Appendix 1

Methods to Assign Distance: Before the survey, while on the ground, we marked the boundaries of the distance intervals on the windows of the aircraft. Each observer assumed their landmark position in their seat while we measured the distance from their eye to the ground. We drew a line perpendicular from the aircraft and marked the line at the boundary for each distance bin. We stretched a string from each distance interval to the observer's eye and marked the point the string intersected with the window, after confirming the angle of the string with an inclinometer.

During flight, observers often use a second set of markings on the wing struts to help them maintain their position in their seat; when these two sets of markings aligned, the observers knew their eyes were positioned correctly. However, the Partenavia had a strutless wing design. Instead, to ensure the observers aligned their eyes correctly with the horizon, we created a second surface by stretching a clear piece of tape approximately 10 cm inboard from the window. The observers then marked the distance intervals on this tape with the inclinometer. Birds that occur near the boundary between two distance intervals can be difficult to assign to the correct interval. To maximize observers' time searching for flocks, they could record these flocks as being on the boundary between the specific distance intervals. We later randomly assigned half of the sightings on the boundary to one distance interval, and half to the other.

To estimate the unobservable area under the aircraft, the observer then identified the point at which they could no longer see the line. The angles where the line disappeared was 72° and 74° from the horizon for the left and right observer, respectively, so we concluded that the 14 m transect directly below the aircraft was unobservable.

Table A1: The total number of flocks (N_{Flocks}) and birds (N_{Birds}) of each species observed during aerial surveys. Common Golden-eye, Common merganser, and Red-necked Duck are not included in analyses as observers saw less than 10 flocks of each species.

Species	Species Code	N_{Flocks}	N_{Birds}
American Black Duck	ABDU	25	53
Green-winged Teal	AGWT	18	32
Unidentified Scoter	USCO	96	179
Canada Goose	CAGO	75	279
Common Golden-eye	COGO	2	4
Common Merganser	COME	9	18
Red-breasted Merganser	RBME	63	105
Red-necked Duck	RNDU	2	4
Unidentified Scaup	USCA	50	100
Total		340	774

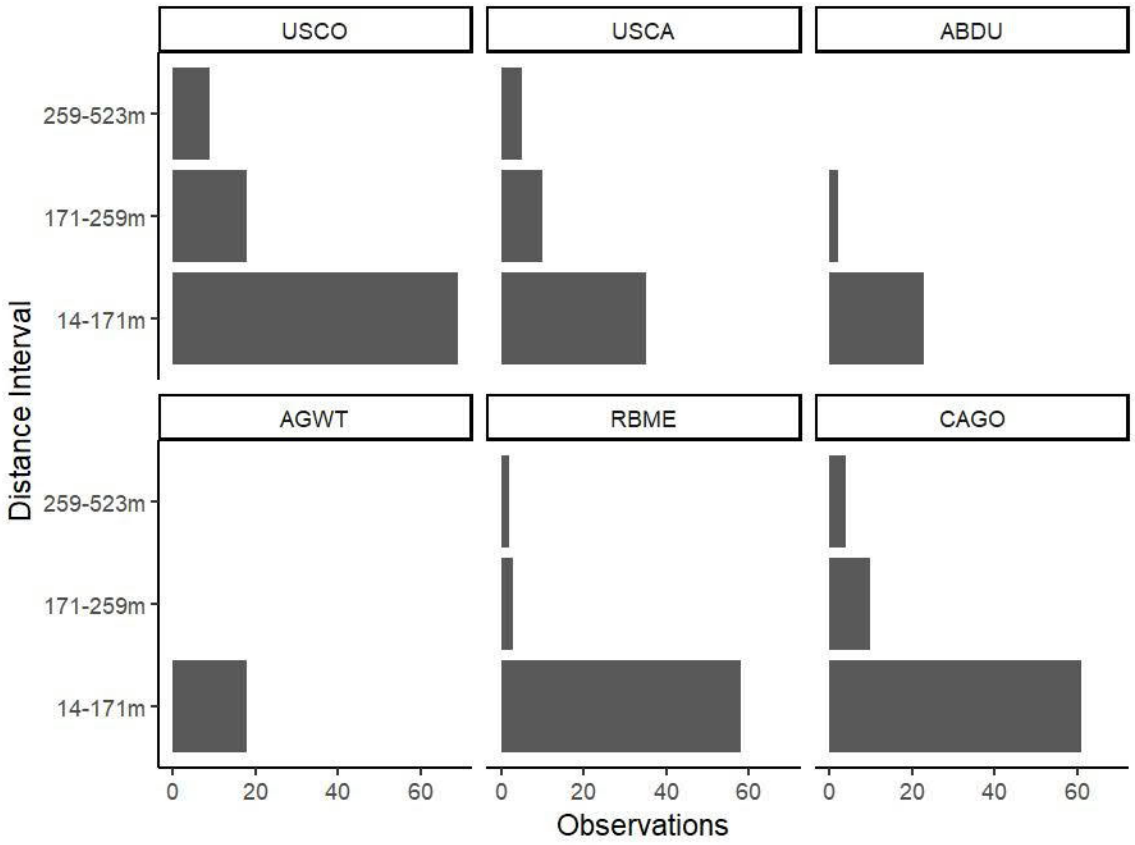

Figure A1: Observations of flocks of birds in each distance interval, per species.

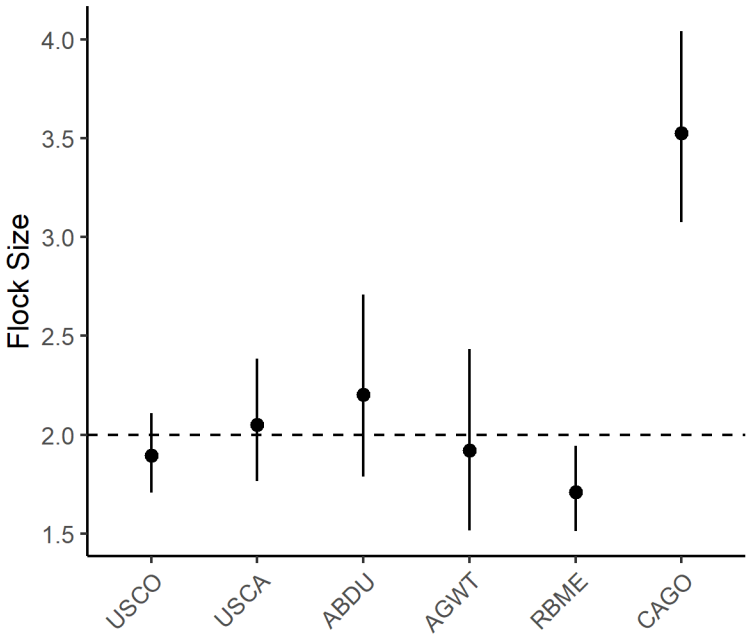

Figure A2: Mean flock size. Points represent means; bars represent 90% BCIs. The dashed horizontal line represents a flock size of two, which would likely be a breeding pair.

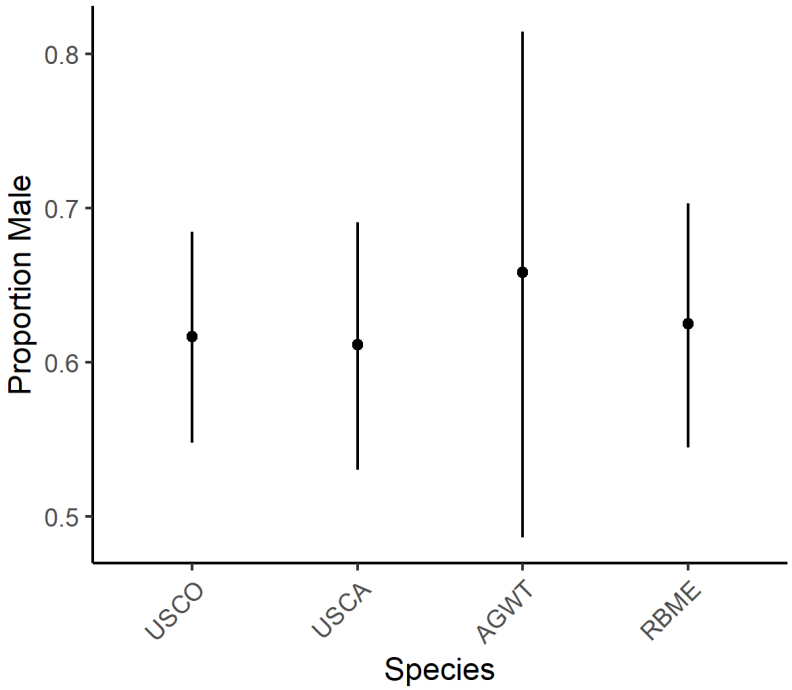

Figure A3: Mean proportion of male birds for each dimorphic species. Points represent means; bars represent 90% BCIs.