



# Comparing and Contrasting the Fat Scores and BMI of Yellow Warblers Banded in the Treasure Valley

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## Project Background

The Lucky Peak banding site has been banding songbirds since 1997, and in the spring of 2015, a second banding site was introduced along the Boise River. The advantage of having two different sites is that we are able to see what differences are apparent in migration, fat, and the age range of the birds. At each site the MAPS (Monitoring Avian Productivity and Survivorship) banding protocol was used to monitor songbirds at both locations. The two sites are approximately 8 Kilometers apart and a difference of approximately 915 meters in elevation. In addition, the two banding sites also have very different habitats. The Lucky Peak site is forested by douglas fir and other coniferous trees with understory shrubs, where the Boise River site is made up of a cottonwood gallery.

The Yellow Warbler is a songbird species that migrates long distances. By early August no more Yellow Warblers were being banded. In this poster the data on the fat scores and BMI of Yellow Warblers that was collected in 2015 at both banding sites shows the variety of fat levels during the banding season.

## Project Purpose

By looking at the data provided by the Intermountain Bird Observatory (IBO) on Yellow Warblers in 2015, we are able to see how the birds have drastically different fat scores and BMI and how that is affected by the age and at what site the bird was banded. It is also important to note that the Yellow Warbler is a riparian species, meaning that they prefer to live in a habitat on the banks of a river.



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## Results

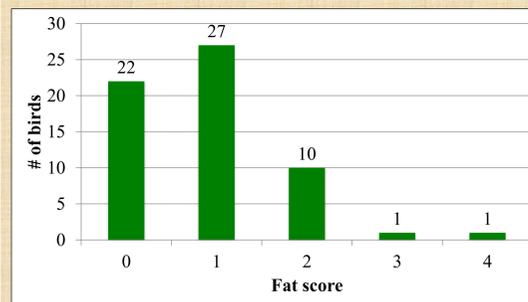


Figure 1 shows the fat scores of all the Yellow Warblers that were analyzed and banded at the Lucky Peak site.

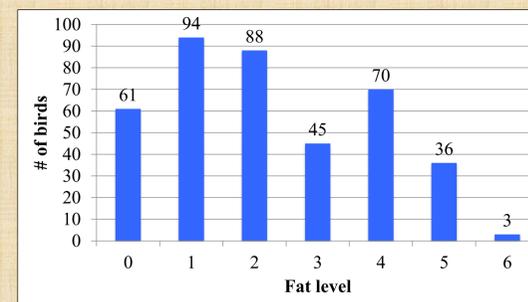


Figure 2 shows the fat scores of all the Yellow Warblers that were analyzed and banded at the Boise River site.

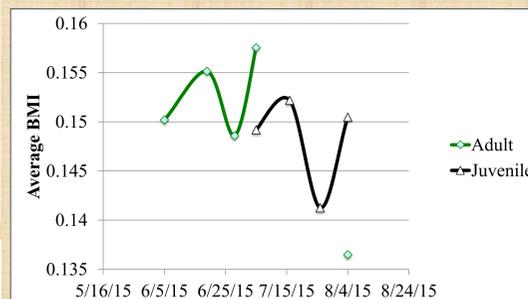


Figure 3 shows the average BMI for each banding date for adult versus juvenile Yellow Warblers at the Lucky Peak site.

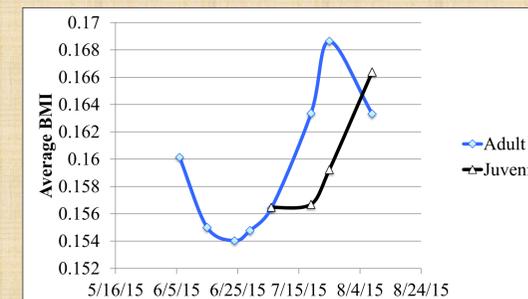


Figure 4 shows the average BMI for each banding date for adult versus juvenile Yellow Warblers at the Boise River Site.

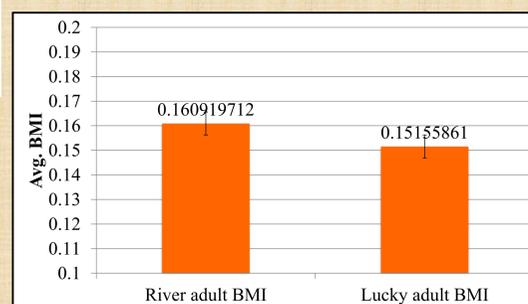


Figure 5 shows the standard error for the average BMI of adult Yellow Warblers at the Boise River and Lucky Peak sites. A T-Test was conducted prior to making this standard error graph and the p-value found showed that the null hypothesis of "adult YEWA at the two sites do not have different average BMI's" is likely.

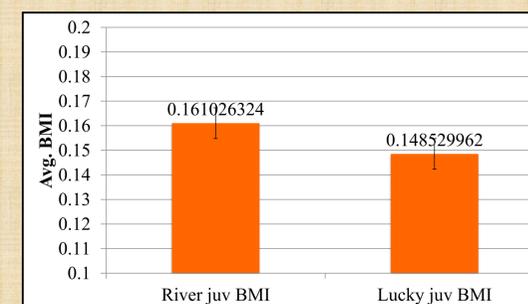


Figure 6 shows the standard error for the average BMI of juvenile Yellow Warblers at the Boise River and Lucky Peak Site. A T-Test was conducted prior to making this standard error graph and the p-value found showed that the null hypothesis of "juvenile YEWA at the two sites do not have different average BMI's" is likely.

## Conclusions/Discussion

The main goal of looking at this data was to observe the Yellow Warbler's fat levels throughout the year and look at the difference in fat scores at the two sites. As shown by figure 1, a lot of the Yellow Warblers that were banded at Lucky Peak had a very low fat score, whereas in figure 2 we see that they had a wide range of fat scores that are spread fairly evenly. Before migrating, Yellow Warblers have to molt, and where they molt has to have plenty of food to stock up fat and energy for the long trip south. One conclusion that can be reached based off of figures 1 and 2 is that the Boise River site may be a molting and stopover site.

In figures 3 and 4 we can see major differences in the average BMI's of adults and juveniles. At the Boise River site (figure 4), we see that adult Yellow Warblers being caught have a higher average BMI for each banding date where adults and juveniles were caught. The trend that we see at Lucky Peak (figure 3) is that adults and juveniles were only banded at the same time in early July and then have zero overlap. The average BMI for each banding date is also noticeably higher for adults when compared to juveniles. The reason for the odd lines of average BMI at the Lucky Peak site is unclear.

The Treasure Valley, particularly the Boise River site, provides a good habitat for Yellow Warblers. According to the North American Bird Breeding Survey, the population has been decreasing and between 1966 and 2014 the population has dropped by 25%. In the Treasure Valley there could be a decrease in population due to how much farmland and housing is being erected. Another hazard that Yellow Warblers may have is that they move when migrating at night, putting them at risk of flying into buildings and being attracted to power lines.

## Acknowledgements

My sincere thanks goes out to the following groups and individuals for making this project a success: Boise State University-Intermountain Bird Observatory and Heidi Ware, my internship mentor, who provided the data and shared with me her knowledge on Yellow Warblers.