



Impacts of Black-bellied Whistling-Ducks on the Louisiana Rice Industry: A Summary of a Producer Survey

Developed by

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Executive Summary

An increase in the number of reported cases of damage caused by Black-bellied Whistling-Ducks has raised concerns about the potential economic impact of these ducks on the rice industry in Southwest Louisiana. The rice industry in Southwest Louisiana has a farm gate value of nearly \$327 million annually making it the top ranked agricultural industry in the region. On a state level, the rice industry generates more than \$560 million annually. Given the importance of the rice industry to the state, and more critically, the regional economy and the growing numbers and incidence of these ducks, there is a need for examining potential options for mitigating the impacts beings felt by the rice industry.

To this point, however, much of the evidence of damage caused by the Black-bellied Whistling-Ducks has been anecdotal and does not convey a comprehensive view of the exact nature and magnitude of the issue. As a result, personnel with the LSU AgCenter developed and disseminated a survey to rice producers in two separate efforts, once in the summer and fall of 2023 and another in the spring and winter of 2024. Those efforts resulted in 46 completed surveys. Highlights of the results from the survey are:

- Impacts were reported by producers in 10 parishes indicating that the issue is not limited to coastal parishes
- Nearly 75 percent of the producers indicated they had experienced negative impacts from the ducks
- Over 76 percent of the producers indicated that these ducks are causing negative impacts in their operations annually
- At planting through establishment of the permanent flood was reported as the periods when the ducks are causing the most impacts by nearly 90 percent of the producers. The time at or around flooding the ratoon crop was identified as the period in which the ducks were causing the most impacts by nearly 11 percent of the producers
- Increased costs associated with having to replant acres, increased costs associated with activities taken to reduce the impact of the ducks, and reduced revenue from yield losses were all equally as likely to be experienced by producers.
- Damage caused by these ducks was limited within producers' operations with roughly 8 percent of the acres having to be replanted, roughly 18 percent experiencing yield losses, and roughly 37 percent having additional costs associated with mitigation actions taken to attempt to minimize the impacts from the ducks.
- On impacted acres, average yield losses reported by producers was roughly 13 percent while average mitigation costs were roughly \$42 per acre.
- The total estimated economic impact (increased costs and/or reduced revenue) associated with the Black-bellied Whistling-Ducks averaged \$49 per acre across all rice acres reported in the producer's operation.

It should be noted that care should be taken in making definitive statements regarding the scope and significance of this issue given the low number of responses. However, despite the implication that the impacts being caused by Black-bellied Whistling ducks are, even for an individual farm operation, relatively localized, the estimate of the per acre economic impact across all rice acres is still significant. In a time when profit margins continue to shrink with rising input costs and softening rice prices, any additional costs and/or reductions in revenue puts even more pressure on profit margins.

Despite the limitations of this survey, there seems to be ample evidence that this is not an insignificant issue and, if left unchecked, has the potential of becoming excessively challenging for rice farmers. As such, additional efforts are likely warranted to study this issue and examine potential short term and long solutions.



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Introduction

Over the last ten years, as the numbers and presence of Black-bellied Whistling-Ducks have increased in Southwest Louisiana, so has the frequency of reported cases of negative impacts of these ducks on the agricultural industry. Most of these reported cases have been associated with rice production and the rice industry. The rice industry is the top ranked agricultural industry in Southwest Louisiana in terms of farm gate values with nearly \$327 million generated annually over the last five years according to data from the LSU AgCenter's Agricultural Summary publication. In addition, at the state level, the rice industry ranks in the top ten of all commodities with a direct economic contribution averaging more than \$560 million annually over the last five years. With the importance of the economic stability and sustainability of the Louisiana rice industry to the state and, more critically, regional economies, the reports of the significant impacts these ducks are causing to rice production certainly provides justification for examining options for mitigating these impacts.

Before a determination of the need for mitigation strategies and the options for those strategies, there needs to be a better understanding of the nature and extent of the impacts being reported. In an effort to collect information on how the ducks have impacted the rice industry and the extent of those impacts, the LSU AgCenter initiated a survey of rice producers in the summer of 2023. A survey instrument was developed by personnel with the LSU AgCenter and was disseminated at both the Louisiana Farm Bureau Federation annual meeting and the H. Rouse Caffey Rice Research Station Field Day, both of which occurred in June 2023. Due to an extremely low response rate of those efforts, the survey instrument was distributed through the LSU AgCenter's parish extension offices in August 2023. Parish-based LSU AgCenter personnel were asked to distribute the survey to rice producers in their respective parish. The survey was made available to rice producers through this effort both as a fillable pdf that could be completed and returned as well as through an online version. A reminder was sent in September 2023 to encourage additional responses.

Given the low returns and issues discovered with responses received during the efforts in 2023, the survey was revised to improve the clarity of the question being asked. The revisions made to the survey were solely to improve the clarity of the wording of the questions. No changes were made to the volume and type of information requested. The revised survey was disseminated at annual LSU AgCenter educational meetings targeted to rice producers held in January and February 2024 throughout the state.

The remainder of this report provides a summary of the results from completed surveys received through both the initial effort in the summer and fall of 2023 and the second effort in the winter of 2024.

Survey Results

As mentioned, the goal of the survey was to collect information to establish a more definitive assessment of the interaction between the Black-bellied Whistling-Ducks and the Louisiana Rice Industry. To this point, all of the evidence of the impacts caused by the ducks on rice production had been anecdotal with no clear picture of the magnitude of the issue. One factor to determine was the geographic distribution of the impacts of the ducks. Is this a more isolated issue with ducks impacting rice production in a confined location or are the ducks causing issues for rice production throughout the Southwest Region and the state of Louisiana? Based on anecdotal evidence, it would appear that the issue is more confined to rice production in coastal parishes.

Table 1 shows the breakdown of responses by parish. The average number of rice acres in the operations of the respondents over the last five years totaled over 61, 000 acres. This represents roughly 14.3 percent of total rice planted annually in the state but roughly 17.5 percent of the rice acres planted in the responding parishes over that time. While the respondents represent a relatively small percentage of the total rice acres, the majority (74 percent) of them indicated that the ducks were causing negative impacts to their operations.

Table 1. Parishes Represented and Total Rice Acres Represented by Responses to Black-bellied Whistling-Ducks Survey

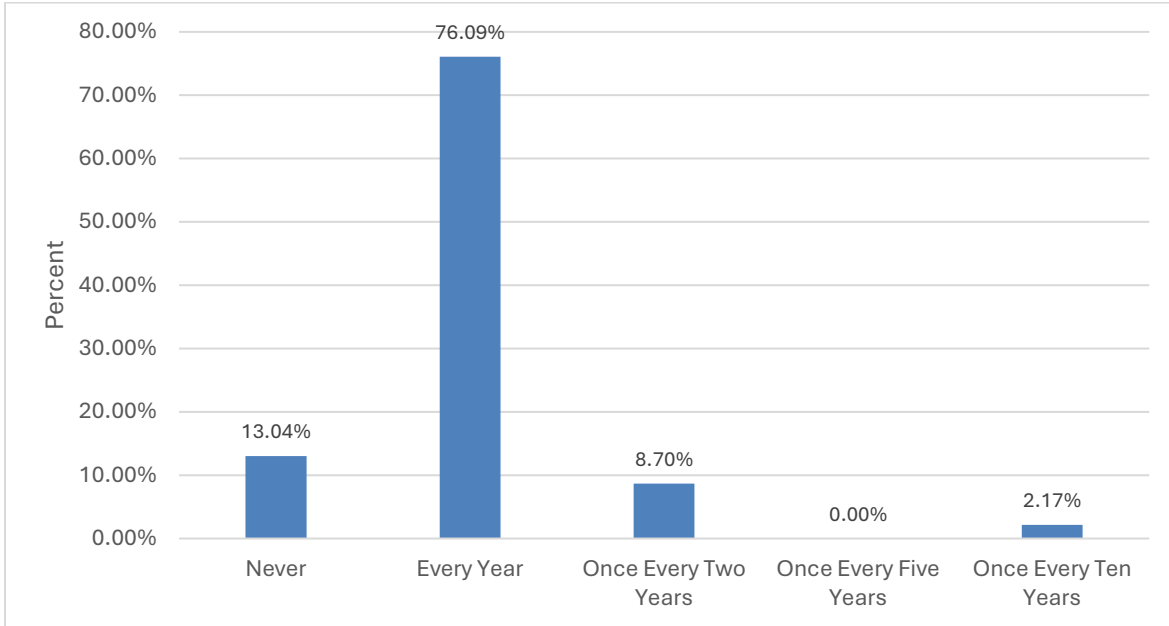
	Number of Responses	Percent of Responses Reporting Impact	Total Rice Acres Represented
Acadia	10	40.00%	14,775
Allen	1	100.00%	800
Calcasieu	2	100.00%	1,100
Cameron	4	100.00%	4,650
Concordia	1	0.00%	4,000
Evangeline	4	50.00%	4,015
Jeff Davis	6	100.00%	6,575
Rapides	1	100.00%	2,800
St Landry	2	50.00%	5,250
St Martin	5	100.00%	5,650
Vermilion	2	100.00%	2,650
Multiple ^A	1	100.00%	6,500
Not Identified	7	85.71%	2,850
Total	46	73.91%	61,615

^A Parishes included were Vermilion, Jeff Davis, Allen, Evangeline, and Acadia.

So, while the impacts of the Black-bellied Whistling-Ducks seems to be more widespread than just the coastal parishes, they do appear to be isolated to Central and Southwest Louisiana. And while the low number of responses limits the definitive conclusions that can be made, having the majority of respondents indicating that the ducks are causing negative impacts on their operations does suggest that this issue is more than insignificant.

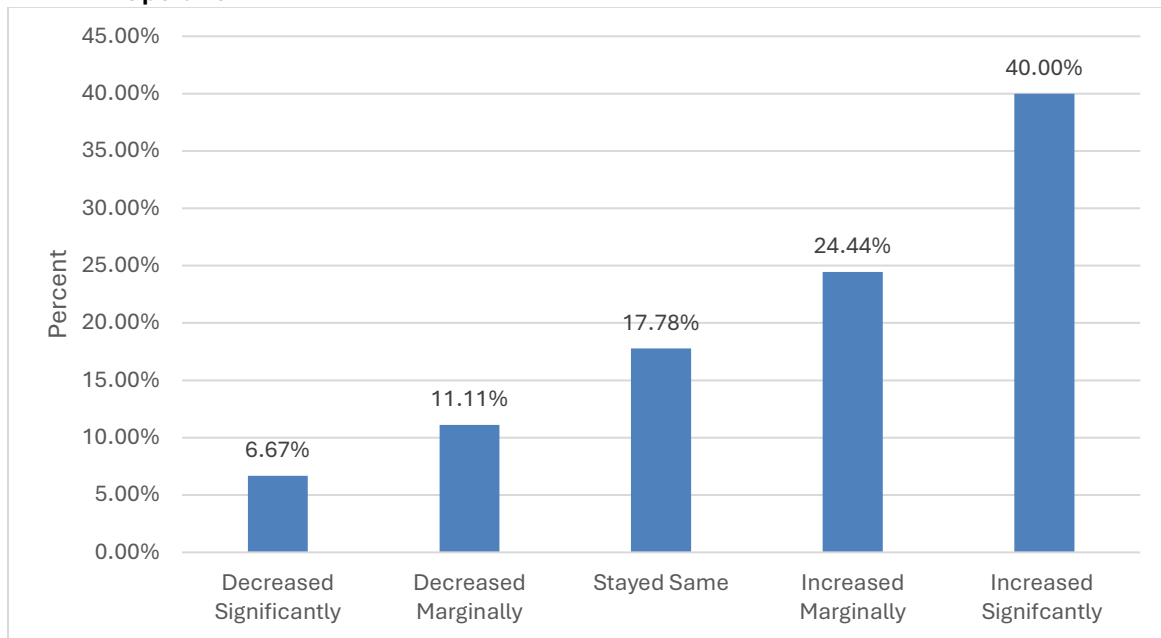
Another important factor to consider is the frequency at which these ducks are causing issues for rice producers. Obviously, the seriousness of the situation takes on a different perspective if the ducks are causing damage every year versus once every several years. Responders were asked to identify which of 5 different scenarios best described how often they were being impacted by these ducks. Figure 1 shows the percentage of respondents selecting each of the different scenarios. More than 76 percent of the respondents indicated that the ducks were causing issues in their operations each year. When the 9 percent that indicated ducks caused issues every other year, nearly 85 percent of all respondents indicated that ducks caused issues at least once every two years. So, it does appear that the ducks are persistent once they enter an area and start creating issues.

Figure 1. Reported Frequency of Negative Impacts from Black-bellied Whistling-Ducks



Another important factor to consider is the trend in the population of these ducks. Respondents were asked to choose between 5 scenarios that described trends in duck populations and presence. Figure 2 provides the percentage of respondents indicating how the presence of the ducks on their farming operations has changed over the years. As shown, over 82 percent of the respondents reported that the ducks have either stayed roughly the same or increased over time. This seems to correspond to the percentage of respondents indicating ducks were causing issues in at least one out of every two years (85 percent). This may suggest that as populations grow and ducks migrate into new areas, the likelihood of them causing negative impacts to rice production is high.

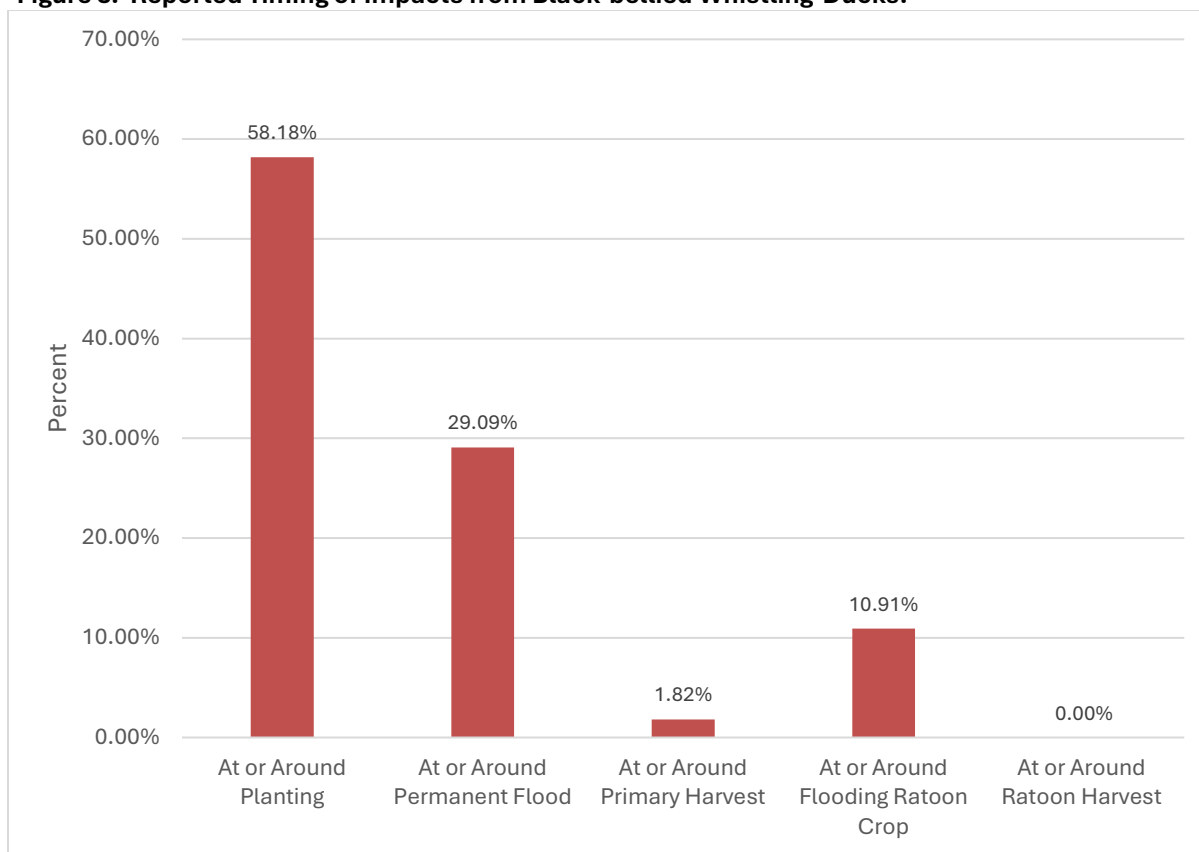
Figure 2. Reported Perceived Change in Presence of Black-bellied Whistling-Ducks on the Farm Operation



Another important factor is when these ducks are causing impacts to rice production. Respondents were asked to select the time period that ducks had the most significant impact on their operations. Five time periods were offered from the time around planting the crop to harvesting the ratoon crop. Figure 3 shows the percentage of respondents

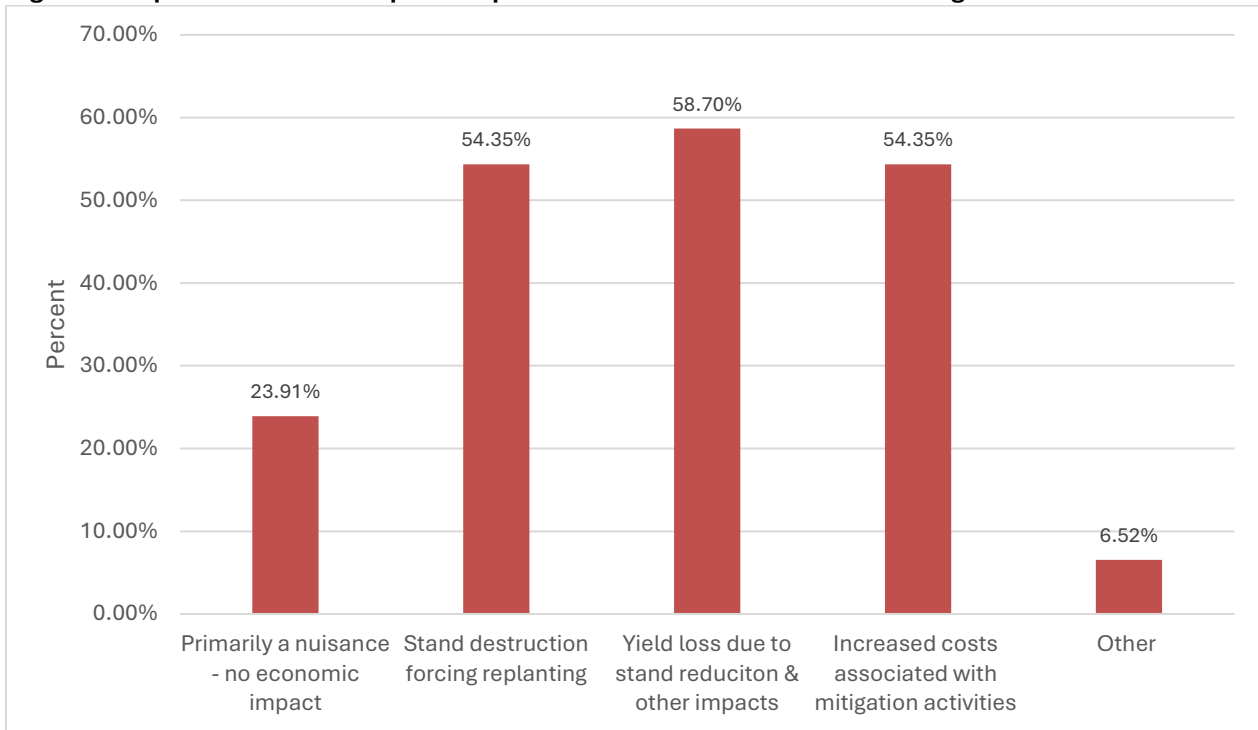
selecting each of the 5 times periods identified. The two most highly selected time periods were the time at or around planting (nearly 60 percent of respondents) and the time at or around establishing the permanent flood (nearly 29 percent of respondents). The time at or around flooding the ratoon crop was the next most selected time period with nearly 11 percent of the respondents. Less than 2 percent of the respondents selected the time at or around the first crop harvest. As such, the most critical time periods for managing these ducks seem to be from planting to establishment of the permanent flood, which typically corresponds to late February/early March to late April/early May.

Figure 3. Reported Timing of Impacts from Black-bellied Whistling-Ducks.



The next factor addressed by the survey was how these ducks were impacting rice production. Most of the reports related to the ducks have generally been focused on ducks eating young rice. To see the types of impacts being experienced, respondents were asked to select the type of impact most frequently experienced in their operations from 4 different categories, with one of the categories being no economic impact. In addition, producers were allowed to specify the impact if their experiences didn't fit or match with one of the categories offered. Figure 4 shows the percentage of respondents indicating the type of impact being experienced. Increased costs from having to replant rice, increased costs associated with mitigation strategies employed to minimize the impacts from the ducks, and reduced revenue from yield loss caused by the ducks were each identified by more than 50 percent of the respondents. Since respondents were asked to select every category or type of impact they experienced and given that the responses for those three categories were very similar could imply that if ducks are causing issues for a farm operation, it is likely that they are creating both increased costs and reduced revenue for the operation. Nearly 7 percent of the respondents indicated "other" impacts. Those responses were limited to either ducks trampling or knocking down rice or ducks negatively impacting wood duck populations. While a negative impact, there is no apparent linkage between reduced wood duck populations and the rice operation's financial situation. Therefore, this would not be perceived as an impact directly affecting the farming operation. The trampling or knocking down rice plants is likely manifested in reduced yields, and therefore, reduced revenues, either through shattering and grain loss or through harvest inefficiency associated with harvesting lodged rice.

Figure 4. Reported Nature of Impacts Experienced from Black-bellied Whistling-Ducks



While the number of rice acres in the operations of respondents totaled 61,615 acres, not all of those acres are impacted by these ducks. Respondents were asked to specify how many of their rice acres were directly impacted by these ducks. Table 2 provides the number of acres that had to be replanted, the number of acres that experience yield loss due to the ducks, and the number of acres on which the respondent implemented some type of mitigation strategy. Of the 61,615 of rice acres in the farming operations of the respondents, roughly 8 percent were reported to have to be replanted, roughly 18 percent were reported to have yield loss associated with the ducks, and nearly 38 percent had costs associated with actions taken to attempt to mitigate the impacts of the ducks. So, while these ducks seem to be impacting farming operations throughout Southwest Louisiana, only a portion of the rice acres in those operations are actually experiencing a negative impact.

Table 2. Acres Reported to be Impacted by Black-bellied Whistling-Ducks

Impact	Acres Reported	Percent of Total Rice Acres Reported ^A
Acres Replanted	5,072	8.23%
Acres with Yield Loss	11,379	18.47%
Acres with Mitigation Costs	23,075	37.45%

^A The total number of rice acres in the farming operation reported by respondents was 61,615 acres.

The largest percentage of acres reported were acres in which the respondent had taken some type of mitigation action. To understand the mitigation strategies being used and their effectiveness, respondents were asked to list the different actions they had taken to try to minimize the impact of these ducks and whether they thought those actions were effective. Producers were able to list up to three different mitigation actions they had taken. Since different mitigation actions were reported by multiple respondents, they were summarized into 8 unique actions. Table 3 provides the number of respondents reported to have utilized each of the 8 unique mitigation actions. By far, the most common mitigation action taken was shooting a gun, using fireworks or other noise makers. Nearly 90 percent of the respondents indicated using that particular strategy. Using propane pop or scare guns was the next most common mitigation action with 55 percent of the respondents reported to have used that strategy. All other mitigation actions were much less frequently used.

Table 3. Reported Actions Taken and Their Effectiveness in Mitigating Impacts of Black-bellied Whistling-Ducks

Action Taken	Number of Responses	Percent of Responses	Percent of Responses Reporting Action Was Effective	Percent of Responses Reporting Action Was Effective or Partially Effective
Propane Pop or Scare Guns	16	55.17%	12.50%	31.25%
Shooting Guns, Fireworks, Noise Makers	26	89.66%	34.62%	46.15%
Drill planting vs Water Planting	3	10.34%	33.33%	66.67%
Flagging	2	6.90%	0.00%	0.00%
Spotlights at night	1	3.45%	100.00%	100.00%
Bird Repellent on Seed	6	20.69%	33.33%	50.00%
Water Seeding	1	3.45%	0.00%	0.00%
Delayed Planting	3	10.34%	66.67%	66.67%

Despite being used most frequently, shooting guns or using some type of noise maker and using propane pop or scare guns were not believed to be particularly effective in mitigating damage from the ducks. Only 34 percent of the respondents indicated they thought shooting guns or using some type of noise maker was effective. And that percentage only increased to 46 percent when asked if they were even partially effective. Similarly, only 12 percent of the respondents thought propane pop or scare guns were effective and that only increased to 31 percent when asked if they were even partially effective. Only two mitigation actions were believed to be effective by more than half of the respondents – using spotlights at night and delaying planting. Using spotlights was only used by one respondent, so it is difficult to imply that this would be a widespread, effective strategy. And while delayed planting was identified as being effective by 2 of the 3 respondents using that strategy, it could be argued that respondents are still experiencing negative impacts. Delaying planting beyond optimal planting windows increases the probability of increased insect and disease pressure which could negatively impact yields. So, while it may help mitigate the direct impact from the ducks, producers could continue to experience increased costs and reduced yields.

When relaxing the criterion from effective to partially effective, only two additional mitigation actions were identified by more than half of the respondents. Drill planting instead of water planting was identified by 67 percent of the respondents as being at least partially effective while using a bird repellent on seed was identified by 50 percent of the respondents as being partially effective. Finally, with the limited number of respondents, there should be caution in making any definitive claim that any of the mitigation actions would be universally effective in managing damage caused by these ducks.

Table 4 shows the range in responses to the estimated percent yield loss caused by these ducks and the per acre costs associated with mitigation actions. Estimated percent yield loss ranged from as low as 5 percent to as high as 30 percent. The weighted average percent yield loss, weighted by the number of acres impacted, was just over 13 percent. Mitigation costs were reported from as low as \$10 per acre to as high as \$300 per acre. The weighted average mitigation cost was roughly \$42 per acre. It should be noted that these mitigation costs were not estimates per mitigation action but costs per acre for all actions that may have been taken. As indicated prior, most respondents identified several actions that they had taken to try to manage the damage caused by these ducks.

Table 4. Reported Estimates of Yield Loss and Mitigation Costs Associated with Black-bellied Whistling-Ducks

	Number of Responses	Low	High	Weighted Average
Estimated Percent Yield Loss	28	5.00%	30.00%	13.03%
Estimated Mitigation Control Costs (\$/Ac)	26	\$10.00	\$300.00	\$41.79

The information on acres impacted from Table 3 and the estimates of yield loss and mitigation costs from Table 4 was combined with published data from the LSU AgCenter and USDA's National Agricultural Statistics Service to estimate an economic value associated with the different impacts. Table 5 provides estimates of increased costs and reduced revenue associated with impacts of these ducks on rice farming operations. The costs associated with replanting were estimated using data from LSU AgCenter Rice Enterprise Budgets on planting costs. The per acre estimate of \$120.69 per acre assumes that the entire acre will be replanted and that no additional field preparation work is needed prior to replanting. The amount of revenue loss of \$125.09 per acre was estimated using a 5-year state average yield and price and the estimated percent yield loss provided by survey respondents. Costs of mitigation actions were set to the estimates provided by survey respondents which were \$41.79 per acre. When the per acre estimates were applied to the number of acres impacted, the total estimated economic impact was calculated at nearly \$3 million. It should be noted that this \$3 million estimate is not meant to be an estimate of the total economic impact associated with damage caused by Black-bellied Whistling-Ducks across the entire rice industry. Rather, it is simply an estimate of the economic impact associated with the total rice acres represented by the survey and the survey respondents.

Table 5. Estimated Economic Impact of Black-bellied Whistling-Ducks

	Acres Impacted	Total Estimated Economic Impact	Economic Impact Per Impacted Acre ^D	Economic Impact Per Total Reported Acre ^E
Estimated Replanting Costs ^A	5,072	\$612,130	\$120.69	\$9.93
Estimated Loss Revenue Due to Yield Loss ^B	11,379	\$1,423,403	\$125.09	\$23.10
Estimated Mitigation Costs ^C	23,075	\$964,250	\$41.79	\$15.65
Totals/Average ^F	N/A	\$2,999,784	N/A	\$48.69

^A Replanting cost was set at the 2024 LSU AgCenter Enterprise Budget estimates for the costs of planting rice. The value assumes the entire acre would be re-planted and does not consider any additional field preparation that may be needed prior to replanting.

^B Revenue loss was estimated using 5-year state average yields and prices from NASS and the estimated percent loss reported by survey respondents.

^C Mitigation costs were set at the estimated costs reported by survey respondents.

^D Average economic impact per acre across those acres reported as being impacted.

^E Average economic impact per acre across all acres reported to be in the farming operation. Total rice acres in farming operations were reported at 61,615 acres.

^F Because of the potential of double counting (i.e. the same acres reported to have replanting costs could also be included in the acres reported to have yield loss), acres impacted were not summed. Also, because there is no way to accurately determine the unique number of impacted acres, an average per acre estimate across all impacted acres could not be calculated.

When the \$3 million in total estimated economic impact is averaged over the total number of rice acres represented by the survey (61,615 acres), the per acre impact is roughly \$49 per acre. If you consider the average projected gross revenue per acre of rice over last 5 years of \$960 (5-year average yield times 5-year average price), the \$49 estimated economic represents a 5 percent reduction in returns to rice production over each of those 61,615 acres. The estimated economic impact reduces gross revenue (through reduced yields) and increases total production costs (through replanting costs and mitigation costs). In both instances, the end result is that returns (gross revenue minus production costs) to rice production is being reduced.

Summary and Implications

This survey provides an initial glimpse into the nature and the magnitude of the damage caused by the Black-bellied Whistling-Duck to the rice industry. Because of the low number of responses, care should be taken in making definitive statements or implications regarding the significance of the issue or steps needed to address the issue.

With that in mind, in general, the survey responses did indicate that the geographic distribution of the impacts being caused by these ducks was perhaps more widespread than originally anticipated. Certainly, there is evidence from the survey that these ducks are causing damage in areas other than strictly in the coastal parishes. In addition, the survey suggests that the damage caused by these ducks is consistently occurring, implying that once ducks are in an area, they tend to remain in that area or routinely return to the area. Finally, the survey would suggest that the population and presence of these ducks on rice farms has increased over time in many areas of Southwest Louisiana and that there appears to be a strong correlation between the presence of ducks in the area and damage to rice production. In other words, if ducks are in the area, it is likely that there will be damage to rice production.

The survey also shows that not every acre of rice in Southwest Louisiana is being negatively impacted by these ducks. The survey results showed that roughly 73 percent of the farming operations of the respondents had been impacted by these ducks. And of those that had been impacted, less than 38 percent of their total rice acres were impacted. But, despite the implication that the impact, even for an individual farm operation, is likely to be relatively localized, the estimate of the per acre economic impact is still significant. And, in a time when profit margins continue to shrink with rising input costs and softening rice prices, any additional costs and/or reductions in revenue puts even more pressure on profit margins. And weakening profit margins creates long term challenges for the economic sustainability of rice farming operations.

Despite the limitations of this survey, there seems to be ample evidence that this is not an insignificant issue and, if left unchecked, has the potential of becoming excessively challenging for rice farmers. As such, additional efforts are likely warranted to study this issue and examine potential short term and long solutions.