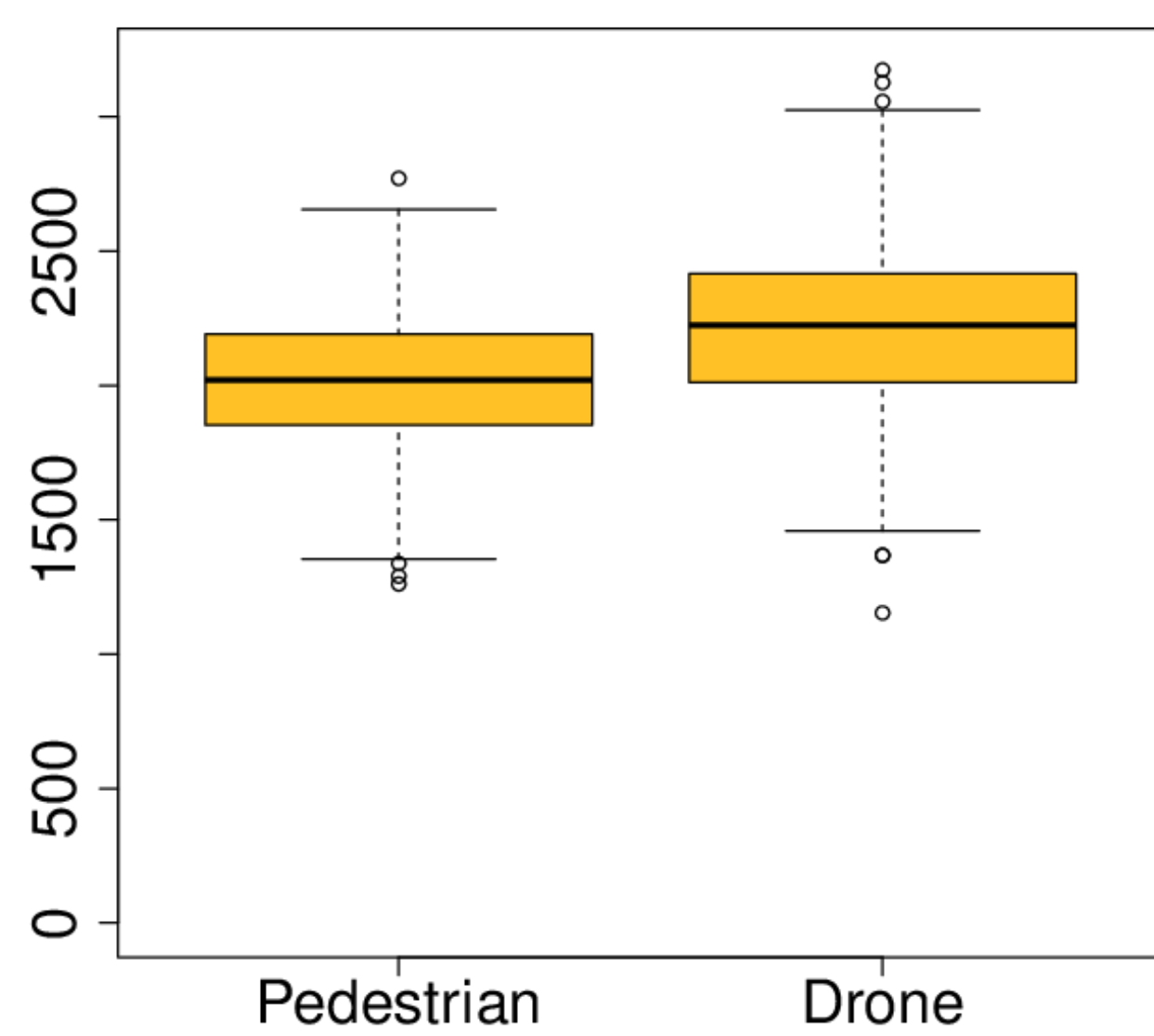


Drone photography and AI models detect wildlife and plants more efficiently than traditional methods.

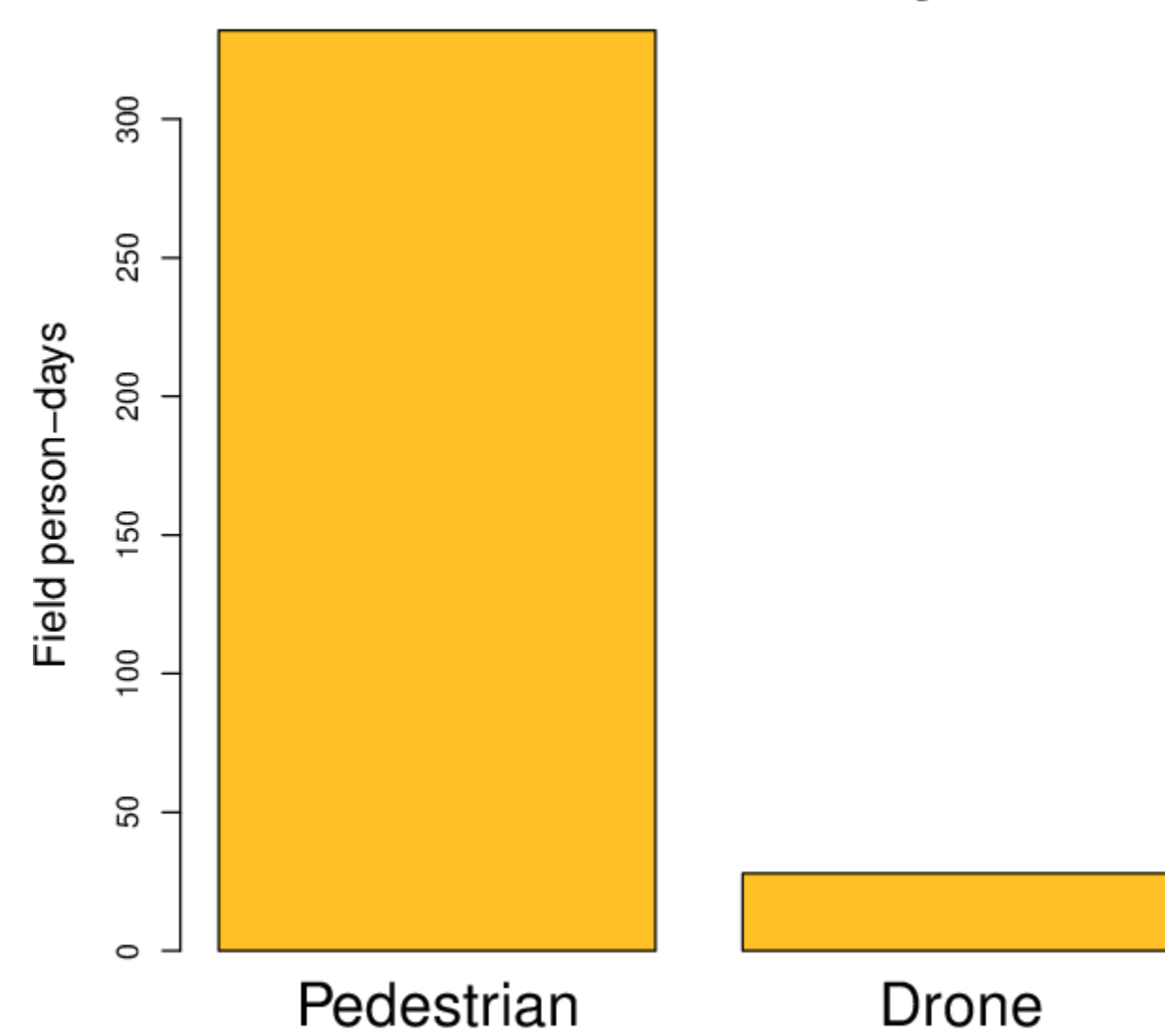
Landscape-Scale Resource Surveys with Drones and Artificial Intelligence

Matthew Bandy, Resi Solutions

Estimated tortoise abundance



Level of field survey effort



Introduction

Traditional biological survey methods are time-consuming and costly. **Drone photography** and **AI object detection** could make some surveys faster, cheaper, and safer.

Methods

Paired drone and pedestrian **Mojave desert tortoise** surveys were conducted in SE Utah.

- > 7,100 acres surveyed
- Density and abundance through distance sampling

Results

- Drone abundance estimates within 4% of pedestrian values
- Drone field sampling was ~9% of pedestrian effort
- **Comparable estimates** with lower sampling effort

Discussion

Similar results obtained for:

- **Eagle/other avian carcasses**
- Joshua trees
- Saguaros
- Pronghorn

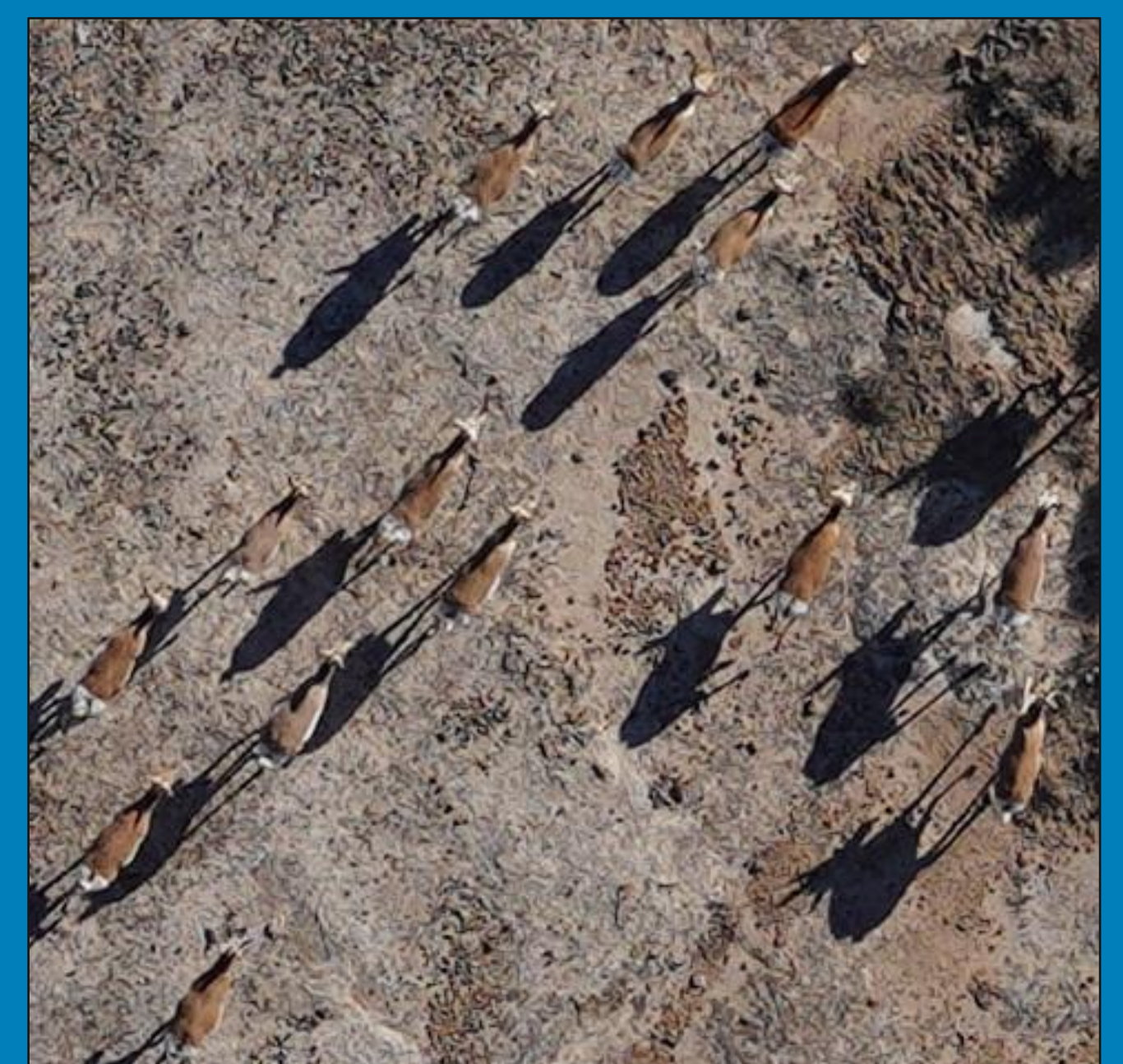
Sample detections



A pair of mating Mojave desert tortoises photographed from a drone in eastern California in 2023



Joshua tree detected in drone imagery from eastern California in 2023



A herd of pronghorn detected in drone imagery from northwestern New Mexico in 2023

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