



Fisheries Research Fact Sheet

Assessing Angler Use and Demographics at Three Sandhills Game Land Lakes Using Trail Cameras

October 2018



The N.C. Wildlife Resources Commission's (Commission) Sandhills Game Land (SGL) comprises 64,500 acres in the south-central portion of North Carolina. While the SGL is primarily managed for timber and wildlife habitat, it also contains nine impoundments that are open to the public for fishing and other types of recreation such as paddling and hunting. These lakes were constructed in the 1930s and 1940s, range in size from 2 to 74 acres and contain naturally reproducing populations of Largemouth Bass, Bluegill, Redear Sunfish, Chain Pickerel, Yellow Perch and Black Crappie. Additionally, 1,200 Channel Catfish are stocked into Indian Camp Lake annually. Until now, no information had been collected regarding the amount and type of use on the impoundments located on the SGL. While these lakes represent a significant portion of the impoundments owned by the Commission, they are located in rural areas and access to these lakes can be limiting, making traditional creel surveys with staff difficult to execute. Typically, Commission creel surveys have focused on larger bodies of water that receive heavy amounts of use and also are located near denser population areas. They also require hiring additional staff to conduct the creel. Since a traditional creel survey was not feasible, Commission staff deployed trail cameras to document use of these game land lakes.

Objectives:

- Quantify the amount and type of use at three lakes on the SGL.
- Assess the utility of trail cameras for collecting angler use information.

Methods:

- Three lakes were selected for this study: Indian Camp Lake, Crappie Lake and Kinney Cameron Lake. Indian Camp Lake is 5 acres and contains a gravel parking lot and two fishing piers. Crappie Lake is 20 acres and contains a gravel boat ramp and areas along the bank for fishing. The third lake, Kinney Cameron Lake, is 35 acres and has a gravel boat ramp and unimproved fishing areas along the bank.
- These lakes were also selected because access to the lakes varied by distance from a major road and they had different amenities (i.e. boat ramp, fishing pier, etc.).
- Cameras were set to take one photo every 15 minutes from 7 a.m. to 6 p.m. daily from Oct.1, 2015 through Sept. 30, 2016.
- Images were downloaded every 30 to 60 days and stored on a laptop computer. Images were analyzed using time lapse image enumeration software.
- For each image collected, the number of users, defined as anyone visiting the lake, were counted. Further analysis was made to determine type of use: bank angling, kayak angling, canoe angling, jon boat angling, hunter, horseback rider, or unknown and counts were also made by user type. If a person was engaged in some type of angling, gender and age (< 16 years old = youth while > 16 years old = adult) were assigned if they could be determined and additional counts were made based on these determinations.

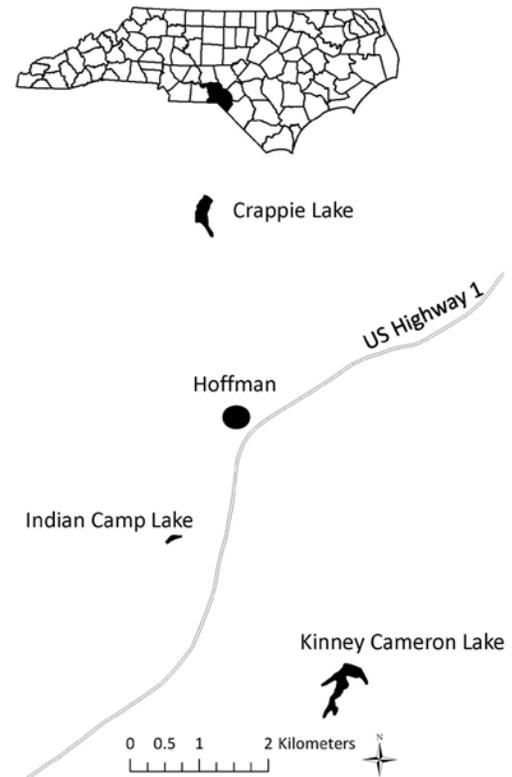


Fig. 1: Map of three lakes on the Sandhills Game Lands used to evaluate usage from October 2015 to September 2016

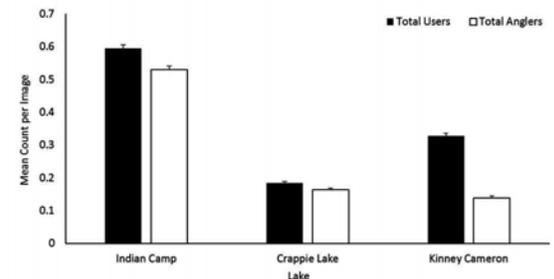


Fig. 2: Mean count per image of all users and all anglers at each of three Sandhills Game Lands lakes from October 2015-September 2016.



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- Total counts for each category (all users, user type, age, and gender) at each lake were divided by the number of images collected at each lake to calculate a mean value per image for each metric.

Results so far:

- 41,851 images were collected during the study. Of those images, 14,123 were collected at Indian Camp, 16,445 were collected at Crappie Lake, and Kinney Cameron yielded 11,283 images.
- Indian Camp was the most used lake (i.e. highest mean count per image), followed by Kinney Cameron, and Crappie Lake (Figure 2 on previous page). Angling was highest at Indian Camp, followed by Crappie Lake, and Kinney Cameron (Figure 2 on previous page). Angling use and total use were correlated at Indian Camp and Crappie Lake indicating most of the use of these lakes involved angling while a substantial percentage of the use at Kinney Cameron was not angling or could not be determined from the images collected.
- Adult male anglers were the predominant users at these sites (Figures 3 and 4). Indian Camp had the most diverse user group, and this is probably due to its proximity to a main highway and the two fishing piers onsite. The percentage of unknown age and gender anglers were highest at Crappie Lake, which likely occurred due to the distance of the camera from areas used by anglers at this site. This increased distance yielded poorer resolution of some images compared to the other sites.
- Bank anglers were the dominant user type at Indian Camp (Figure 5); this is likely a result of the two fishing piers at this site. Jon boat, canoe, kayak anglers and bank anglers were present in representative numbers at Crappie Lake and Kinney Cameron. Both of these lakes did not contain piers but have boat ramps that facilitated watercraft use. While most users could be assigned to a user type at Indian Camp and Crappie Lake, approximately 40 percent of the use at Kinney Cameron was categorized as unknown.
- Trail cameras were effective at collecting total use data on these three lakes but not as effective at collecting demographic data. The use of trail cameras provided valuable information on these SGL lakes without the logistical challenges associated with traditional creel surveys.

What's next?:

- This study will be repeated in 10 to 15 years or sooner if amenities (e.g. boat ramps, access roads, etc.) are modified to determine if user volume and type changes in future years.
- Staff will employ trail cameras on future studies when these types of information are needed on other systems in the future.

For more information:

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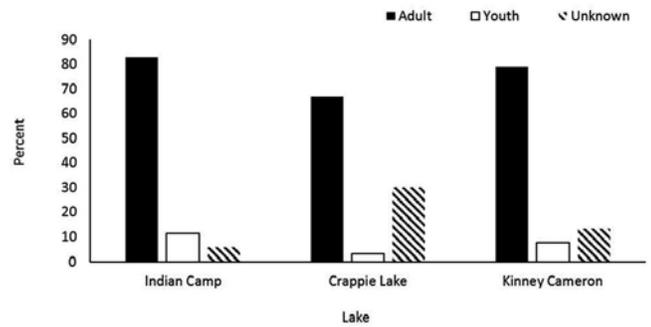


Figure 3: Percent composition of adult, youth and unknown age anglers at three Sandhills Game Land lakes from October 2015 to September 2016.

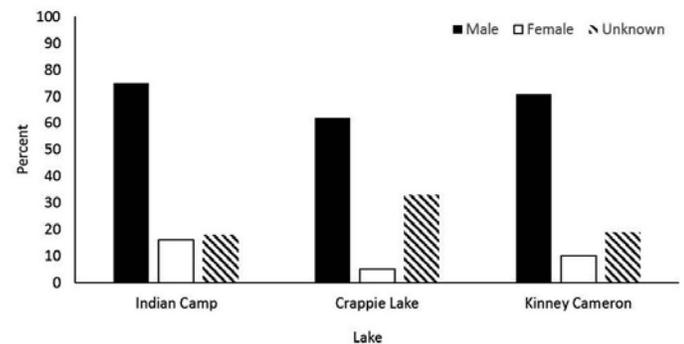


Figure 4: Percent composition of male, female and unknown gender anglers at three Sandhills Game Land lakes from October 2015 to September 2016.

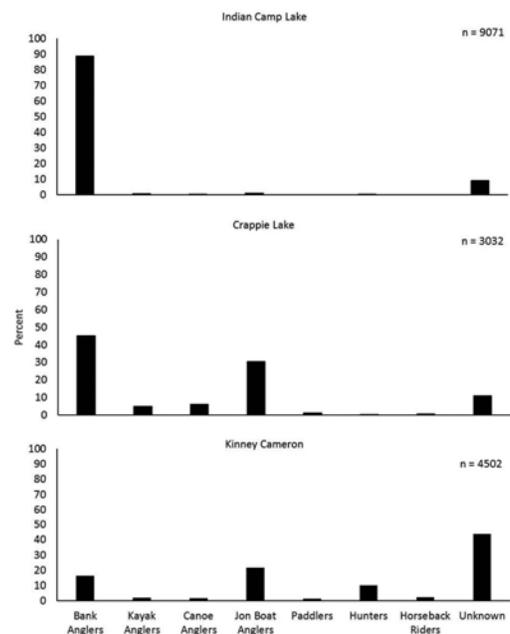


Figure 5: Use by percentage of eight use categories at three Sandhills Game Land lakes from October 2015 to September 2016.