

Rhino Hoof Management at Perth Zoo including the use of Operant Conditioning

Kerry Norris and Rob Herkes
Perth Zoo

This paper is reprinted from the 2000 ARAZPA/ASZK Conference Proceedings with permission of the authors.

In 1990, Perth Zoo acquired a two-year-old male Southern White Rhino "Memphis" (*Ceratotherium simum simum*). Over the past ten years, Memphis has suffered from cracked nails and episodes of foot rot. These hoof problems caused by rapid nail growth and little natural wearing is believed to be due to the lack of exercise that Memphis had in captivity. As the outer nails grow, the weight of the animal is no longer distributed evenly between the padded sole and nails. Instead, overgrown nails bear the majority of the animal's weight, resulting in cracks caused by this extreme pressure. With this in mind, keepers implemented a training program to allow them to control the nail length.

This paper will discuss the different training methods used, how and why they were modified, and demonstrate the benefits to the health and well being of the animal through Operant Conditioning.

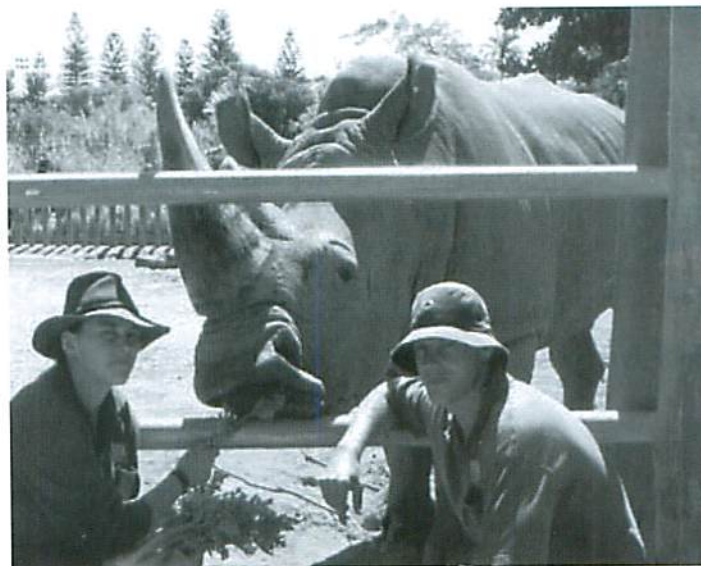


Figure 1 shows Memphis' old exhibit. Recently this exhibit has undertaken a full reconstruction and has been enlarged three fold to accommodate him and two newly acquired females.

The above exhibit area was approximately one thousand square meters. (A male rhinos average territory in the wild is around two square kilometres.) A large proportion of this area was taken up with rip-rap used to deter Memphis from the boundaries or to protect trees. Sloped embankments throughout the exhibit design helped to hide the night quarter areas, though proved impractical to Memphis as he seldom set foot there. Once these areas are deducted, Memphis was left with little more than half of the exhibit to exercise.

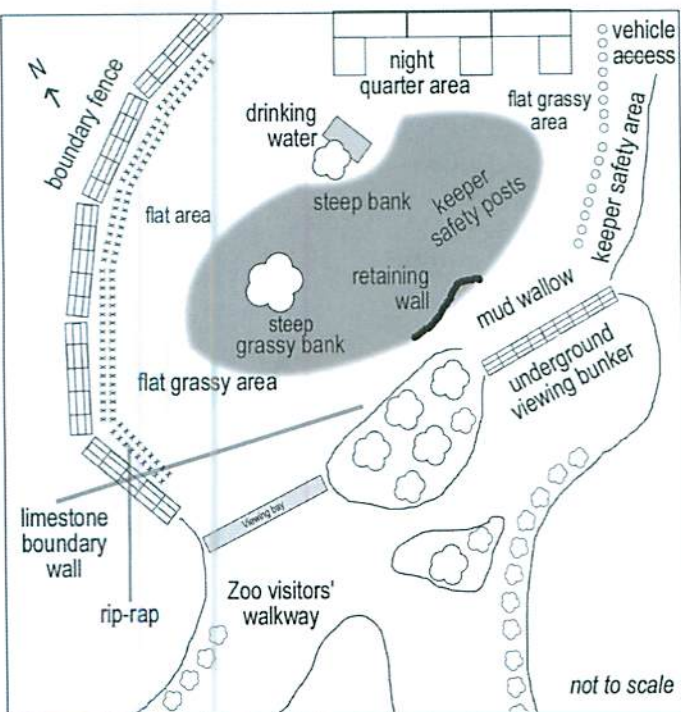


Figure 1. The Exhibit

Hoof Care Management

Method one – In the exhibit

When this hoof care program was implemented, Memphis was considerably smaller and more manageable. This method entailed two experienced keepers entering the exhibit, while Memphis was lying down. While one keeper would scratch him from behind, the other worked on his hooves. This method was a starting point, but not an ideal situation for obvious safety reasons. Memphis did not appear to object to keepers working on his hooves, providing he received constant attention and praise. Treatment frequency and duration was dependent on uncontrollable factors such as his temperament, unforeseen distractions from his surroundings and weather conditions.

Method two – In the night quarters

In 1994, it became obvious that this process was not adequate to prevent existing cracks from getting worse and it became necessary to undergo hoof care on a more frequent basis.

Behavioural conditioning was introduced using fruit rewards, praise and tactile contact. Memphis was encouraged to position himself along side the rails of his night quarters, with

6941



African park. Despite having quite a sheltered life up till now, she is adapting well to finding her own food inside the large enclosure and, already, is far less people-orientated than she was when she arrived.

During our trip, we went to visit Hluhluwe/Omfolozi National Park, which was the final place where southern white rhinos were living at the turn of the century. Only 13 known animals existed at this time, largely due to excessive hunting. Because the population was critically endangered, intensive protection was initiated to stop the extinction of the species. Gradually the numbers built up again and animals could be translocated from Hluhluwe/Umfolozi to reestablish populations in parks where they had been totally wiped out. White rhino had been extinct in Kruger National Park, but now they can boast a white rhino population of over 3000 animals and they are able to conduct translocation projects of their own.

Other projects that Sam and I have had an insight into have been the wild dog census in KNP. This is done on a five-year cycle and encourages visitors to send in photos of wild dogs and sighting information to construct a clear picture of pack numbers. The population this year is only 30% of the figure established from the last census that is of real concern. The project will highlight conservation measures that may need to be implemented if the population is to be able to survive.

There is an elephant contraception project running in the Park. This project tries to find ways to control the elephant population in Kruger without the need for culling. It is considered that the KNP elephant population is around 3000 too many over the Park's carrying capacity. This has knock-on effects for other animal and plant species in the Park. It is important to try to maintain the elephant population at a level the Park can support, to ensure that the biodiversity of the Park is not compromised.

We attended an elephant capture to move a bull elephant that had been repeatedly breaking out of the Park to eat nearby crops. He was darted and loaded onto a truck to be relocated to a private game park. This way the animal was moved to a place where he would no longer be a problem. Wherever possible the Park will try to source a new home for an animal such as this, as a preferable option to having to put the animal down.

Sam and I attended buffalo captures. These take place in the northern part of the Park, around Shingwedzi, where tuberculosis-free buffalo are darted from a helicopter and tested for Tuberculosis. After 72 hours, they are driven down to quarantine holding areas at Skukuza where TB-monitoring continues. Those that remain tuberculosis-free are kept for a breeding program for release into other S. African Parks.

Tuberculosis came into the buffalo population at the southern part of KNP through infection spread from domestic cattle. It has since spread into impala, lion and baboon populations

and poses a real threat to the diversity of fauna in the Park. The plan is for disease-free stock to be sent to other parks while Kruger tackles the TB problem. Then, disease-free animals will be used to restock Kruger.

An insight into the Game Capture section at Kruger National Park has given us a greater perspective of real conservation and management issues that face the Park and the knock-on effects that these have on captive populations and release projects. KNP is approximately 2 million hectares and, despite being the largest park in South Africa, it still requires a high level of management to ensure that the biodiversity is maintained. We were very grateful to have been given the opportunity to experience work in Kruger National Park and to be able to observe many of the "Pridelands" species in their natural habitats.

Next Issue of thylacinus includes:

- *Avian Diet Research in New Zealand
- *Captive Vertebrate Management Course
- *David Fleay's Wildlife Park
- *Galapagos Tortoise nutrition
- *Norfolk Island Parrot
- *Aiptasia anemone research

Plus more

Deadline for next issue is 15th November 2001

his head comfortably and safely between another set of rails. This maximised animal and keeper safety and minimised the uncontrollable factors mentioned earlier, enabling keepers to access hooves on one side of the animal. Memphis was encouraged to hold this position by offering slow but constant rewards until the hoof treatment was completed on that side. In order to work on the remaining hooves, Memphis was repositioned in the opposite direction. The “Feeder” would move to the opposite end of the training area, recalling the animal, and the process was then repeated.

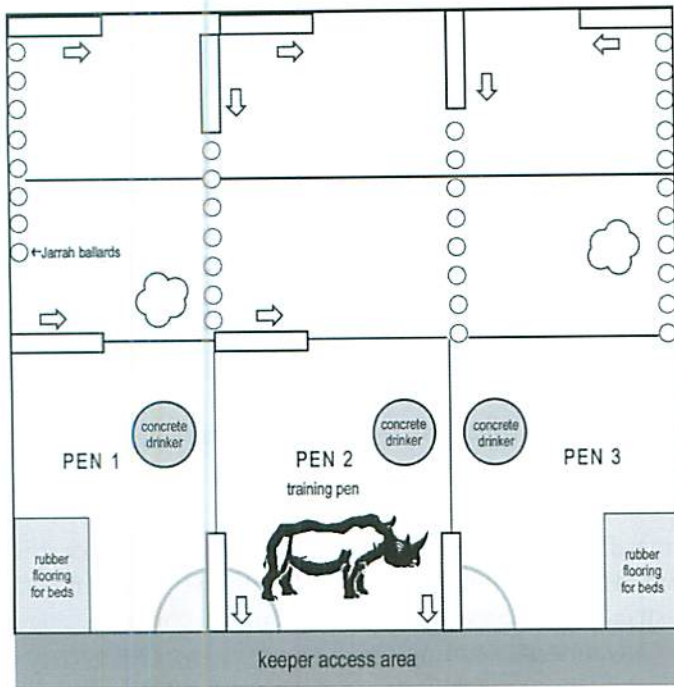


Figure 2. Training is carried out in pen 2.

This was considered adequate treatment throughout the winter periods. The constant moisture created by the wet substrate was beneficial as it softened the nails and the ground, creating a cushioning effect therefore relieving the pressure, which can cause the cracks. During the summer months however, the hooves began to crack partly due to the drying affect of the sandy substrate. The protecting outer layer (the periople) which holds moisture in the nail is worn due to abrasion from the sandy soil, causing the nails to become brittle and dry. Although the training program saw an improvement to treatment frequency and duration, the treatment carried out was minimal, as there was no way of gaining access to the undersides of Memphis’ hooves.

Current method – Operant Conditioning

Veterinary staff confirmed keeper concerns and it was agreed that the hoof problems were not improving. In 1998 it was feared that, over a period of time, continued hoof deterioration could cause lameness. Despite our efforts, hoof cracks were increasing in severity on the outside nails of all four hooves. They were as far as $\frac{3}{4}$ of the nail height, and as much as

2mm wide. Access to the entire hoof, particularly the underside was required to enable necessary filing and re-shaping to remove the overgrowth and properly assess progress.

With the help of marine mammal trainers from Underwater World Perth, an operant conditioning program was implemented. This is a more formal approach of training using shaping techniques, where previously methods were solely reliant on bribes and capturing behaviours. Memphis was conditioned to lift his hoof off the ground and onto a block to enable access to the underside of the hoof.

Raising the hoof off the ground

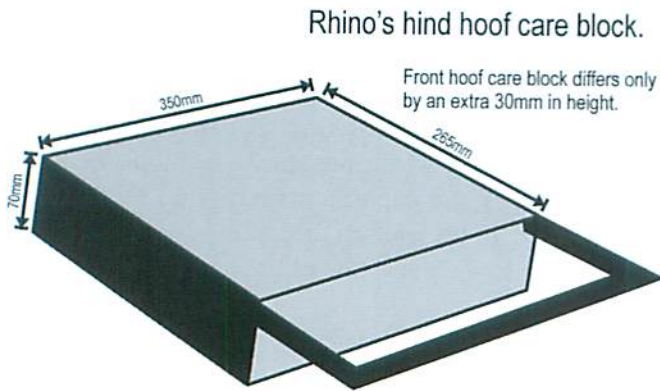
The rhino keepers, in consultation with the training team at Underwater World, identified the necessity to modify and improve the current training methods. While the standing position was adequate, it was agreed to train Memphis to move his hooves into the desired position to gain complete access. We first introduced a ‘bridge’ (dog whistle) which became a conditioned reinforcer as it was associated with food rewards. This allowed us to begin shaping the new behaviour. Once Memphis recognised the bridge we were able to progress to placing a finger between the animal’s toes. This acted as a negative reinforcement being something the animal works to avoid and therefore stimulated him to move his hoof. As pressure was applied we incorporated the command ‘lift’ and ‘lift off’ respectively, as a verbal cue. Even the slightest movement received a bridge and in turn positive reinforcement was given by ways of fruit (the primary reinforcer), as well as verbal praise and tactile contact (secondary reinforcers).

Within three weeks Memphis was conditioned to lift his hoof high enough to enable a chopping board, approximately 15mm in height, to be slid under the hoof. Progress was made quickly, as Memphis was highly food motivated and responded well to praise and physical contact. Through shaping in successive approximations (small steps), we raised the criteria by increasing the height of the board. Before long, the board was doubled and gradually increased in increments determined by his progress. Approximately five months from commencement of the new training program, a board 70mm tall was being used.

Board height

Due to the anatomical structure of the rhino, the hind leg is unable to bend as freely as the front and therefore we had reached our maximum tolerated height. A second board was constructed for use on the front legs and the height continued to increase gradually to a final level of 100mm. It was agreed that these heights were adequate to provide clear and safe access to the underside of each hoof without straining his level of tolerance. Memphis consistently presents each hoof and we have been successful with maintaining the desired

behaviour. From this we assume the exercise is without discomfort to the animal



Refining Training

Targeting

When in a standing position it seemed Memphis was more tolerant raising his right legs rather than his left. He seemed to favour leaning on his left side while standing, and to lift the left leg to shift his weight to the right side. In time, we noticed that he was more tolerant standing on his right side if moved away from the side rails. In order to reposition Memphis during a session, a verbal cue 'here' was introduced accompanied with a visual hand gesture of which acts as a target. This has also proved beneficial during eye examinations, where it is necessary to position the head for ease of access.

Replacing negative reinforcement with a new cue

Over time Memphis became extremely efficient with his routine and this technique was refined. We replaced the negative reinforcement of placing a finger between the toes with a light tap at the back of the leg (still accompanied by a verbal cue to lift / lift off) and he would bring his foot onto or off the board. This was necessary in order to alleviate confusion while working around the toe areas.

Re-positioning the hoof without removing it from the board

During treatment it is necessary for the area being worked on to overhang the board. In order to achieve the required access to specific areas it is essential that we are able to manoeuvre the board under each hoof. It was preferable to do this without Memphis removing the hoof completely. Keeping the tapping of the hoof as a cue (to remove the hoof from the board) separate and unique to the behaviour served to minimise the risk of confusion.

We were able to apply existing methods to the hind legs and found the gesture of pulling the flank area was sufficient to

prompt enough movement. In order to guide the front legs, we placed one hand on the top of the leg and added slight pressure in the direction of the trainer with the verbal cue of 'come on'.

To keep the hoof still

When the hoof is in the correct position, or we would like the animal to keep still, we use the command 'steady'. Memphis recognises this command and will generally cease any movement of the hoof to accommodate. When 'steady' he is bridged and rewarded with positive reinforcement according to the criteria met.

Ending the session

There are two cues used to indicate that the session has been completed. The verbal cue 'Finished', is used with the gesture of hands crossed at the wrists, and then moving them into an open position (hands apart) is carried out. This signals that the session has been completed and the animal is free to move away as no more food rewards will be given. At this time the feeder will leave from the feeding station to reinforce that the feeding has stopped, reducing the risk of any aggression displayed towards them in anticipation of further interaction.

Methods used in hoof care

Cleaning the nail

The nail is cleaned with a wire brush to remove dirt or dried mud. This allows the keeper to clearly view nails for any fresh cracks or recent damage, for example, chipping, ridges, and any unusual wearing.

A hoof knife is used to remove any foot rot causing agents that build up in the hollow between the overgrown nail and the soles.

Rasping

We use a farrier's rasp to file the overgrown nail to the desired length. Rasping on the underside only, the area is checked frequently throughout the process to minimise the risk of over filing.

When the hind hoof is suffering from cracks (in particular the outside nail), the leading front edge is rasped off the outside nail. This helps to relieve pressure on the affected nail when the animal walks, reducing the risk of opening the crack further. This should be six or seven millimetres in height, angling backwards.

Crack treatment

If the crack is large, a 'T-cut' is placed at the top to prevent it from travelling further up the nail. A hoof knife or a rasp can be used to achieve this cut.

Sand and dirt is removed from inside the crack to prevent compaction. Pressure from this dirt can force the crack to

extend further. It is then opened up slightly to prevent dirt from becoming lodged in this area.

Grease application

Horse hoof grease is applied to the nails to act as a protective layer. The grease minimises moisture loss from the nail due to the drying effects of sandy substrate. We use a brand called Farriers Choice - Medicated Hoof Grease. In the dry summer months it is applied daily using a paintbrush or rag.

Other advantages of operant conditioning

Collecting blood

With veterinary team consultation, we were able to apply operant conditioning to other areas, such as medical procedures including collection of blood from the ear vein. It was apparent that while blood had been collected in the past, it was not a regular occurrence and was shaped as a new behaviour. Again the positive reinforcement techniques were used to shape the desired behaviour. Memphis has always appeared to enjoy a scratch around the ear, therefore, he was comfortable with us working in this area. The next step was to have him stand while we desensitised him to the blunt end of a nail or matchstick to the ear, being careful not to elicit any negative response and lose his trust. Memphis showed no obvious response to the probing. As he appeared comfortable, within one week, we were able to collect blood with ease.

Application of topical sprays

We have a problem with biting flies, especially in the summer months. A citronella spray must be applied to the affected areas daily to combat this problem. Prior to using the shaping techniques, Memphis was reluctant to tolerate these sprays. Using operant conditioning, Memphis is now keen to respond, and will stand and accept the spray.

Oral presentation

We have incorporated oral presentation to our training program. Memphis will now open his mouth wide with his head raised. We have also desensitised him to the point where we can move the tongue for us to view the area well. Using a torch, we are able to see most of his teeth, and we are intending to introduce a salt-water mouth flush to the program.

Eye examination

Recently, Memphis had an infection present in both eyes. As we had previously desensitised him to eye treatment, we were able to promptly treat and remedy the problem.

Body examination

Another simple practice we like to use daily is desensitisation to body examinations particularly around areas such as the eyes, ears, mouth, nose, horn, neck, chin, underbelly and back. These areas are generally out of sight or sensitive though by using positive reinforcement training, Memphis is calm and allows us to regularly access different areas. This assists us

with early detection of any cuts, scratches, discharge, foreign objects etc, and the problem is treated with minimal stress to the animal. This ongoing keeper/animal interaction helps with bonding and promotes a sense of trust.

Other trainers

From our experience, it has been important to set clear goals and actions, and monitor them closely. The techniques were kept simple and precise in order to minimise confusion for the animal and the keeper. We found Memphis would only consistently behave and cooperate for two people, therefore to maximise positive results only these individuals were shaping the behaviours needed until our goals were achieved. Once competent in all areas, a third trainer was introduced to continue basic maintenance of hoof care accommodating rosters and leave.

Added preventative measures

Substrate control

To ensure that all of our hard work and treatment to the hooves is not undone, the exhibit is watered before Memphis is given access to it. This not only helps to compact the substrate; it keeps dry dust from absorbing the grease on the freshly treated nails.

As mentioned earlier, we have modified his old exhibit to accommodate him and two female's (1.2.0). The enclosure size has been almost tripled, and modifications have resulted in the surface being relatively flat, promoting exercise. Memphis' activity levels have increased remarkably with these renovations and the arrival of the female rhinos.

Housing

When held in his night quarters overnight, Memphis wears the outer nails on the rough surface of the floors. Even though he has a straw bed on top of rubber matting, he tends to lie outside on the concrete possibly to catch the early morning sun. The problem is caused when he moves to stand, and the sides of the nails wear on the concrete. Not only does this remove the protecting layers of the nail; it wears them so thin that the nail becomes weak and frayed. If the nails deteriorate to this level, treatment can be difficult to administer.

To overcome the problem, Memphis is given access to the exhibit at all times unless maintenance work or uncontrollable factors require him to be locked away.

Bonding sessions

Memphis has a quiet temperament and good nature, which enables us to promote close contact between him and his keepers. In their natural habitat, rhinos regularly coat themselves in mud. Regular mud scrubs are performed by his keepers and are considered positive contact which he, his keepers and the visitors all enjoy. Imitating this natural behaviour is also beneficial as it deters flies and biting insects, as well as provides protection from the sun, cools him down, and keeps his skin in good condition. It is even thought that

the clay mud (covering the nails) can aid in retaining moisture in the nails similar to the application of hoof grease. This scrub is usually carried out at his daily keeper presentation.

Conclusion

It has become evident to us that more can be achieved with these animals with trust, patience and persistence from both parties. With the assistance of Underwater World Perth, we have been able to successfully introduce and maintain a behavioural training program to manage our male Southern White Rhino. This type of program is currently being incorporated with other animals at Perth Zoo with positive results. Perth Zoo has recently acquired two female Southern White Rhinos from South Africa. The older female 'Katala' has a deformed nail, which was reported as a result of dislocation earlier on in life which may need to be accessed for treatment in time. We intend to implement an operant conditioning program with these animals in the near future so that preventative hoof management can be applied.

Bibliography

Fraser, Clarence M. et al. (1991) The Merck Veterinary Manual, Seventh Edition. Merck & CO., Inc.
Pryor, K. Don't Shoot the Dog.

Acknowledgments

Mark Whitfield and Gloria Jackson - Underwater World Perth.
Previous Keepers, Colin Wallbank, Chris Wilson and Ric Dunlop.

Perth Zoo Veterinarians.

Appendix 1.

Step By Step Procedure.

Below is a guide to how a typical training session would be carried out.

1. Memphis is called into position by a verbal command from the feeder "**Memphis here**", and a visual hand target between the rails where the head is to be positioned. The trainer then asks the rhino to position his body alongside the rails near the access area with the command '**come on**', and a guide by pulling the flank area of the back leg. As Memphis appears to enjoy being scratched in this area, he will move in towards the person when touched.

2. **Whistle** is blown (bridge) when he is in correct position, and feeder begins to **feed at a slow steady pace**, while trainer positions themselves, and rhino has a chance to settle. (Trainer should **use tactile and verbally reward** Memphis for responding). While stroking/feeling all over that side of the body, you may check for any injuries or abnormalities etc, and ascertain if any treatment is needed.

3. When trainer and rhino are settled and in place, the trainer will ask the feeder to **stop feeding**, and give the rhino the command '**Memphis lift**'. When he does so, correctly, pat and **verbally reward him**, and give the command '**steady**' straight away.

4. Keeping an eye on the animal's body language, **verbally reward** and **bridge** within 4-5 seconds - the feeder is to feed **one piece of fruit only**.

5. Immediately after bridging, give your next command. If treatment is to be carried out for example, give the command '**steady**' - (he is steady) so start treatment verbally rewarding and reinforcing - '**good boy, steady**' through out.

6. **Bridge**, feeder feeds one piece of fruit, and the trainer gives the **next command immediately**. Bridge periodically depending on the animal's response, for example if you are doing something new, reinforce and bridge more often for good behaviour. If it is a standard session, bridge less frequently but still keep up a good verbal reinforcement. Carry on with the '**steady**' command until you need him to carry out another task such as -:

- He has moved his hoof, but is still on the board, or you simply want him to place the hoof a little further on the board - verbal command '**Memph come on**', and guide him with both hands at the top of his front legs, or pull the flank for the back - he moves back to place, blow whistle (one piece of fruit rewarded from feeder), verbally reward, and give next command.

OR

- He has taken his hoof completely off the board - verbal command '**Memphis lift**', with the tap to the back of the hoof to be lifted - (he does so), verbally reward and command '**steady**', verbally reward and bridge. He receives one piece of fruit only. Next command.

This continues until all treatment, or training is completed for that hoof.

7. You have finished all you need to do, verbal command '**Memphis lift off**' with a tap to the back of the hoof (he lifts off) - **bridge** immediately, **pat and verbally reward**. The feeder feeds the fruit at the sound of the bridge, and will **feed at a slow steady pace** until the trainers have positioned themselves to the next hoof, and the commands recommence.

TURNING HIM AROUND

8. Once the two hooves are completed, and any extra treatments to that side of the body has been carried out, (there has been a large fruit reward of 2-3 handfuls of fruit providing the behaviour has been good), the feeder will move to the other slide gate behind the rhino encouraging him to follow

with a verbal "here Memph", and a hand target between the rails where the head is to be positioned. Again the trainer aligns the rhino with the verbal "come on", and a guide by pulling the flank until the animal is in position. Once the rhino is in place, step 1. Is repeated (**whistle is blown, verbally rewarded and patted** until both the rhino and trainer are settled), and the session continues again repeating **steps 2 through 7.**

SESSION COMPLETED

9. Once this side is completed, the 'Memphis lift off' command has been carried out, and the whistle blown, **three full handfuls of fruit** are given as a reward, lots of **praise** and **tactile** from the trainer, and the feeder should command and give the sign of 'finished' (cross the hands at the wrists, and bring them to an open position apart from each other).

NOTE - Once the 'finished' command has been given, ensure the feeder moves out of the feeding areas immediately to reinforce that the session has been completed. This reduces the risk of any unnecessary aggression displayed towards the keeper in anticipation of further interaction.

Announcing an ASZK Website

The ASZK has set up a temporary website to get us started on our journey into cyberspace! It contains information about the society including a downloadable membership application form. We will be keeping it up to date with notices of upcoming ASZK events. The eventual aim is to get a dedicated website started that will be able to hold husbandry manuals that can be downloaded.

To visit the new website the address is

http://www.users.bigpond.com/tidbinbilla_n_r/

*We would welcome any comments. Please send these to
Geoff Underwood, email
tidbinbilla_n_r@bigpond.com*

5TH INTERNATIONAL CONFERENCE ON ENVIRONMENTAL ENRICHMENT TARONGA ZOO, SYDNEY, AUSTRALIA

4-9 NOVEMBER 2001

Planning for the enrichment conference is proceeding apace. We have now received 75 abstracts and the programme for oral presentations is full. There will also be a large poster display. A wide range of enrichment related topics are to be presented

There will be two workshops expanding on the conference theme, "Making Enrichment a 21st Century Priority". The first conducted by Dr. Jill Mellen and the team from Disney's Animal Kingdom, Florida is titled "Practical Tools to Develop and Plan Enrichment Initiatives" and the second led by Becca Hanson of the Portico Group will explore "Keeping enrichment a priority through the exhibit planning process." There will be a group of supporting presentations from several institutions on how they implement their enrichment programmes.

The use of techniques such as training, multi-species exhibits, moving animals between exhibits, randomizing enrichment schedules will be explored. There will also be specific reports on enrichment initiatives for many groups; primates, from marmosets to chimpanzees; carnivores with papers on bears, tigers and giant panda; hoofstock, and also for birds, reptiles, amphibians and octopus.

Enrichment is expanding outside the zoo industry and there will be a strong group of presentations on laboratory animals from rodents to primates, on domestic pets and agricultural species. There are also a group of papers on the value of presenting enrichment to zoo visitors and its use in education from pre-school to university level.

So, all in all, it looks like a stimulating week and a programme with a wide appeal within and beyond the zoo community. There is still plenty of time to register and attend the conference.

Full registration is \$400 or day rate at \$80 per day.

Full registration includes a copy of the conference proceedings as well as participation in all conference sessions, meals and some social functions.

For registration and further information including the programme, go to the Taronga website, www.zoo.nsw.gov.au, or contact the organisers.

Margaret Hawkins, SIEE Conference Co-ordinator,

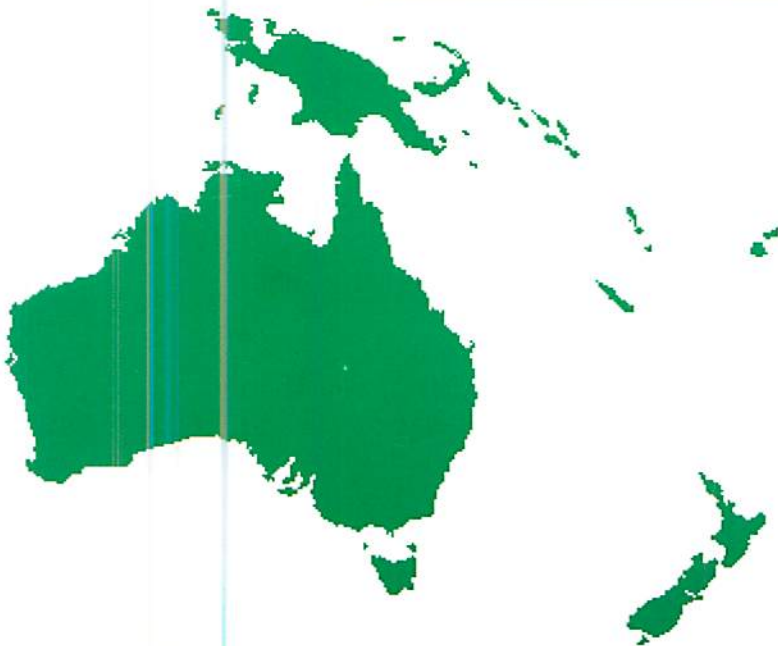
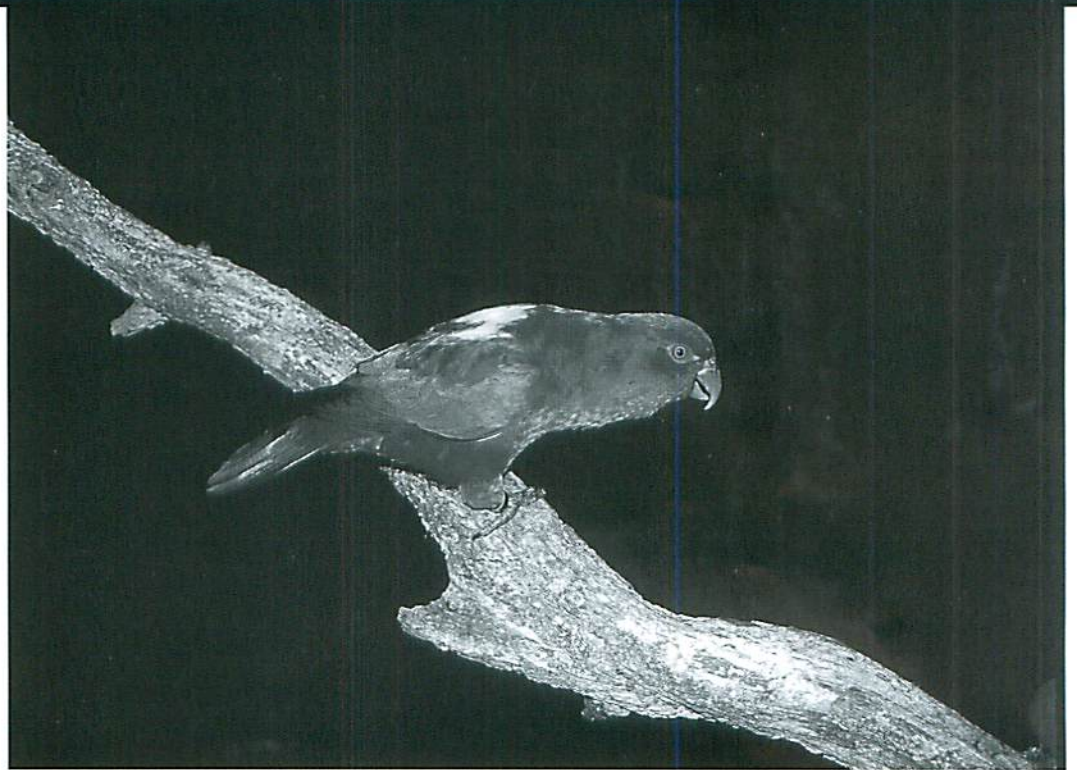
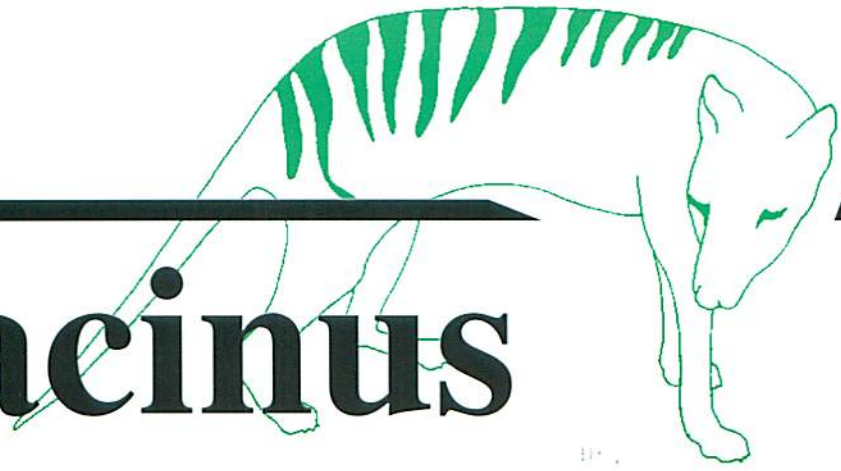
Taronga Zoo, PO Box 20, Mosman, NSW, 2088, Australia

E-mail: mhawkins@zoo.nsw.gov.au

Telephone: 61 2 9978 4615

Fax: 61 2 9978 4613

thylacinus



A publication of the
Australasian Society of Zoo Keeping
ISBN 0811-6857

Vol.25 no.2 2001

Australasian Society of Zoo Keeping

PO Box 248, Healesville, Victoria, 3777, Australia

From the President

The ASZK committee has been busy since the last edition of *thylacinus*. We have firstly had a meeting in July at Melbourne Zoo, to discuss the strategic review of the ASZK and formulate a strategy that will take us into the future in a positive way. Many thanks to all those members who responded to the questionnaires sent out earlier this year. It was helpful to the process to hear your views on the future of this society. Results of the review will be published in an upcoming edition of *thylacinus*.

The second big news is the organisation of an ASZK "Back to Basics" Zoo Keeping Conference. We are overwhelmed by the support shown for this conference by Australia Zoo who has agreed not only to host the conference but to sponsor it as well. This gives us the opportunity to hold a conference that is highly affordable to all staff and indeed volunteers involved in zoos. The conference will be held 15-17 March 2002. Australia Zoo is undergoing a tremendous period of growth and it will be a great opportunity for us all to see first hand the expansion that has occurred and the plans for the future. We will be presenting the ASZK awards at this conference so we would like all members to start thinking about nominations for these coveted awards.

It should be noted that this is a one off event and came about over concerns of the affordability for keepers to attend the joint conference to be held in Singapore in June 2002. The Singapore conference will be held in conjunction with SEAZA and will present lots of good opportunities for zoo staff to broaden their horizons and visit some of the world's most well known zoological institutions.

Hope you enjoy reading this volume of *thylacinus*. As usual the committee of the ASZK welcomes any feedback you may have on the content of YOUR journal!

Carla Srb President ASZK

To submit papers to "thylacinus" please send to ASZK

Healesville Sanctuary,

PO Box 248,

Healesville Vic 3777

or email them to csrb@zoo.org.au

***thylacinus*, Volume 25, Number 2, 2001**

Cover photo

Chattering Lory

Photo by Steve Wilson

Editors

Stephen Jackson NSW Dept Agriculture

Liz Romer ASZK

Contributing Editors

Des Spittall Seaworld Australia

Proofing, layout and type-setting

Liz Romer ASZK

Opinions expressed in this publication are those of the authors and are not necessarily those of the editors or ASZK.

ISBN 0811-6857

© Copyright

Australasian Society for Zoo Keeping Inc.

Address enquiries to:

Australasian Society of Zoo Keeping

PO Box 248

Healesville Vic 3777

Committee Members 2001-2003

President

Carla Srb Healesville Sanctuary

Vice President

Patrick Honan Melbourne Zoo

Treasurer

Sonia Goldie Currumbin Wildlife Sanctuary

Secretary

Heather Guy Adelaide Zoo

International Liason

Geoff Underwood Tidbinbilla Nature Reserve

Committee

Michelle Burrridge Dreamworld

Damian Stanioch Australia Wildlife Park

Executive Officer

Liz Romer

Contents

Captive Husbandry & Rehabilitation of the Striped Possum <i>Dactylopsila trivirgata picata</i> in Far North Queensland.....	2
Captive Breeding of Silvereyes <i>Zosterops lateralis</i> at Currumbin Wildlife Sanctuary.....	8
Breeding the Chattering <i>Lory lorius garrulus</i> at Melbourne Zoo.....	10
Zoo Alive: Our time with the Game Capture Section at Kruger National Park, South Africa	12
Rhino Hoof Management at Perth Zoo including the use of Operant Conditioning.....	14
Regent Honeyeater. The Challenge and Achievement of Artificial Propagation.....	20
The Zoolex Gallery on www.zoolex.org	22
Zoo News.....	24
Conferences and Meetings.....	28



To subscribe to *thylacinus*:

Join ASZK

Full individual members - A\$55

Associate individual members - A\$55

Please enquire for details on institutional memberships.

All membership enquiries to ASZK, PO Box 248, Healesville, Vic, Australia 3777