

# White-crowned sparrow songs not shown to respond to anthropogenic noise pollution in coastal Humboldt County

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## Introduction

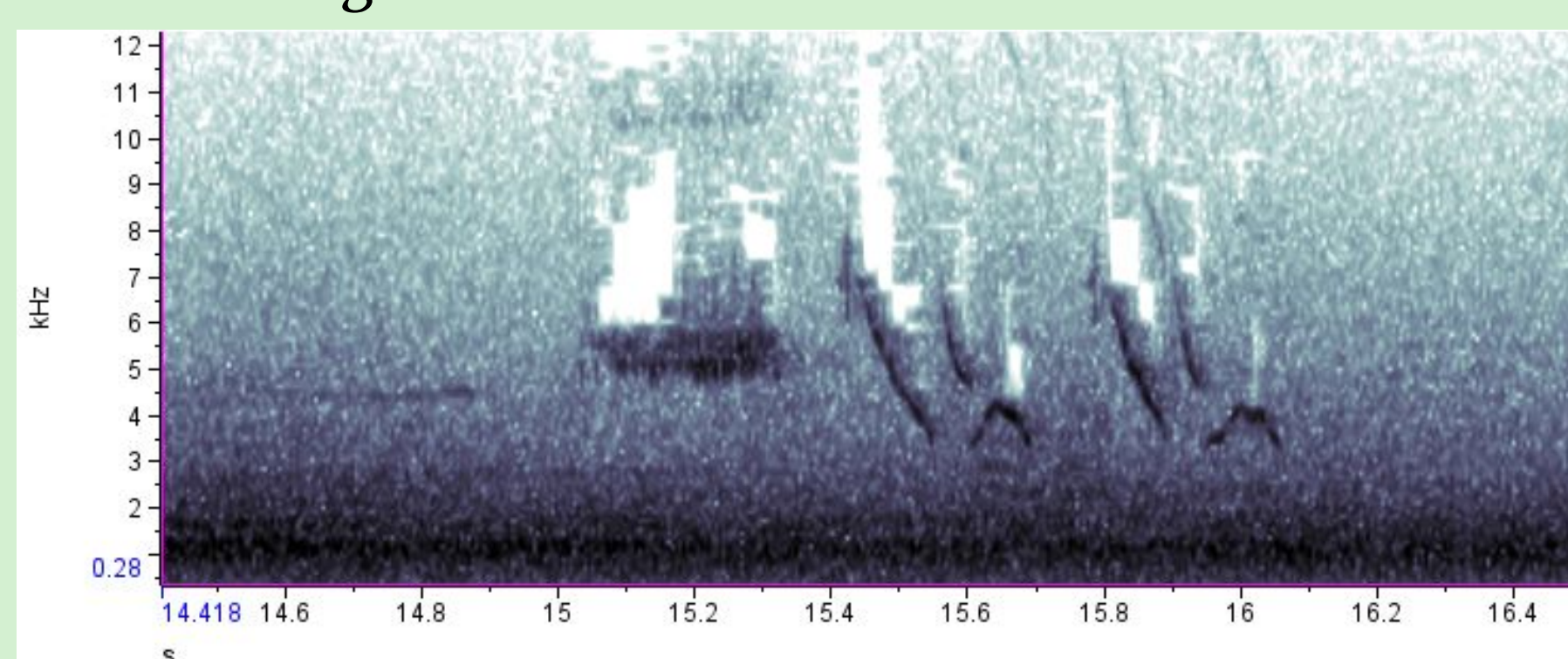
White-crowned sparrows (*Zonotrichia leucophrys*) adjust their songs based on environmental factors. White-crowned sparrows have been observed altering their songs in response to loud anthropogenic background noise. **Therefore, sparrows are expected to have higher minimum frequency (higher pitch) songs and lower frequency bandwidth (less variety) in their songs when ambient noise was louder vs. when ambient noise was quieter.**

## Methods

- Singing white-crowned sparrows were recorded in louder (car traffic) and quieter (no car traffic) locations.
- Background noise levels were measured in dB(A)
- Song audio files were analyzed using the program Raven Pro 1.6.
- Found song minimum frequency, maximum frequency, and frequency bandwidth
- Linear regression in R used to test whether ambient noise level could predict the above variables.

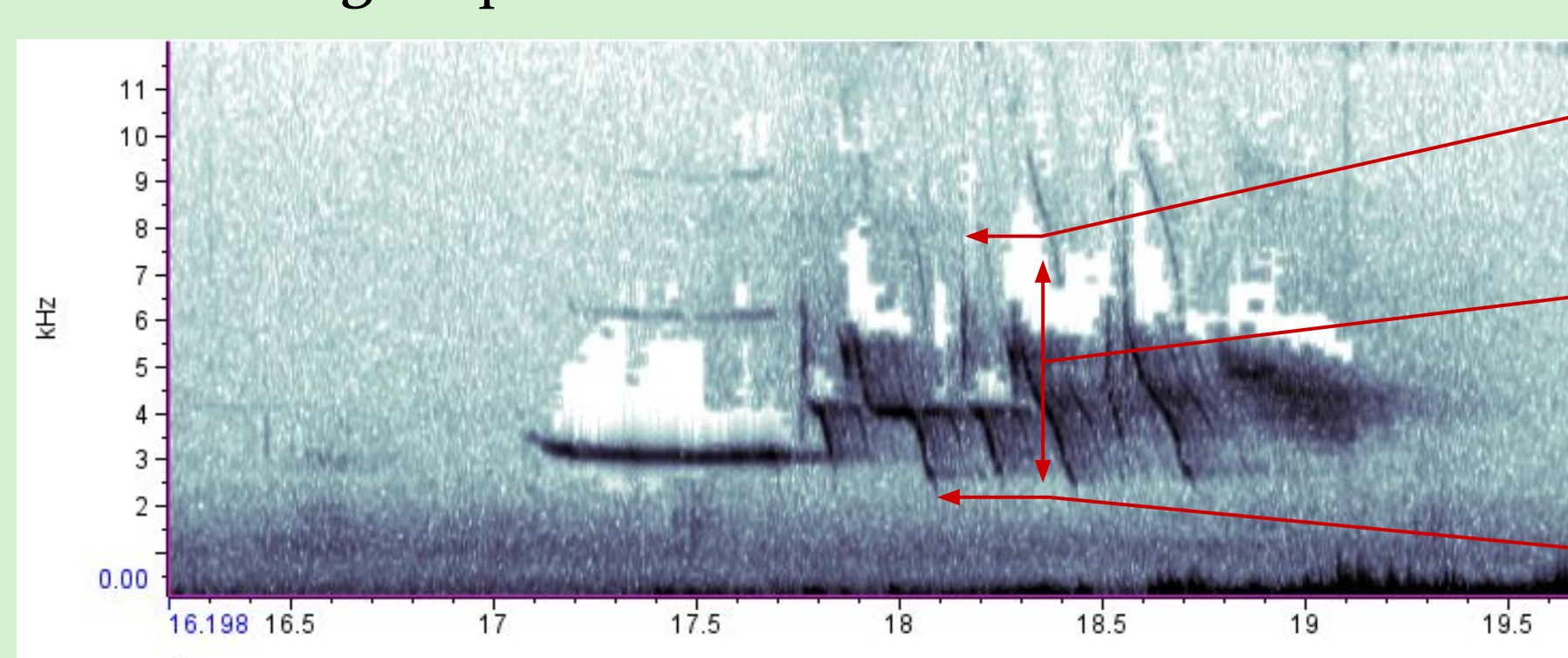
## Spectrographs

WCSP song in loud environment



Raven Pro 1.6

WCSP song in quiet environment

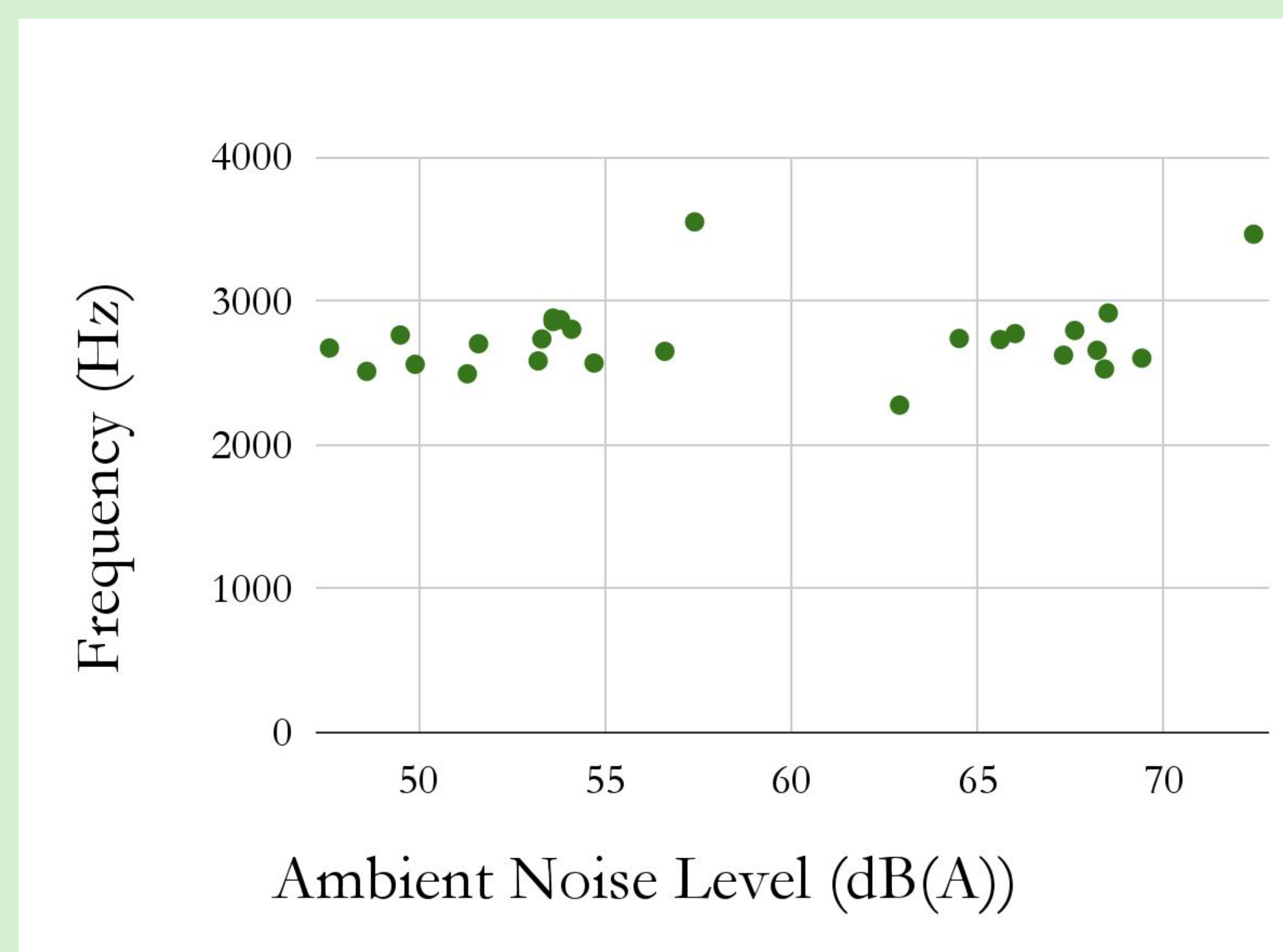


Maximum frequency

Frequency bandwidth

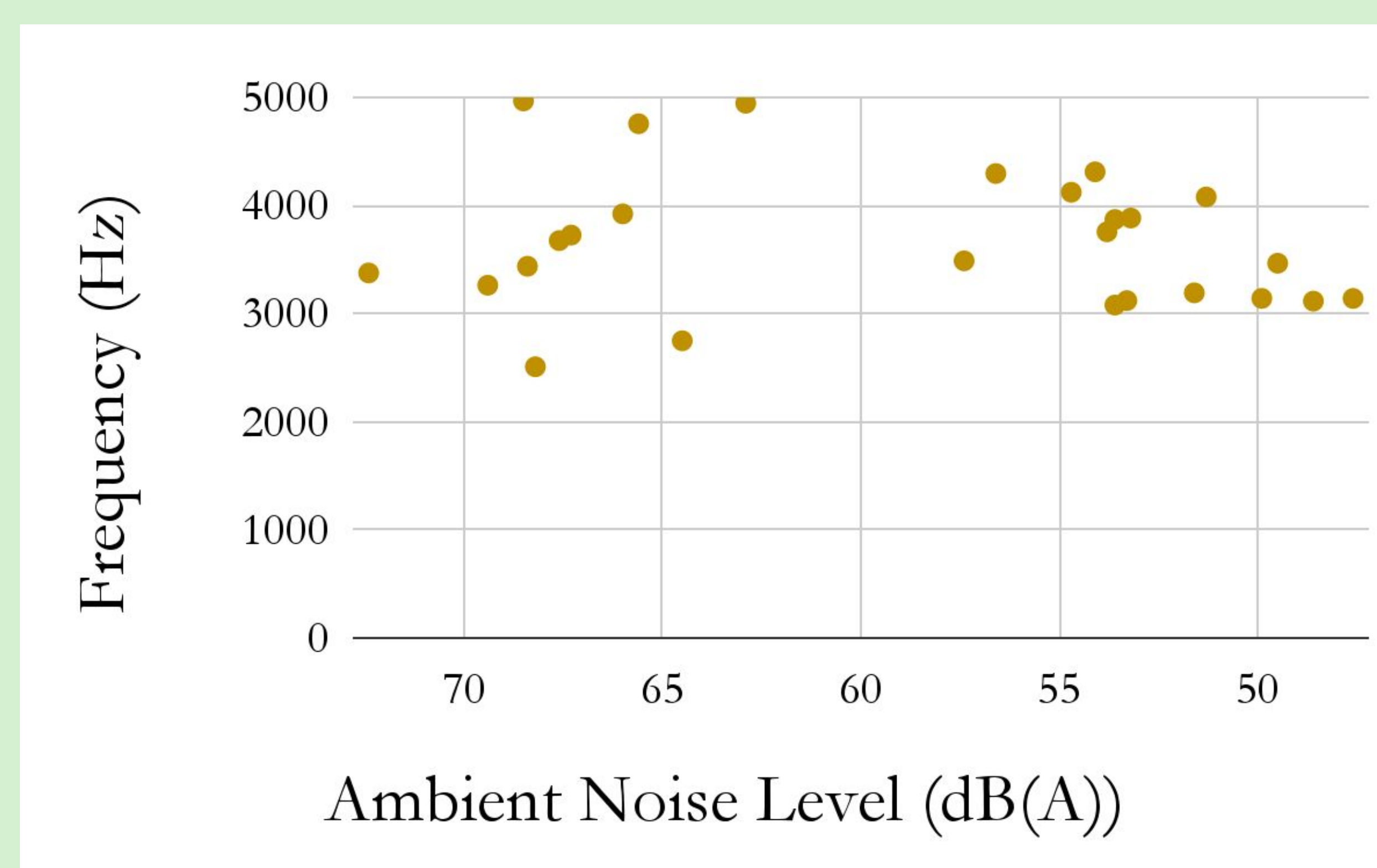
Minimum frequency

## Minimum Frequency in Response to Ambient Noise Level



No significant relationship was found between minimum frequencies ambient noise level.

## Frequency Bandwidth in Response to Ambient Noise Level



No significant relationship was found between trill rate and ambient noise level.



White-crowned sparrow photo by Wolfgang Wander

## Results

- No variables found to correlate with one another
- Ambient noise level did not predict any song variables
- No significant difference between the songs for WCSP in louder areas vs. quieter areas.

## Conclusion

- White-crowned sparrow songs are not shown to differ in response to anthropogenic noise pollution in Humboldt County
- WCSP songs did vary between individuals
- Two song “dialects” identified, little difference in response to ambient noise level
- Investigation needed into other causes of variance

## Acknowledgements

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## References

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