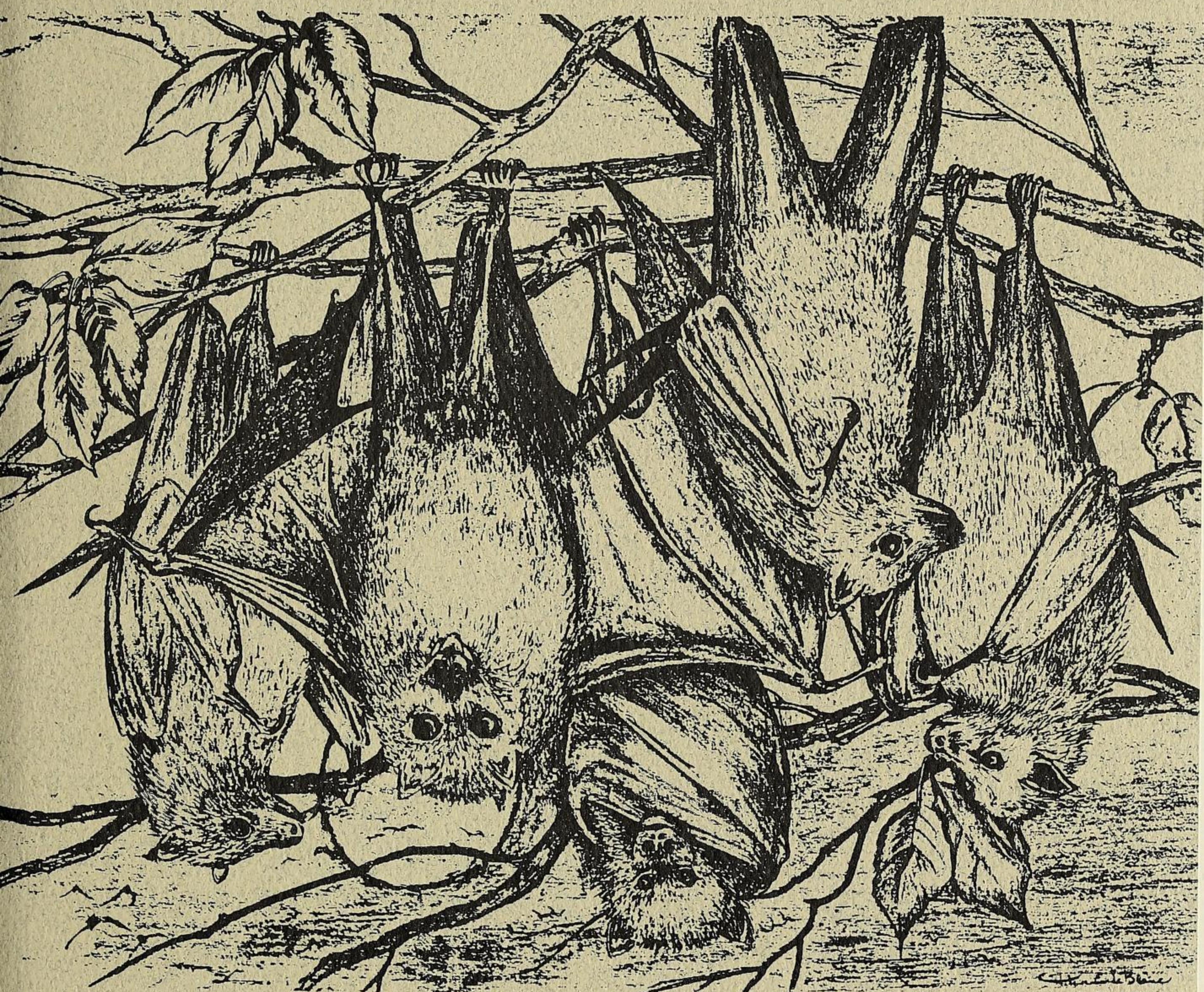


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ANIMAL KEEPERS' FORUM



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Husbandry and Management of the Southern Black Rhino

(Diceros Bicornis Minor)

at White Oak Conservation Center

By
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White Oak Conservation Center

**The author is currently a Zoological Manager at
Walt Disney's Animal Kingdom in Orlando, FL*

Since 1984, White Oak Conservation Center has been involved in rhino conservation, both *in-situ* and *ex-situ*. White Oak supports projects with all five species of rhinos through involvement and participation with the I.R.F. (*International Rhino Foundation*). Howard Gilman Foundation is a founding member and major contributor of the I. R. F. and John Lukas, Director of White Oak Conservation Center, is currently serving as president of the I. R. F. White Oak Conservation Center is involved in *ex-situ* conservation of the southern black rhino (*Diceros bicornis minor*) and the southern white rhino (*Ceratotherium simum simum*). In addition, White Oak Conservation Center currently supports *in-situ* research in nutrition, behavior and physiology.

Currently, White Oak's black rhino population stands at eight animals ranging in age from two months to 20+ years. In April of 1992, White Oak received its first female, *Mwenda*, through an International Rhino Foundation (IRF) partnership with the government of Zimbabwe. In July of 1994, Zimbabwe Parks and Wildlife Department decided to place two males on loan to White Oak as an addition to the U. S. southern black rhino population. The two males, *Clem* and *Tortoise*, originated from a private reserve in Zimbabwe where drought conditions depleted valuable nutritional resources and threatened their lives. On 19 July, 1995 White Oak received two additional females. *Ngewete* was received on loan from the Ft. Worth Zoo via Calvin Benson's La Coma Ranch in Texas. The second, *Thombi*, arrived on loan from Calvin Benson's La Coma Ranch. Since their arrivals all three females have produced calves.

HOUSING

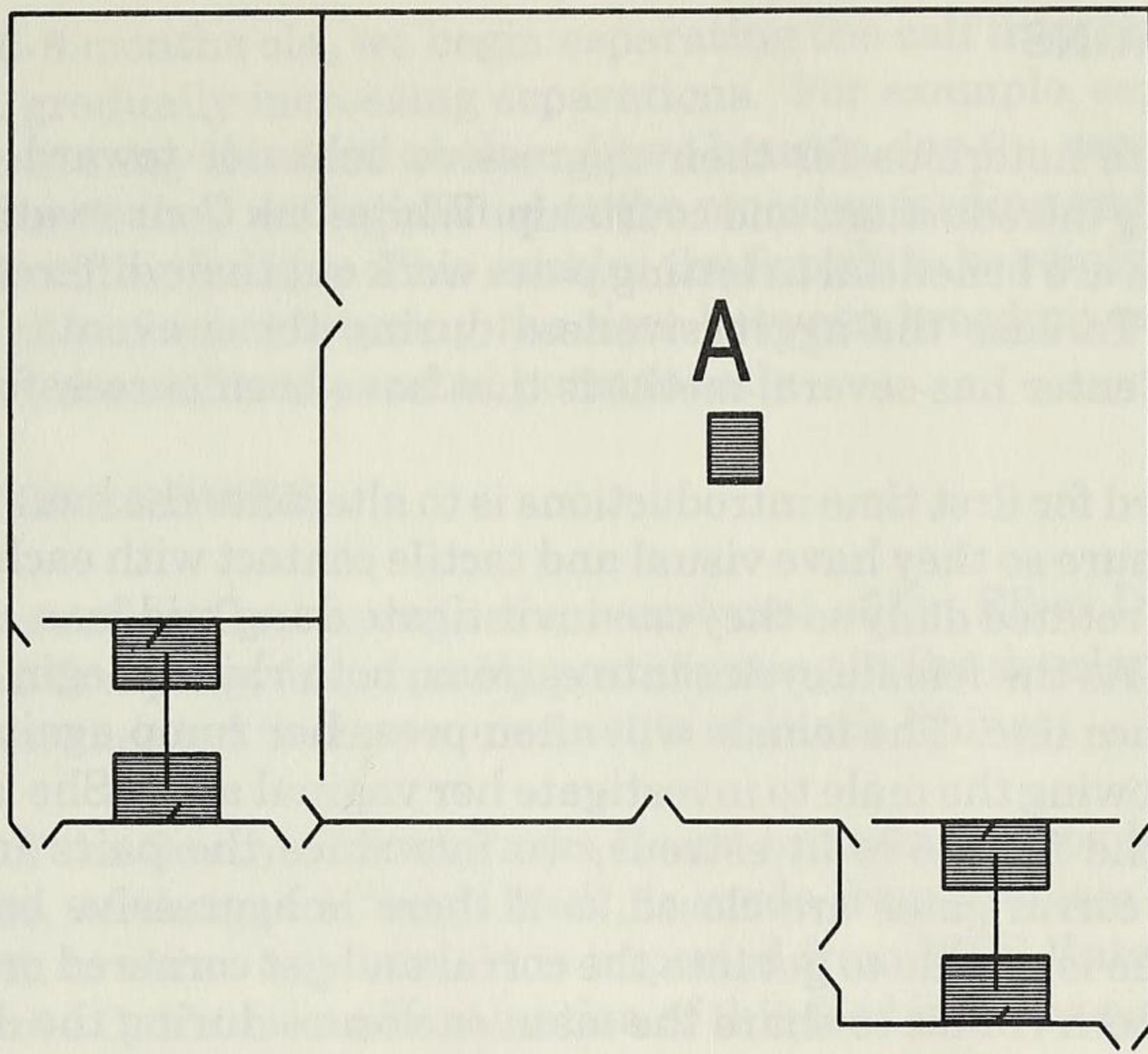
White Oak's southern geographical location makes it favorable for its black rhino and white rhino conservation breeding programs. The mild winters allow the rhinos to remain outside year round with no need to separate animals or lock them in barns. The rhinos are provided with shelters and infra-red heaters and have experienced temperatures in the 30s for short periods (not more than 12 hours) without any problems. Also favoring our breeding programs, is the resource of available land to construct spacious enclosures.

Presently, White Oak has three main breeding and rearing pens dedicated to black rhino management. The main enclosures have a vehicle access, mud wallows, and numerous shade trees with welded pipe protectors. There are logs and rocks for rubbing and scratching. The shelter for shade and rain protection has a soft sand substrate for comfort and dry wallowing. The largest pen (Figure 1, diagram A) is 1.15 hectares (2.85 acres) with a divided corral at one end and an adjoining smaller enclosure at the other end. Each corral is 27.45 meters (90') wide and 18.3 meters (60') deep. One corral and adjoining enclosure lie within the main perimeter fence. The second divided corral lies outside, but connects with the perimeter fence with access to the main enclosure through two gates. The perimeter fence and corrals are constructed of 7.62cm (3") horizontal welded pipe that is 1.63 meters (6') high with a 30.48cm (1') separation between pipes. There are vehicle access gates to the corrals from outside of the main pen's perimeter fence. The animal access gates enter the main pen from the corrals. The fence line that divides the corral also has an animal gate allowing access to either side.

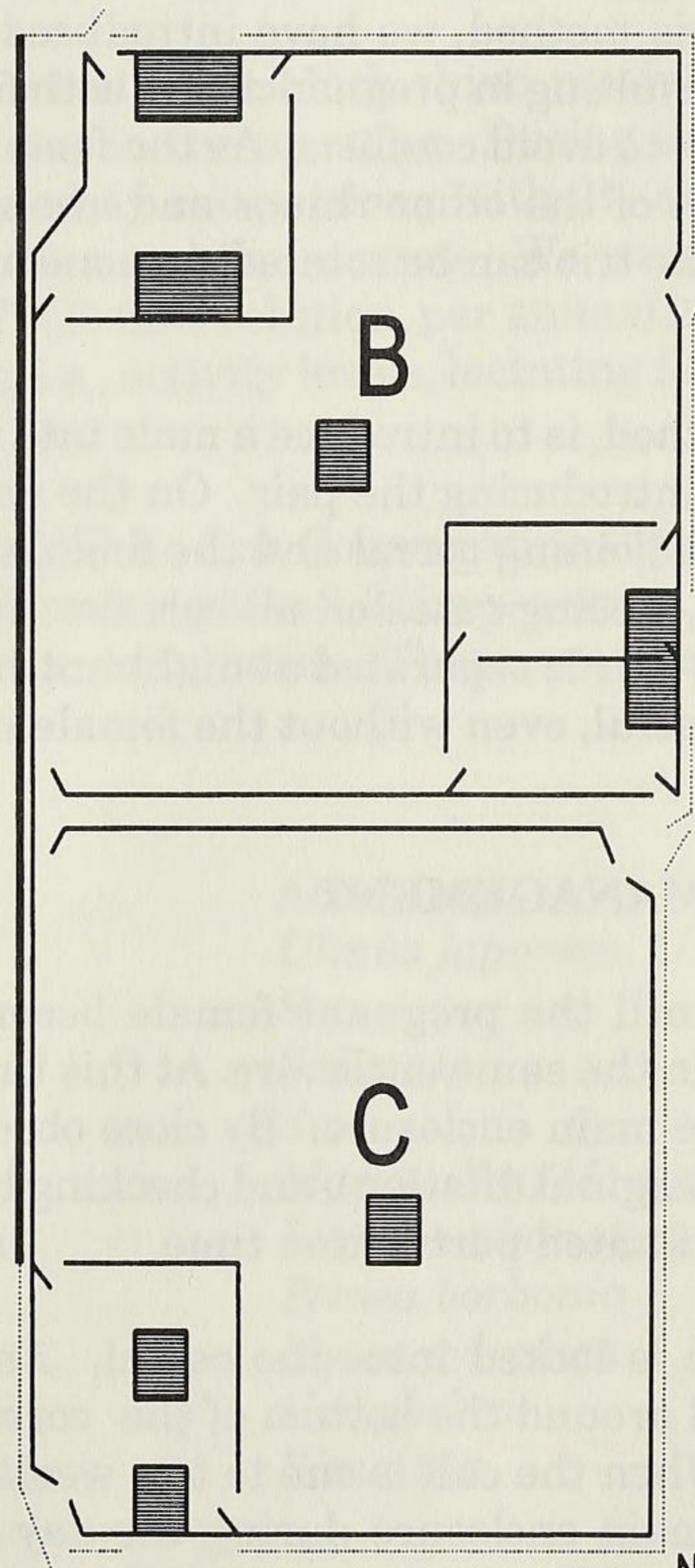
The second enclosure (Figure 1, diagram B) is .761 hectares (1.88 acres) with two corrals, one divided 23.18 x19.22 meters (76' x 63') and one single 16.165x 25.62 meters (53' x 84'). The perimeter fence is constructed of 1.52 meters (5') I-beams with 2.29 cm (3/4") steel cables running horizontally, 40.64 cm (16") apart. The steel cable is covered, with 2.54 cm (1") P.V.C. pipe, to prevent notching of horns. It is very effective. The single corral has a vehicle access gate along the perimeter fence and two animal access gates into the main enclosure. The divided corral has two vehicle access gates, one entering from inside the main pen on one side and one entering outside the enclosure on the opposite. The fence dividing the corral also has two animal access gates leading to either side.

The third pen (Figure 1, diagram C) lies adjacent to the second and is similar in construction to the second pen. There is a 1.83 meters (6') separation between perimeter fence lines with a dual gate access between main enclosures. There is a .915 meter (3') keeper space between the chain link and perimeter fences of the pen. The remaining fence line is an 2.44 meter (8') stockade fence serving as a visual barrier for adjacently housed hoofstock species. The enclosure is approximately a .4047 hectare (one acre) rectangle with one corral 24.4 x 19.83 meters (80' x 65'). The corral is constructed with 7.62cm (3") round horizontal welded pipe that is 1.37 meters (4' 6") high. There is vehicle access gate entering from outside the enclosure and two animal access gates into the main enclosure.

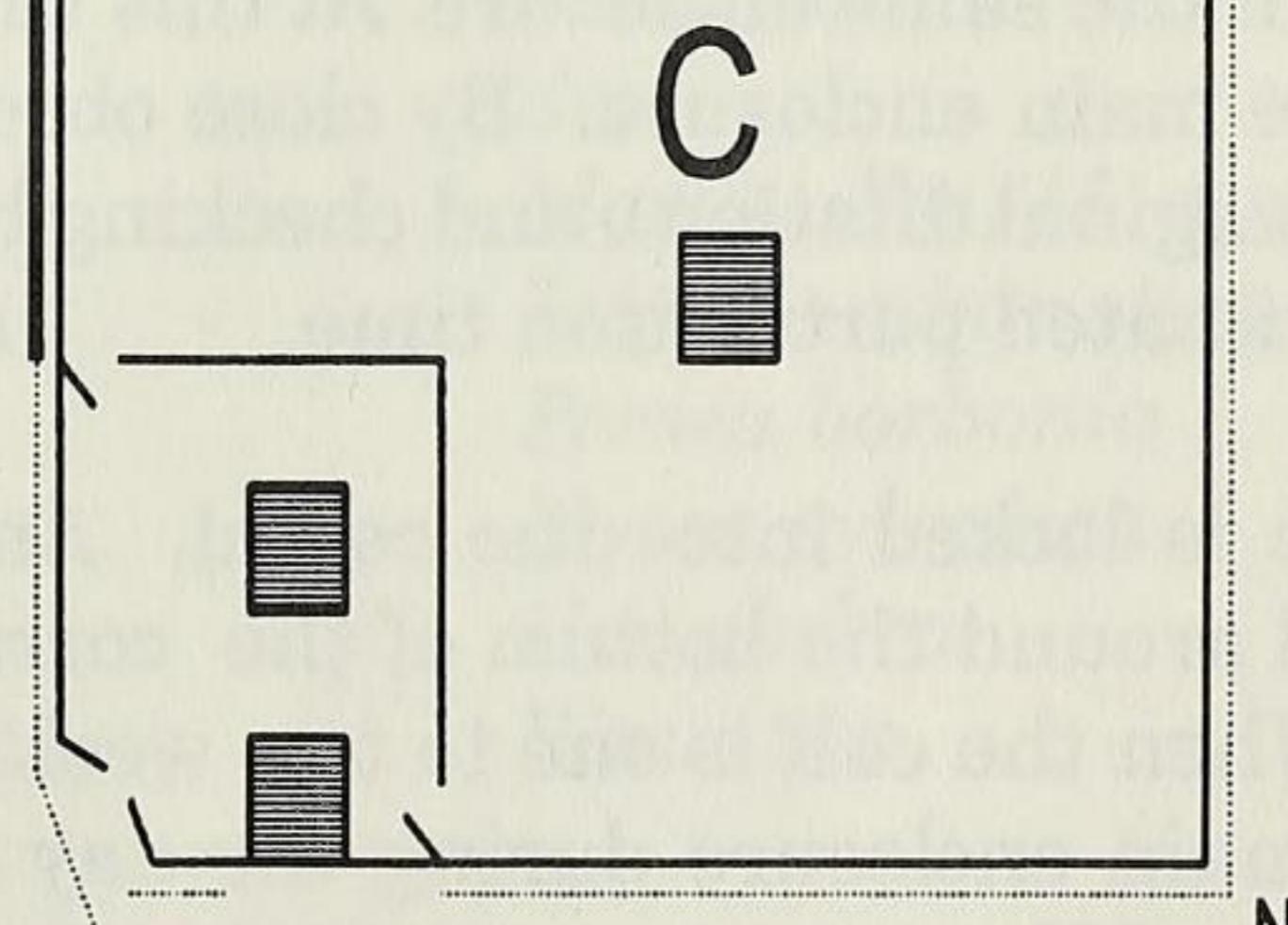
All but one corral has two shelters. One is a cement slab floor for feeding with an automatic water fixture on, or near, the slab. The other shelter is a sand substrate with a heat source. Bedding hay is provided in cold weather.



A



B



C

Legend

— Steel pipe fence

····· 8' Chain link security fence

— 8' Wood stockade fence

■ Open-sided shelter

Note: Drawings are not to scale

Figure 1: Black Rhino Enclosures at White Oak Conservation Center

INTRODUCTIONS

Black rhinos are notorious for their aggressive behavior toward each other, especially during introductions and courtship. White Oak Conservation Center's large enclosures are beneficial in letting pairs work out their differences during these rituals. To ease the aggressiveness during these events, White Oak Conservation Center has several methods that have been successful.

One method used for first time introductions is to alternate the male and female in a main enclosure so they have visual and tactile contact with each other. The individuals are rotated daily so they can investigate dung middens, urine odors, and pathways. As the female cycles into estrous, both rhinos begin to frequent the common fence line. The female will often press her rump against the bars of the corral allowing the male to investigate her vaginal area. She also squirts urine. When the female is in estrous, we introduce the pairs in the main enclosure. All corral gates are closed so if there is aggressive behavior, the submissive rhino is unable to get into the corral and get cornered or hurt itself. We then allow both rhinos to share the main enclosure during the day. If all is going well with no overt aggressiveness, we allow the pair to remain together day and night. Using this method, we have introduced an additional female successfully to the pair, resulting in pregnancies in both females. All rhinos are separated during feedings to avoid conflicts. As the females neared parturition they become less tolerant of the other rhinos and are separated into corrals. During the separations the trio can be rotated, so none are locked into a corral for an extended period.

Another introduction method, is to introduce a male into the female's enclosure for several days prior to introducing the pair. On the day of the introduction, the male is locked in an adjoining corral and the female is given access to her original enclosure, again, closing gates on all corrals. The male is then given access to the female. The pair is separated at night until breeding occurs. This has proved equally successful, even without the female in estrous.

MOTHER AND CALF MANAGEMENT

Pairs remain together until the pregnant female becomes intolerant of the presence of other rhinos in the same enclosure. At this time they are separated and rotated daily into the main enclosure. By close observation of the female (i.e., udder development, vaginal dilation), and checking breeding dates, we can roughly determine an estimated parturition time.

At this point, the female is locked into the corral. An 45.72 cm (18") high plywood barrier is placed around the bottom of the corral so the calf does not step through the bars. When the calf is one to two weeks old, mother and calf are given access to the main enclosure during the day and locked back in a corral at night. When the calf has grown enough that it can't escape the main enclosure, the calf is given full access to the corrals and main pen.

When the calf is 6-8 months old, we begin separating the calf from the mother for short periods, gradually increasing separations. For example, separations may begin one hour a day the first week and two hours a day the second week. This is continued until they are separated at the morning feeding and put back together at the afternoon feeding. This enables the female to be reintroduced to the male earlier, therefore, shortening the time between breeding and births. At one year of age, the calf is separated permanently.

NUTRITION AND BROWSE

White Oak Conservation Center, with the assistance of Dr. Ellen Dierenfield and Nutrena Feed Company, is currently participating in the development of a feed specifically formulated to the requirements of Black Rhinos.

Dr. Pete Morkel of the South African Parks Board brought Boskos feed to our attention. Boskos, Afrikaan for "bush feed", is made from problem bush and Acacia overgrowth in rhino habitats. It is imported from WES Enterprises in South Africa. White Oak's use and evaluation of this feed is in the early stages of investigation.

At the time of this article each adult black rhino receives one flake each of timothy, alfalfa and Sudan hay in the morning. During the afternoon feeding each adult receives the same hay ration along with 2% animal weight (10-12 lbs.) of Boskos feed, four apples and four carrots. We pour one liquid ounce of Mazuri® 5M84 Vitamin ETPG5 20% solution, per animal, over feed. We adjust diets to each animals needs, i.e., activity levels, lactating females and/or health status.

In addition to the above diets, White Oak Conservation Center also gives browse year round. In the winter, browse is given 2-3 times a week. During the growing season, browse is given on a daily basis. These are the browse species we currently feed:

Acacia	<i>Acacia</i> ssp.
Elm	<i>Ulmus japonica, U. minor</i>
Bamboo	<i>Ssp.</i>
Willow	<i>Salix</i> ssp.
Banana	<i>Ssp.</i>
Mulberry	<i>Morus alba, M. nigra</i>
Sweet gum	<i>Liquidambar styraciflua</i>
Red Bay	<i>Persea borbonia</i>
Tupelo	<i>Nyssa sylvatica</i>
Gall Berry	<i>Ilex glabra</i>
Pine Cones	<i>Pinus</i> ssp.

HEALTH MANAGEMENT

White Oak Conservation Center performs routine health screening and preventative medicine to minimize problems. As a part of this preventative medicine program, all rhinos are screened for parasites quarterly and treated as needed. All rhinos that are more than one month old are vaccinated annually for leptospirosis, Tetanus toxoid, eastern equine encephalitis and tested for tuberculosis.

Three of our adult black rhinos have been conditioned for routine blood collection without restraint or immobilization. It is believed that lack of proper nutrition is responsible for causing a number of health problems in black rhinos. White Oak Conservation Center will continue investigating the development of feeds and will support research in this area to improve the health of rhinos.

ACKNOWLEDGMENT

White Oak Conservation Center's commitment to the conservation of rhinos includes all five species. With the support of Howard Gilman and Howard Gilman Foundation it has been the vision of our director, John Lukas, that has made this conservation effort possible. I am proud to have been a part of White Oak Conservation Center staff and to have had the opportunity to work with this group of rhinos. I would also like to thank Connie Webb, Cyd Teare and John Flemming for their assistance in the preparation of this article.

For more information regarding White Oaks rhino programs, please contact: Steve Shurter, Collections Manager at White Oak Conservation Center, Yulee, Florida.

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