shreveport	111	95	112	95
St. Tammany Parish	84	80	71	70
Tensas River N.W.R.	98	225	71	150
Thibodaux	47	60	—	—
Venice	69	69	124	108

Table 5: Overall Values for 106th and 107th Counts in Mississippi as a Percentage of Baseline Values.

	106th	107th
Number of Species	99.7	95.4
Number of Birds	96.4 #	64.3 *
Number of Party Hours	88.1	85.4
Number of Participants	92.7	95.0
Number of Species Per Party Hour	115.8	118.6
Number of Birds Per Party Hour	111.4 ##	75.5**

Includes the relative outlier values for Arkabutla Lake (153%) and Moon Lake (231%). If those are excluded, the average is 82.7%.

Includes the relative outlier values for Arkabutla Lake of (153.2%) and Moon Lake (229.1%). If those are excluded, the average is 100%.

* Does not include the outlier values for Arkabutla Lake (767.5%) and Moon Lake (628.6%). If included, the average would be 148.8%.

** Does not include the outlier values for Arkabutla Lake (1483.7%) and Moon Lake (659.2%). If included, the average would be 208.3%.

years under consideration. It shows how much the total number of birds for Louisiana varies from year to year. It demonstrates what a significant influence the Pine Prairie count area has had on the total number of birds for Louisiana, especially so in the 101st, 103rd, and 105th count years. It also shows that the hurricane-affected count years of 106 and 107 do have lower total bird numbers, both for all of Louisiana and especially for Pine Prairie. (Of note is that for count year 100, the Crowley count area reported

8.3 million birds and the Lafayette count area reported 6.5 million. Pine Prairie is not the only eccentric.)

In total, there were just under 4.7 million birds counted in 19 count areas of the 106th count, compared to the baseline of 8.54 million birds for those same 19 areas. This equates to 55 percent. There were 4.97 million birds counted in the 107th count. (It makes little sense to average the values of the counts since the actual count numbers vary from year to year and count area to count area by

two to three orders of magnitude; the Pine Prairie and Crowley areas have an inordinate influence on the totals.)

Party Hours and Participants

As is demonstrated in Table 4, five of the count areas for the 106th census—led by D'Arbonne with 170 percent (!)—actually had more than 100 percent of the baseline number of party hours (Natchitoches at 121 percent, Grand Isle at 117 percent, Reserve-Bonnet at 113 percent, and Bossier at 105 percent). Other count areas ranged from 47 percent to 98 percent, except for the Sabine N.W.R. area, which was, not surprisingly from what we have read above, at 28 percent. Also, the participants all together logged a total of 1320.75 hours, which is 84 percent of the baseline 1572 hours for the 19 areas that were conducted.

The intrepid birders of Louisiana made an admirable effort at continuing the yearly CBC censusing in spite of the devastation to their homeland. Eight counts had more than 100 percent of baseline number of participants. (Lafayette at 113 percent, Natchitoches at 108 percent, Grand Isle at 106 percent, Pine Prairie at 105 percent, D'Arbonne at 104 percent, Cheneyville at 103 percent, Baton Rouge at 101 percent; Crowley at 98 percent and Shreveport at 95 percent were close. Tensas River N.W.R. had 225 percent, with a baseline of 5.3 participants.) The remaining count areas ranged to lows of 32 percent at Sabine, 45 percent at New Orleans, and 58 percent at Northshore-Slidell. In all, 326 participants were recorded for the 19 areas, which is 86 percent of the 381 baseline expected number of observers. This was a noble effort, indeed!

For the follow-up year, both the number of participants and the number of party hours decreased from the level of the 106th count. The average percent of baseline number of party hours fell from 86 percent to 72 percent, and the average number of participants fell from 92 percent to 77 percent. The reasons for these decreases are not clear from our analysis.

Mississippi

The composite values for Mississippi also showed some changes and trends, as can be seen in Table 5. The averages are somewhat problematic because of a few outlier values that skew the averages, even the geometric averages.

Species

As mentioned above, the number of species identified for both years does not show striking variations from the baseline averages. Only Sidon (another north-western count) had a percentage above 110 percent of baseline. The only large decrease of note is the 76.1 percent for the Hattiesburg area for the 107th count. Hattiesburg, as demonstrated in the next section, also had a sizeable but not exceptional decrease in the number of birds counted: 82 percent of baseline in the 106th, and 76.7 percent for the 107th. Since Hattiesburg was close to the track of the eye of Katrina, although about 50 miles inland, one ponders how these decreases may actually be hurricane-related. Table 6 reinforces that concern.

Number of Birds

For Mississippi, as for Louisiana, the decreases in the numbers of birds counted are much greater than the decreases in the number of species identified (comparing Table 6 and Table 7). In fact, for both states, the decreases in the numbers of species identified is minimal, and certainly within the year-to-year range. Interestingly, Mississippi also had a minimal decrease in the total number of birds in the 106th count, but an increase if the two outlier areas are included. For the 107th count, the number of birds averages 64.3 percent for the bulk of the counts, but exactly 100 percent if the two outliers are included. Those outliers, Arkabutla Lake and Moon Lake, are in the extreme northwestern corner of the state, which leads to a hypothesis that there was a mass exodus of birds up the Mississippi River from the more devastated southern regions. It might be interesting to assess whether similar increases were noted in any nearby

Table 6: Mississippi Species as a Percent of the Baseline for Count Years 106 and 107.

CBC Area	106th Species	107th Species	Change
Arkabutla Lake	93.7	90.6	-3.1
Eagle Lake	106.0	102.0	-4.0
Grenada	87.9	96.3	8.4
Hattiesburg	91.3	76.1	-15.2
Jackson	97.7	96.7	-1.0
Jackson County	98.7	96.0	-2.7
Lauderdale	107.1	97.8	-9.3
Moon Lake	101.4	105.1	3.7
Natchez	100.0	92.3	-7.7
Noxubee N.W.R.	97.1	100.0	2.9
Sardis Lake	99.7	96.0	-3.7
Sidon	110.7	96.3	-14.4
Southern Hancock County	87.4	98.0	10.6
Tupelo	120.0	—	—
Vicksburg	96.1	93.0	-3.1
Washington County	101.1	95.3	-5.8

Table 7: Number of Birds in Mississippi as a Percentage of the Baseline.

CBC Area	Baseline in thousands (geometric mean)	106th	107th	Change
Arkabutla Lake	42	153	767	614
Eagle Lake	63 **	66	57	-9
Grenada	14	101	50	-51
Hattiesburg	5	82 *	64 *	-18
Jackson	56	107	32	-75
Jackson County	11	96	77	-19
Lauderdale	8	79	64	-15
Moon Lake	11	231	629	398
Natchez	8	66 *	55 *	-11
Noxubee N.W.R.	13	78	88	10
Sardis Lake	20	51	50	-1
Sidon	39	100	72	-28
Southern Hancock County	20	51 *	55 *	4
Tupelo	2	98	—	—
Vicksburg	22	52 *	71	19
Washington County	115	131	101	-30

* = a value less than any of baseline values

** = baseline value is skewed because of one super-high value

Arkansas counts across the river. (The one nearby Arkansas count area that we looked at, the White River N.W.R. count circle, did have an influx of 2.7 million Red-winged Blackbirds and 200,000 Common Grackles for the 106th count, which were both exceptionally high values. For example, the second highest Red-winged Blackbird count in the eight years was in the 107th count with about 9000.)

The table of the numbers of birds (Table 7) counted is far more worrisome than the species identified table (Table 6). For two reasons: first, the percent-

ages for individual areas are low; second, the 107th count year fared quite a bit worse than the 106th. As mentioned above, the data must be viewed carefully because of the striking outliers of the Arkabutla Lake and Moon Lake numbers. For the 106th count, six of the 16 areas have numbers below the arbitrary 80 percent threshold; for the 107th count, 11 of the 15 areas do. Many of these are major decreases, not even close to the threshold: the 107th Jackson at 32 percent is the most concerning, but many of the bird numbers are in the 50 percent to 60 percent range.

The Sardis Lake count area, although it is in the northwestern corner of the state near the two outliers Arkabutla Lake and Moon Lake, had values of 51 percent for the 106th count and 50.2 percent for the 107th count, and did not demonstrate the large increase that the other two counts had. It is, however, farther from the Mississippi River.

Perhaps the best way to assess the bird numbers for the eight count years for Mississippi is to look at Graph 2, which shows the total number of birds tallied for all the Mississippi count areas together and for the Eagle Lake count area in particular. There are several observations that can be made about this graph. First is the exceptionally high number of birds for the 104th count year; this high number for the state is due to results from the Eagle Lake circle. The 2.54 million birds in the 104th count included 2.1 million at Eagle Lake, of which 2.01 million were Red-winged Blackbirds. Second, the hurricane-affected years of the 106th and 107th counts are in the range of the other count years. Also, the 107th count included 327,000 birds from Arkabutla Lake, of which 306,000 were Snow Geese. So, although the individual count percentages were down for the 107th count, the influx of Snow Geese made for a better than usual total number of birds.

Graph 2: Total Number of Birds for Mississippi and Eagle Lake for Count Years 100-107.

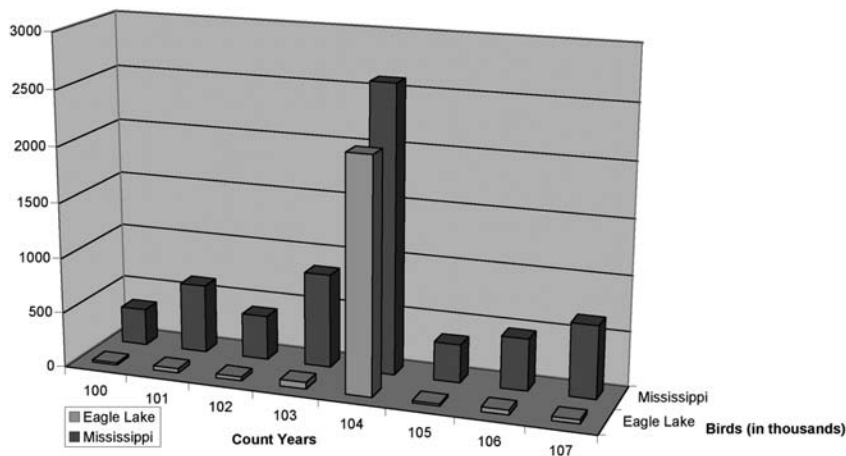


Table 8: Participants and Party Hours in Mississippi as a Percentage of the Baseline.

CBC Area	Party Hours 106th	Party Hours 107th	Participants 106th	Participants 107th
Arkabutla Lake	90.8	47.0	133.5	97.1
Eagle Lake	89.2	122.5	118.5	118.5
Grenada	69.9	89.3	64.1	96.1
Hattiesburg	107.0	74.6	107.7	93.4
Jackson	99.4	86.8	114.0	93.6
Jackson County	103.0	104.3	102.0	106.6
Lauderdale	88.4	64.6	87.6	87.6
Moon Lake	90.2	85.5	55.6	83.4
Natchez	108.5	55.1	127.4	55.7
Noxubee N.W.R.	90.3	90.6	107.5	98.6
Sardis Lake	93.2	96.8	84.5	119.7
Sidon	73.5	96.5	84.2	134.8
Southern Hancock County	75.5	103.2	88.5	75.4
Tupelo	68.6	—	15.3	—
Vicksburg	78.3	79.1	69.4	64.0
Washington County	83.8	86.0	122.8	99.4

Participants and Party Hours

In general, the birders of Mississippi, as did their counterparts in Louisiana, made valiant efforts to continue their Christmas Bird Counts during the 106th and 107th seasons. Most of the count areas have party hour and participant percentages that are in the range of the baseline values. As shown, some of the values are even greater than baseline. This admirable effort prevents the assumption that the bird counts were down because of lack of effort by the observers.

Latitude and Longitude Correlations

There are several factors that make it difficult to do straightforward correla-

tions of latitude and longitude with the results of the post-hurricane count results. As demonstrated above, species totals for the most part were not significantly decreased for either state. Bird numbers, on the other hand, were quite depleted, but in both states there were statistical outliers that had very high numbers of birds. Whether these dramatic increases were storm-related remains to be determined, but they do skew the data analyses. Also, as discussed below, Rita hit the western end of the two-state area, and Katrina coursed through the east-central part of the area: this double effect makes an east-west longitude analysis more difficult.

Nevertheless, there are correlations that exist and make some sense. One might expect that the counts close to the Gulf of Mexico, the lower latitude counts, would have been affected the most. Indeed, there are significant correlations between latitude and the number of species counted in the 106th count ($p = 0.014$), and also between latitude and the number of birds counted in the 106th count ($p = 0.0001$). Interestingly, neither number of species nor number of birds were significantly correlated with latitude for the 107th count (latitude and number of species were correlated to a $p = 0.14$).

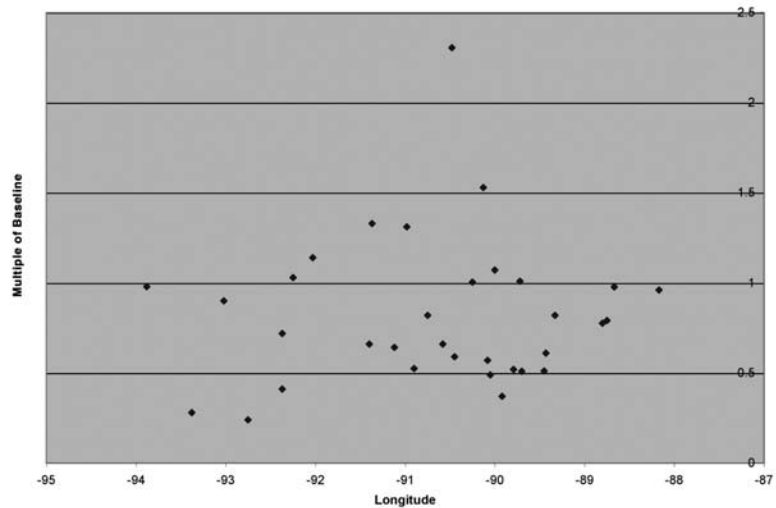
When longitude is considered for the two years, basic correlations are made

difficult by associations that are not linear. As Graph 3 shows, the numbers of birds counted in the 106th count are relatively low in the lower (that is, more eastern—88 to 90 degrees) and higher (more western—92 to 94 degrees) longitude areas, and relatively high in the central part of the region. This phenomenon can be explained by Rita's passing through at about 94 degrees west, and by Katrina's path at 89 degrees. For the 107th count, the association between longitude and numbers of birds counted is skewed by the observation that the westernmost counts had both the highest and the lowest percentages of baseline numbers of birds counted, as shown in Graph 4.

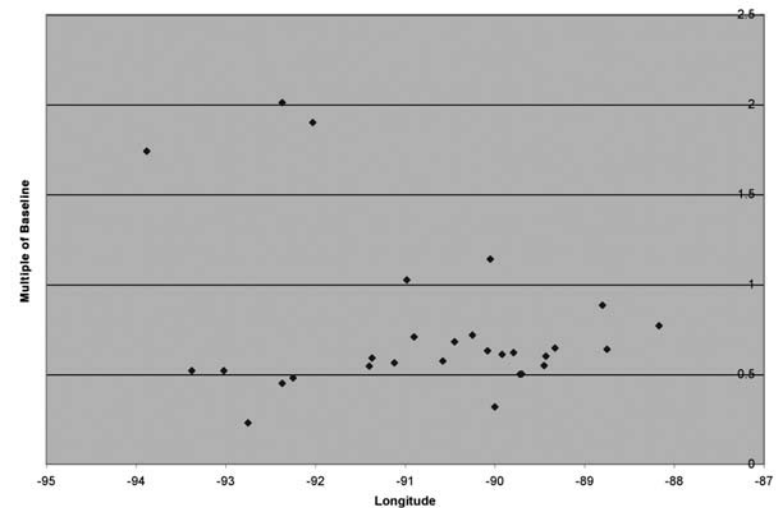
Summary

Rita and Katrina, the two hurricanes of 2005 that devastated Louisiana and Mississippi, had an impact on the Louisiana and Mississippi Christmas Bird Counts of the 2005–2006 (106th) and 2006–2007 (107th) seasons. The impact on the number of species identified in the 106th count was seen primarily in specific count circles, and in general most areas for both states did not have an appreciable decrease in species identified, averaging 95 percent to 99 percent of baseline. There was a significantly greater impact on the number of birds tallied. For Louisiana the total number of birds counted was about 63 percent for the 106th count and about 81 percent for the 107th count. For Mississippi, the 106th CBC averaged about 96 percent of the baseline number of birds, but the 107th CBC noted only 64 percent. The number of party hours decreased by a small degree, but this decrease was not comparable to the greater decrease in numbers of birds. In both states there were two or three count areas that had large increases in the numbers of birds and that acted as outliers in the averages. In Louisiana this phenomenon was observed in the 106th count (Lafayette at 776 percent and Bossier at 451 percent) and less so in the 107th (Granby at 201 percent,

Graph 3: Number of Birds in the 106th Count Year.



Graph 4: Number of Birds in the 107th Count Year.



Catahoula at 190 percent, and Shreveport at 174 percent). This dramatic increase in an area's number of birds was not observed in the 106th count for Mississippi, but it did occur, as mentioned above, during the 107th count (Arkabutla Lake at 767 percent and Moon Lake at 629 percent).

It is interesting to note that the number of species reported in both states during both years is not significantly decreased, but the number of birds is reduced, except for a few outlier count areas. The persistent decrease in bird numbers for the 107th count is of concern. One speculation is that the hurricanes had a significant impact on

the following (2006) breeding season that continued the decreased numbers. 🐦

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References

1. Personal communication, used by permission of Martin Guidry, compiler of Louisiana's Sabine N.W.R. Christmas Bird Count.