Retrofitting New Technology into an Existing Long-term Citizen Science Program: Field Test of the "Birdbox App"

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Introduction

Background

"Bluebird trail" monitoring is a long-term citizen science program in which volunteers monitor and maintain bird boxes along fence lines in rural North America[1] (Fig. 1).

The Problem

Trail monitors submit their data to Area Leaders, who must transcribe it into spreadsheets. Data transcription is a lengthy process, often taking as long as 60 hours and resulting in volunteer fatigue. Moreover, the geospatial data associated with the boxes is underutilized.

The Project

Using an Area Leader's spreadsheet as our template, we customized Esri's Collector Application[2,3] to streamline bluebird trail data collection and transcription. Here we report on the perceptions of the citizen scientists who field tested our "Birdbox App".

Methods

Twenty trail monitors were recruited from Ellis Bird Farm Ltd. and Calgary Area Nest-box Monitors in Alberta, Canada. They received training with the App (Fig. 2) at the Mount Royal University campus. We obtained informed consent and surveyed participants at the beginning of the 2017 field season and again at the end.

All 14 citizen scientists who completed our surveys were over the age of 36 and 85% were older than 50; 28% had prior experience with other ecological Apps such as eBird or iNaturalist and reported spending 2-30 hours per week monitoring between 25-300 nest boxes.

Results

Figure 1: Nest box along a "Bluebird Trail" Photo Credit: Sacajawea Audubon Society

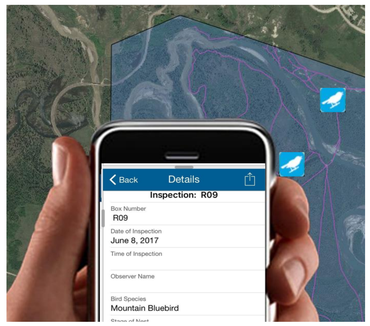

Figure 2. Interface of the "Bird Box App", a customization of Esri's Collector Application[2,3] for collecting bluebird trail data.

♦The Bird Box App did not streamline field data collection (Fig. 3); the majority (71.4%) of participants, including all those with prior ecological App experience, found using the Bird Box App was slower than using paper data collection sheets.

♦57.1% reported poor cell phone coverage in the field, which was the most common technological issue. The App allowed for off-line data collection and delayed upload, but several participants did not use this feature.

♦Scrolling through the extensive pull-down menu, not having an autofill function for repeat visits to the same box, and difficulty reading the screen in bright sunlight were among the reasons participants found the App slower than paper.

♦35.7% of participants thought the App diminished their outdoor experience resulting in them spending more time looking at the screen than watching the birds

♦Streamlining data transcription and providing geospatial data are the two main advantages of the App.

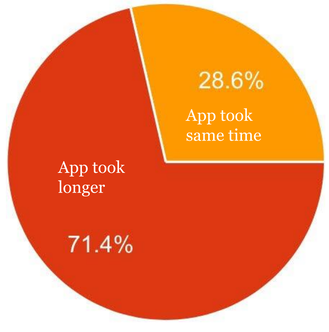

Figure 3. A majority of participants (71.4%) found that data collection using the App was slower compared to paper data collection sheets, while the remainder (28.6%) said it took about the same amount of time. None of the participants found that the App streamlined field data collection.

Discussion

The advantages of the Bird Box App, streamlined data transcription and geospatial data, benefit Area Leaders and researchers who wish to conduct more in-depth data analysis. The disadvantages of the App, slower field data collection and a diminished outdoor experience, handicap the trail monitors who collect the data. Unless an app can streamline data collection, it is unlikely that trail monitors will adopt it and the benefits of using a geospatial app will not be realized.

App design suggestions from our participants

♦Simplify the App – eliminate uncommon selections and provide more room for notes

♦Reorganize the pull-down menus so most common selections are at the top

♦Autofill function for repeat visits to the same box

♦Use background and colours that are easy to read in bright sunlight

Acknowledgements

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References

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