

REPRODUCTIVE HORMONE ASSAYS IN CURASSOWS

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Blue-billed Curassow, *Crax alberti*

- IUCN Critically Endangered
- Endemic to Colombia
- Small captive populations
 - 38 AZA and growing
 - ~37 ACOPAZOA
 - Handful in JAZA and EAZA



Blue-billed Curassow Management at White Oak



- Acquired first birds in 1994
- 32 chicks produced
 - Parent and surrogate-reared
- Housed in 15' x 30' x 7' pheasant runs



March 21-27, 2015



WHITE OAK



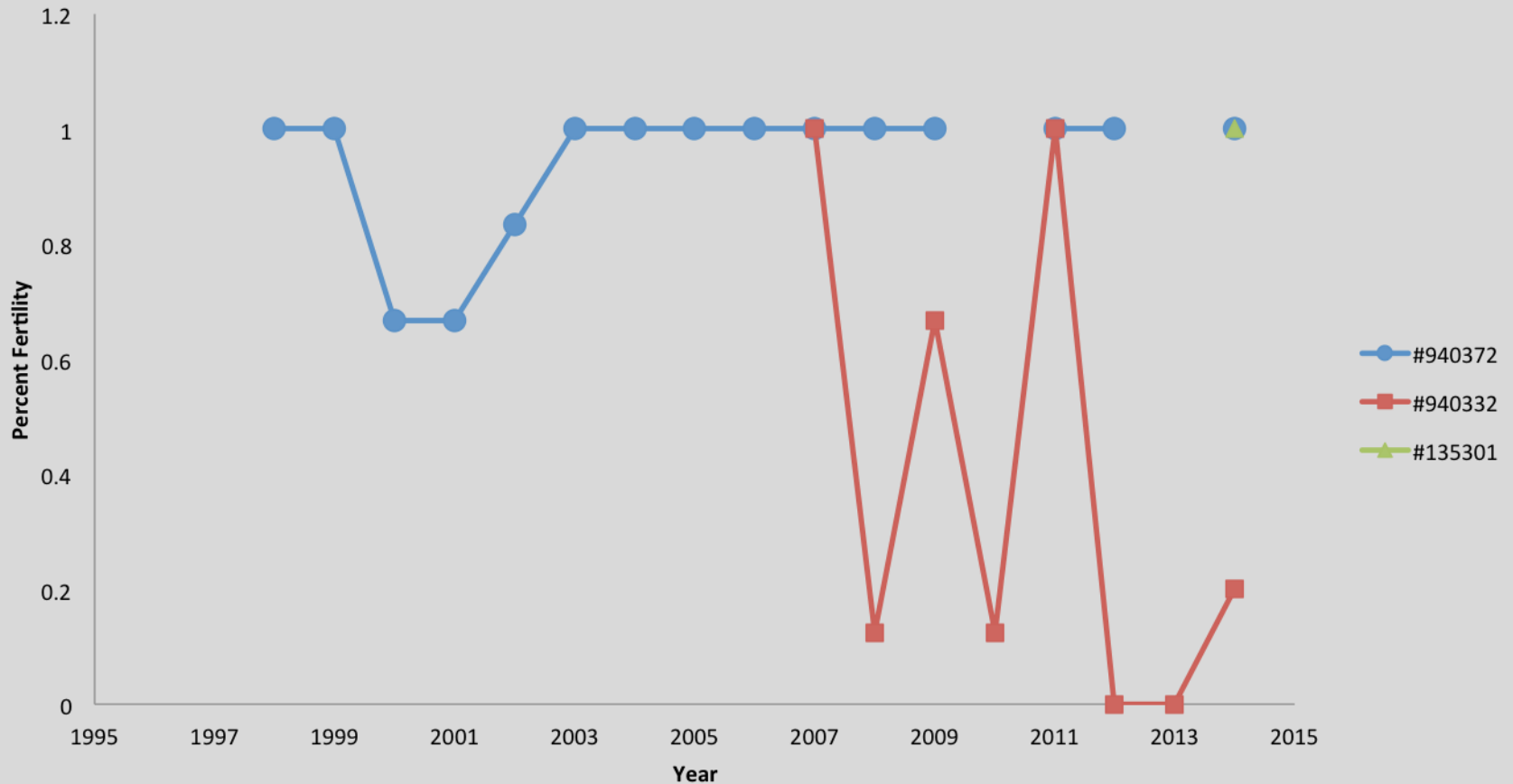
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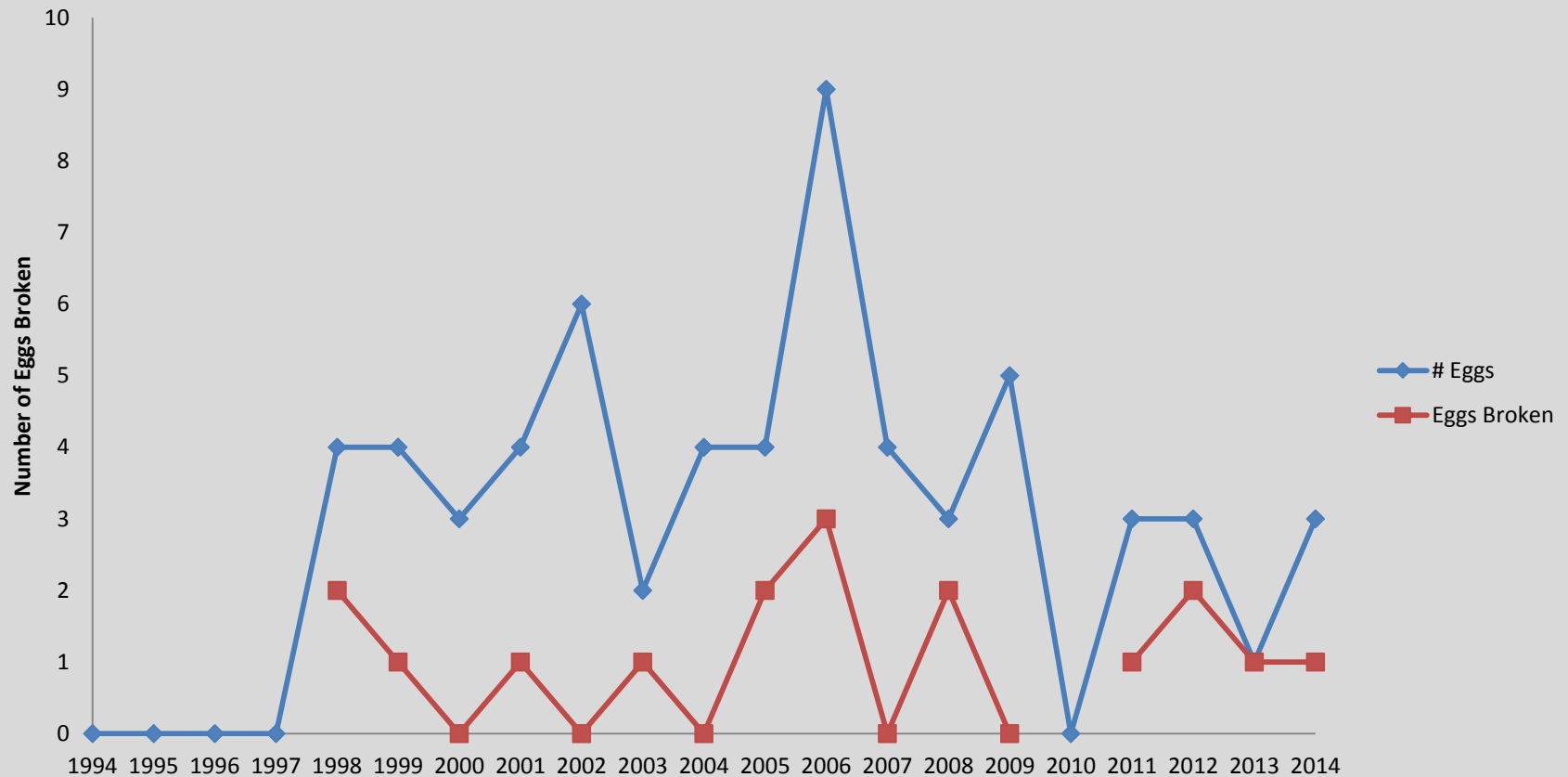
Fertility

Percent Fertility of 0.2 Blue-billed Curassow



Egg Breaking

Number of eggs and number broken



Thin-shelled Eggs

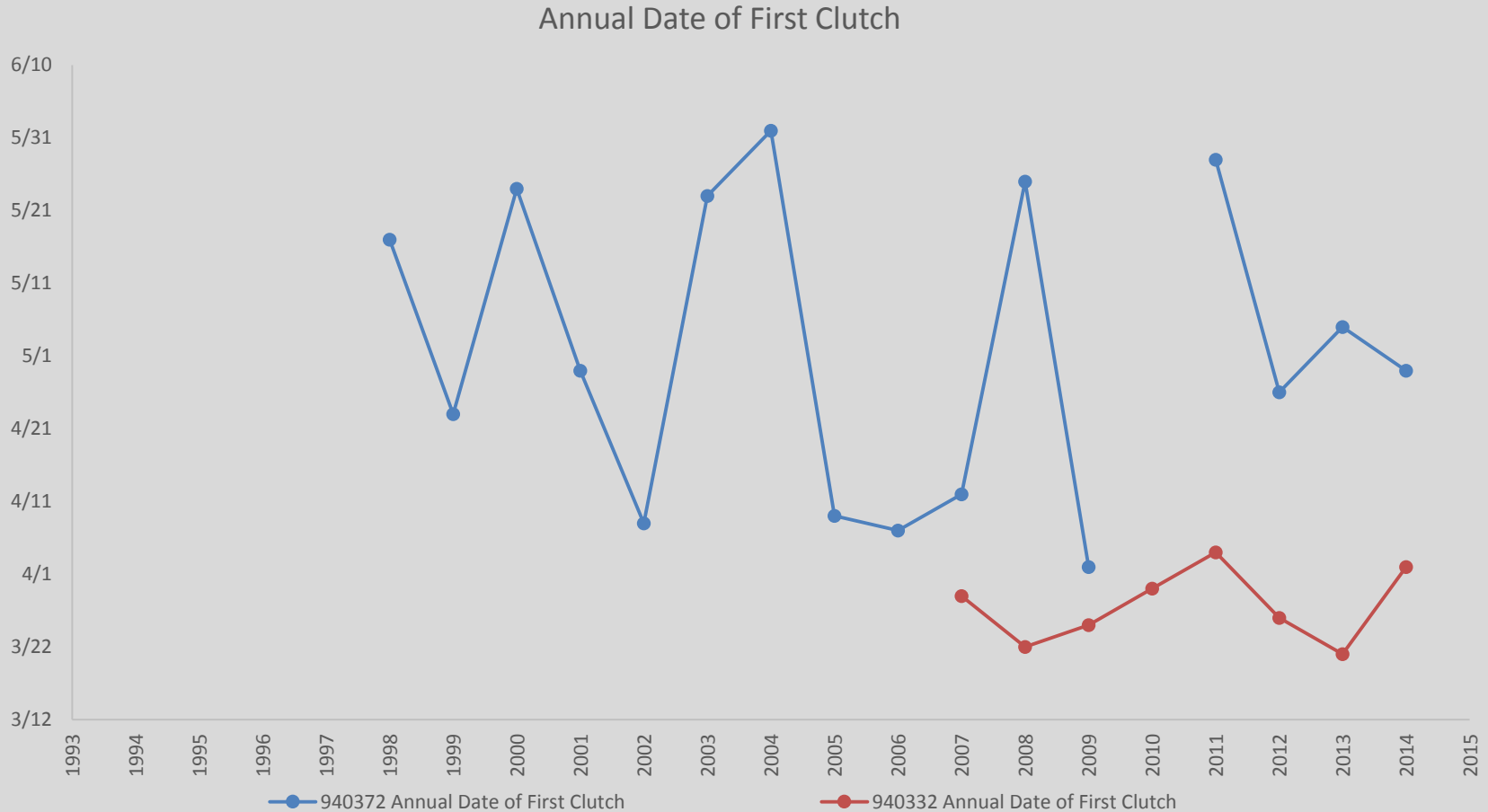


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Inconsistent Timing of First Clutch



Inconsistent Interclutch Interval

- Interclutch intervals based on individual
 - Some females appear to be consistent
 - Some females appear to lack consistency
- Variation makes separation of pairs prior to laying difficult

	Average (days)	Min (days)	Max (days)	Sample size
940372	30	23	37	7
940332	19	18	24	13
135001	22	20	23	2
940370	20	17	25	13
940371	22	15	30	9

Intraspecific Aggression

- Males can get very excitatory and aggressive with females
 - Injuries
 - Excessive courting and harassment
 - Often brought on by human presence
- Historically, males are given a “time-out” and separated out for a few hours
- Other facilities have had success with keeping aggressive pairs separate and introducing few times per day.
 - Copulations occur immediately, if not, they are separated.

Human-Focused Aggression

- At White Oak, it seemed as though males would get increasingly excitatory and aggressive towards keepers prior to the female laying.
 - Is this really happening, or am I crazy?
 - If this is happening, can I use it to help manage the species, or am I still crazy?

South-East Zoo Alliance for Reproduction and Conservation

- Approached SEZARC
 - Assisted in experimental design
 - Trained me up on EIA and techniques
- Approached other Blue-billed Curassow holding facilities
 - Zoo Miami
 - Houston Zoo
 - National Zoo
- 9.9 total animals in study



“Seasonal Changes in Reproductive Hormones and Aggressive Behavior in Captive Blue-billed Curassow”

- Determine optimal time for introductions and separations
 - Reduction of
 - Broken eggs
 - Thin-shelled eggs
 - Injuries
 - Stress
- Is aggression linked with testosterone?
- Determine seasonality
- Help with lack of captive breeding success within Colombia
 - Potential implications towards semen collection/artificial insemination protocol
- Potentially help determine infertility issues

Methods

- Human-focused aggression was measured
- Feces were marked with iron oxide colorant
 - Birds tested for metals
- Feces lyophilized and extracted
- Analyzed for testosterone using enzyme-linked immunoassay technology



<http://www.ahdiagnostics.fi/ELISA/ELISA/ELISA/Microplate-detection-and-handling-2454.aspx>



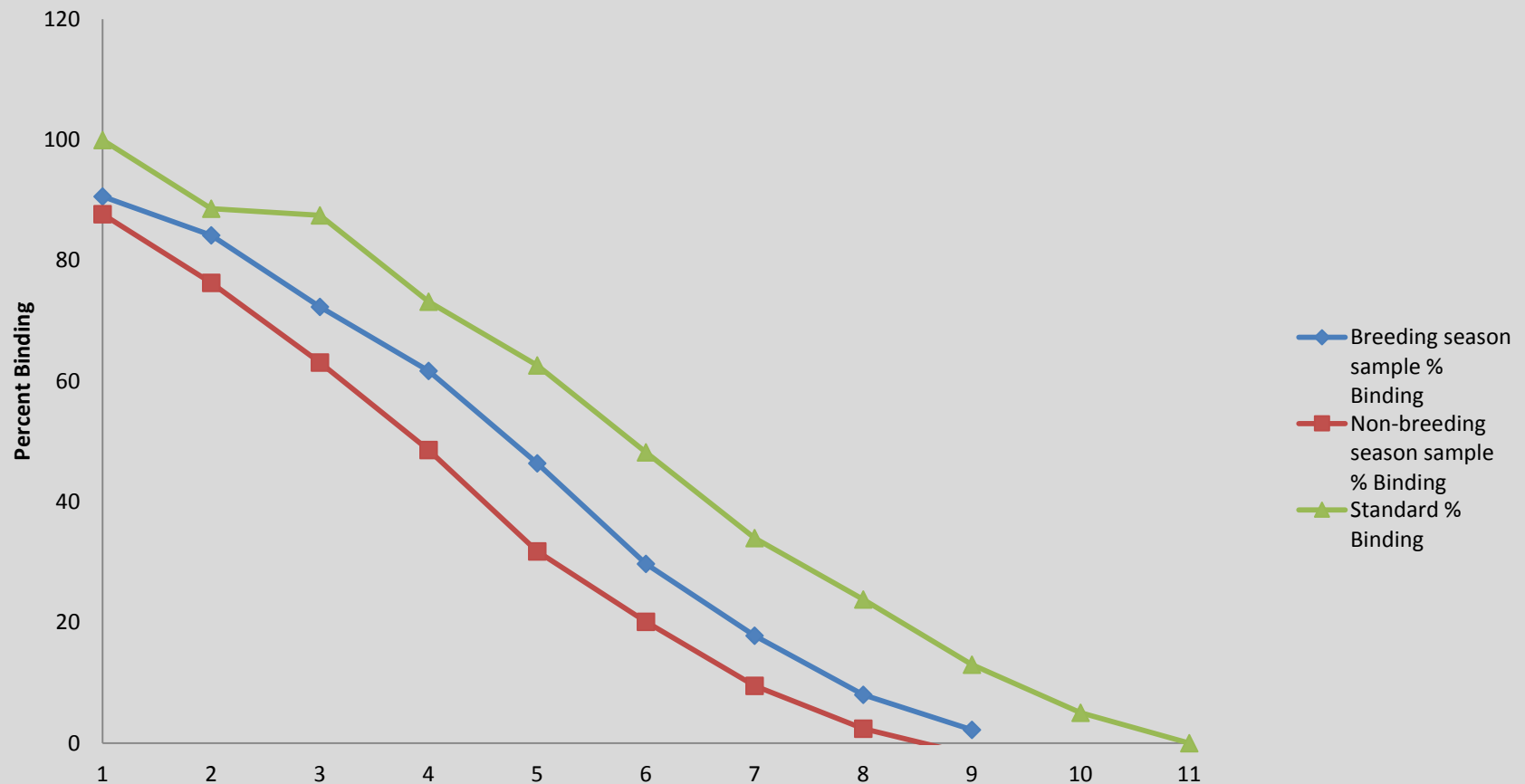
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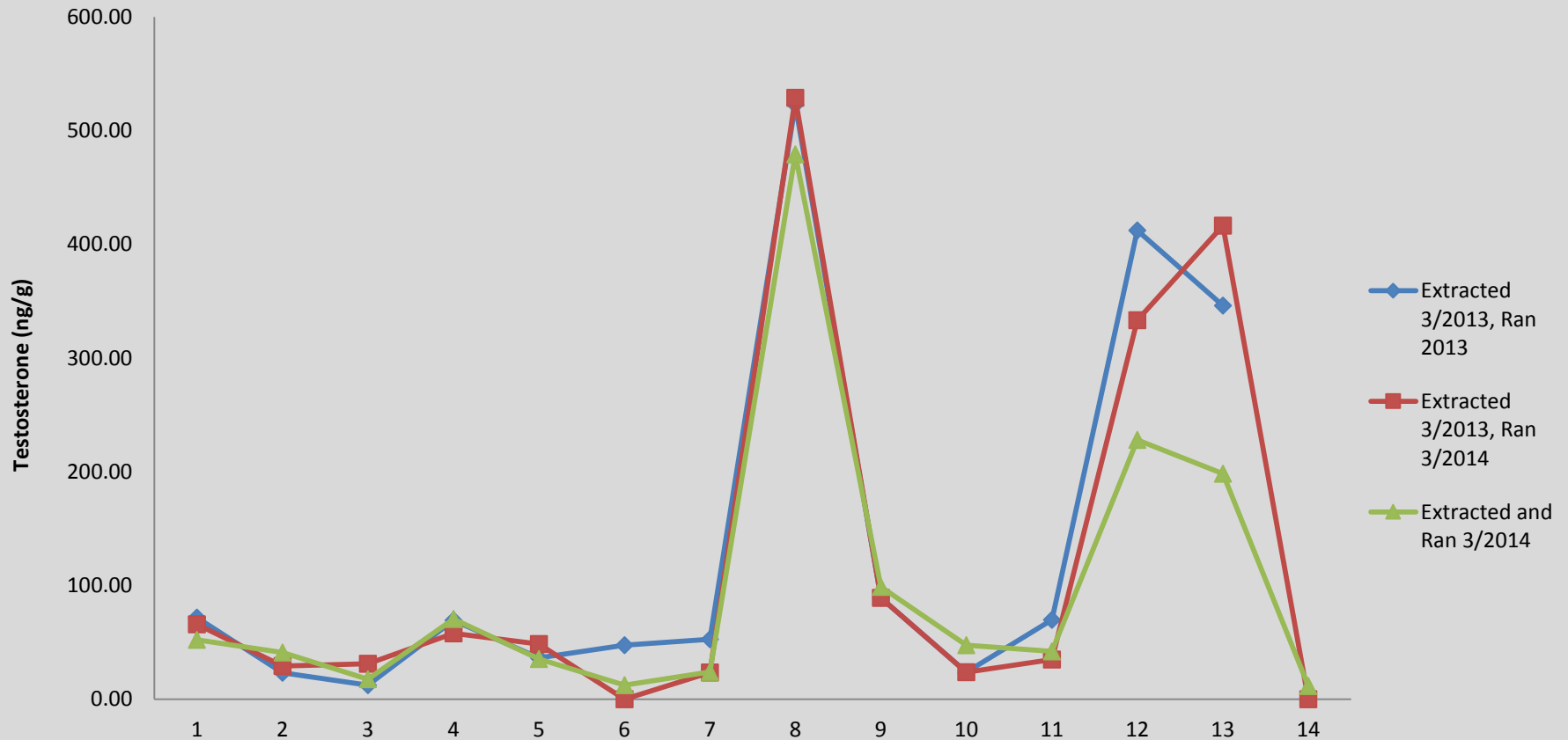
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Validations of Males and Females

Testosterone Parallelism, 3.0 Blue-billed curassows



Blue-billed Curassow Extract Degradation

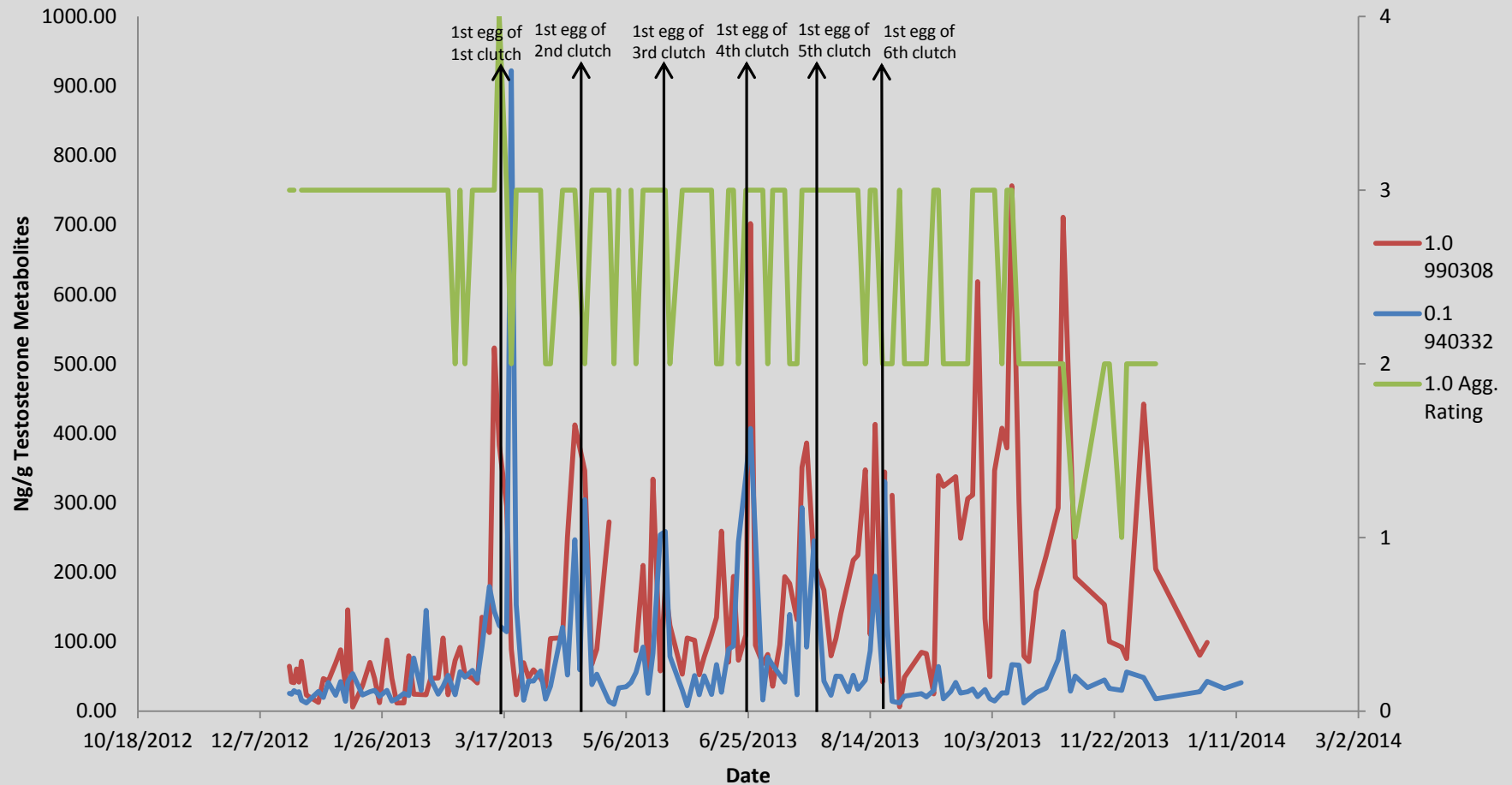


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1.1 Blue-billed Curassow #990308 #940332 at WO

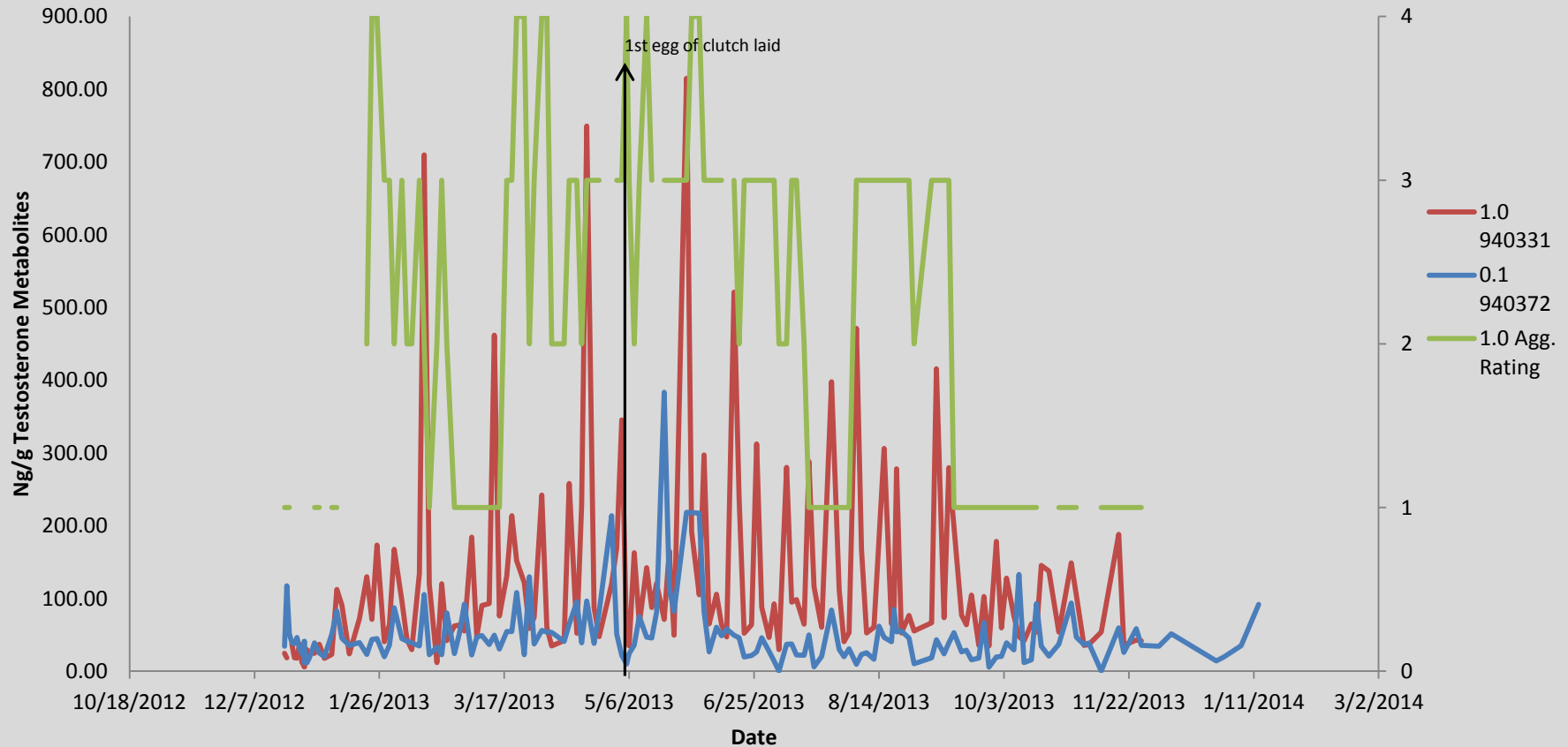


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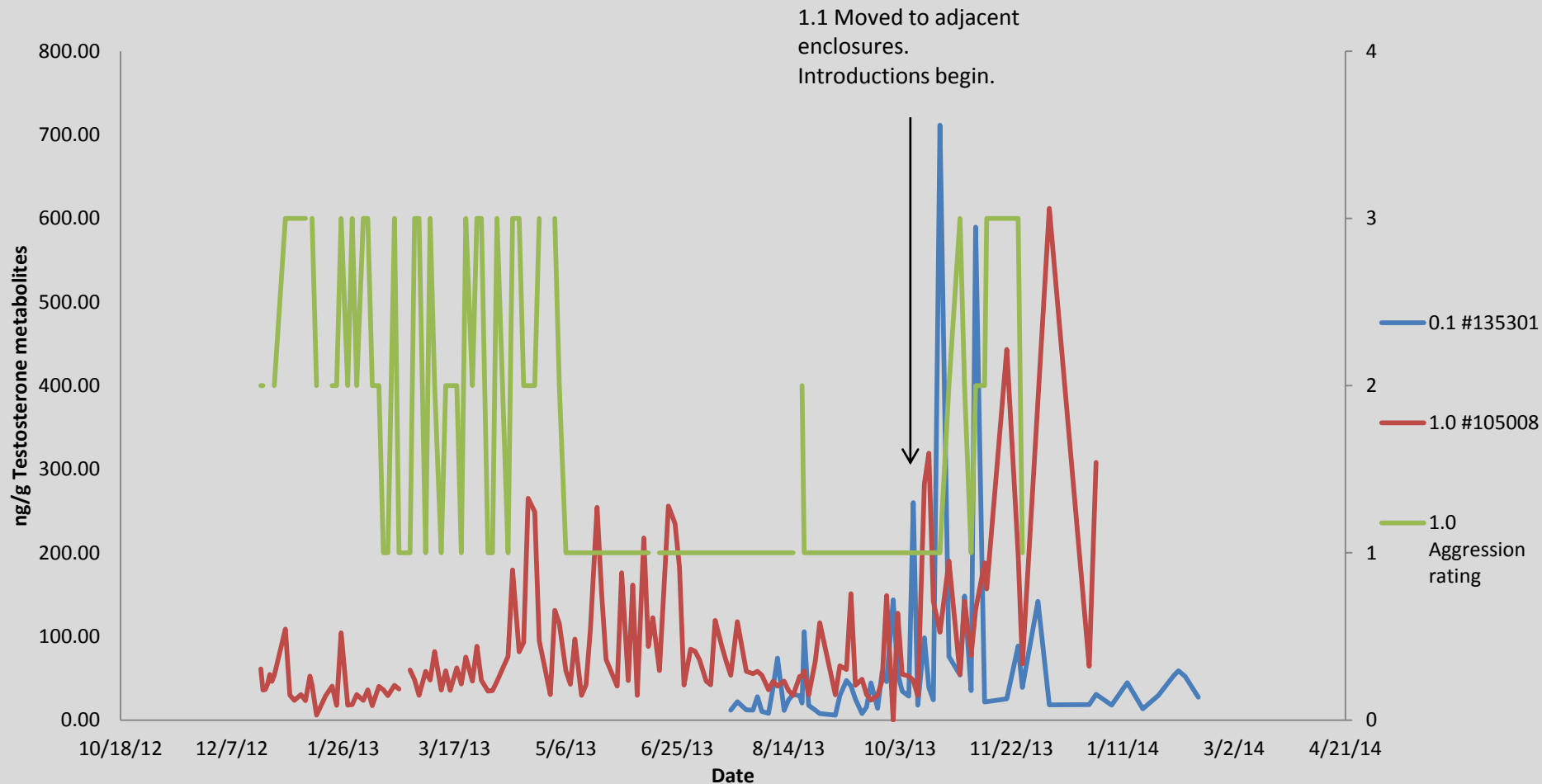


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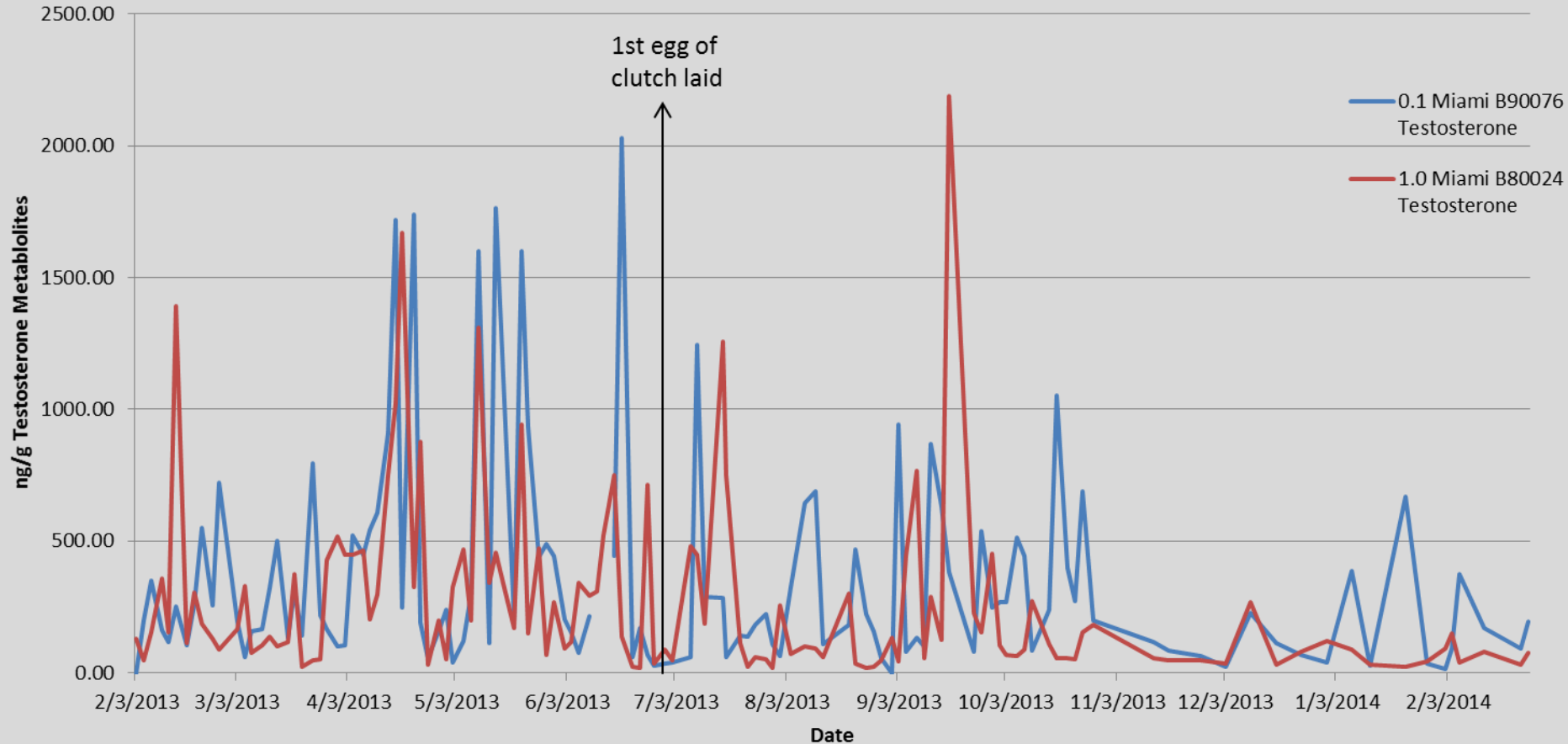
1.1 Blue-billed Curassow #940331 #940372 at WO



1.1 Blue-billed Curassow #105008 #135301 at WO



1.1 Blue-billed Curassow #B80024 #B90076 Zoo Miami

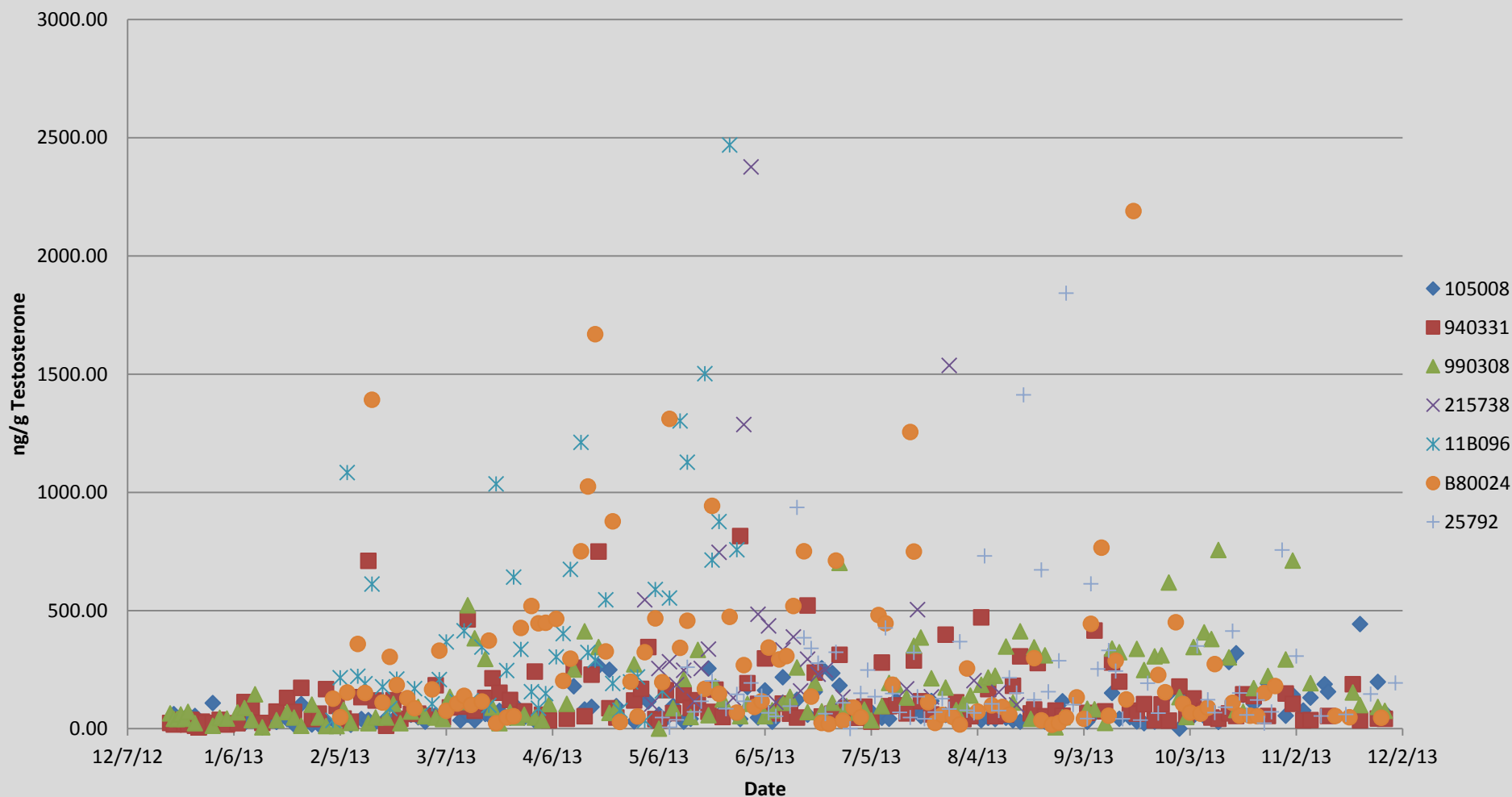


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7.0 Blue-billed Curassow Males



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Conclusions

- Male aggression is occurring at lay
- Moving aggressive pairs into new enclosures may reduce aggression
 - Potentially less egg breakage
 - Potentially increase fertility
- Seasonality established
- Problem pair profiles established
 - Preliminary results have aided management

**HOUSTON
ZOO**



Thank You!

Special thanks to:

- Participating facilities
- White Oak for support
- Dr. Penfold, Dr. Metrione, and Cayman Adams of SEZARC
- Megan Brown for being so helpful and supportive when I was getting started
- Clarice Brewer for helping out with lab grunt work
- Chris Holmes for endorsing this research
- Mike Taylor for sparking my interest in blue-billed curassows



Smithsonian
National Zoological Park

SEZARC



South-East Zoo Alliance for Reproduction & Conservation

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THANK YOU !

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