



Project Pigeon Watch

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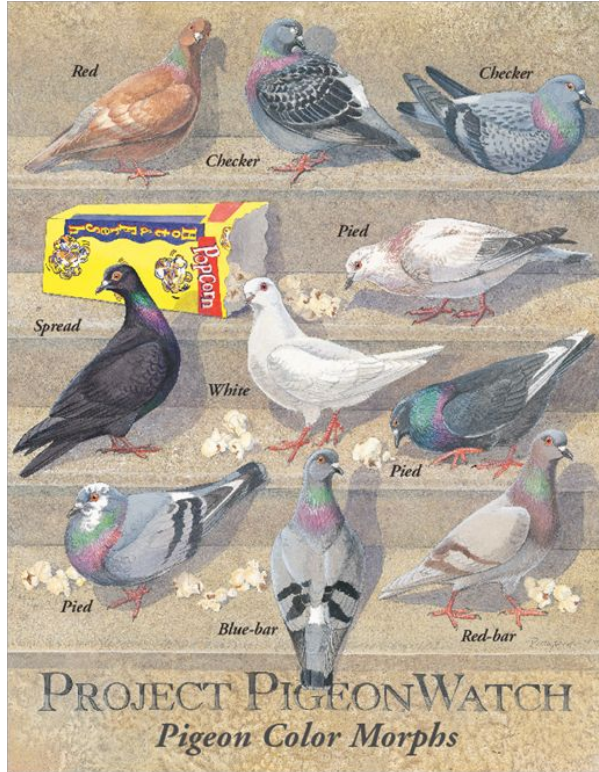
Goal of Project:

We sought to find if there is a significant difference in pigeon morph distributions by the three core habitats, in relation to stabilizing selection

***Stabilizing selection: penalizes morphs that diverge from a common pattern, enforcing greater uniformity in prey species, in this case diverging from what's common in a certain habitat**



Data and Methods



Data: Archival data collected by students of ESP 330 at California State University Long Beach

Dates used: Fall 2000 until Spring 2018, from all over California

6,341 Pigeons in total

Method of Analysis: Chi-square Distribution

Alpha value = .05

12 degrees of freedom

* as chi-square is the best qualified method for analyzing counts that are divided into categories

Results

EFFECT SIZE= **.058**

POWER= **.904**

X-CALC= **42.5**

X-CRIT= **21.0**

P-value= **0.0**

ALPHA= **0.05,**



What this means?

Comparing P-Value and Alpha = $P\text{-Value} < \alpha$

The null hypothesis: There no significant difference in the distribution of morphs by these three core habitats

→ **Null rejected**, there is a significant difference

The Effect Size:

.058

Was very small, this means that although significant, there is only a faint matching of pigeon morphs to habitat

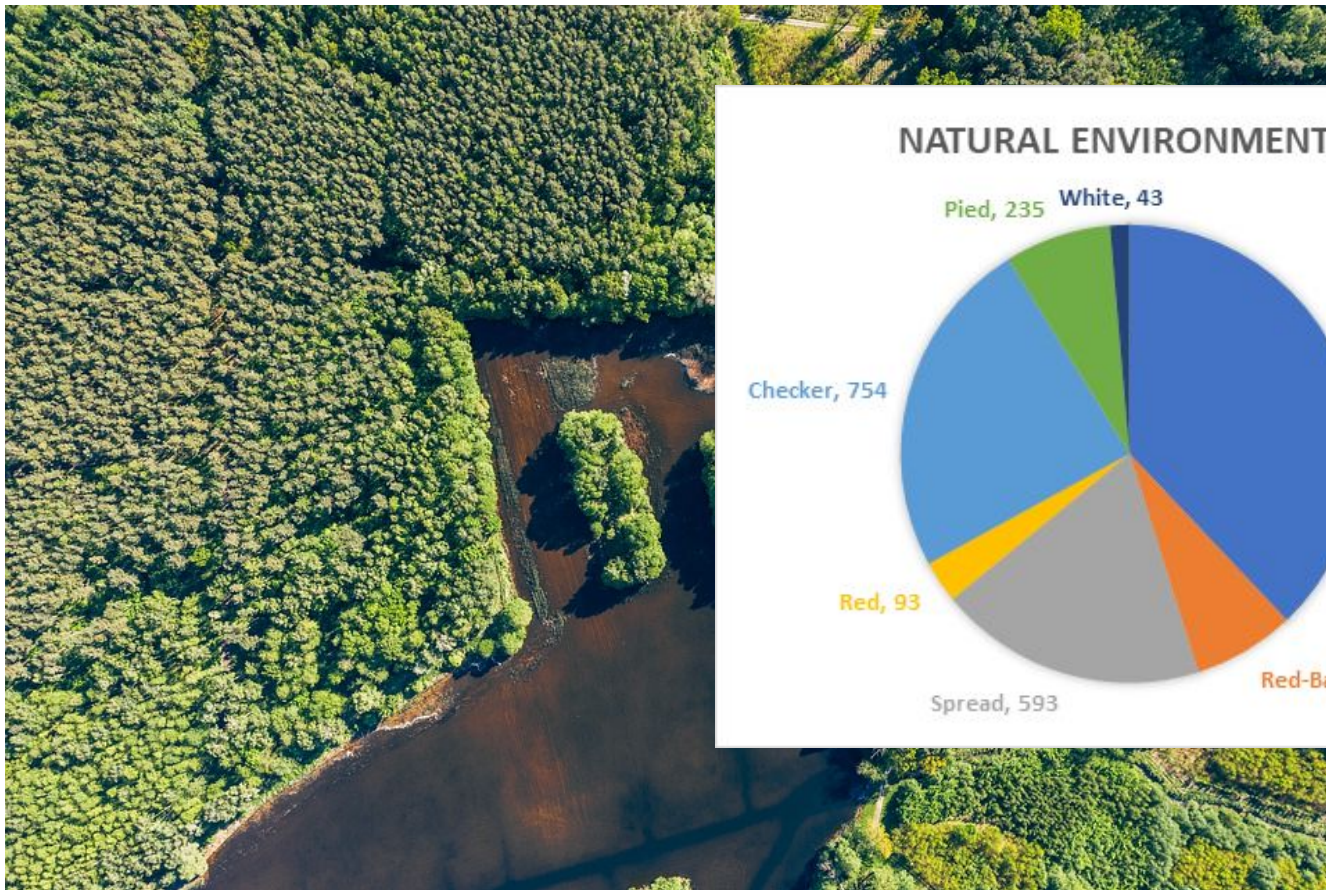
Power:

.904

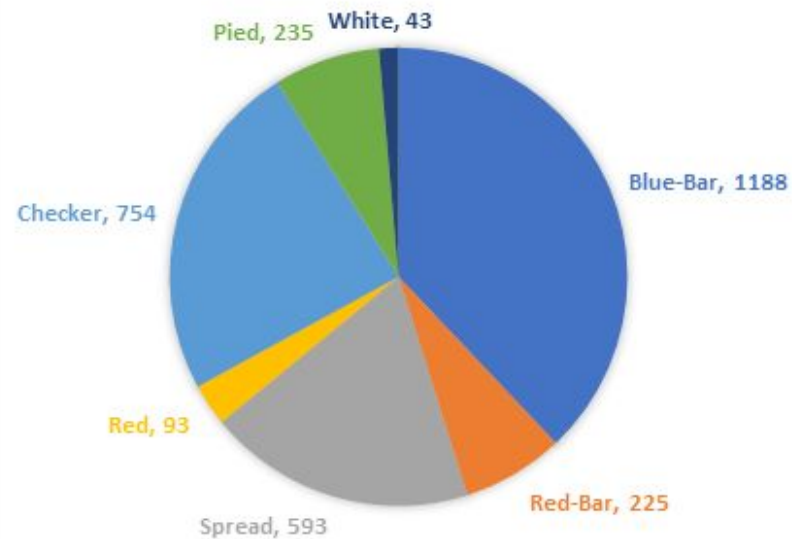
Power is whether we have enough power in our data to trust a finding of no significant difference, here it was very high



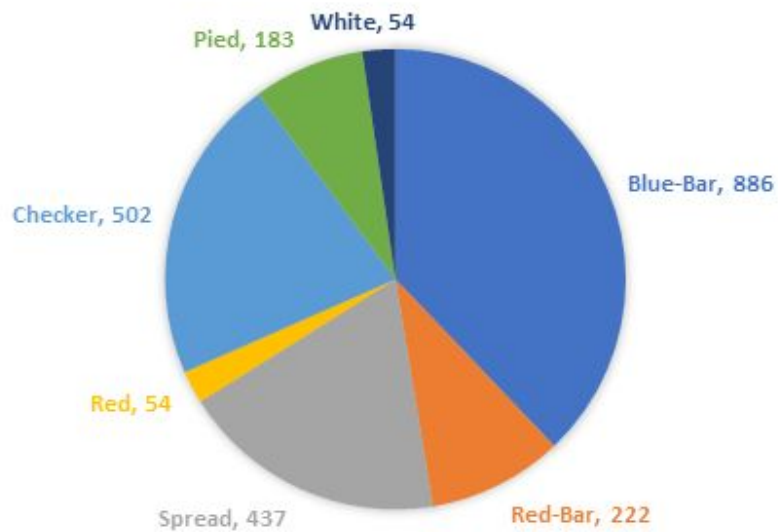
- Blue-Bar
- Red-Bar
- Spread
- Red
- Checker
- Pied
- White



NATURAL ENVIRONMENT

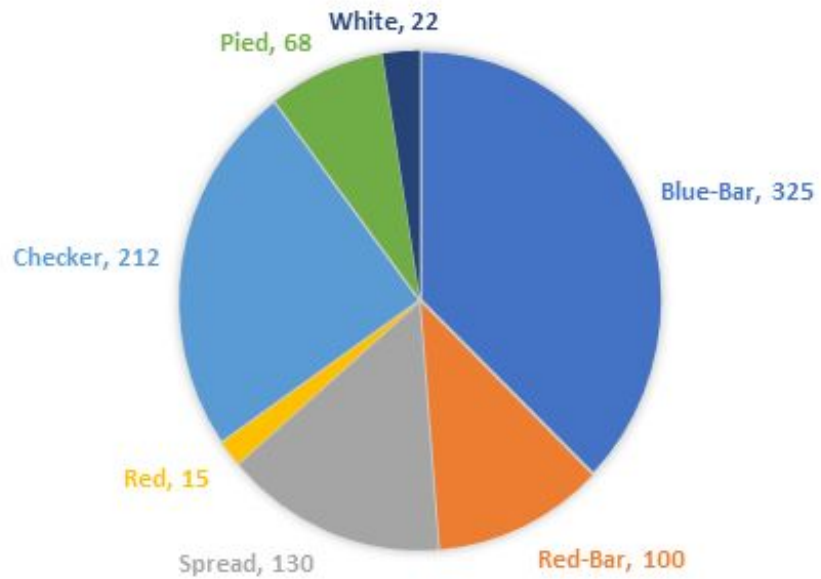


URBAN



- Blue-Bar
- Red-Bar
- Spread
- Red
- Checker
- Pied
- White

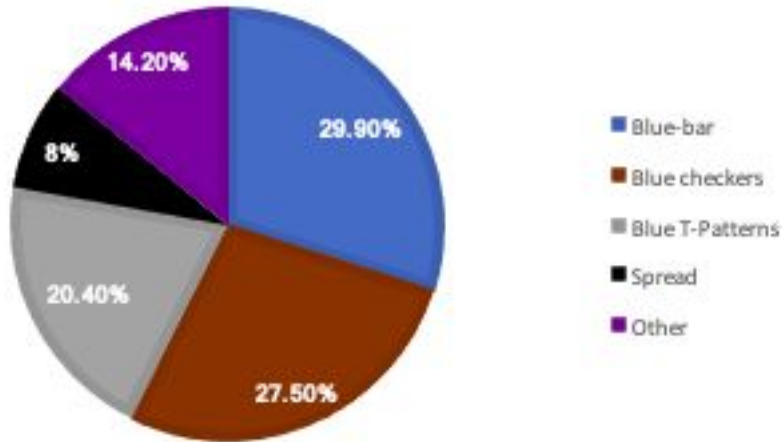
RESIDENTIAL



- Blue-Bar
- Red-Bar
- Spread
- Red
- Checker
- Pied
- White

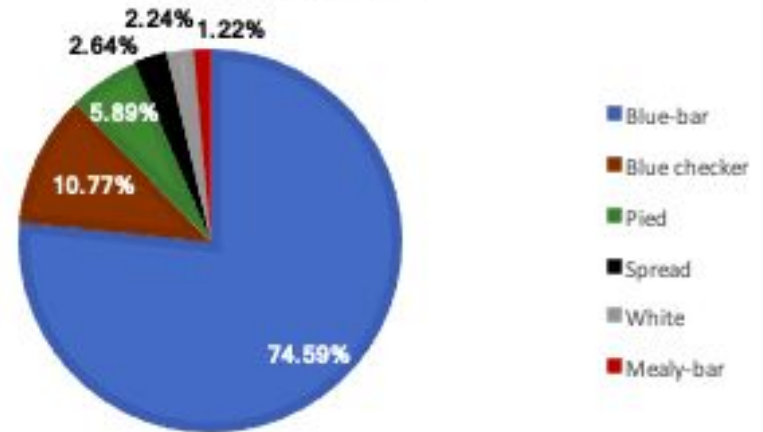
Discussion

PIGEON MORPH DISTRIBUTION IN VIENNA



Haag-Wackernagel, *et al.* (2006)

PIGEON MORPH DISTRIBUTION IN BANGLADESH



Kabir, M. A. (2016)

Conclusion

Pigeon morph plumage diversity was shown to vary in different environments only slightly

The rewards for lifesaving melanic stabilizing selection traits to avoid predation is generally favored

For future projects we Recommend further research to continue by separating environment grouping Parks and Beaches into separate groups; regrouping into four groups





References

Haag-Wackernagel, D., Heeb, P., & Leiss, A. (2006). Phenotype-dependent selection of juvenile urban Feral Pigeons *Columba livia*. *Bird Study*, 53(2), 163-170. doi:10.1080/00063650609461429

Kabir, M. A. (2016). Rock - Pigeons in Some Parts of Bangladesh. *The Journal of Middle East and North Africa Sciences*, 2(3), 45-49. doi:10.12816/0032663

LaBranche, M. S. 1999. *Why Study Pigeons?* *Birdscope*, Volume 13, Number 3: 3.

Rodrigue, C.M. 2019. Chi-square modeling spreadsheet. Department of Geography, California State University. <http://web.csulb.edu/~rodrigue/geog400500/ChiSquareModels5plus.ods>