

HAND REARING 1.1 ASIAN SMALL CLAWED OTTER (*Amblonyx cinereus*)

21 February 2007 through 2 July 2007

Terry D. Webb, Curator of Mammals

Miami MetroZoo

## INTRODUCTION

Captive conditions and husbandry at times are challenging for species that require extreme privacy for successful reproduction. Infanticide and/or cannibalism have been observed in captive and wild animals, including carnivores.

Hand-rearing is not recommended as an elective process for various reasons. In almost all cases, the philosophy of the Association of Zoos and Aquariums (AZA) managers is for the offspring of captive born species to be parent-reared. At times this goal cannot be reached. When an animal requires hand-rearing it is very important to have a clear and well planned course of action for all staff. The dietary, medical, and social needs of the species must be included in the hand-rearing protocols.

In 2005 the Asian Small Clawed (ASC) Otter Species Survival Plan recommended that a pair of ASC Otter breed at Miami MetroZoo, in Miami, Florida, United States. Both the sire and the dam were parent-reared. The sire was two and the dam was five years old at this time. The pair had not had an opportunity to breed before this recommendation.

In November 2005 they produced their first litter and the pups were missing and presumed cannibalized on day two after delivery. They produced another litter in May

2006 and again on day two the pups were missing. Management and protocols were discussed following this litter. It was decided that strict visitation and husbandry restrictions should be put into place approximately two weeks prior to the expected delivery date.

In August 2006 a third litter was born and cannibalized on day two. At this time management made the decision that any further litters with this pair would be pulled for hand-rearing as soon as the birth occurred. On 21 February 2007, this pair had two pups and they were pulled for hand-rearing as soon as they were discovered.

## **INITIAL DISCOVERIES**

The pups were clean and dry at the time of discovery. Both pups had bite wounds to the head, muzzles, abdomen and the female had blood in her urine. They were both given a complete physical evaluation and determined to be in good health. The umbilicus area was cleaned with betadine solution, they were given antibiotic injections, confirmed sex, and placed in an incubator at a temperature of 26.6 C – 32.2 C (80 – 90 F). The pups had a hard time adjusting to the flow of milk from the nipple and aspirated formula for approximately eight days before they suckled well.

## **MEDICAL TREATMENT**

<b>Drug</b>	<b>Purpose</b>
Ceftiofur PO	Preventive
Baytril SQ	Antibiotic

Fluids SQ	Hydration
Pedialyte PO	Electrolytes for infants
Feline distemper vaccine at Day 53	Preventive
Feline rhinotracheitis vaccine Day 64 and 70	Preventive
Calicivirus vaccine Day 64 and 70	Preventive
Panleukopenia vaccine Day 64 and 70	Preventive
Canine distemper Day 70 and Day 97	Preventive
Rabies vaccine Day 70	Preventive

## **DIET**

### ***Day 1-5***

Esbilac brand, ready to use canned formula for dog pups at ratio of 50:50 to water.

Feed every two hours.

3.0 ml of formula offered at each feeding.

2.0 ml of fat free yogurt once a day to help curb diarrhea and aid in formula digestion.

A small latex marsupial nipple will be used until further notice.

### ***Day 6-8***

Esbilac changed to full strength.

Feed every 2 hours.

4.0 ml per feeding.

### ***Day 8- 21***

Feed every 3 hours.8.0 ml per feeding.

***Day 22 – 26***

9.0 ml per feeding.

***Day 27 – 28***

10.0 ml per feeding.

***Day 29 - 31***

12.0 ml per feeding.

***Day 32 – 36***

14.0 ml per feeding.

***Day 37 – 38***

15.0 ml per feeding.

***Day 39***

16.0 ml per feeding.

The nipple was changed to human premature infant type, and pups accepted well.

***Day 40 - 43***

20.0 ml per feeding.

***Day 41***

Number of feedings reduced from 7 to 6 per day.

***Day 44 – 46***

22.0 ml per feeding.

***Day 47 – 50***

24.0 ml per feeding.

***Day 51 – 84***

30.0 ml per feeding.

***Day 57***

Both exposed to live fish for first time in a pool. The male caught and ate 2 small fish and the female caught and chewed one fish, but did not consume.

***Day 60***

Offered IAMS cat food soaked in formula. The male ate a few pieces and the female chewed and not did consume.

***Day 62***

The nipple was changed to high flow nipple, and pups accepted well.

***Day 85***

Number of feedings reduced from 5 to 4 per day.

***Day 96***

Number feedings reduced from 4 to 3 per day.

***Day 110***

Number of feedings reduced from 3 to 2 per day.

***Day 114***

Beginning to lose interest in bottle and showing more interest in solids.

***Day 124***

Number of feedings reduced from 2 to 1 per day.

***Day 130***

Last bottle given today, weaned.

**GROWTH PROGRESS**

Male

Birth weight = 55.5 grams.

Weaning weight = 2374 grams.

Total gain from birth to weaning = 2318.5 grams.

Average monthly gain from birth to 6 months = 508.1 grams.

Crown-rump length at birth = 9.0 cm.

Crown-rump length at 1 month = 16.0 cm.

Female

Birth weight = 52.6 grams.

Weaning weight = 2336 grams

Total gain from birth to weaning = 2283.4 grams.

Average monthly gain from birth to 6 months = 491.2 grams,

Crown-rump length at birth = 8.5 cm.

Crown-rump length at 1 month = 17.5 cm.

## **DEVELOPMENT NOTES**

### **Male**

Day 17 R eye open.

Day 20 teeth erupting.

Day 33 L eye beginning to open

Day 35 both eyes completely open.

Day 38 no longer require supplemental heat source, thermo-regulating well.

Day 55 first exposure to water, 2 inches deep in small pool, and had no aversion to water and played in water for 30 minutes.

Day 57 first live fish caught and ate.

Day 59 no longer need to stimulate, urination and defecation are normal.

Day 91 canine teeth are erupting.

Day 92 eating smelt, live fish, and cat food well.

Day 103 given access to deep water pool (~2.4 m) and did well.

Day 130 weaned.

### **Female**

Day 20 teeth erupting.

Day 34 both eyes beginning to open.

Day 35 both eyes completely open.

Day 38 no longer require supplemental heat source, thermo-regulating well.

Day 55 first exposure to water, 2 inches deep in small pool, and had no aversion to water and played in water for 30 minutes.

Day 57 caught first live fish but did not consume.

Day 59 no longer need to stimulate, urination and defecation are normal

Day 70 ate first live fish.

Day 91 canine teeth are erupting.

Day 92 eating smelt, live fish, and cat food well.

Day 103 given access to deep water pool (~2.4 m) and did well.

Day 130 weaned.

### **SOCIALIZATION**

Fortunately for these two pups they have each other for companionship during the hand-rearing period. We believe this was beneficial to their well being and contributed to their physical and mental development. They were definitely bonded to the keeper staff, but

they played with each other and competed for space in their enclosure when they were not being handled. They are not planned to be introduced to any adults at this time.

## **CONCLUSIONS**

Hand-rearing is difficult, challenging, and labor intensive, especially during the early stages of the process. The most challenging aspect of this hand-rearing process was getting the animals to swallow and not aspirate milk. The animals were very anxious and drank too fast and milk was passed back through the nasal passages for the first eight days. After this problem passed, the pups grew fast, and did well with their natural behaviors of swimming, diving, and catching live prey.

## **ACKNOWLEDGEMENTS**

The Zoological Supervisor, Randall Tucker, Senior Keeper, Tom Condie, keepers, Rue Hewett and Jennifer Lindsley all did a very good job with following protocols and providing guidance and care for these otter pups. The senior veterinarian, Dr. Christine Miller, provided clear diet, social, and medical advice throughout the process. Everyone deserves thanks and appreciation for their efforts.