

Methods

An inventory was conducted to determine the scale of the free-ranging cat (*Felis catus*) issue at San Juan National Historic Site. Three camera traps were installed at feeding stations on the west side of the park to determine the number of cats visiting areas where they are being fed. An additional three cameras were installed on the east side of the park, where no feeding stations occur, to determine the number of cats visiting areas where supplemental feeding is not occurring (Figure 1). Camera traps were set for approximately two weeks during the period of May 10 to June 16, 2021 (Table 1). Cameras were run throughout each 24-hour period, but only photos between 7:00 pm and 7:00 am local time were analyzed. Batteries and memory cards were changed during the day to ensure complete coverage of photos during the survey period.

Initially, the goal was to calculate population density using a mark-recapture methodology appropriate for camera trap data; however, a number of issues arose during the inventory that made this impossible. For one, only six camera traps were set up on the west and east sides of the park (three on each side), but none were set up in the northern portion of the park, where a number of cats also reside. This was due to issues with setting up cameras in locations that would be undetectable by visitors, which could increase risk of theft or damage to the cameras. Additionally, conditions at the feeding stations on the west side of the park changed throughout the survey period, including changes in amount of food provided, number of feeding stations set up, and angles of cameras. For these reasons, it was decided that a count of individual cats would be identified to estimate the scale of the free-ranging cat issues instead.

Individual cats were identified in each photo, provided a unique identifier that included the type of cat identified (i.e. solid, solid bicolor, solid tricolor, tabby, tortoiseshell, and sealpoint) and a number. Because most black cats were unidentifiable by individual, they received a code of BLK. Individual cat information was recorded in a “cat registry” with example photos, and cat sighting data were recorded in a separate trail camera spreadsheet that included location, night, and photo information. Every cat that was identified in a photo was first compared to the previously recorded cats in the cat registry. It was recorded under its assigned id if it matched with a previously recorded cat, or was given a new id if it was not found in the “cat registry”.

To calculate the total number of cats, the photos in the cat registry were compared to ensure that there were no duplicate identification assignments. The number of cats in the registry were then totaled. For the number of unidentifiable black cats, the trail camera spreadsheet was analyzed to calculate the maximum number of black cats found in a single photo. This number was added to the total number of cats in the registry. Additional information was also pulled from the cat registry, including the estimated number of pregnant cats, kittens, and males that had not been neutered. An attempt was made to identify the number of cats with clipped ears, but this was very difficult to obtain from the photos.

Results

Analysis of the camera trap data resulted in 193 individual cats being identified. All cats were observed at Camera Traps 1, 2, and 3, where the feeding stations are located (Figure 1). Of the 193 individual cats identified, 26 appeared to either have been pregnant during the survey or had recently been pregnant. Also, 9 individual kittens were identified. This data suggests that even though Trap-Neuter-Return (TNR) is being conducted at the park, a breeding population still exists. Only three unneutered cats were identified; however, photo evidence of this was difficult to observe without clear photos captured from specific angles.

Feeding stations located in the park may also be exacerbating invasive species issues. Cats were primarily observed at the camera traps located at the feeding stations, suggesting that they may be attracting more cats to the park than would normally occur there. Invasive rats (*Rattus spp.*) and green iguanas (*Iguana iguana*) were also observed eating from feeding stations, suggesting that these species are being supported by supplemental food, as well (Figure 3).

Figure 1. Camera trap locations.



Figure 2. Pregnant cat observed at park.



Figure 3. Rats at feeding station.



