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Project Perch's BuOw Blog 11

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### Black, Speckled and Brown Eyed Owls - Background

When I first started learning about burrowing owls, Dr. Mealey, our local burrowing owl expert, told me about dark eyed owls. He suggested that I go to Brian Piccolo Park and look for an adult owl with black eyes so I could see one first hand but when I went there I couldn't find that owl. Dr. Mealey had pictures of that owl and it showed the owl had a yellow ring in the center of the iris and the outer iris was mottled.<sup>1</sup>



2005 – Brian Mealey – Brian Piccolo Park – An adult burrowing owl with a yellow inner ring and mottling in the iris.

Dr. Mealey had another picture from 2005 of an adult owl from Marco Island with irises that were dark brown, so dark that they looked black in the photographs.<sup>1</sup> Dr. Mealey believes their dark eyes are indicative of a genetic depression showing up in the Florida burrowing owl population and wants to do DNA testing on it.<sup>1</sup> So I knew to keep an eye out for dark eyed burrowing owls.

## **A Cape Coral Owl with One Yellow and One Black Eye – The Owl Lady**

In the Surfbirds.com Forum, there was a post from the Owl Lady dated December 5, 2011.<sup>2</sup> Her post read as follows: *“Here in Cape Coral, Florida, I have noticed that a small population of our Burrowing Owls have very dark, almost black eyes, while the majority of them have brilliant yellow eyes. We first began noticing this a few years ago when we photographed an owl with the black eyes, which was very rare. Then we photographed an owl with one black eye and one yellow eye. I have seen siblings from one brood with some having black eyes and some having yellow eyes. This phenomenon occurs in both adult and juvenile birds.”*<sup>2</sup> The Owl Lady was looking for why this happens.

### **The Babies of the Prolific Pair**

This year at the school, the prolific pair as we like to call them had babies. In their brood there was one owlet with solid straw colored irises and another owlet that had solid very dark brown eyes. As the owlets grew up, their irises first mottled and then turned yellow. So some owls are born with different colored irises, but as they mature their irises turn into the normal yellow color. The parents of these owlets both have yellow colored irises.



April 20, 2013 – The parent with normal yellow irises, an owlet with straw colored irises and an owlet with dark brown irises, picture from K Drews.

### **Speckled Eyed Owl in Cape Coral - Megan Lorenz**

On the Burrowing Owl Facebook Page, Megan Lorenz and I were talking about how unusual our pair is, where our female is much lighter than our male. Normally it is the opposite. The males are much lighter because their feathers get sun bleached while they stand guard at the burrow. Females spend so much time down in the burrow that their feathers retain more of their brown color. Then Megan asked us if we had ever seen an owl with “speckled” eyes.<sup>3</sup> She shared a picture of an adult female owl with speckled eyes from April 2013 that was taken in Cape Coral Florida and she said that she came across 2 other dark eyed owls.<sup>3</sup>

### **The Brown Eyed Owls of Marco Island**

After the 2013 burrowing owl nesting season on Marco Island, an article was published entitled “Burrowing Owls and Brown-Eyed Owls”.<sup>4</sup> Many years ago on Marco Island, there was a burrowing owl that had dark eyes and was known as the “brown eyed owl”.<sup>4</sup> At the time, other biologists that monitored burrowing owls populations were asked and it had only been seen in Brevard County a few times, but not in Cape Coral, Elgin Air Force Base or other sites on the West coast of Florida.<sup>4</sup> To date there are only two, possibly three, Marco Island burrowing owls documented with this atypical eye color.<sup>4</sup> This year, they were able to get very good photographs and they documented that the iris’ were not a solid

color but mottled, they were a mosaic of yellow, brown and green, a “tortoise shell coloring.”<sup>4</sup> At the end of the paragraph they indicate the owls may carry a recessive gene that produces the mosaic eye color instead of the bright yellow eye color and that a study is needed to understand what is happening genetically with the Marco Island burrowing owls.<sup>4</sup>

### **Buffy the Burrowing Owl in Cape Coral – Betty Gilbert**

I remembered that Betty Gilbert’s book, *Buffy the Burrowing Owl*, had a picture of Buffy on it and he had dark eyes.<sup>5</sup> So I called her to see what else she had documented about dark eyed owls. Betty Gilbert studied the Cape Coral burrowing owl population, comprised of about 2,000 owls, for more than 10 years. She took several thousand pictures during her work and has studied more burrowing owls than most. When I called her, I was thinking it was very rare to see an owl with dark eyes and so I was surprised at first when she told me how lots of owls had different colored eyes. I asked her to define the different colored eyes and the list was as follows: yellow, very dark brown which when photographed can look black, amber or speckled, blue and grayish green.<sup>6</sup> I asked about a straw color and she agreed they can look straw too and she described seeing quite a bit of variation within each color or category.<sup>6</sup>

She looked at her copy of *Buffy the Burrowing Owl* and told me Buffy’s mother had dark brown eyes and his father had yellow eyes.<sup>6</sup> When their owlets were born, there were 3 brown and 2 yellow eyed owlets.<sup>6</sup> Buffy was born with brown eyes like his mother, but as he matured his eyes changed color to yellow.<sup>6</sup> She described another pair where the mother had yellow eyes and the father had brown eyes and their owlets had eyes of both colors.<sup>6</sup> She also documented a blue eyed father and a brown eyed mother and their owlets had different colored eyes, amber and brown but no blue.<sup>6</sup> She also remembered a male owl with one yellow and one brown eye.<sup>6</sup> When I asked her approximately how many of each she had seen, she said she only ever saw one owl with blue eyes and 2 owls with grayish green eyes.<sup>6</sup> Most owls had yellow eyes, more than 60%, but she saw a lot of brown eyed owls and amber or speckled eyes.<sup>6</sup>

She said she believed that owl eyes were very similar to people eyes, only the yellow color was the dominant eye color and the others were recessive.<sup>6</sup> Has she seen more owls with different colored eyes because she has studied more burrowing owls than anyone else or because while she was watching the Cape Coral population it was declining and genetically isolated and so she was actually seeing a higher percentage of eyes with recessive eye color? We do not know the answer, but she agreed the owls’ numbers were dwindling and she felt their situation was and is dire.<sup>6</sup> She could recall all of the owl burrows that were destroyed by development.<sup>6</sup> She also believes the weather, which now includes all of these severe storms, is causing the flooding of a lot more burrows.<sup>6</sup> We agreed I would send her a letter and she would look for pictures and more information to help with our questions.

### **Recessive Eye Color and Inbreeding**

In small isolated populations, individuals are more likely to share the same recessive genes and pass these on to their young.<sup>7</sup> The young have to receive the recessive gene from both parents.<sup>7</sup> Some recessive genes are harmless, like the panthers’ tail crooks and some are harmful genes, like the panthers’ heart defects.<sup>7</sup> In panthers, there was a high incidence of crooked tails, which were visible and obvious, long before they found the defective hearts.<sup>7</sup> The recessive eye color in burrowing owls is also indicative of inbreeding. Inbred populations are less likely to survive because they are genetically less variable, less able to adapt to environmental change or to disease and are less fit.<sup>7</sup> Dr. Mealey is right when he says the owls with recessive eye colors are a sign of inbreeding in our burrowing owl population. A question he may be trying to answer with DNA testing is just how inbred they are.

### **Western Burrowing Owls and Recessive Eye Color**

In my research, I never found any references or pictures of owls with dark or different colored eyes from out west. The owl populations out there are migratory and may still have enough owls and genetic variability in their populations.

**Sources:**

<sup>1</sup> Dr. Brian Mealey, 2013. Personal Communication.

<sup>2</sup> The Owl Lady, Surfbirds.com Forum, post from December 5, 2011.

<sup>3</sup> Lorenz, Megan, 2013. Personal Communication.

<sup>4</sup> Ritchie, Nancy, Burrowing Owls and Brown-Eyed Owls, *Coastal Breezes*, November 8, 2013.

<sup>5</sup> Gilbert, Betty, Gilbert, Betty. 2008. *Buffy the Burrowing Owl*. ISBN: 978-0-942407-88-4.

<sup>6</sup> Gilbert, Betty, 2013. Personal Communication.

<sup>7</sup> Florida Conservation Commission, Panther Net Handbook, myFWC.com,  
[http://www.floridapanthernet.org/index.php/handbook/threats/inbreeding\\_threatens\\_populations/](http://www.floridapanthernet.org/index.php/handbook/threats/inbreeding_threatens_populations/)