

Questions from the How to train a dragon: An evening with.....Jim Mackie

1. **Are there any current behaviours that are being investigated by ZSL at the moment? – Sophie**
2. **When training the hornbills how did you begin the process and then continue their exchange? – Anonymous**

Training wise we are continually evaluating the welfare benefits of training, whether that is through giving animals more choice and control or new techniques or behaviours we find out about through the international training community.

3. **How would you go about training hornbills? And what did you train them to do? - Jasmine Eade**

We have trained a large variety of hornbills at ZSL, including great Indian, red billed, Von-Der-Deckens and, my personal favourite, Malayan Black hornbills. We train as we would any other animal, using operant conditioning, starting with creating motivation to behave for favoured food items such as mealworms and grapes. The behaviours we have taught them include weighing, transportation and auscultation (stethoscope exam), and I even trained the Malayan Black hornbills to exercise outside the aviary for enrichment. I trained one individual, called “Jazz”, for about 2 years before he was exported to Sparsholt College, a few years later I was asked to go and do some teaching there and he remembered me!



*“Jazz” the hornbill - London Zoo 2011  
Trained for routine weighing*



*“Jazz” at Sparsholt College in 2018*

4. **Have you ever trained frogs? – Anonymous**

Personally, no, but I know there are examples of training with frogs. They are quite visual, so they have been trained to follow a laser pen to move them without restraint.

5. **I like your training on not using darts. How have the Lions been trained at London Zoo? – Neesha Khan**

Thanks Neesha. The lions have all been trained using operant conditioning. I am very proud that all of ZSL’s large carnivore species at both zoos are trained to accept voluntary hand injections for vaccinations and general anaesthetic, and many are trained to give blood too.

6. **Whipsnade’s new male ostrich has an issue with being overly- friendly with Zoo visitors. How could operant training be used? – Andrew Heaver**

Good question! I have yet to observe this behaviour but this type of “undesired” behaviour would be tackled by using applied behaviour analysis. I prefer not to go straight to operant conditioning to solve problem behaviours, but rather take a “constructional approach”, looking at environmental conditions and enrichment first. However, we do use Skinner’s principles of behaviour change to help us identify behaviour and help to solve them. Simply put, we work out what value the behaviour serves to the animal and what the triggers are, and we try and remove or reduce the triggers and replace the undesired behaviour with an alternative behaviour. This new behaviour should provide equal value to the animal and be incompatible with the undesired one. For example, if the trigger for the over friendly behaviour is visitors at a certain location we could install a new barrier making the trigger less effective. If the reason for the behaviour to occur is that the ostrich enjoys interaction, we would increase

enrichment provision in a location away from the visitors, encouraging longer duration of natural foraging behaviours. Most of all myself and the EAC team would look to collect as much evidence as we can to make sure we have the best chance of solving the problems.

**7. How much interaction do you have with other zoos? – Sue Shaughnessy**

The British, Irish and European (BIAZA) (EAZA) zoo community is very well connected; ZSL is an integral part of these communities. We have representation on all taxonomic working groups including my own external roles of chair and vice chair of the BIAZA and EAZA Training and Behaviour Working Groups respectively. I also teach courses for the EAZA Academy and I have hosted keepers from zoos all over the world, seeking to learn about ZSL's work in training animals for improved welfare.

**8. In the terms of motivation, how would you work towards training inverts – Oliver**

This is a relatively new area – the aquatic inverts such as octopus are highly food motivated and intelligent so motivating operations would be fairly similar to vertebrates. Terrestrial inverts are a different matter entirely, but Ken Ramirez has trained butterflies and the method is best explained here:  
<https://www.clickertraining.com/the-butterfly-project>

**9. Do you agree with wing feather clipping? I have a young hand reared conure named Sweetie and she is so tame. I'm going to try and teach her to talk, and quite a few more tricks using operant conditioning (positive reinforcement), she is very happy, how long do you think it will be before she talks, she is currently nearly 6 months – Rhonda Lane**

This is quite a big subject which I do not think I can do justice to in this forum! However, I wish you all the best with the conure!

**10. In your 20+ years at ZSL, what's been the biggest change in zoo animal husbandry in your opinion? – Paul Rose**

Hi Paul, great question. I think so much has changed in that time – at ZSL training is probably as significant as any other management change but I have also seen a complete transformation in diet provision and nutrition. There is no question that there has been a shift from traditional methods of husbandry to a more science based approach, with animal welfare the primary consideration in most good zoos.

**11. I spoke to a keeper at West Midlands Safari Park about their hippos and training and apart from healthcare training, they don't do so much training, do your hippos get training? – Lisa Trodden**

Yes, we train our hippos but the most advanced training is with pygmy hippos rather than commons. One of the reasons for this was borne out of necessity – our male at London, "thug", had a dental issue and needed frequent interventions, initially done under anaesthetic. The keepers at the time decided to train for a tooth filing behaviour instead and the results were impressive. West Midlands is a great zoo by the way – we visited there to learn how to train our African wild dogs, a good example of inter-zoo information sharing.



*Pygmy hippo dental procedure under GA*



*Tooth filing under trained behaviour*

**12. With invasive testing / training how would you work around negative reaction to steps in the training? –**

**Anonymous**

All training is based on feedback from the animal. Its often called a conversation – this way the trainer can evaluate and adjust throughout the training process, “relaxing criteria” when the animal has reached its physical or mental threshold. Small approximations mean you can retrace your steps and go at the animal’s pace. After the behaviour is fully trained, if the reaction to a painful procedure occurs the reinforcement history means the animal has the coping skills to overcome it.

**13. Do you think there are times when traditional/classical training is more practical/useful than operant conditioning? E.g. crate training can be time intensive and dependent on an animal’s cooperation compared to older methods of capture – Seyan Dattani**

The science of behaviour change encourages the use of “least restrictive, most effective” methods. This isn’t always trained behaviour but, in my experience,, it is often the best way for the animal. I always work on what is best for the animal not the human. If time and resource are the problems, that’s not the animal’s fault so we should find a way of proceeding. There are plenty of examples when traditional husbandry is used at ZSL though, for example, with large herds of deer at Whipsnade, it is impossible to train each individual using operant conditioning, so herding could be the least restrictive, most effective method.

**14. Hi Jim, How do you do about training large groups of animals such as Squirrel Monkeys? – Sheila Smith**

Hi Sheila, you know the answer to this...with great difficulty! All group training requires good antecedent arrangement, careful planning and a great deal of consistency and routine. Group training is delivered in one of two ways – by stationing individuals or by physical separation. I always favour the latter in large active groups, like the Squirrel Monkeys, as its easier to weigh one of them at a time than trying to manage 25 in turn! However, we have done both ways and they have their pros and cons – some animals really struggle with separation anxiety and some are highly competitive over food resources so it’s always decided by species specific behaviours and individual needs

**15. I am afraid that I cannot resist asking one question. Dana the lemur played a large part in our family life. We all loved watching her in Animals in Action. It was a bit of a surprise to hear that her actual name was Jess. Do you know why she took a stage name? – Mark Bucknill**

Yes it’s because she could learn her name and if children called her during a demonstration she would run over to them to seek reinforcement!

**16. After the lecture I can see the need to use behavioural training for the Lions to breed, has this been done and can the example be used with Bhanu the Lion to impress the lionesses for breeding? I understand they have been through a lot to try to make them attracted to one another already.**

I am unaware of this training, I would be interested in learning more!

**17. Also, as you mentioned these pdf files on BIAZA Animal And Behaviour Training Group, I can’t seem to find them could you send them to me, please? Neesha Khan**

Attached!

**18. How do you train the Zebra to come into a stable? Over home much time? – Caroline**

This was through name recognition, targeting and stationing. It took about 18 months

**19. Was the vet in with the zebra or separated by the barrier – couldn’t tell from the video – NTC**

It’s a protective barrier

**20. Hi Very informative lecture. Why do the collars on animals like this dog have to be so big? And are they uncomfortable for them? – Neesha Khan**

**21.**

The collars were specially made for each dog according to neck measurements. The tracking technology is contained in the box. We placed and removed them on the dogs ten times to make sure they were comfortable

**Questions raised during the talk can be viewed on the video.**

**Thanks for the great questions everyone!**

**Kind regards**

**Jim**