

# Husbandry Practices for Hand-Rearing Cranes

A collaborative review of management strategies to address developmental limb abnormalities



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# Why Hand Rear?

- No suitable parent rearing options
- Health issues require intensive management
- Reintroduction efforts- large numbers for cohorts

## Imprinting Challenges

- Cross-species fostered
- Traditional hand rearing
- Puppet / Costume rearing



*Many reasons why hand rearing is necessary- it may be that there are no suitable parents available to parent rear; the chick may need to be pulled from parents for medical reasons that are too intensive to be compatible with PR'ing, or in case of 3 centers compared here- may be done as a reintroduction method to rear a large number of chicks at once in hopes of quickly bolstering wild populations.*

*Imprinting is always a challenge with rearing methods- parent rearing is best and also tends to result in 'healthier' chicks, but what about cross-fostering?*

*Experience has shown that cross foster rearing should be done with caution as chicks imprint on incorrect species & can be challenging to pair with conspecifics down the road. Pulling chicks between 80-120 days and placing next to own species may help with proper imprinting.*

*Traditional hand rearing can produce human imprinted birds- we all have some we love or hate- females tend to respond positively towards & males are extremely aggressive- which again makes captive management and breeding challenging.*

*Puppet or costume rearing can aid by still providing flexibility of human care, but disguising form with general appearance of species. Is more labor intensive since communication is limited, but end result seems to be a more appropriately imprinted bird. More mild mannered than PR chicks too, which for captivity can be a plus.*

# Rearing Facilities



ICF



Patuxent



Audubon SSC

*International Crane Foundation, USGS Patuxent Wildlife Research Center and Audubon Species Survival Center have all been involved in costume rearing for reintroduction. ICF & Patuxent rear Whooping cranes for release both into the Eastern Migratory Population (EMP) and Louisiana non-migratory population. Audubon SSC rears Mississippi Sandhills for a non-migratory population in Gulf Coast & may be involved in limited costume rearing in the future.*

*Rearing facilities are similar in that they are fairly remote buildings with individual runs for chicks that can be expanded with age. Soft substrate (beta-chips, sani-chips, or mason sand) with indoor/outdoor carpeting for young chicks, supplemental heat, flexible runs. As chicks grow/gain weight runs are expanded (eventually incorporating outdoor runs as well) and carpets removed. Chicks have taxidermy brood models in runs with them 1<sup>st</sup> 10-14 days as well as visual access to adult crane role models.*

# Daily Exercise Routines

## ICF

- Day 1 + outdoor exposure if temps 75+ (usually during a feeding)
- Runs expanded with age & weight gain to include outdoor access
- Yard walks 2x's daily: 15-20m (Day 0-10), increases with age

## Patuxent

- Day 0- 2 restricted to ICU unit
- < Day 5 often restricted to inside runs (outdoor temp requirement of 75+)
- 15-20 min walks 2x's / day
- Swimming 2x's / day, 15-20+ min sessions

## Audubon SSC

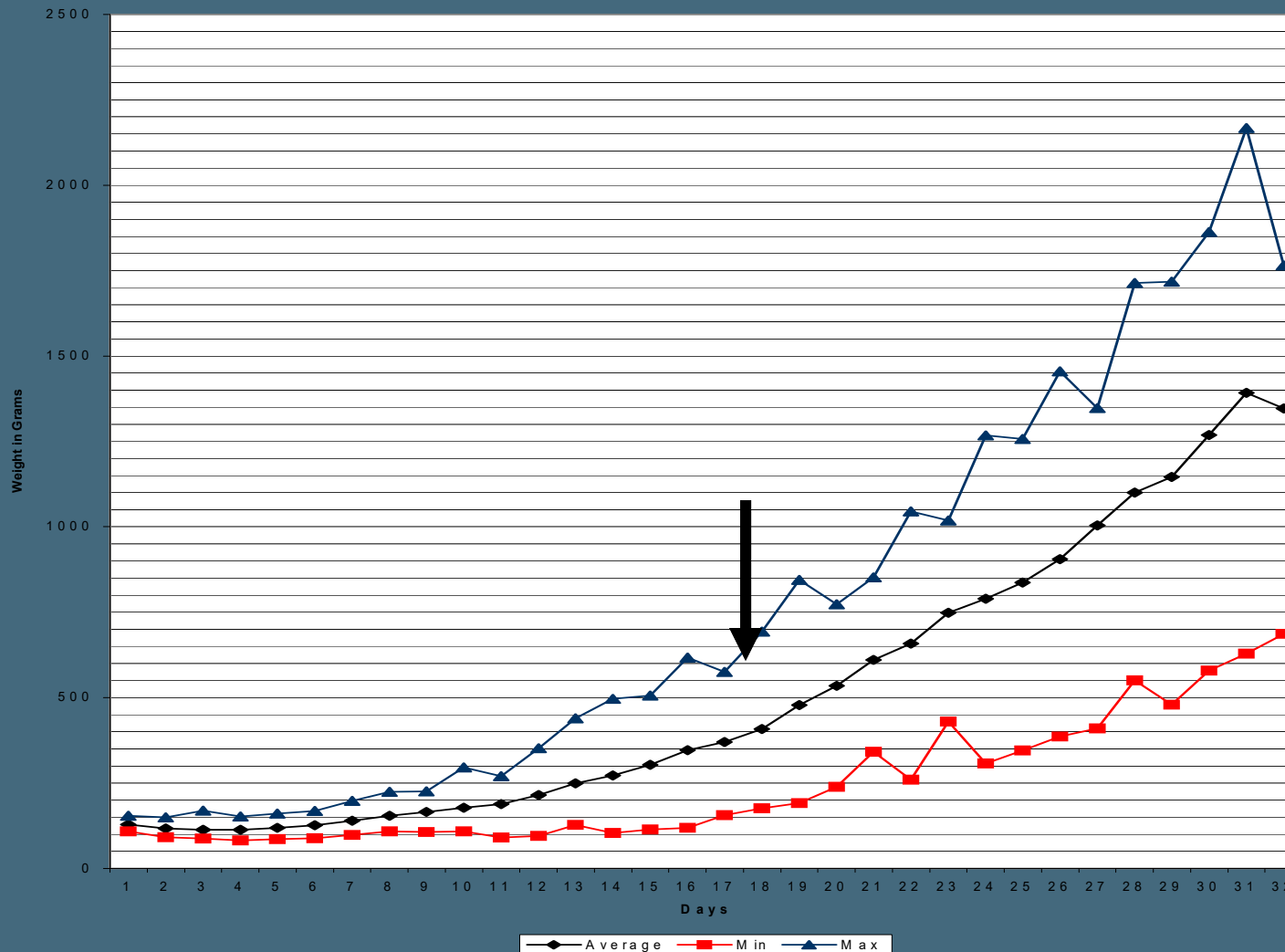
- 1<sup>st</sup> 24 hrs restricted to isolette
- Day 1-5 restricted to inside runs
- Day 6+ outdoor runs, walks 5-15 mins 5x's / day

*Common themes are that chick exercise is restricted until they are eating/drinking reliably & that outdoor conditions are appropriate - warm , dry etc. to keep chick from becoming stressed (micro-climate). No food/water is left with chick when unsupervised 1<sup>st</sup> 24 hrs (risk of drowning/ tripping hazards). Exercise is increased as chick development progresses.*

# Weight Management

## Weight Gain

- Ideal weight gain is ~10-12% per day
- Median onset of limb deformities: Day 20



*Weight management is critical to healthy hand reared chicks. Hand reared chicks have significantly lower average daily weight gains from parent reared chicks until about week 4 when they surpass average parent reared gains by 20%. Daily gains over 20% can be manifested as toe/leg issues within 24-48hrs.*

*Managing weights can be done through management changes in feeding and or exercise routines.*

*Weighing schedules vary some between institutions but all monitor closely during week 1 when weights typically drop 10-15% before rebounding. Weights within first month closely tracked. For weights over 500 grams, rely on walk-on scales for up to daily weights if needed. Try to maintain approximately 24 hour comparisons.*

*After first 30-40 days, weighing may only be weekly.*

# Diet Management

## ICF

- Poultry crumbles Day 0-7
- Zielger Crane Starter added by Day 7 and 1+ week transition to full pellets by Day 15-20
- Opportunistic foraging on greens in yard

## Patuxent

- Local mill produced crumble & starter diet (monensin treated)
- Pellet introduced at Day 16 and 2 week transition to full pellets by Day 35

## Audubon SSC

- Recent switch from gamebird starter to Mazuri Ratite starter
- Chopped greens/crumbled hard boiled egg 1<sup>st</sup> week
- Mazuri crane diet

Total Protein < 24%

Sulfur amino acids < 0.73%

Limited Animal Protein 1<sup>st</sup> 30 days



*Feeds vary by institution but general composition is similar.*

*Puppet bills hold red spoons to help chick focus on bigger target as coordination develops. ICF & SSC use marbles in water dish to help avoid drowning. Phase both out within 2 weeks.*

*Centers limit over overall proteins and SAA (sulfur amino acids - done in part by limiting animal protein) during 1<sup>st</sup> month as it is correlated to increased developmental deformities (increased weight gains). Live food (waxworms, mealworms) are used sparingly to encourage chicks to eat - moving food in crumbles is stimulus.*

*Diet management to control weight gains should be considered carefully. Limit feeding or food withholding for periods throughout the day can help manage weight, but can also lead to aggression, panic, eating inappropriate substrates, and gorging when food is returned. Staff (puppet/costume) should monitor for several minutes when food is returned to ensure chick doesn't have problems. Diet ratio can also be modified so chick has to work harder for more calories (increase crumbles) and separating food/water dishes so chick has to move back and forth between the 2 more regularly are additional considerations.*

# Developmental Issue: Splayed Legs



Immediately Post-Hatch



Astroturf



Hobbles

*Splayed legs are seen right after hatching. If the umbilicus is healthy & chick is to remain in hatcher for length of time, substrate can be switched to smooth carpet to something more rigid to help chick keep legs underneath.*

*In severe cases: legs may be hobbled with vet wrap below hocks to restrict splaying while still allowing some locomotion until muscles strengthen. May need to start with wider hobble and gradually make tighter as chick finds balance etc.*

*Hobble for 24-48 hours and evaluate.*

# Developmental Issue: Curled/Crooked Toes

- Average onset week 1+
- Tape if less than 5 days old
- Sandwich splint for older chicks
- Vary substrate



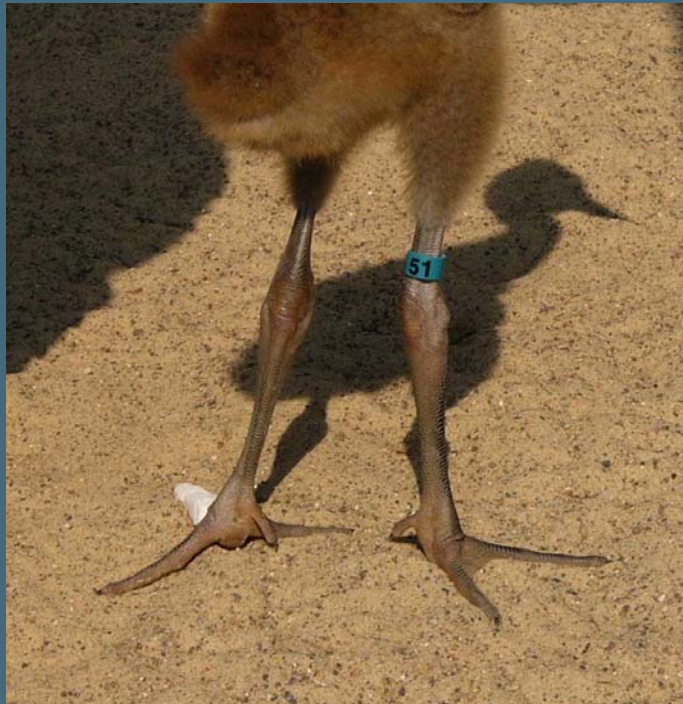
*Curled and crooked toes are not uncommon at an early age. Taping alone with Transpore tape can also be effective if less than 5 days old. If chick will stay in hatcher for longer periods, switch from carpet to Astroturf assuming no umbilicus or other medical concerns.*

*At least for Patuxent & ICF, spring weather is unpredictable & often too cool for chicks less than a week of age to spend much time outdoors. May be managed by adding Astroturf/alternative surface in run to help balance & strengthen muscles. Providing access to various substrates- carpet, sand, grass, soft mud/water shallows can aid in muscle development.*

*Chicks older than a week typically require wooden splint or even sandwich splint. Cut wooden depressors to appropriate length & wrap in waterproof tape so no rough edges. Use additional strips of tape to secure split to toe. Leave splints on toes up to 3 days depending on growth of chick before replacing with larger splint. Mixed practices of whether to maintain continuous splinting (assuming no sores/behavioral issues) or giving chick up to 24 hour break & see if correction holds.*

# Developmental Issue: Angular Limb Deformities & Leg Rotations

- Average onset in week 2-4
- High weight gains contributing cause
- Increase exercise
- Diet Management
- Tension Taping



*Leg rotations are usually seen starting between 2-3 weeks. Feet turn outwards, but there is no obvious angulation of limb. Can be multifocal but the condition involves an actual twisting (rotation) of the bone proximal to growth plates - more commonly at tibiotarsus but can also occur at tarsometatarsus plate.*

*Holistic treatment of increasing quality of exercise and managing weight gains via diet manipulations. Tension taping may be used to counter-balance rotation by twisting counter to the direction of the rotation - may result in 'wonky leg' but will be a matter of performance ability vs. aesthetics.*

# Developmental Issue: ALD & Rotations continued

- Tension Taping
  - Waterproof tape
  - Kinesio-tape



*In addition to rotations where the entire leg is rotating in an outward direction, limb deformities are also an effect of high weight gains or inadequate exercise. Can be more challenging to correct & can also progress in severity fairly rapidly.*

*Tension taping is more intensive management and is most useful for angular limb deformities (valgus-cow hocked or varus- bowed legs). Tape is applied to the outside of the curve to slow growth on that side allowing the unrestricted side a chance to 'catch-up' and straighten the leg.*

*Kinesiotape has been used more recently at Audubon & ICF after successes with flamingos. It requires more precise application than traditional tension tape, but can be left in place longer (7-10 days). Recoil effect to help correct deformities.*

# Increase Exercise

- Consider Quality and Quantity
  - Yard time
  - Swimming



*Patuxent & ICF can swim chicks for non-weight bearing exercise to address rotations and somewhat angulation. Older chicks tend to tolerate less and handling for swimming becomes challenging & higher risk. Increasing quality of yard exercise to include more active movement & access to soft/marshy substrate is beneficial.*

# Handling Techniques

- Handling increases risks of injury/deformities
  - Required for management
  - Keep leg spacing as natural as possible
- Handler and veterinary communication
  - Maintaining legs / feet in same plane



*Handling of chicks can be a double edged sword - required for health care, but increases risk of injury. Traditional 'bouquet' method still used some for smaller chicks, but use caution not to squeeze legs together at hock.*

*Cranes under age of 1 year are held with legs out to reduce risk of traumatic injury. Cnemial crest is vulnerable to injury in young birds - avoid pressure loading on joints via restraint.*

# References

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- Dr. Barry Hartup, International Crane Foundation
- Marianne Wellington, International Crane Foundation



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