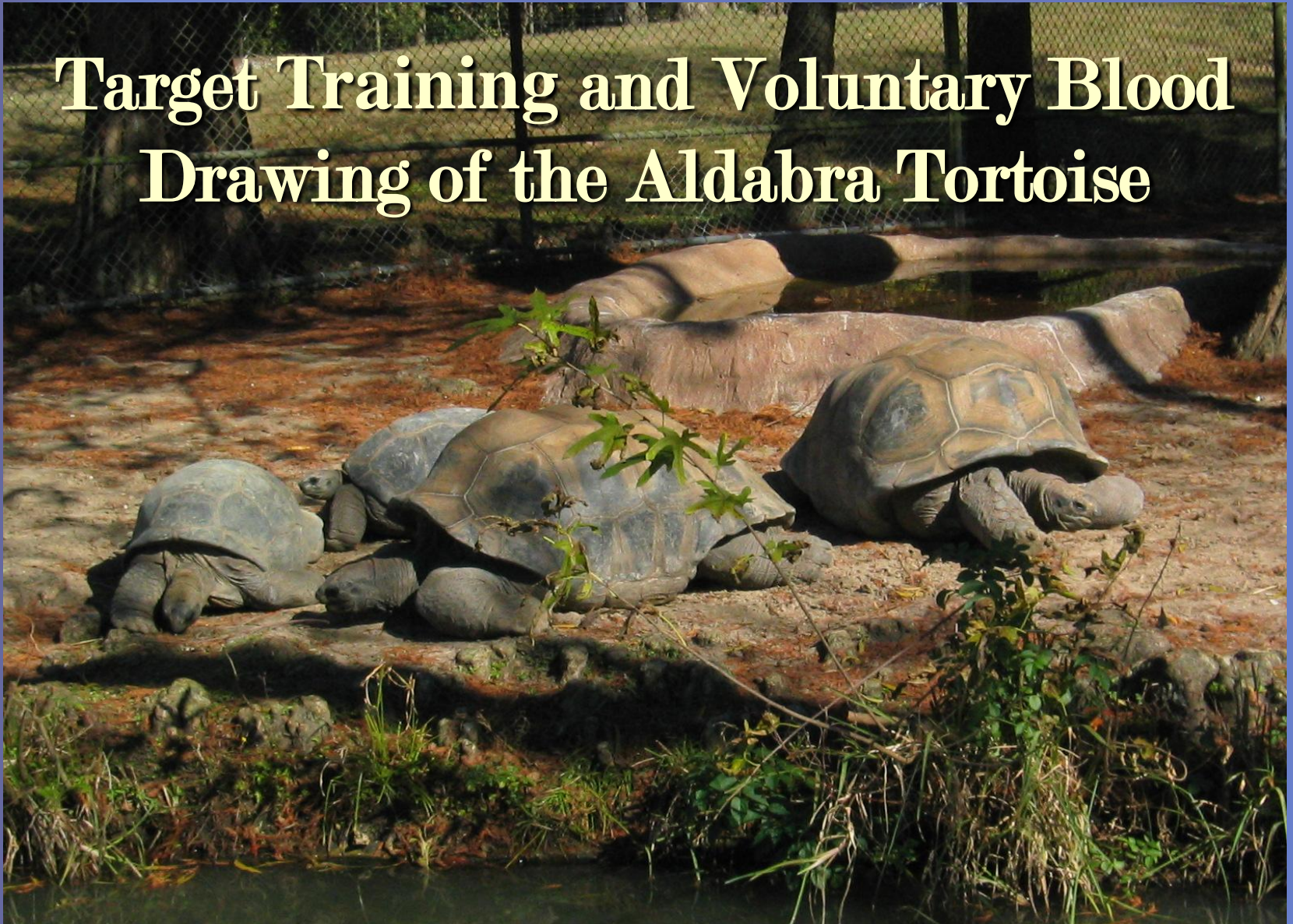


Audubon Nature Institute  
*Celebrating the Wonders of Nature*





# Target Training and Voluntary Blood Drawing of the Aldabra Tortoise





# Zoos Are Increasing Efforts Toward Integrating Training Into Basic Husbandry of Many Species





# Discovering How To:

- **Improve Techniques of Captive Management**
  - **Shifting**
  - **Crating**
- **Achieve More Proficient Examinations**
  - **Draw blood**
  - **Radiographs**
  - **Ultrasounds**





# **These Training Techniques Are:**

- **Faster**
- **Safer**
- **Less Invasive**
- **Less Stressful**
- **More Accurate**

# Why Bother Training an Aldabra Tortoise?







**To move them, of course!**



# Audubon Zoo currently manages 2.1 Aldabra tortoises (*Geochelone gigantea*)

## ❖ Males = 500 lbs.

- Oldest male “Magma” = 80 - 90 years old
  - Youngest male “Feldspar” = 60 - 70 years old
- 

## ❖ Females = 200 pounds

- “Xaviera” & “Obsidian” = 30 - 40 years old





Trying to move a 500 pound tortoise is *not* an easy task





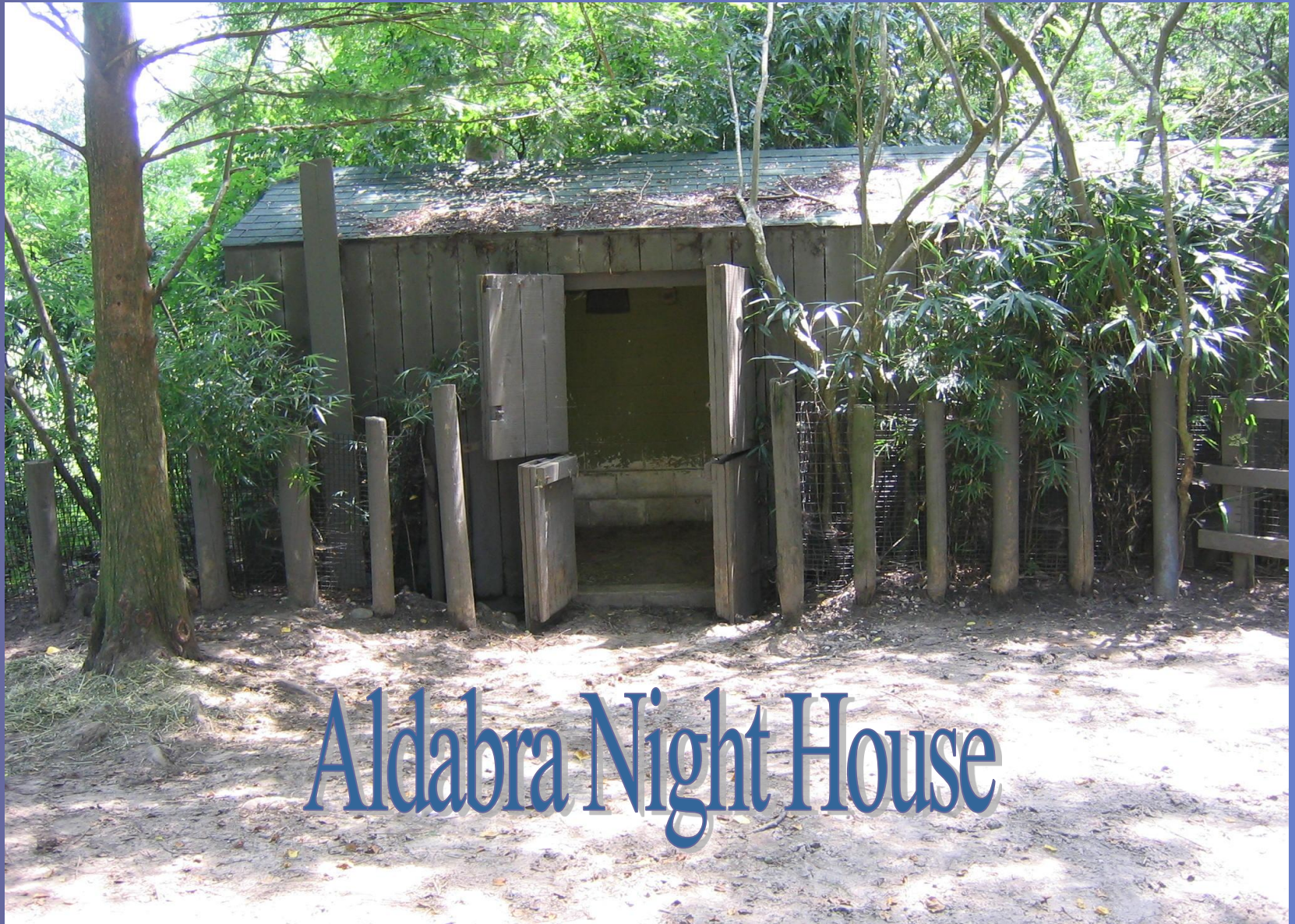
# Why did we need to move them?

➤ **Seasonal Temperatures...**

➤ **55° or below ...**

**Put Tortoises Indoors**

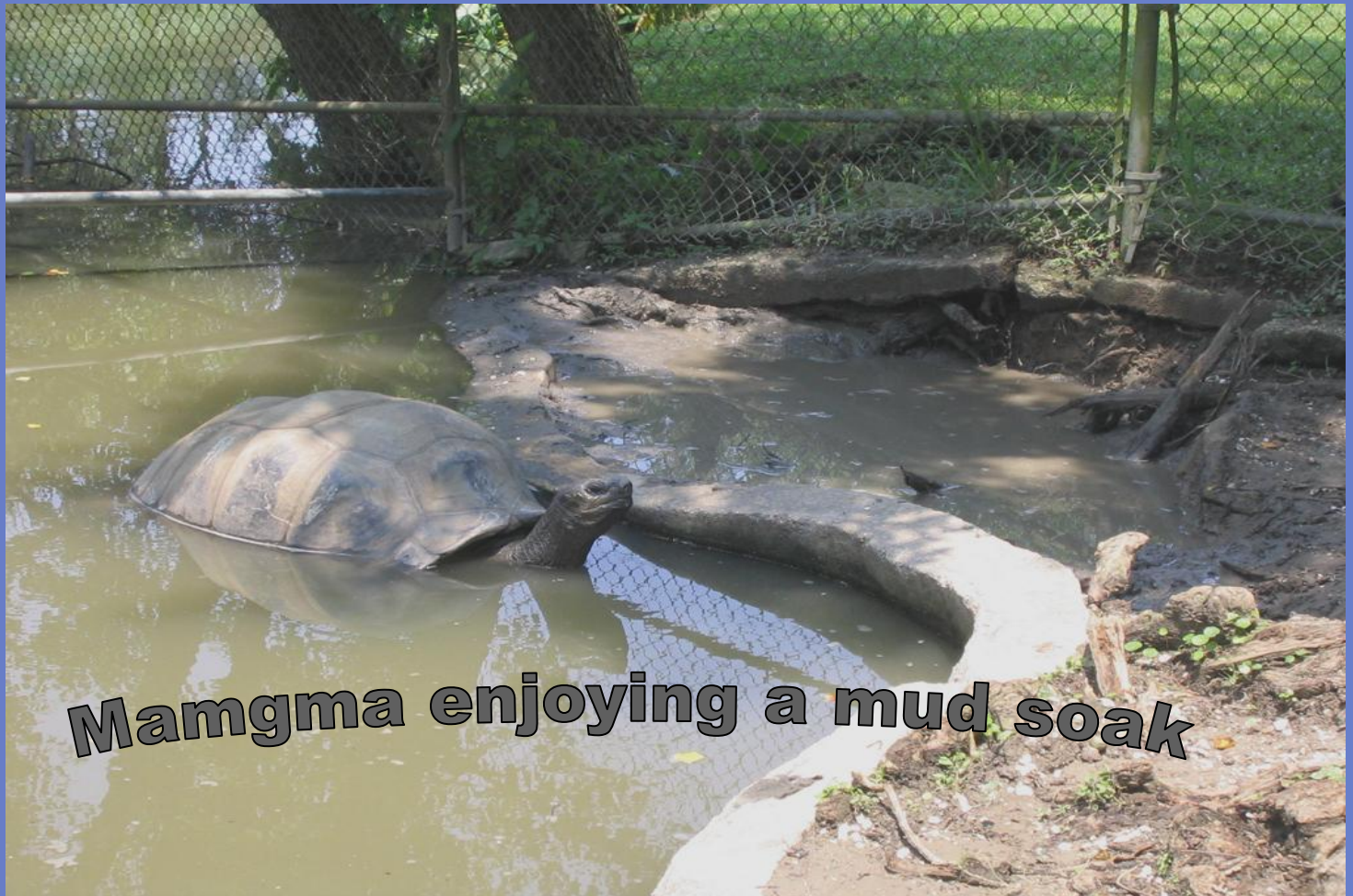




# Aldabra Night House



# Tortoises Retreated to Warm Moat When Temperature Dropped & Remained There



**Mamgma enjoying a mud soak**



**Female Alabra Tortoise in Moat of Exhibit**





# **Prior methods used to move them on & off exhibit: **FORCE!****

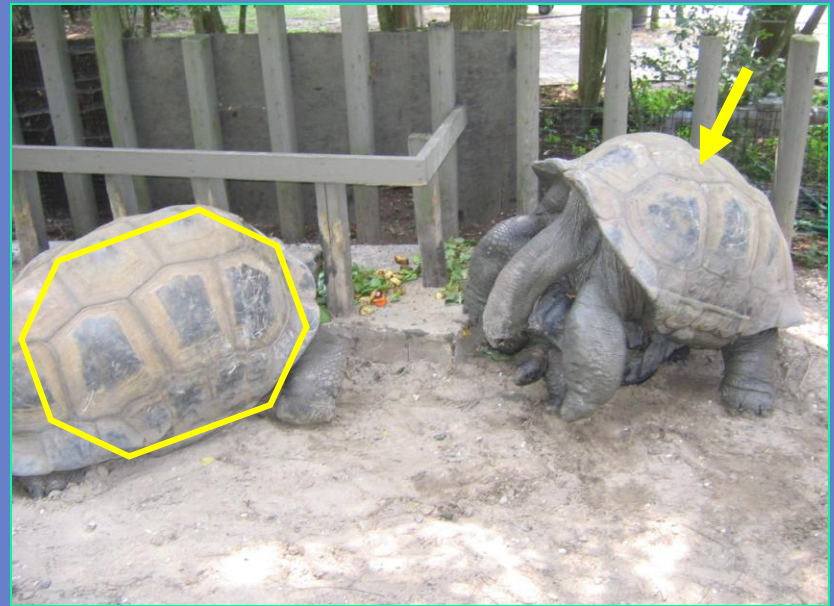
- **Time Wasted Daily Was > 40 min.**
- **2 or 3 Staff Needed**
- **Carry 200 lb Females**
- **Pushing & Shoving**
- **Used Rocks to Tap on Carapaces**
- **Visitors Watched**







# Research of the Tortoises' Anatomy Revealed a Sensitive Carapace





# Weakened Bond Between Tortoises & Keepers



**We needed a solution...**



**“TARGETING” is the Answer!**





# The “TARGET”





# FOOD Motivated!



# Factoring the Tortoises' Natural Biology into the Training Program



- **Inherently Shy & Avoid People**
- **Hesitant of New Objects**
- **Curious**



# Conditioning the Tortoises to the Target Pole

- Target placed in front of tortoises at every feeding
- Target out of reach



# Magma at Food Platform: Target in view, but out of reach





# Use of **Color** to Associate Food with Reward

- **Xaviera & Obsidian** went for apples and tomatoes first
- **Changed Color of the Target to RED**





# Xaviera at Food Platform with Target





# Desensitizing “Magma” to Target





# Using Tactile Reinforcement with Target





# Learning to Associate the Target with Reward



=



OR

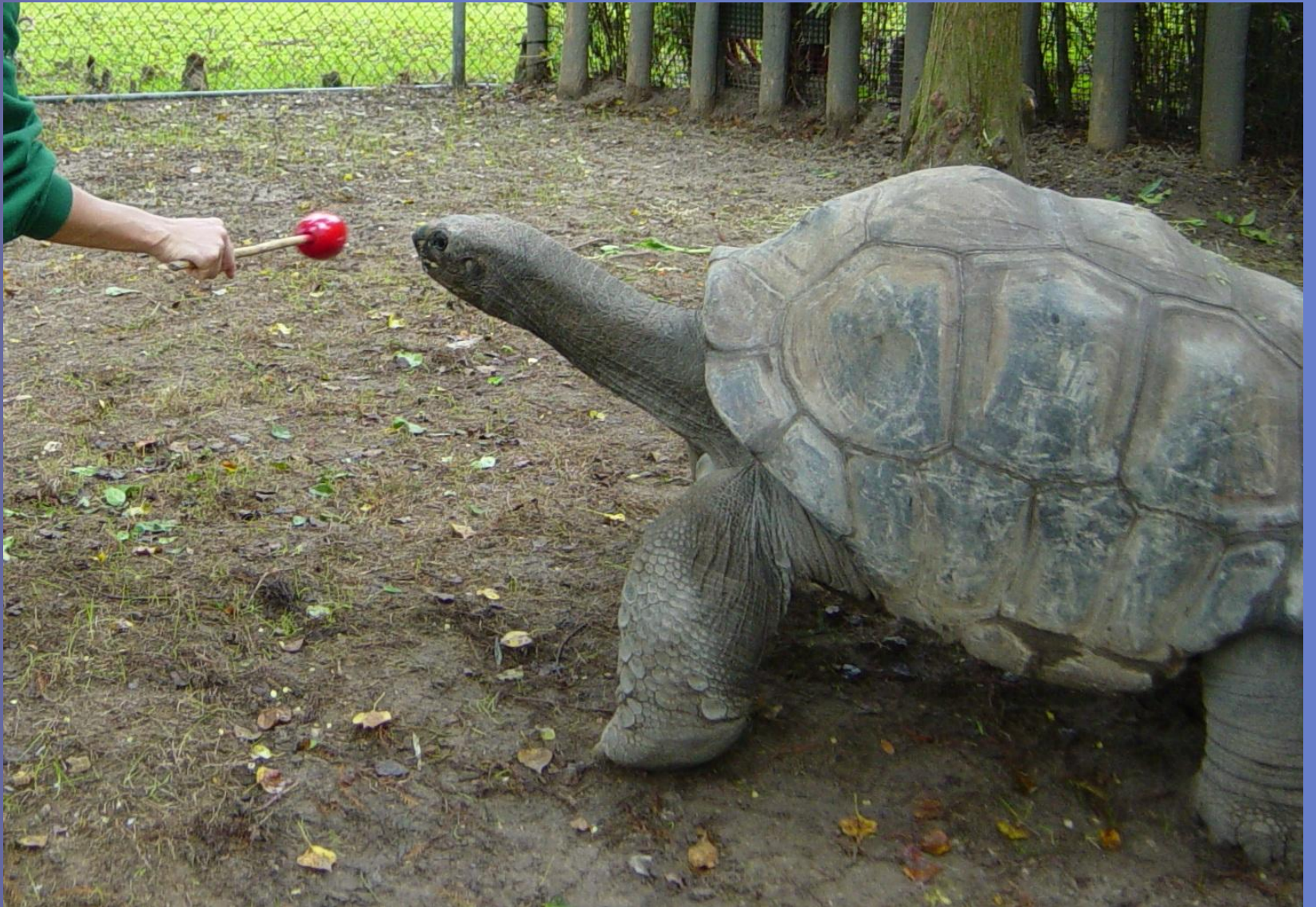




# 1<sup>st</sup> step: “Simple Targeting”







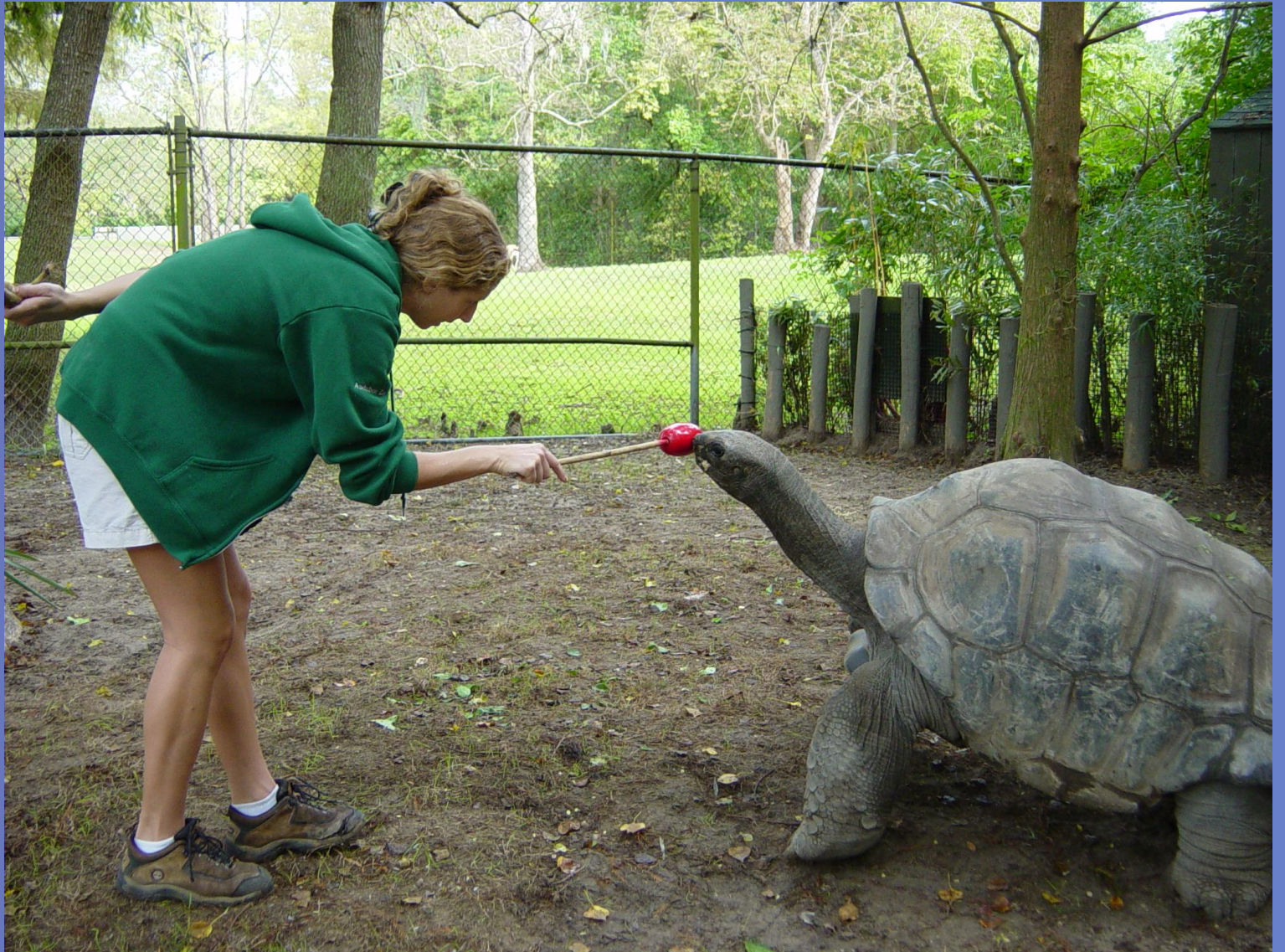




# **Learned to Keep it Simple!**

- **Small Steps**
- **Take a step or two backward**
- **Start again, simplify**















## 2<sup>nd</sup> step: “Complex targeting”

- ❖ More difficult...Requires more energy



Targeting Magma out of the Moat













## **3<sup>RD</sup> STEP: “FOLLOW TARGET”**

- **Follow target** = animal follows the target wherever you take it
- Replaces tapping on their carapaces, pushing & shoving to move them



# Magma Following Target





# Targeting the female out of the moat







# **Manipulation of Diets**

- **Smaller quantities at scheduled feedings**
- **Food subtracted from diets used as reinforcement during training sessions**





# Constant Reminders

- **Patience!**
- **Sessions Only 5 – 10 minutes/day**
- **Allow Tortoise to Be Successful at Last Step**





# Recognize Each Tortoise's Learning Curve

- **Magma** - oldest male, first to associate target with reward
- **Feldspar** - younger male, learned within weeks
- **Obsidian** - larger female, learned quickly, but only after target was painted red
- **Xaviera** - took MONTHS to learn!



# Mission Accomplished!

## 2.2 Aldabras Target Trained







# **Prior Methods of Performing the Aldabras' Physicals**

- **Crude, Forceful Means**
- **Labor Intensive**
- **Time Consuming**
- **Stressful to Animals & Staff**
- **Negative Results**
- **Injury**



# 1<sup>st</sup> Attempt to Draw Blood on Feldspar





# Turning Tortoise Over to Check Plastron & Produce Tail





# Prepping the Site



# Caudal Stick







**CLEANING FECES OFF PLASTRON AFTER THE ORDEAL**



# TRYING TO FLIP HIM OVER





DOESN'T THIS LOOK LIKE FUN???







## Procedure caused the Tortoises to be:

- **STRESSED**
- **Apprehensive**
- **Lose TRUST**
- **Desensitizing from months prior was lost**





# **Voluntary Blood from a Reptile**

- **Straightforward**
- **More Predictable**
- **Safer**
- **Faster**





# BENEFITS

- **Calm & Relaxed Reptile:**
  - **Safer for Staff & Animals**
  - **Accurate blood chemistry levels**
  - **Free-flowing blood**
  - **No contaminated blood**





# **Voluntary Blood**

## **... How is it Accomplished?**

- **Take Advantage of Their Natural Biology**
- **Patience, Patience, Patience!**
- **Be Willing to Take Steps Back**
- **Consistency**




# Voluntary Blood ... How we started



- **Xaviera Was Key**
- **Take Advantage of Her Natural Biology**



- 
- **Giant tortoises in wild have external parasites**
  - **The island birds will pick at the giant tortoises' necks, legs and feet to consume the parasites**
  - **When the birds peck at their skin, the tortoises stand fully erect, with necks and legs extended while the birds clean skin of any parasites.**
  - **Extending their necks & standing fully erect while being rubbed by their keeper mimics natural behavior**



# Applying the Tortoises' Natural Biology to the Training Program



**Vermillion Flycatcher catching a ride/eating parasites on an Aldabra on the Aldabra Atoll**



**Tortoise extending neck to allow island birds to remove parasites**



# Use Disadvantages as Advantages



- Female will stand motionless for several minutes after touched/rubbed
- This was an obstacle in Targeting, but can now use this behavior in blood collection



# Tool Used to Mimic Needle

- **PAPER CLIP**  
replaced scratching  
neck with hand



- **Daily sessions**
- **< 5 minutes**
- **Continued for 2 weeks**



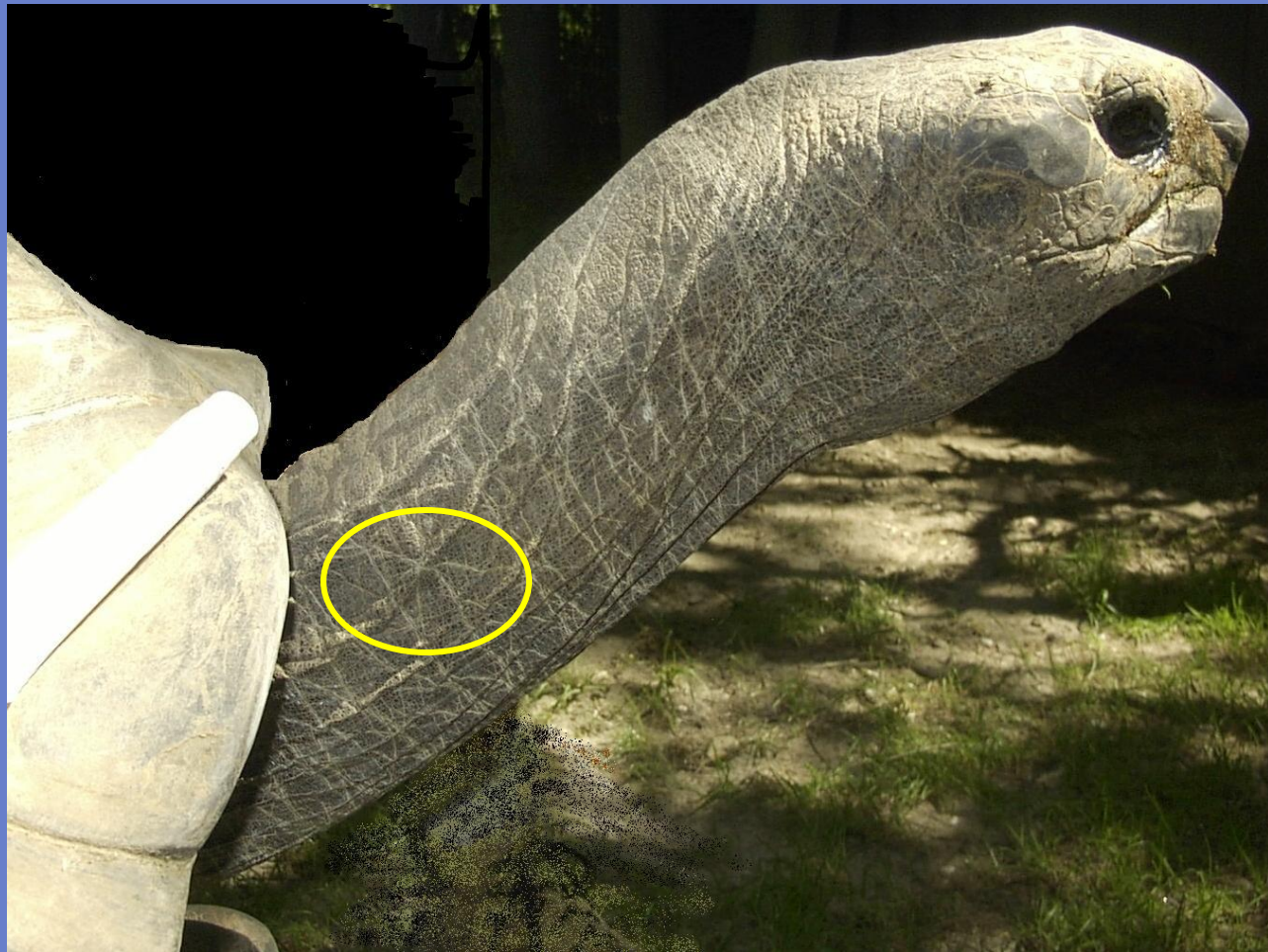
# Desensitize Tortoise for Needle Prick

1. Gently pinched skin along neck while rubbing / scratching
2. Pinch became more firm, sharper
3. Elevated to twisting skin

- 
- ❖ When pinching neck, did not react negatively
  - ❖ Tortoises content with the pressure



# First Attempt to Collect Voluntary Blood on Exhibit





# Successfully Drawing Blood With Only One Staff Member





# Desensitizing Tortoises to Peripheral Movements



**DESENSE IN NIGHT HOUSE  
OFF EXHIBIT**



**DESENSE ON EXHIBIT**







GOAL HAS BEEN REACHED



# Xaviera's First Trip to the AHCC





# Holds During Needle switch



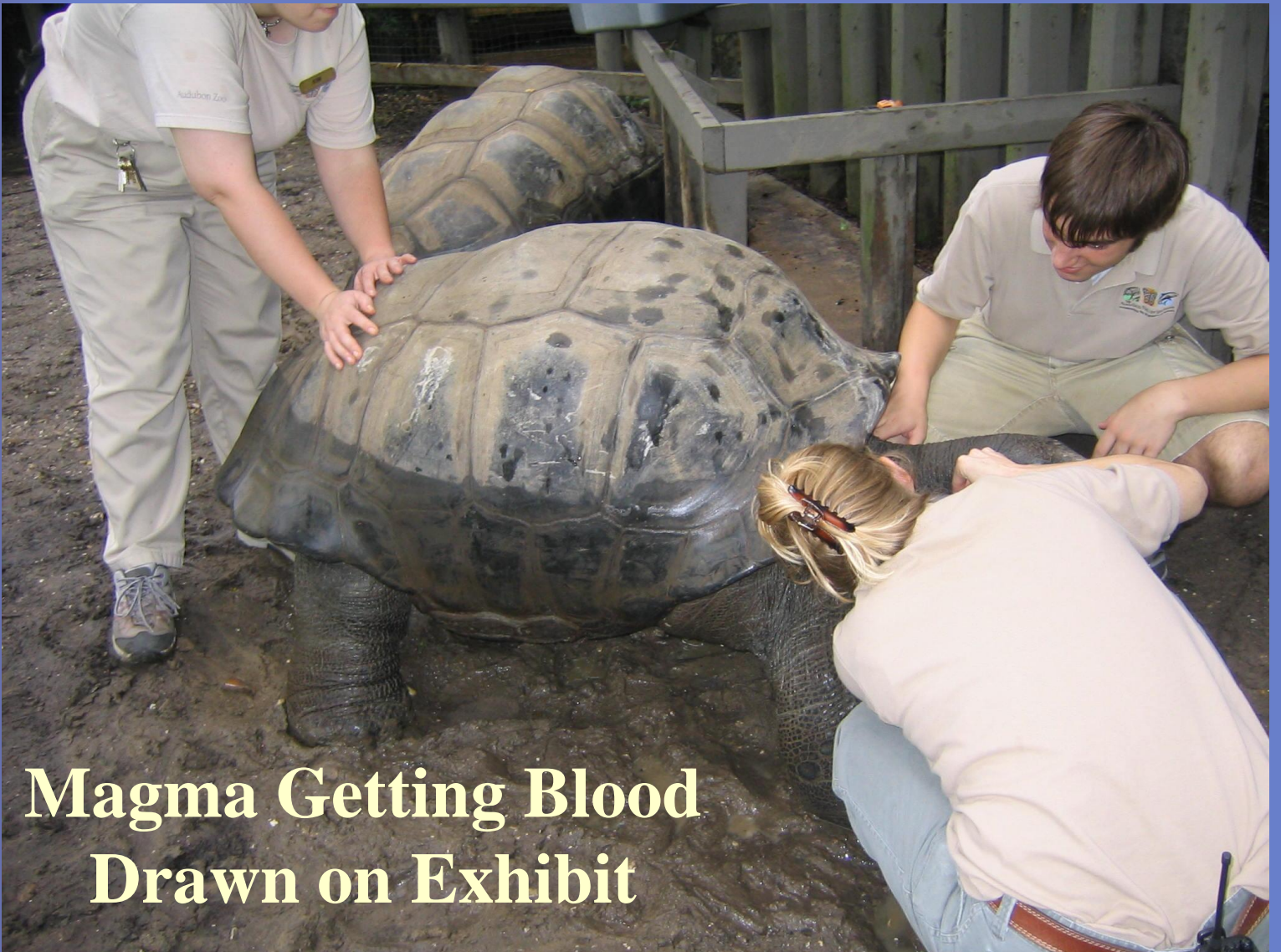


# First Successful Attempt to Draw Blood at the Hospital

**Finished in minutes!**

**We did it!**





**Magma Getting Blood  
Drawn on Exhibit**







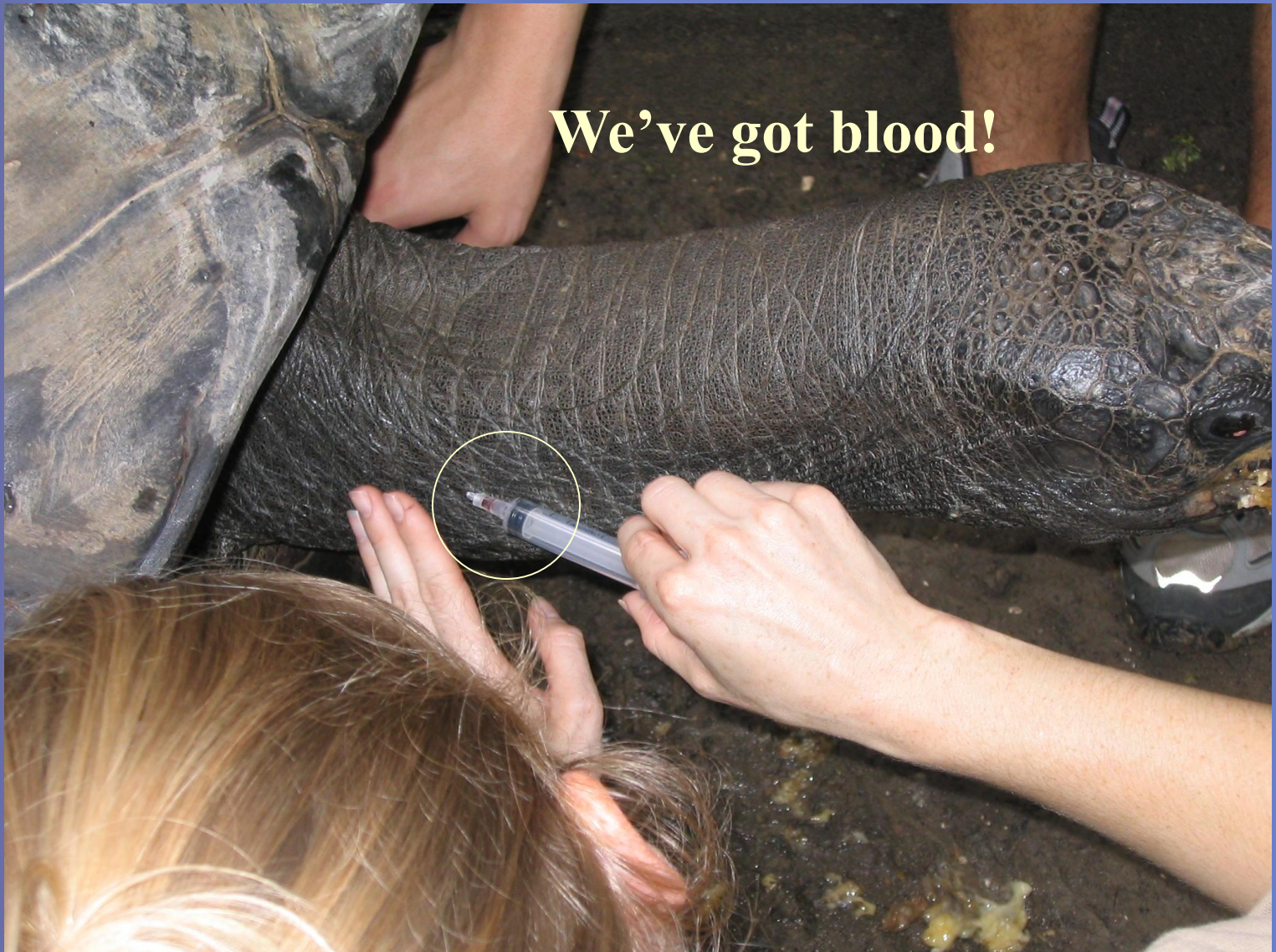
# Magma Holding While Dr. Beth Waits for Blood



# Magma Eats While Needle Is In Neck







**We've got blood!**



# Benefits of Training Aldabra Tortoises (or *any* Reptile)

- Strengthens Bond
- Eliminates Stress
- Greater Awareness of Behavior / Diet Changes
- Visitors Benefit





# Today, Trust is Finally Established with Feldspar



# Important Concepts for Success with **Voluntary Blood** :

- **Continuous Desensitizing**
- **All Staff Involved**
- **Daily sessions**
- **Patience!**







# **Crucial Points to Remember when Target Training:**

- **Individual learning curves**
- **Daily one-on-one sessions**
- **Only 5-10 minutes**
- **All staff must participate**
- **Be Consistent**



# **Elements for a Successful Training Program with Audubon Zoo's Aldabra tortoises**

- **Extensive Research of the Species**
- **Individual History & Temperaments**
- **Developing TRUST**
- **Taking Steps Back**
- **Ending Sessions Positively**
- **Patience**



*Anyone can accomplish this!*





