

Prevalence of Feather Degrading Bacteria on Northern Saw-Whet Owls

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Overview

- Introduction
- Objective
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Introduction

- Feather degrading bacteria (FDB) degrade β -keratin
 - *Bacillus licheniformis*
- Contaminated through random environmental contact
- Little evidence that FDB degrade feathers on live birds
- Strong evidence that FDB can alter feather coloration
- Reported prevalences change from 6.7%-99%

Objectives

- Characterize and compare the microbiome of the dorsum, tail, and wings
- Determine a prevalence of *Bacillus licheniformis* Northern Saw-Whet Owls

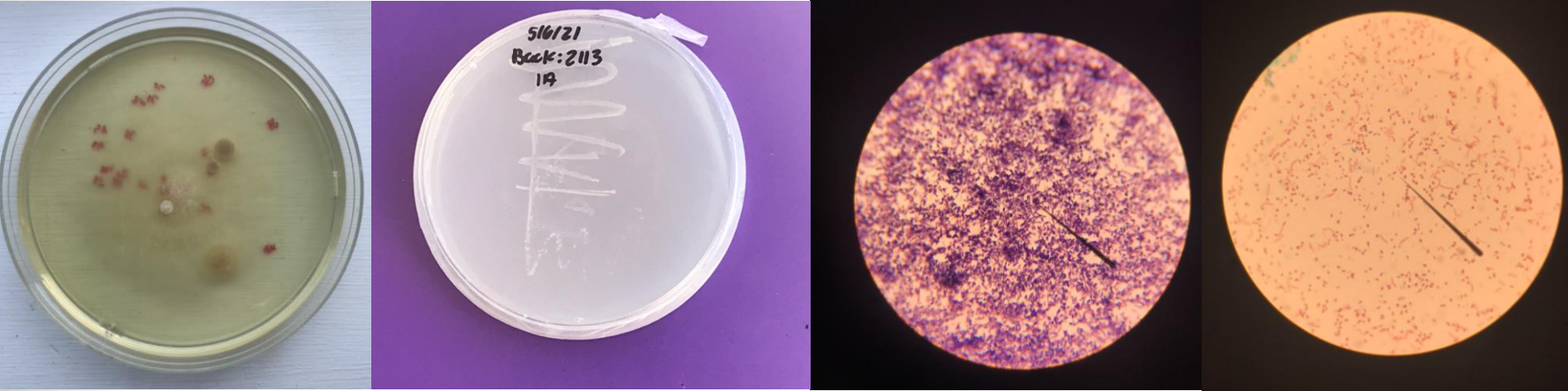
Figure 1. Photo of NSWO



Photo taken by Lauren Benedict

Material and Methods

Figure 2. Photos of the analysis process.



All photos taken by Lauren Benedict

Results

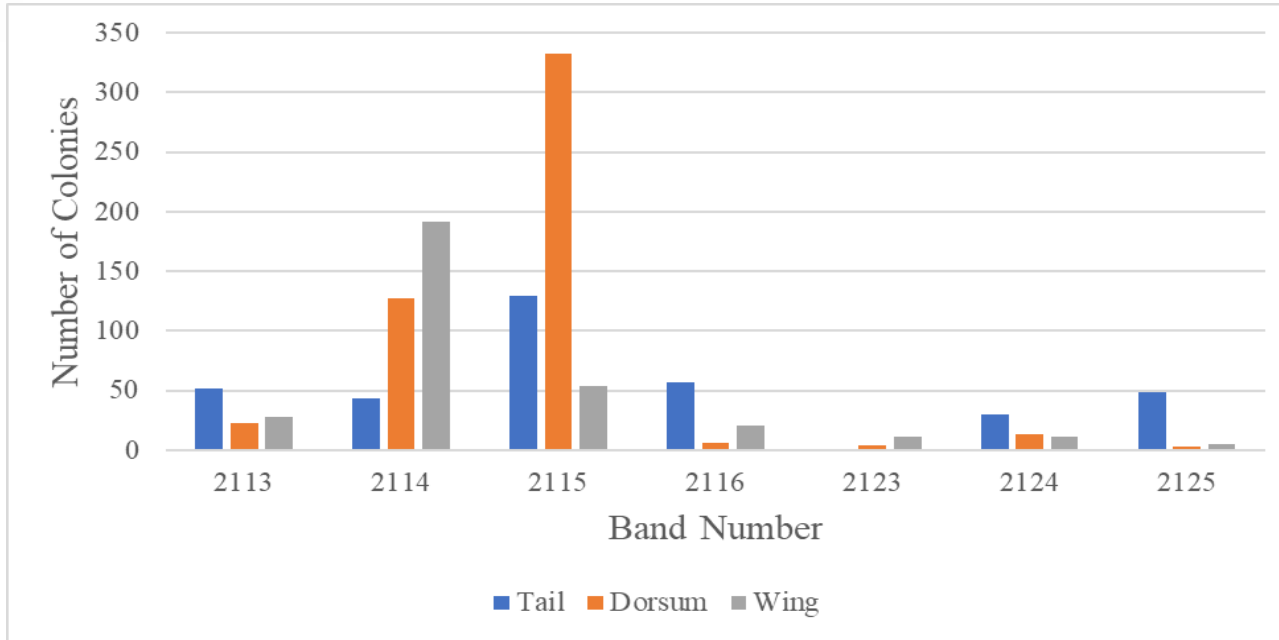


Figure 3. Graph of the number of bacterial colonies that grew on the initial sample plates by the owls' band number and location sampled.

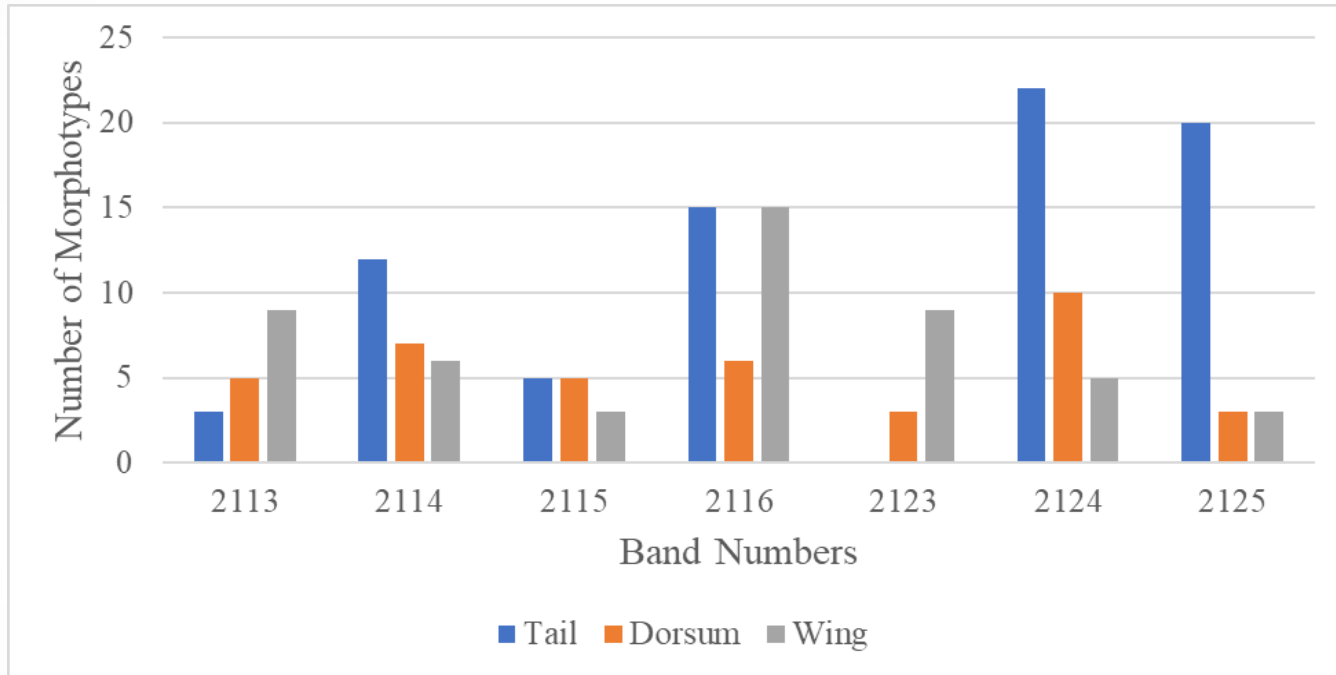


Figure 4. Graph of the number of bacterial morphotypes counted and characterized from the initial sample plates by the owls' band number and location sampled.

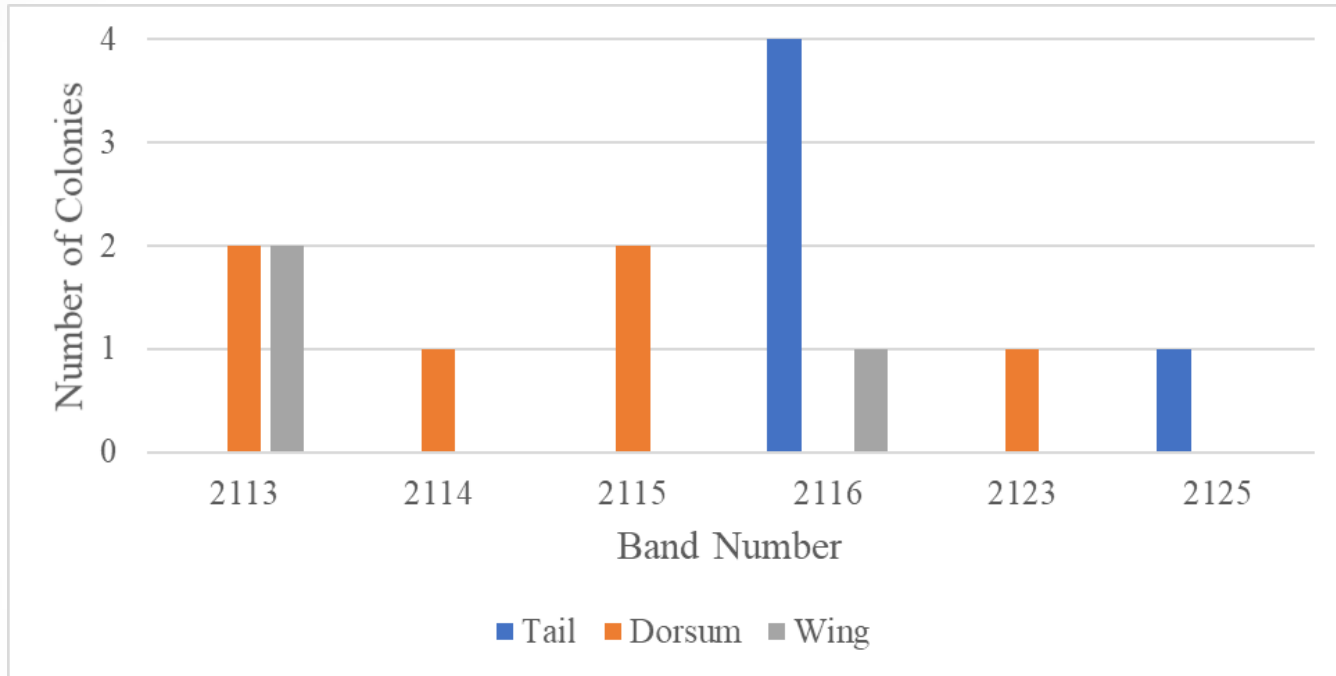


Figure 5. Graph of the number of *B. licheniformis* colonies isolated by owls' band number and location sampled.

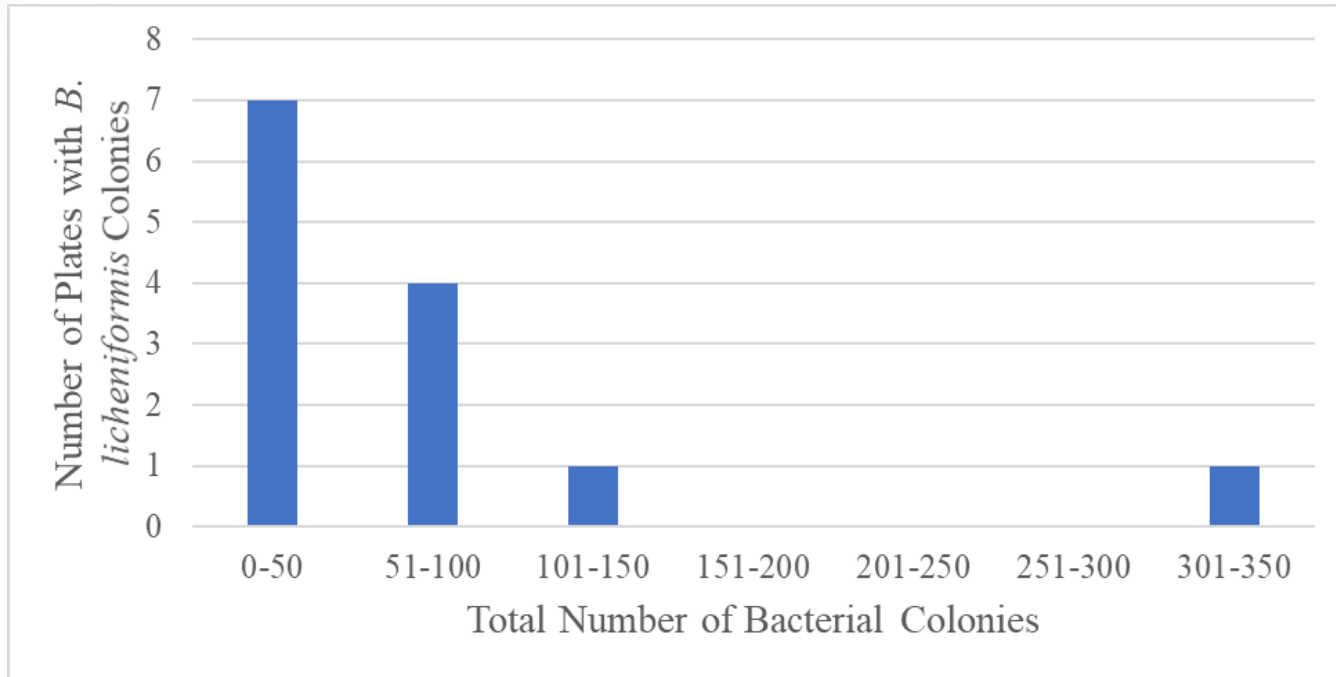


Figure 6. Number of source plates with possible *B. licheniformis* colonies by total number of bacterial colonies on the source plate that the *B. licheniformis* colony was isolated from.

Discussion

This study

- Wing: 21.4%
- Dorsum: 42.9%
- Tail: 35.7%

Burt & Ichida, 1999

- Venter: 44.9%
- Dorsum: 30.2%
- Tail: 24.9%

Prevalence Comparison

- **This study: 85.7%**
- **6.7-10%** (Burtt & Ichida, 1999)
- **23%** (Burtt & Ichida, 2004)
- **26%** overall, **59%** in NSW (Whitaker et al., 2005)
- **39%** (Kent & Burtt, 2016)
- **88%** (Gunderson et al., 2008)
- **99%** (Gunderson et al., 2009)

Variance explanations

- Species
- Season
- Sampling procedure
- Number of individuals sampled

Conclusion

- Highest abundance occurs on the dorsum, then tail, and the least on the wings
- *B. licheniformis* is common
- Likely does not damage feathers but can alter coloration
- More research needs to be done on birds from different Orders

References

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- Whitaker, J. M., Cristol, D. A., & Forsyth, M. H. (2005). Prevalence and genetic diversity of *Bacillus licheniformis* in avian plumage. *Journal of Field Ornithology*, 76(3), 264–270.