



# Groundbreaking Science That's Fun to Observe

by Bernadette Plair,  
CREW Research Associate

The birth of "Andalas," our Sumatran rhino calf, on September 13, 2001 marked the happy ending of a five year project focused on achieving a successful pregnancy in our female rhino, Emi. This momentous occasion also marked the beginning of another important scientific study focused on the behavioral relationship between the Sumatran rhino mother and calf. There is very little published data on rearing rhino calves, and none on the development of a Sumatran rhino calf raised by its mother. This long awaited event provided the Cincinnati Zoo and Botanical Garden with an excellent model for studying the behavior of a normal, healthy Sumatran rhino calf, and an instinctively good first-time mother.

Although watching a mother animal interact with her new offspring would be considered simple fun by many of us, in reality there is a real science to monitoring animal behavior. When gathering data, animal behaviorists typically use what is known as an *ethogram*, or catalog of behavioral patterns. For this study, data is being collected on behaviors that are indicative of the health and well-being of both the calf and mother. Basic behaviors such as eating, drinking, sleeping, as well as specific cow/calf



Andalas, the Sumatran rhino calf

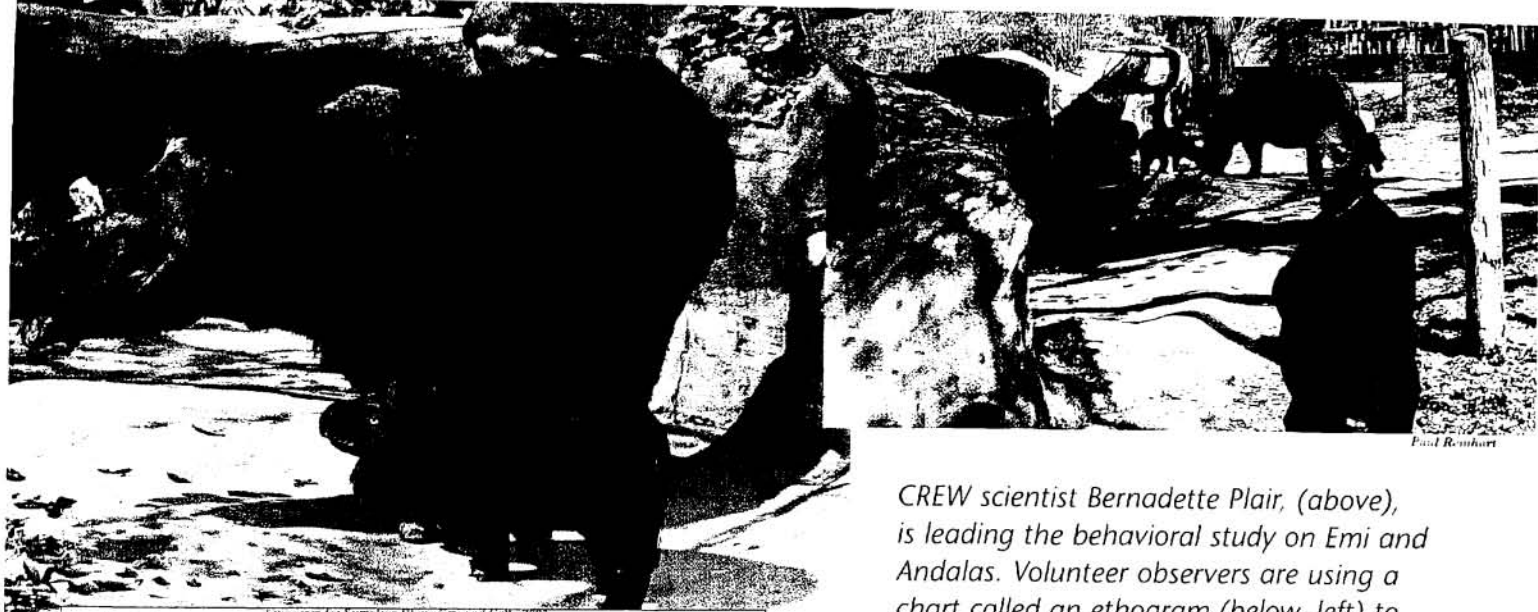
Dave Jenke

interactions such as licking, nudging, and playing are recorded at two minute intervals throughout the observation periods. The data collected will help us determine how much time the mother and calf spend engaged in each activity and will enable us to scientifically document changes in their behavior as the calf develops.

Nursing is one of the most important behaviors to monitor in a newborn. Information documenting the frequency and duration of nursing will be critical if it ever becomes necessary to hand raise a calf in the future. Hand rearing occasionally must be done when a

mother rejects her calf or if there are problems with the calf that prevent the mother from raising it herself. Happily, this is not the case with Emi and Andalas.

Although 'play' may be the behavior we most enjoy observing, it actually serves a very serious role in the development of young animals. Through play, an animal gains coordination and develops motor skills necessary for survival and for interacting with other animals. It is an important part of the animal's social development (e.g. playing helps a male develop skills later used for fighting to establish



Paul Reinhart

CREW scientist Bernadette Plair, (above), is leading the behavioral study on Emi and Andalas. Volunteer observers are using a chart called an ethogram (below, left) to record data on the behavior of the Sumatran rhino mother and calf.

Date: 11/21/06  
 Observer name: David Jenike  
 Time: 4:35 PM  
 Comments with Time and VCR #:  
 Location: Sumatran rhino exhibit

Ethogram for Sumatran Rhinos Emi and Cal 2006

Activity	Minutes	0	5	10	15	20	25	30	35	40	45	50	55	60
Resting														
Drinking														
Licking														
Urinating														
Spraying														
Defecating														
Playing														
Walking alone														
Pushing calf														
Lying alone														
Lying normal														
Call														
Publicly aggressive behavior														
Pushing mother														
Licking mother														
Clambering on mother														
Rolling against side														
Walking - slow														
Running														
Walking - front to mother														
Walking behind mother														
Walking behind mother														
Eating														
Drinking water														
Out of view														
Lying alone														
Lying normal														
Spreading dirt														
Interacting with water tray														
Playing with object														
Playing alone														
Playing with mother														
Humming														
Defecating														
Write other														
Write other														
Write other														

David Jenike

dominance). Young siblings in a herd may play together, whereas single offspring may play more alone or with their mother. Andalas is a precocious and very playful calf. When he was only two days old, he discovered that he could toss his head about. This action initiated his play behavior. He quite often plays alone with a ficus branch, manipulating it and carrying it from one stall to another. He plays with Emi by nudging her, pulling at her ears or tail, and butting her. Sometimes Emi interacts with him during his play by pushing him with her muzzle. In addition to being an important part of a calf's development, play activity also is a sign of good health. Knowing the typical activity patterns of a young

animal make it easier to identify when one becomes sick, because lethargy is a common sign of illness.

In the wild, one of the most important roles of a mother is to protect her young. Although animals may alter some of their natural behaviors when in captivity, instinct remains strong, and Emi is certainly protective of Andalas. The night before Emi gave birth she started exhibiting more frequently a behavior that she had exhibited only on a few occasions before. Emi started spraying urine on the walls of her stalls as she paced. Frequent urine spraying is something she has continued to do both inside the barn and in the outdoor enclosure ever since Andalas was born. Whereas this behavior may bring

laughter to the children watching Emi and Andalas in their exhibit, it actually is an important protective mechanism. Studies of wild rhinos suggest that females spray urine to mask the presence of their calves and to mark trails for their young. The first few days Andalas was allowed outside, he kept very close to Emi. But it wasn't long before he gained confidence and entered the exhibit with wild abandon, galloping around, sampling the dirt and leaves and playing with pieces of twigs.

Our enthusiastic and committed Zoo Volunteer Observers and staff have spent hundreds of hours recording the interactions of Emi and Andalas for this study. It has been an especially rewarding experience for all of us. Since the Sumatran rhino is one of the most endangered species on earth, everything we learn from this study is critically important in our efforts to save the species. Although watching a baby rhino and its mother sounds like fun, it is actually a scientific study that has never before been done on these critically endangered animals. ❁

*Sincere thanks to the dedicated Zoo volunteers and staff whose help in implementing this behavioral study is invaluable.*