



Whooping Crane Stopover Habitats on Belton Lake, Texas U.S. Army Corps of Engineers, Tulsa District

The primary purpose of this report is to: (1) *protect existing wild Whooping Crane “stopover habitats; (2) improve existing habitats where needed; and (3) create new “stopover habitats” where there are opportunities.*

Friends of the Wild Whoopers (FOTWW) and the U.S Army Corps of Engineers (USACE) have a Memorandum of Understanding to evaluate Whooping Crane “stopover habitats” on USACE lake properties. The project involves the six state migration corridor within in the states of Texas, Oklahoma, Kansas, Nebraska, South Dakota and North Dakota.

There is only one wild self-sustaining population of Whooping Cranes remaining on earth. These birds are America’s symbol of conservation. They are the largest bird in North America standing 5 feet tall with a wingspan of 7 feet (Figure 1). They are endangered species and need our help. This population nests and rears their young in Wood Buffalo National Park, Canada during spring and summer. After their chicks fledge, they migrate 2,500 miles through 6 states in the midsection of our nation to Aransas National Wildlife Refuge on Texas coast where they spend the winter (Figure 3). Thus these birds are known as the Aransas-Wood Buffalo population.

Destruction of nesting habitat and killing the birds for food decimated the population during the 1800’s and early 1900’s. Coupled with this is the loss of approximately 16 million wetland acres in the 6 state migration corridor. In 1943 there were only 16 Whoopers remaining. With protection and habitat management the population has increased to an estimated 505 in 2018.

Today, however Whooping Cranes are facing more threats to their habitats. During their two 2,500 mile migrations they **must stop 15 to 30 times** to rest and feed. Secure **stopover habitats** are needed throughout the migration corridor approximately every 25 miles. And more secure wintering habitats are needed along the Texas coast near the Aransas National Wildlife Refuge.

Currently about half of the population winters off the Aransas National Wildlife Refuge where they are not as safe. Continuous development along the coast is taking a serious toll on habitat.

FOTWW believes that the wild Whooping Cranes in the Aransas/Wood Buffalo population are capable of taking care of themselves with two exceptions. **They need (1) humans to protect their habitats and (2) humans to stop shooting them.** We firmly believe that the USACE can do much to protect and manage many “stopover habitats” within the migration corridor.



Figure 1. Deer and other wildlife species often use the same habitats as Whooping Cranes.

During migration Whooping Cranes often stop over on private lands, wildlife areas, lakes and some military bases. However, many private lands are being more intensively managed and face various forms of development. And some wetlands are becoming dryer due to global warming. *FOTWW contends that lands and waters on USACE and military bases within the migration corridor can provide much needed relief.* Some of these lands can be developed and/or managed to provide more stopover habitats for endangered Whooping Cranes. Habitats for the cranes also benefit many other species of wildlife and fish. Likewise Whooping Cranes are compatible with other wildlife species using the same habitats (Figure 1).

The most expensive part of establishing or improving habitat is land cost. If projects can be accomplished on government lands and Indian Reservations, the cost would be relatively minimal. Importantly any habitat projects deemed to be incompatible with the mission of the agencies involved would not be considered by FOTWW.

FOTWW has completed habitat evaluations on 32 military facilities, 8 Indian Reservations and 23 USACE lakes to date within the wild Whooping Crane migration corridor. Some of these properties currently have suitable stopover wetland habitats while other areas could be enhanced with minor work.

The USACE and FOTWW Memorandum of Understanding allows us to focus on Whooping Crane habitat assessment and management recommendations on lands under USACE jurisdiction. We first need to determine if any suitable areas could be managed, or appropriately developed, to provide stopover habitats for Whooping Cranes. The next step would be to work to encourage appropriate management.

USACE lakes within the 6 state migration corridor are likely to become even more important to Whooping Cranes in the near future because of their locations and quality of “stopover habitats”. Belton Lake and others that are located in the Whooping Crane migration corridor can be especially valuable. As the crane population increases the migration corridor may also expand in width.

According to data provided by U.S. Geological Survey, Whooping Cranes are known to have stopped over on Belton Lake during 2010 (fall); 2011 (spring); and 2013 (spring). Because radio telemetry tracking equipment is placed on only about 20% of the Whoopers in the population, there may have been more stopovers by the Whoopers.



Figure 2. Six Whooping Cranes during migration on Belton Lake within the Fort Hood Army Base, TX . Photo by Gil Eckrich

During their two 2,500 mile migrations each year Whooping Cranes migrate to and from their winter habitats on the Texas coast to their nesting habitats in northern Canada (See migration map Fig. 3).

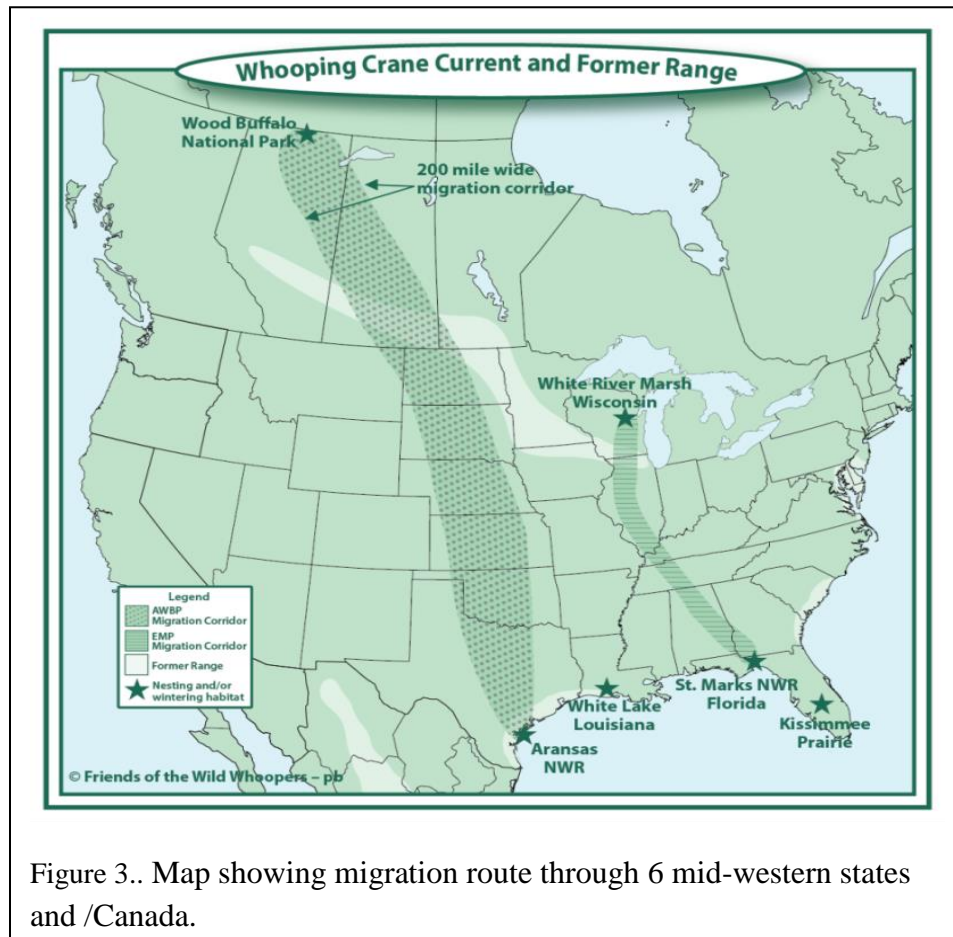


Figure 3.. Map showing migration route through 6 mid-western states and /Canada.

FOTWW Wildlife Biologist Chester McConnell and assistant Dorothy McConnell visited Belton Lake on March 26, 2019 to assess potential “stopover habitats” for Whooping Cranes. David Hoover, Conservation Biologist, Kansas City, MO, USACE in coordination with Belton Lake Manager Ronnie Bruggman made arrangements for our trip. FOTWW appreciates all involved with making preparations for a productive and enjoyable visit.

During a briefing, Biologist McConnell explained the need for Whooping Crane “stopover habitat” and features necessary to make suitable habitats. Belton Lake Manager Ronnie Bruggman and Park Ranger Todd Spivey participated in the lake stopover habitat discussion. We discussed the natural resources condition for Belton Lake and potential areas where stopover habitats are located.

FOTWW reviewed the **Belton Lake Natural Resources Management Program** document which provides a guide for natural resources and park management. It details the specific operation and administration requirements for the development, maintenance, protection, and use of all project land and water areas.

The Management Program document also describes the lake located on the Leon River 16.7 miles upstream of the confluence of the Leon River and the Little River. There are 136 miles of shoreline at conservation pool on Belton Lake..

The purpose of the lake’s dam is for flood damage reduction, water conservation, fish and wildlife habitat, and general recreation. At top of conservation pool, elevation 594.00, the lake covers 12,300 surface acres. A total of 3,900 acres of land surrounds the lake and is used primarily for wildlife habitat, birding, agriculture and recreation. The Corps manages for long-term public access to and use of the natural resources in cooperation with other federal, state, and local agencies, as well as the private sector.

The goal of the natural and cultural resources management program is to manage resources for the public benefit consistent with resource capabilities. Natural resource managers integrate the management of diverse natural resource components such as fish, wildlife, forests, wetlands, grasslands, soil, air, and water with the provision of public recreation opportunities. The Corps conserves natural resources and provides public recreation opportunities that contribute to the quality of American life. They manage vegetation to develop and sustain a diversity of resident and migratory game and non-game wildlife species in accordance with the resource capabilities and other purposes of the lake project. Likewise they protect and manage habitats supporting individuals and populations of special status species, especially federal and state listed threatened and endangered plants and animals.

Belton Lake has a wetland mitigation project located between White Flint and Winkler Parks in the White Flint Wildlife Management Area. The wetland is approximately 25 acres in size and gently slopes to create submersed and emergent zones. Future plans for this wetland include installation of more native plant materials to increase biodiversity and enhance the value to wildlife.

Wildlife Management Areas and other land areas adjacent to the lakeshores were acquired for project operations, but they are designated for wildlife management. Agricultural activities may be undertaken to improve wildlife habitat. As potential wildlife habitat, these compartments are best suited to upland

game bird, songbird and waterfowl species management. Emphasis is placed on improving habitat for bobwhite quail and Rio Grande turkey which will also benefit other species including Whooping Crane foraging habitat. Techniques to encourage continued use by raptors, including osprey and bald eagles, will also be utilized. Such lands are available to the public for sightseeing, nature study, hiking, hunting and other activities that enhance environmental awareness and promote environmental stewardship. The habitat management opportunities surrounding much of Belton Lake could provide many “stopover habitat” sites for Whooping Cranes.

USACE’s broad objective for fish and wildlife management is to conserve, maintain and improve the fish and wildlife habitat to produce the greatest dividend for the benefit of the general public. Implementation of a fish and wildlife management plan is the first step toward achieving the goals of the Fish and Wildlife Coordination Act (Public Law 85-624). The Texas Parks and Wildlife Department and the U. S. Fish and Wildlife Department share responsibility for managing fish and wildlife, primarily through enforcement of laws and regulations and establishing seasons and bag limits for game species.

Texas Parks and Wildlife Department has the primary responsibility for managing resident fish and game species. Game wardens from the enforcement division are responsible for enforcing game laws, and Corps of Engineers park rangers assist them in water safety patrols and search and recovery efforts.

U. S. Fish and Wildlife Service is the lead agency for protection of wildlife and is responsible for carrying out the intent of the Endangered Species Act,

Recommendation: Regardless of the excellent Belton Lake Natural Resources Management Program document, FOTWW’s review of wildlife plans could find no specific reference to endangered Whooping Cranes. Yet, Whooping Cranes are known to stopover on Belton Lake occasionally (see Figure 2). Whoopers have also been recorded on the lake by U. S. Geological Survey telemetry tracking during (2010 fall); (2011 Spring); and (2013 Spring). Friends of the Wild Whoopers strongly recommends that Whooping Cranes be added to the list needing serious attention at Belton Lake and that USACE, TPWD and USFWS management documents include specific plans for endangered Whooping Cranes. *Friends of the Wild Whoopers urges project staff to coordinate with their Tulsa District officials and the U.S. Fish and Wildlife Service to prepare a management plan.*

Mostly, during migration, Whooping Cranes stopover on lakes, natural wetlands and small ponds on private farms just to rest overnight. Like humans on a long trip they just need a small place to briefly stop, feed and then continue their journey. Proactive techniques implemented by conservation interest can help reduce potential mortality that occurs during migration.



Figure 4. Whooping Crane stopping over for the night.

Belton Lake is one of the most unusual lakes FOTWW has evaluated. Most of the potential Whooping Crane stopover habitats we visited were similar. The sites are primarily formed by alluvial fill deposited from streams flowing onto the sites and dropping their silt loads over many years. They appear to have similar soil characteristics, the same species of vegetation and located at the similar elevations. Button Bush shrubs dominate most of the sites especially near the lake water edges. It is a problem to be dealt with. FOTWW believes **a chemical brush killer** that kills bushes above ground, the roots system underground and stumps is the preferred method to use. Clipping bushes above ground or pulling them up will leave many of the roots in place and they will soon sprout back. Fortunately most of the sites we visited can be easily converted to good “stop over habitat” for Whooping Cranes.

Whooping Cranes and other wildlife need lakes, wetlands and small ponds with the following features as “stopover roost sites” during migration:

- Lakes/small ponds/wetlands from 0.3 acres and larger in size
- Lakes/ponds/wetlands with some shallow areas 2 to 10 inches deep for roosting sites
- Flight glide path clear of obstructions for Whooping Cranes to land near roosting sites
- No thick bushes or trees in or near landing site
- Gradual or gentle slopes into lakes/ponds where water is shallow
- Little or no emergent or submerged vegetation in lake at roost areas
- Extensive horizontal visibility from roost site so predators can be detected
- 200 or more yards from human development or disturbance such as power lines
- Agricultural grain fields or pasture land within one mile of stopover site for foraging



Figure 5. Excellent “stopover roost site” for Whooping Cranes. Number “1” points out the glide path for Whooping Cranes landing on lake shore. The site is clear of obstructions and provides a gradual slope into the shallow water. Horizontal visibility around the roost site is good. Number “2” points out the shallow water from 2 to 10 inches deep in roost area. Whoopers can feed on aquatic animals in the lake and forage on insects and grains in fields.

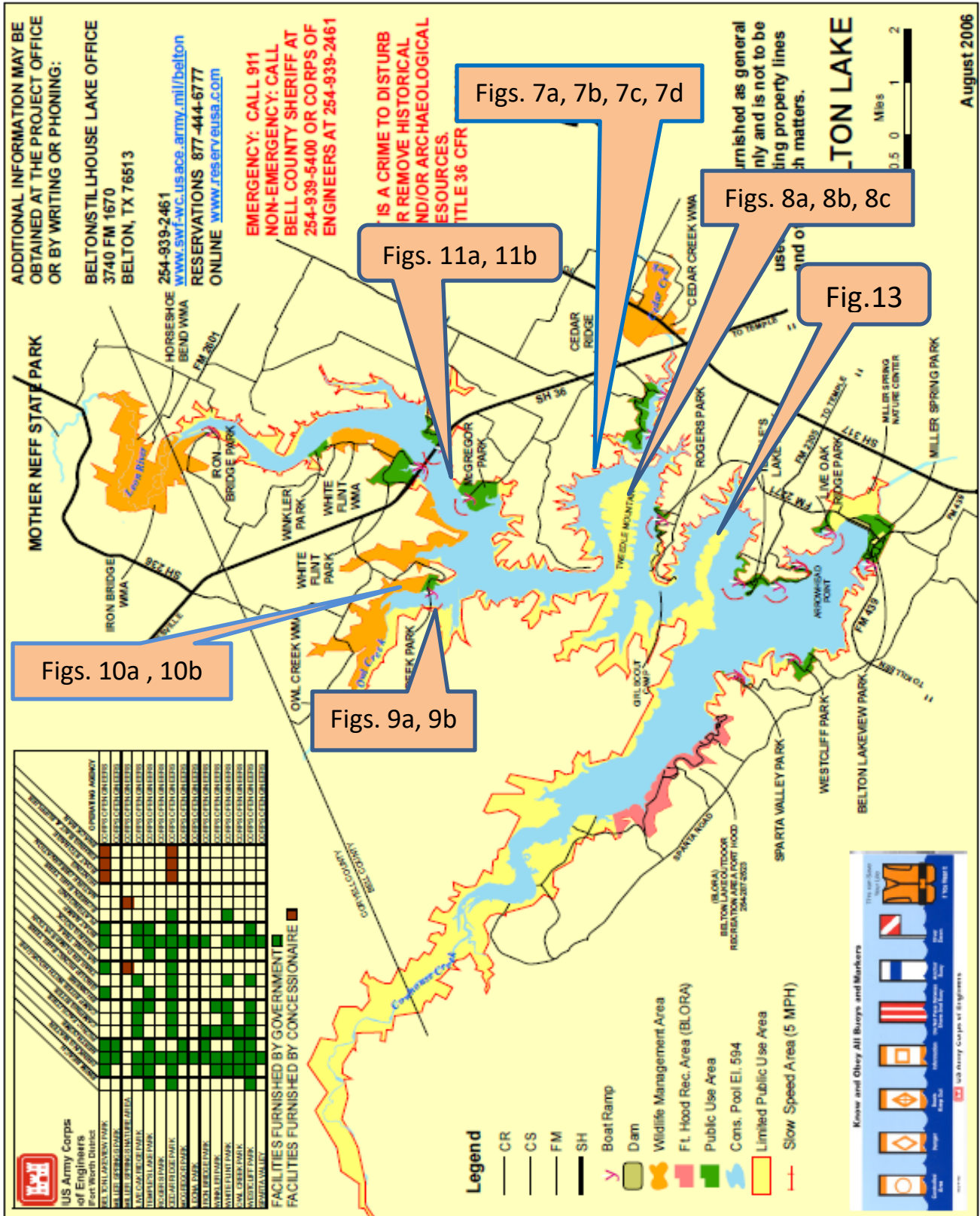


Figure 6. Map of Belton Lake with numbered tabs to identify where photos were taken.

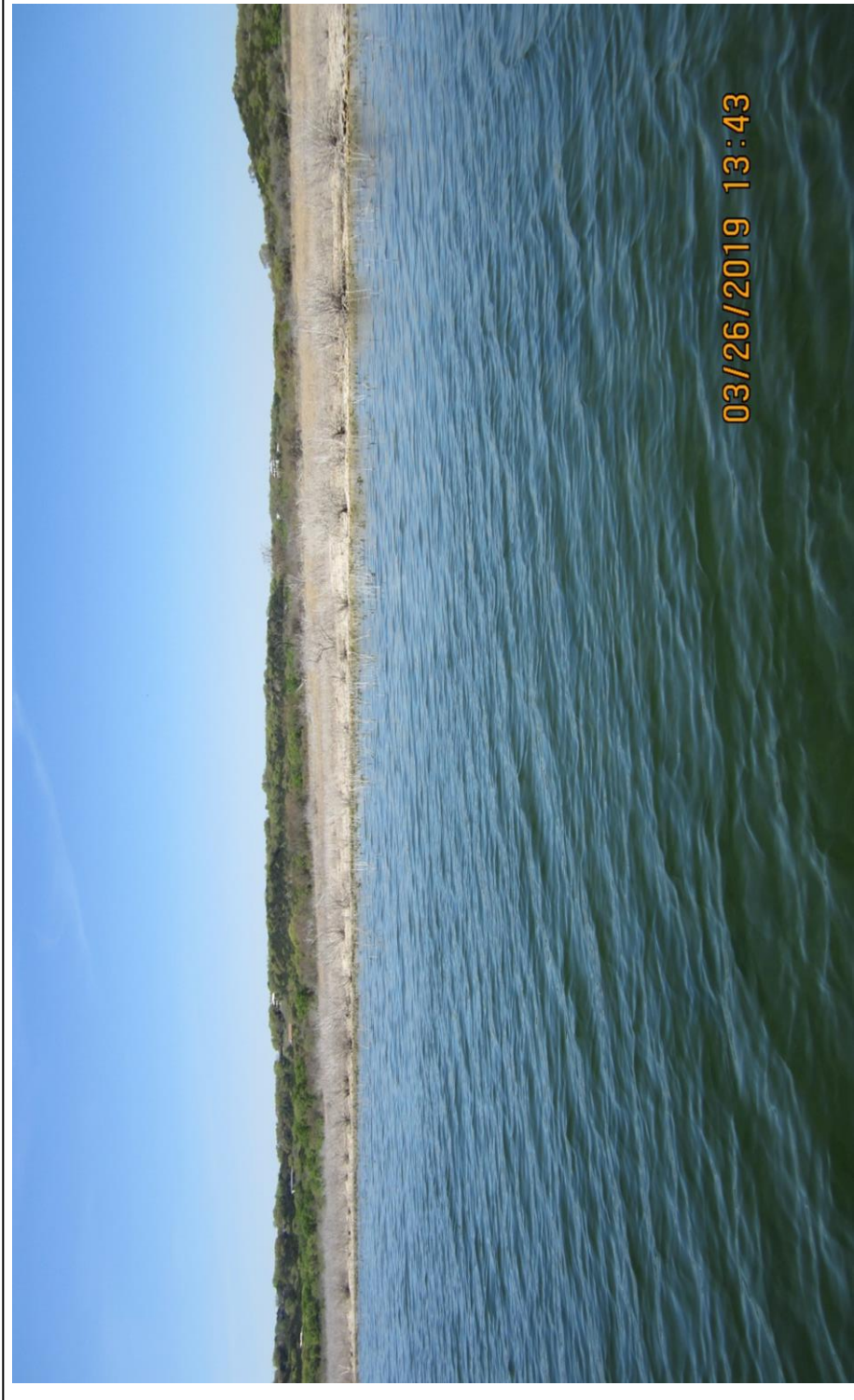


Figure 7a. This sandbar can be developed into an excellent “stopover roost site” for Whooping Cranes. The Button Bush shrubs need to be killed with a chemical brush killer to get rid of the above ground structure and the roots below ground. If clipped a few inches above the ground, they will grow back rapidly. The glide path is open from all directions for Whooping Cranes wanting to land on the lake shore. The site is clear of obstructions. A gradual slope into the shallow water is available along many areas of the lake shore. Horizontal visibility around the roost site is good. The water depth varies from 2 inches to 10 inches deep in much of the roost area. Whoopers can feed on aquatic animals in the lake and forage on insects and grains in fields nearby.

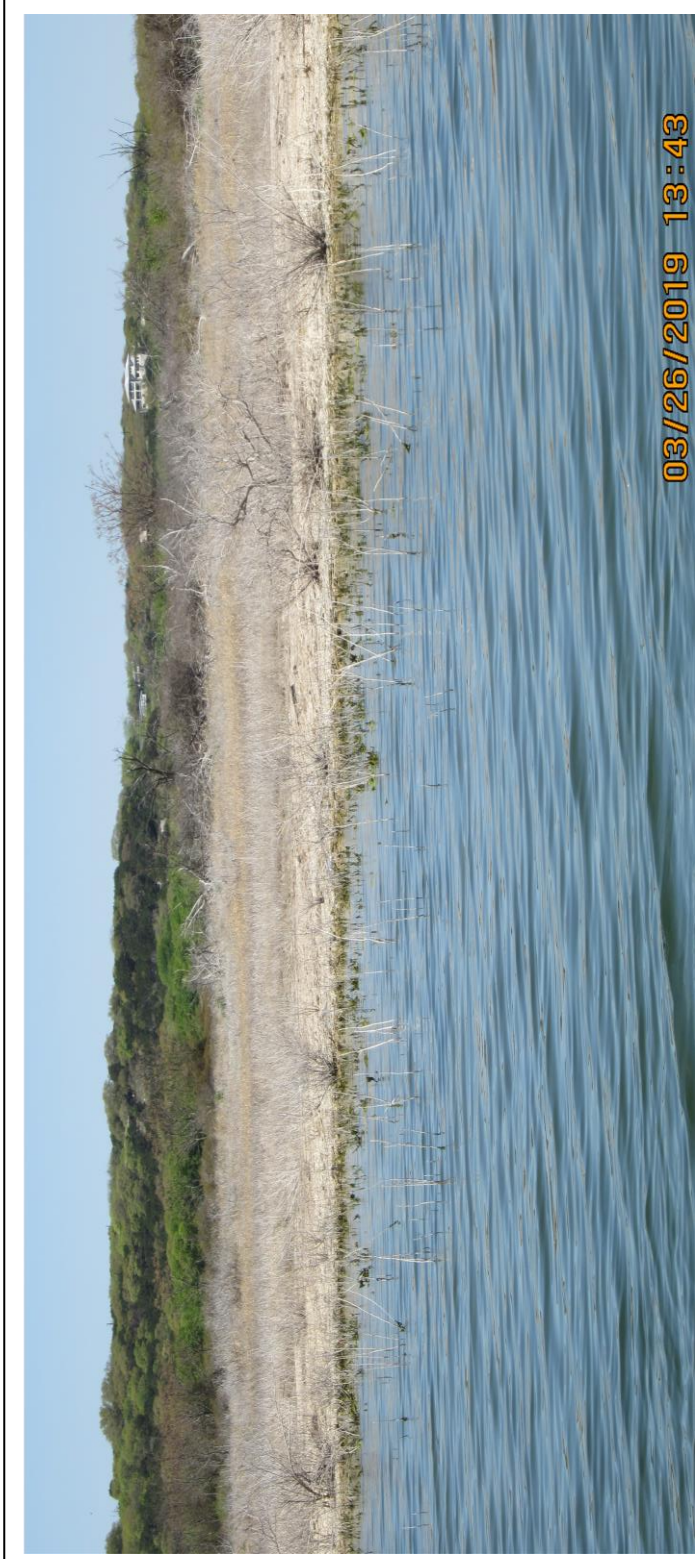


Figure 7b. This sandbar is in the same vicinity as 7a. It can also be developed into an excellent “stopover roost site” for Whooping Cranes. The houses are about 650 feet distance and should not frighten Whooping Cranes. Button Bush shrubs need to be treated with a chemical herbicide bush killer to get rid of the entire bush above ground and the root system. If bushes are clipped a few inches above the ground, they will grow back rapidly. The glide path is open from all directions for Whooping Cranes wanting to land on the lake shore. The site is clear of obstructions. A gradual slope into the shallow water is available along many areas of the lake shore. Horizontal visibility around the roost site is good and any predators can be spotted.. The water depth varies from 2 inches to 10 inches deep in much of the roost area which is the depths desired by Whooping Cranes. Whoopers can feed on aquatic animals in the lake and forage on insects and grains in fields nearby.



Figure 7c. This site is one of the better that we observed on Belton Lake for a Whooping Crane “stopover habitat”. A field about 5 acres in size is located between the trees and Button Bushes adjacent to the shore. Flight glide paths are clear of obstructions for Whooping Cranes to land near roosting sites. The field is an excellent area for Whoopers to land. No thick bushes or trees are in or near landing site. Only a narrow band of Button Bush bushes exist along the shore. Even so, these bushes need to be killed by chemical brush killer so Whooping Cranes can walk from the open field to the water without obstruction. Gradual or gentle slopes lead into the lake where water is shallow. There is good visibility from roost site so predators can be detected. Little or no emergent or submerged vegetation is in lake at roost site. Agricultural grain fields or pasture land is within one mile of stopover site for foraging.



Figure 7d. Button Bush is dense in this location and would be costly to properly remove. Also the shore has a steep bank that drops off abruptly. Fortunately there are several other sites in the vicinity that will make better stopover habitats for Whooping Cranes.

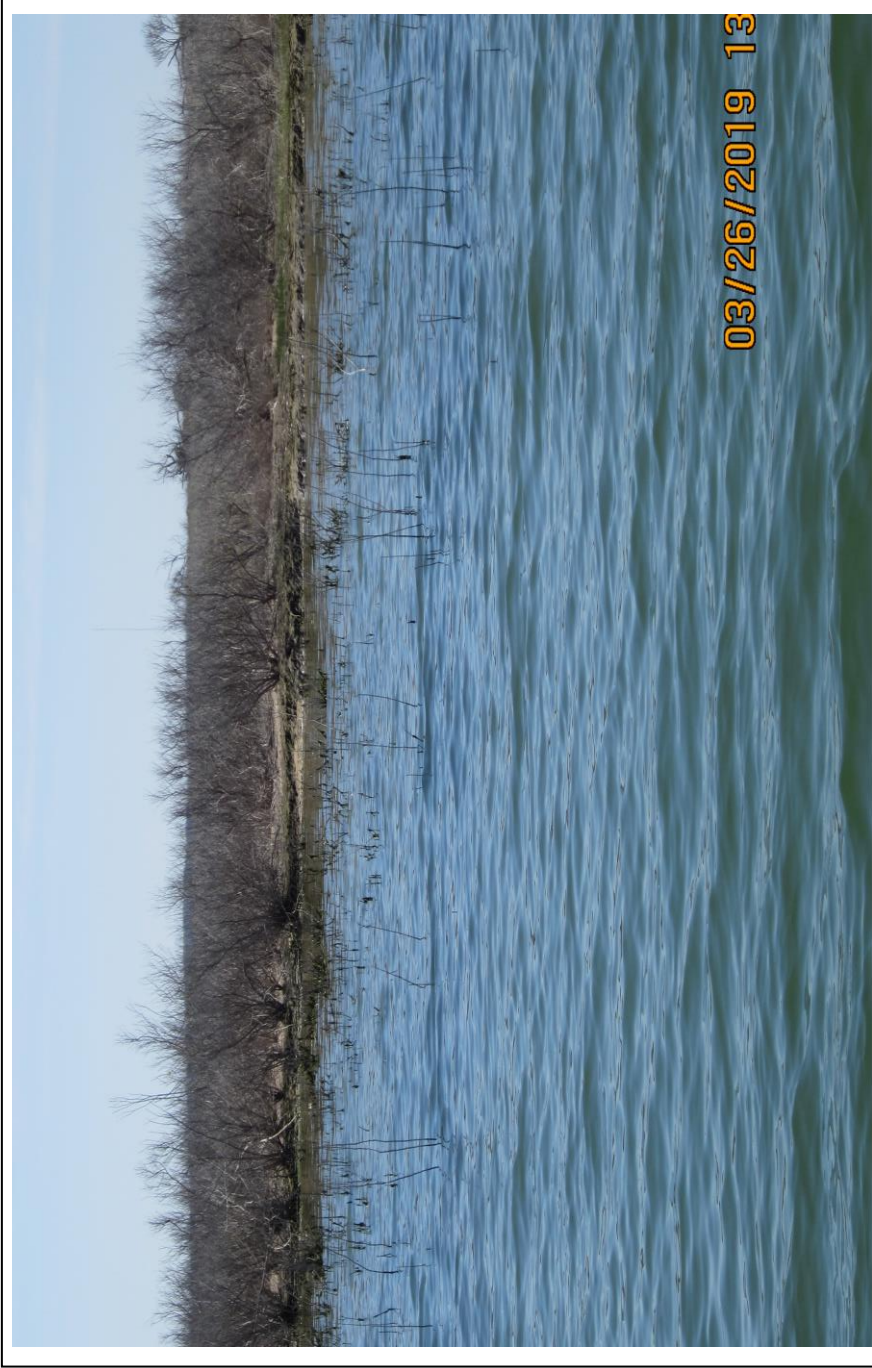


Figure 8a. The banks on the shore area are steep and drop off abruptly. In addition the water depth near the shore is deeper than the 2 inches to 10 inches that is preferred by Whooping Cranes for a roosting site. (See Figure 5 for more information)



Figure 8 b . The lake shore at this site could become a good Whooping Crane stopover habitat with a small amount of Button Bush removal. Bushes on the shore are sparse and can be treated with a chemical brush killer. A good brush killer herbicide would help solve the problem much better. The slope from the shore to water is gradual. Near the shore, the water has some shallow areas 2 inches to 10 inches deep for roosting sites. There is an open field behind the narrow stand of bushes (see arrow) that can provide for foraging.. Flight glide paths are clear of obstructions from several directions which allows Whooping Cranes to land near roosting sites. .Extensive horizontal visibility would also be available from roost site so predators can be detected. The site is 200 or more yards from human development or disturbance such as power lines. Little or no emergent or submerged vegetation was visible in lake at the proposed roost area.

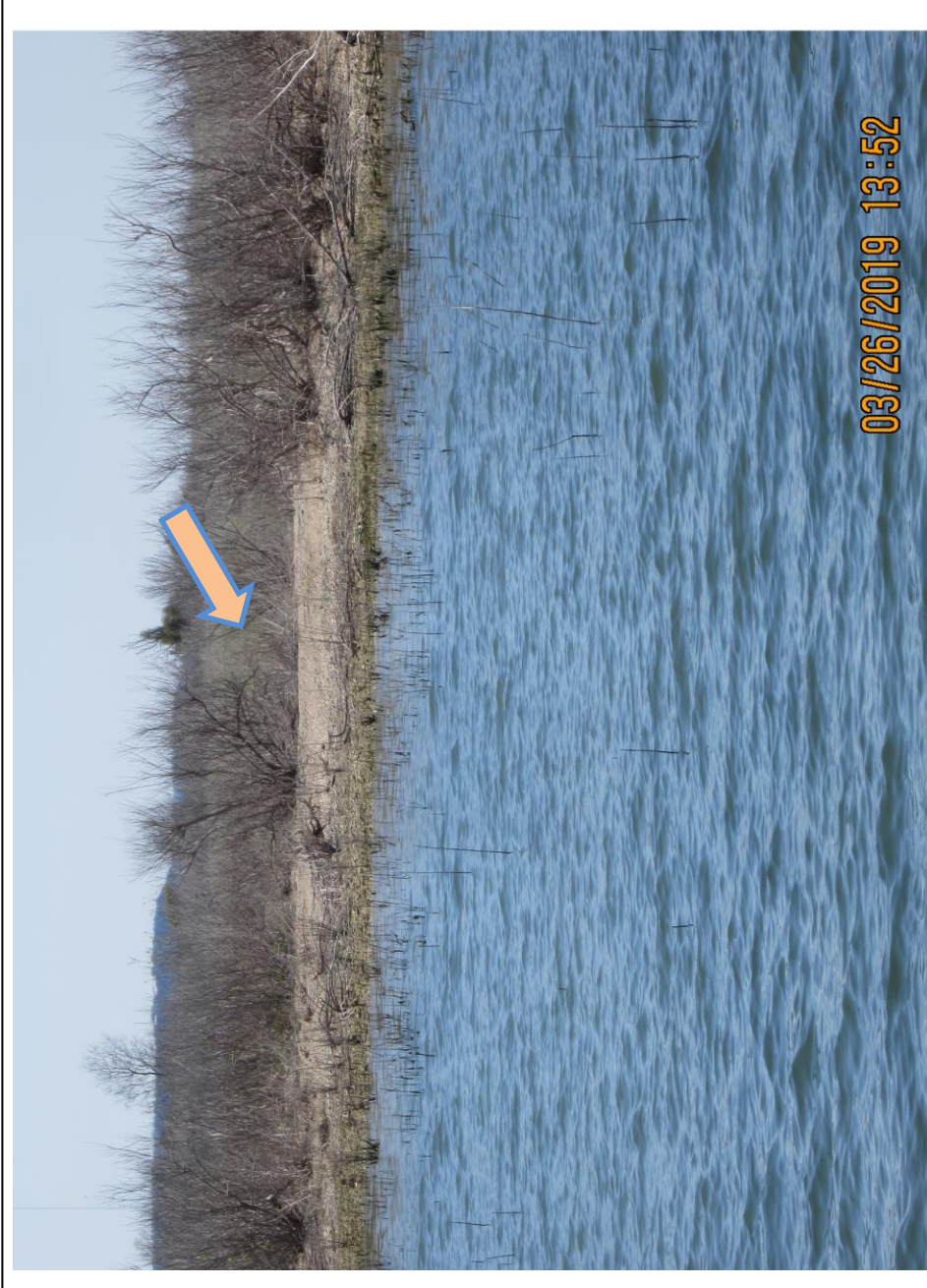


Figure 9 a. This a close up photo of the same area as shown in Figure 8 b. The opening in the Button Bush hedge should be widened to 150 feet to make it more acceptable to Whooping Cranes. Cranes are fearful to walk near bushes that could hide predators. The gradual slope into the near shore shallow water is more visible causing it to meet the criteria for a good roosting site. The arrow points to a field in the background which could serve as a good landing area for Whooping Cranes and a place to forage for food. The Button Bush is sparse at this site and could be easily killed with a safe chemical brush killer..



Figure 9 b. This large area has a sparse amount of vegetation that could be cleared and managed easily. There is a road into the buildings in the background which allows for access. The lake is shallow near the shore with some areas 2 inches to 10 inches deep for roosting sites. Gradual or gentle slopes provide entry into the lake where water is shallow. Flight glide paths to the site are clear of obstructions for Whooping Cranes to land near the roosting site. Extensive horizontal visibility from roost site would allow for predators to be detected. The buildings in the background are 200 or more yards from the proposed site and human development or disturbance should be minimal.

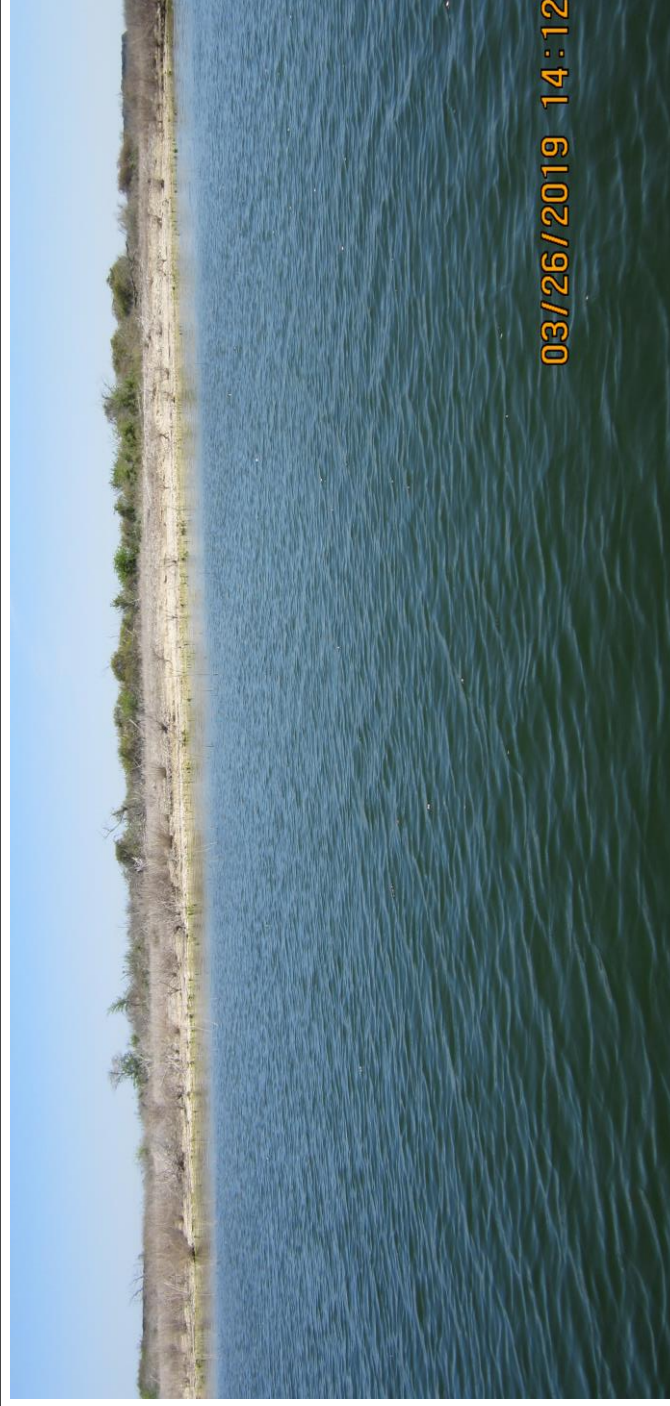


Figure 10 a. This is one of the better sites that we visited to serve as a potential “stopover habitat” for Whooping Cranes. Flight glide paths are clear from all directions. The few obstructions at the landing site can be easily removed by applying a chemical brush killer. There are few thick stands of bushes or trees in or near landing site and these can be removed relatively easy. FOTWW believes a chemical brush killer that kills bushes above ground, the roots underground and stumps is the preferred method to use. Clipping bushes above ground or pulling them up will leave many of the roots in place and they will soon sprout back.

The gradual or gentle slopes into lakes where water is shallow is necessary for Whooping Crane roosting sites. This is the condition we observed here. The birds select lakes/ponds/wetlands with some shallow areas 2 inches to 10 inches deep for roosting sites. Preferably the cranes like extensive horizontal visibility from roost site so predators can be detected. Roost sites also need to be 200 or more yards from human development or disturbance such as power lines and loud noises. If food is not available, agricultural grain fields or pasture land should be within one mile of stopover site for foraging.

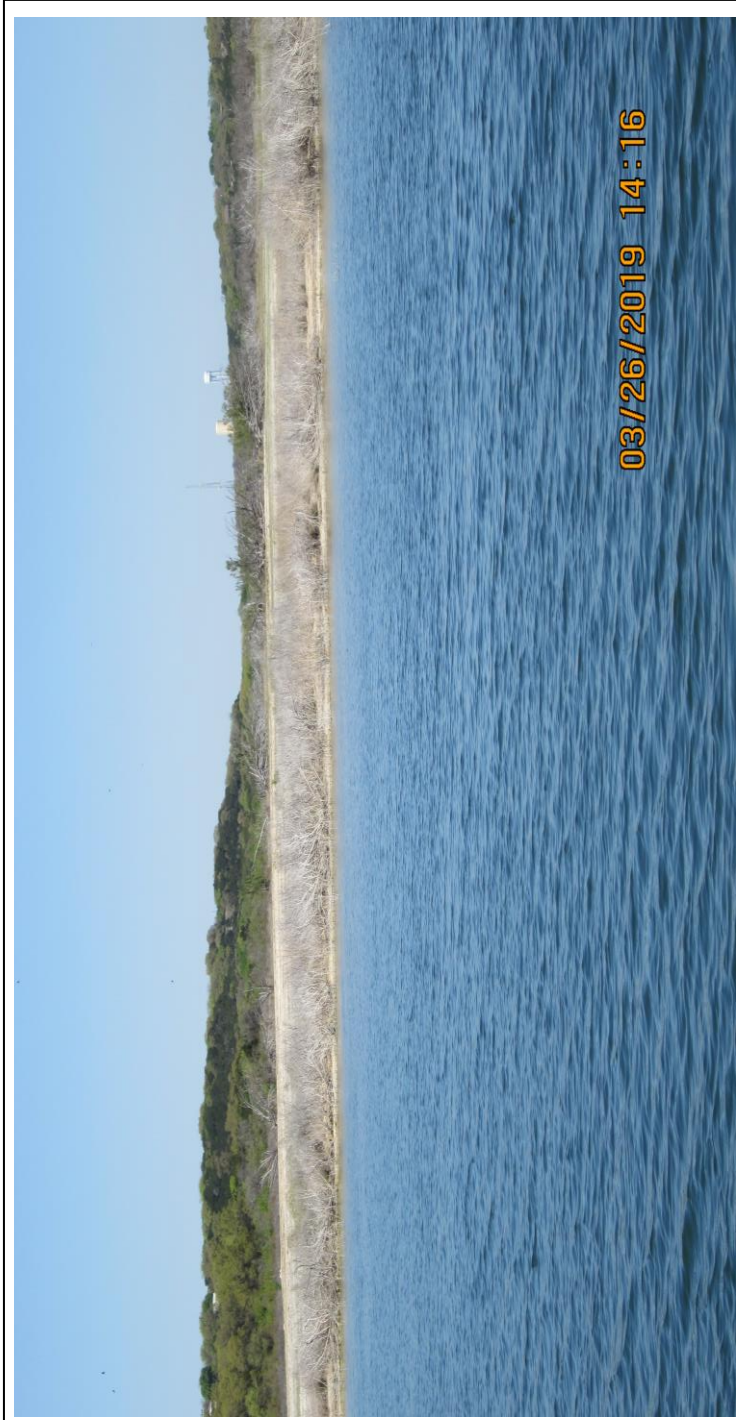


Figure 10 b. This is another good “stopover habitat” site to serve Whooping Crane needs. The obstructions at the landing site can be easily removed. There are a few dense stands of bushes in or near landing site and these can be removed relatively easily. FOTWW believes a chemical brush killer that kills bushes above ground, the roots underground and stumps is the preferred method to use. Clipping bushes above ground or pulling them up will leave many of the roots in place and the bushes will soon sprout back.

Flight glide paths are clear from all directions allowing for safe landings. The gradual or gentle slopes into lakes where water is shallow is necessary for Whooping Crane roosting sites. Such are the condition we observed here. Whooping Cranes select lakes/ponds/wetlands with some shallow areas 2 inches to 10 inches deep for roosting sites. Preferably the cranes select roosting areas with extensive horizontal visibility from roost site so predators can be detected. Roost sites also need to be 200 or more yards from human development or disturbance such as power lines and loud noises. Where food is not available, agricultural grain fields or pasture land should be within one mile of stopover site for foraging.

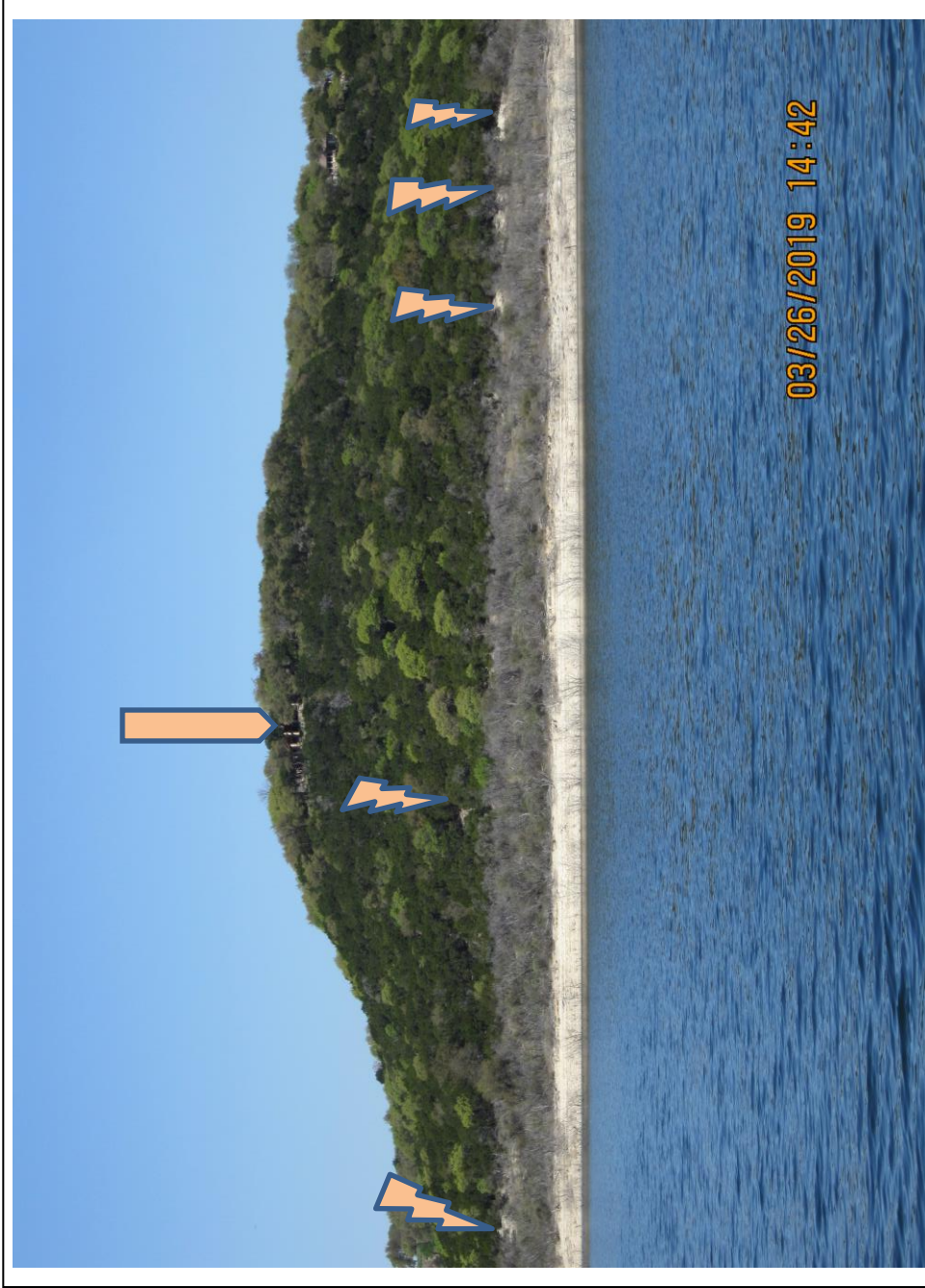


Figure 11 a. While this site looks good for a stopover site, **it is unsuitable**. A campground is nearby just behind the bush line. See markers (). Also houses are on the hills that would likely have loud noises and bright lights at night. Whooping Cranes will not tolerate such conditions.

MANAGEMENT PRESCRIPTIONS

1. Friends of the Wild Whoopers recommend that USACE Belton Lake officials start developing the locations identified by FOTWW as soon as practical. Several areas could be developed each year and evaluations made of the most successful management techniques. Our recommendation for chemical treatment of bushes could be tried to learn which controls best.
2. FOTWW believes a chemical brush killer that kills bushes above ground, the roots underground and stumps is the preferred method to use. Clipping bushes above ground or pulling them up will leave many of the roots in place and they will soon sprout back.
3. Review and update the OMP and other policy documents to include protection, improvement and development of Whooping Crane stopover habitats.
3. Regardless of the excellent Belton Lake Natural Resources Management Program document, FOTWW's review of wildlife plans could find no specific reference to endangered Whooping Cranes. Yet, Whooping Cranes are known to stopover on Belton Lake occasionally (see Figure 2). Whoopers have also been recorded on the lake by U. S. Geological Survey telemetry tracking during (2010 fall); (2011 Spring); and (2013 Spring). Friends of the Wild Whoopers strongly recommends that Whooping Cranes be added to the list needing serious attention at Belton Lake and that USACE, TPWD and USFWS management documents include specific plans for endangered Whooping Cranes. *Friends of the Wild Whoopers urges project staff to coordinate with their Tulsa District officials and the U.S. Fish and Wildlife Service to prepare a management plan.*

CONCLUSION

FOTWW was pleased to have the opportunity to visit Belton Lake. We were delighted to learn about the special wetland site. Only a relatively small amount of habitat development and management is needed to make Belton Lake more suitable for Whooping Cranes. USACE managers should focus on sites with the most suitable roosting characteristics and safe landscapes. The lake and land area also has good fish and wildlife habitat for a large variety of species.

We sincerely appreciate the interest and cooperation of the outstanding USACE officials. We are grateful to Ronnie Bruggman, Lake Manager and Todd Spivey, Park Ranger and other officials of USACE who provided us with documents that assisted in our evaluation. Thanks also to David Hoover, Conservation Biologist, USACE, Kansas who arranged for our evaluation of the lakes and prepared for our visit. Importantly, I also appreciate the assistance of FOTWW Vice-President Pamela Bates in preparing this report.



Friends of the Wild Whoopers

Chester A. McConnell

Chester A. McConnell, President

