

Arizona Sportsmen for Wildlife Conservation Grant -- Year 1 Progress Report

Title: Bringing Lucy's Warblers Home: Refining nesting preferences to increase nesting opportunities and foraging needs.

Focus Species: Lucy's Warbler (*Oreothlypis luciae*) hereafter referred to as LUWA

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Institution: Tucson Audubon Society

Progress Report by Milestone:

1) Jan-March 2019: Past and present distribution of LUWAs in Tucson area established. Create a bench mark of current Lucy's Warbler distribution using Tucson Bird Count data along with other available data sources such as Arizona IBA and eBird.org will be analyzed and distribution of LUWAs in Tucson area will be mapped and summarized. This will allow us to measure the effectiveness of this habitat restoration over time.

Progress Report: A bench mark of current Lucy's Warbler distribution was created using citizen scientist gathered Tucson Bird Count data along with the online database eBird (Figures 1 &2). Maps reveal Lucy's Warbler numbers are higher outside of the Tucson urban center during breeding season. This can be explained by the availability of suitable nesting cavities as the urban trees are often pruned extensively for public safety and aesthetic appeal, therefore

removing the low heavy branches that are often preferred by Lucy's Warblers for the availability of the typical crevice nesting location. Smaller pruned mesquites still support a heavy insect load to support Lucy's Warblers so by adding a nestbox, we are turning marginal habitat into fully functioning breeding habitat.

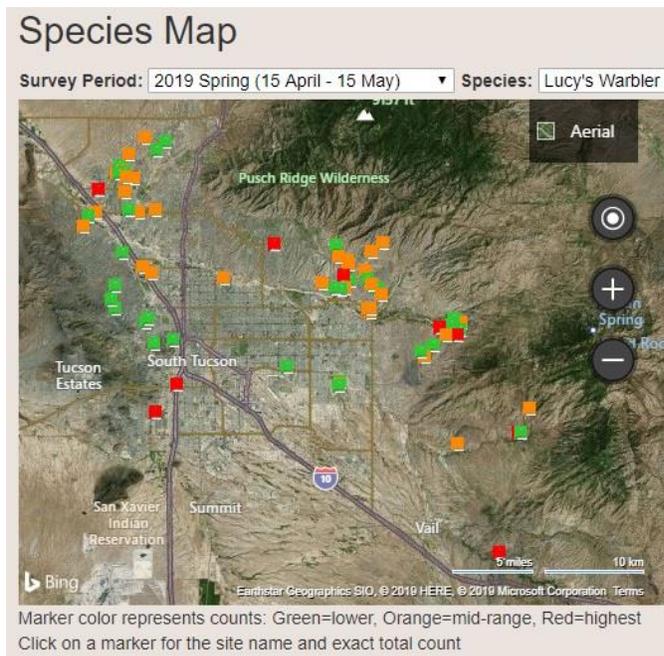


Figure 1. Lucy's Warbler distribution data Spring 2019, Tucson Bird Count.

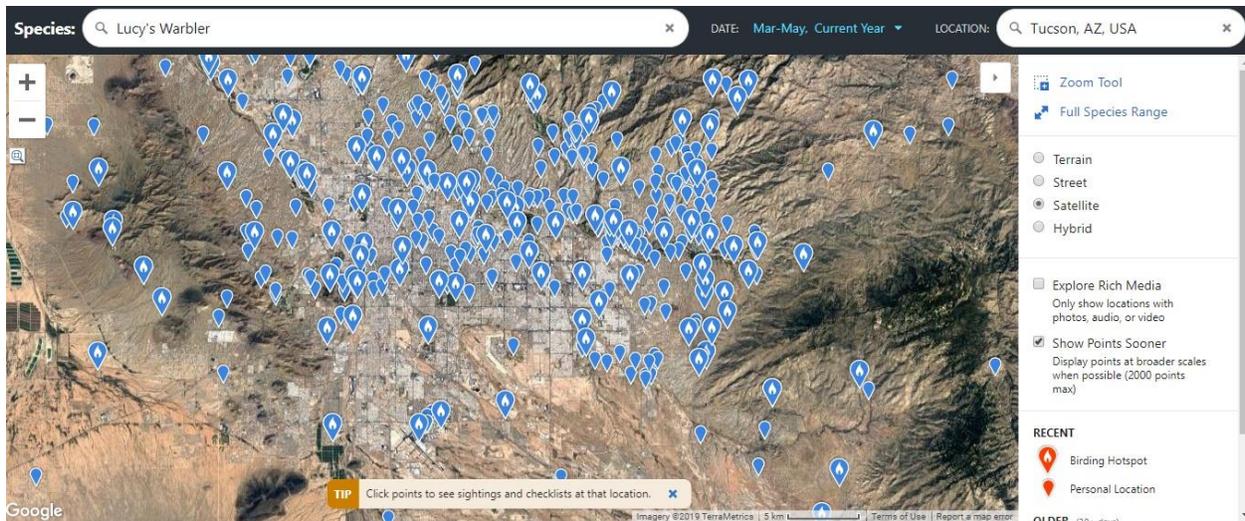


Figure 2 Lucy's Warbler distribution Spring 2019, eBird.

2) March 2019: LUWA triangle nestboxes constructed and installed for third year of project.

Tucson Audubon staff along with help from partners such as local woodworkers, students and TAS volunteers will build boxes using our current plans for LUWA nestboxes. These boxes will be installed by TAS, partners and distributed to the public via outreach events and through our nature shop before and during March, 2019.

Progress Report: Tucson Audubon staff and volunteers built and installed nestboxes using our current plan for preferred “triangle” nestbox design. In 2019 Tucson Audubon has installed 315 nestboxes to add to the 775 already on the landscape (not counting the private sales). This included the establishment of Best Management Practices by figuring out what height off the ground Lucy’s Warblers prefer to nest in, given the choice of 1, 3, 5, 7, and 9 feet off the ground, all other conditions identical. Nestboxes were installed by TAS, partners and distributed to the public via outreach events and through our nature shop.

Over 50 Tucson Audubon volunteers dedicated over 600 hours of their time to build, install and monitor Lucy’s Warbler nestboxes. With this collective effort we were able to gather a lot of valuable data on nestbox usage and fledge estimation. In 2019, 78% of nestboxes got used which is 16% more than last year. In total, we had 124 nests. With each nest having 4-5 eggs we estimate 496-620 Lucy’s Warblers fledged from the nestboxes supplied by our efforts.

The boxes were then installed in Tucson, Mammoth and Tubac.

Other distribution avenues to the general public included the following:

Tohono Chul Park Shop

Southern Arizona Home Builders Association (SAHBA) spring and fall home shows

Southeast Arizona Birding Festival

Tucson Audubon Nature Shop

3) March 2019: Volunteers and students trained for nestbox monitoring

Volunteers and students will be recruited and trained prior to March, 2019 in preparation for LUWA arrival in March/April to help Tucson Audubon staff. The installed nestboxes will be monitored to track the success of this habitat restoration project.



Progress Report: Tucson Audubon trained 22 nestbox monitors that dedicated their time to visiting the nestboxes weekly during the LUWA breeding season to record usage data. They have collectively contributed 333 hours of their time valued at \$8468.19.

Figure 3. Student volunteers installing one of the height preference BMP determinant points.

4) June 2019: Best Management Practices (BMPs) of LUWA boxes determined

Results from the nestbox monitoring will be analyzed and BMPs for LUWA nestboxes will be determined. This information will guide 2020 activities and recommendations for further habitat restoration in the future based on which nestboxes are used by Lucy's Warbler pairs. Measurables: deliverables of summaries of results as well as outreach products created as a result of these finding.

Progress Report: Using the discovered data we have isolated the design we named the "Triangle nestbox" as the ultimate nestbox selected by Lucy's Warblers (Figure 4). Additionally, when presented with nestboxes of preferred design at 1, 3, 5, 7, and 9 feet installed in same tree and direction, the biggest preference went to the highest offered nestbox: the 9 feet (Figure 5).

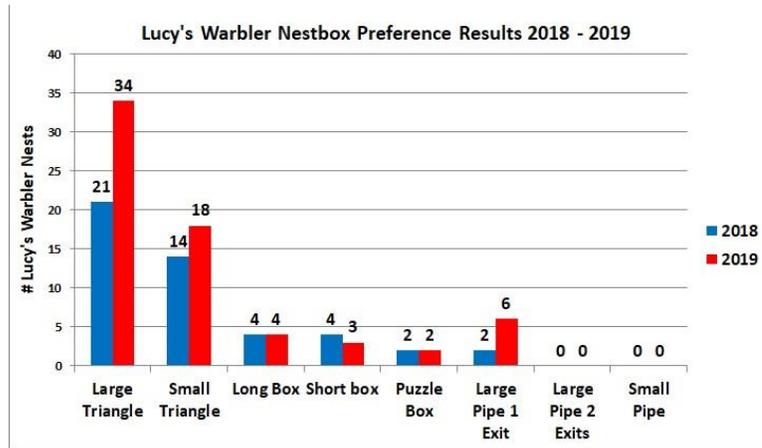


Figure 4. Nestbox preference results by nestbox type.

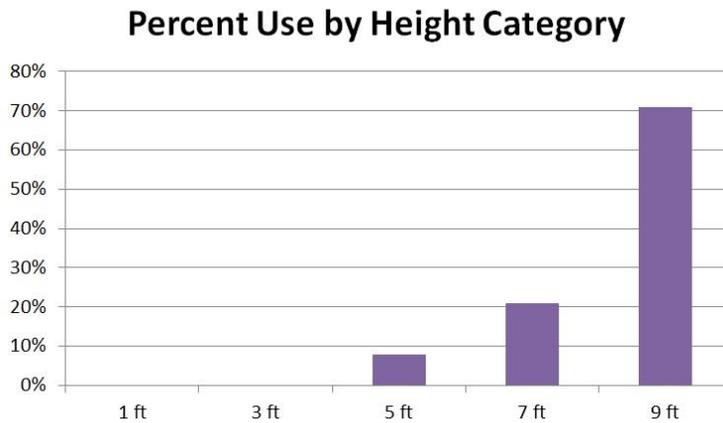


Figure 5. A clear preference for nestboxes higher off the ground (with all other conditions remaining the same).

5) September 2019: Native mesquite trees planted in Tucson valley to create more Lucy's Warbler habitat. Tucson Audubon will directly plant native velvet mesquites and work with partners to get as many native mesquites planted as possible. Research has shown that native mesquite trees have more foraging value for Lucy's Warblers and many other songbird species.



Progress Report: In 2019 Tucson Audubon was able to plant 500 native velvet mesquite (*Prosopis velutina*) saplings along Santa Cruz River just north of Tucson. This is an area that historically supported a healthy mesquite bosque before ground water drop and agricultural activities in the area. Mesquite trees play a vital role in Lucy's Warbler life by being a source of food and suitable nesting cavities in the wild.

Figure 6. One of the many velvet mesquite saplings planted in 2019.