

The Individual in the Bigger Picture

The management, integration and habituation of a male Sumatran tiger to provide a positive welfare outcome



Photo one: Bashii male Sumatran tiger

The breeding of critically endangered species in zoos is a key role of conservation and advocacy. This is accomplished by ensuring healthy, diverse genetic populations are maintained for species through regional and international studbooks. Individual animals are recommended to breed due to their genetic importance and compatibility. Individuals are then moved between zoos to accommodate the successful breeding of a species.

Although these are very important considerations, this presentation will bring up the question of how much, in this bigger picture, we have to consider the individual involved when transferring to a new zoo in regards to how the animal in question is used to being managed, relationships with their carers', the impact on their welfare when locating to a new collection and how to pro-actively minimise welfare impact through care, management and the use of the Five Domains model of animal welfare.

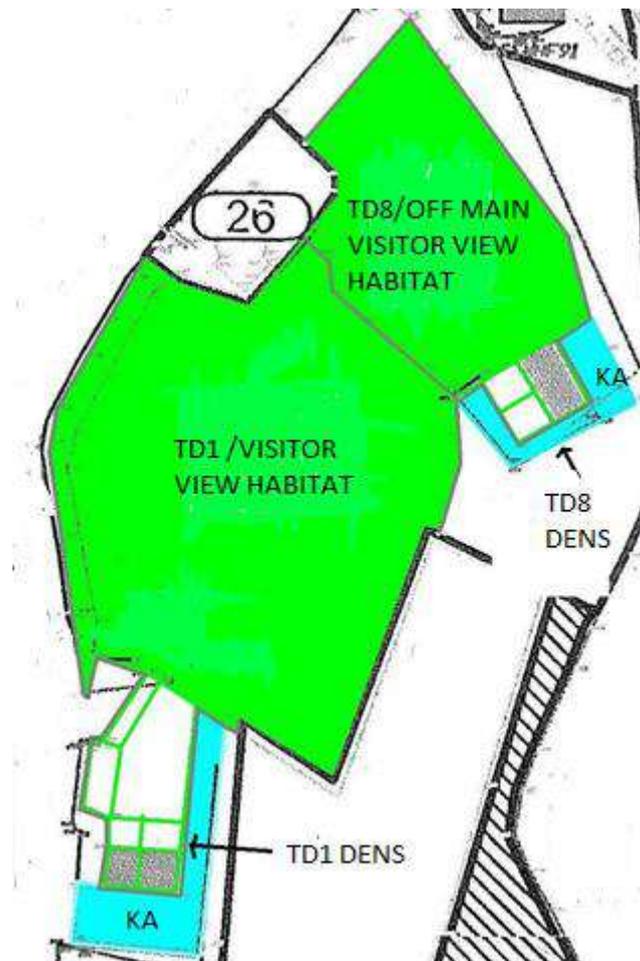
In 2014 at Wellington Zoo Trust, New Zealand, 1:1 Sumatran tigers arrived with the intention of breeding the pair. The female was parent reared, the male hand reared and both had come from different zoos within Australasia with different management styles in their past zoos.

Bashii the male Sumatran Tiger arrived at Wellington Zoo in September 2014. A keeper from his previous zoo travelled with him and stayed with Bashii to support him with the transition. After a quarantine period and the carnivore team at Wellington Zoo working with Bashii's current keeper, Bashii was transitioned into the full care of the WZT carnivore team. Two

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keepers Loreece Vesty and Jo Richardson became Bashii's primary keepers on his arrival to ensure consistency for Bashii in his integration to the habitat, new management expectations and to build rapport and relations gradually. These individual staff were chosen, as Bashii was observed showing most affiliative behaviour towards them in early days of his arrival.

Wellington Zoo has two tiger habitats that are in the Asia precinct of the zoo. On arrival Bashii was housed in the main visitor view habitat (TD1) and dens due to quarantine facilities and size of habitat (Please see plan one of habitats).



Plan one: Tiger habitats at Wellington Zoo

Bashii was given access to the visitor view habitat and off visitor view dens at all times for him to become familiar with the whole area. It was observed very early on in his arrival, that Bashii's preferred space was the off visitor den area.

Within the first week post quarantine keepers observed behaviours in Bashii that raised concerns for his welfare state in regards to his affective state. Bashii was showing behaviours that would dictate a level of anxiety and heightened tension, which was increasing, rather than decreasing as time moved on and as he familiarised and integrated into the new environment.

Anxiety and heightened tension/distress was observed through the following behaviours:

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- 1: Pacing continually in one area of habitat at many different times of the day and overnight.
- 2: Very little exploration or interaction use of whole habitat.
- 3: Exclusion to the point of concern i.e. avoidance of human interaction with keepers and visitors.
- 4: Constant fear and defence response to external variables including staff, visitors, noise (minor or major). This manifested in the following physical body language: Flat ears, narrowed eyes, lowered straight tail, baring teeth, frequent locomotion of low, belly crawl to remove his self from any variables causing the anxiety and defence response.



Photo two and three: Bashii in fear/defence response flattened ears, narrowing eyes, upper lip curling, leading to teeth bare and hiss.

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5: Signs of lethargy and depression, including minimal activity, abnormal sleep levels, not interacting with anything except food. Food was always taken back to den.



Photo four: Bashii spent most of his time in the safe place, the dens with minimal interaction with habitat and carer's.

6: Aggression: Barking and lunging with no purpose or initiator, lowered, straight tail, lashing tail, wide eyes and open gape mouth.

7: Minimal interest in female tiger presence in other habitat, and only aggression (behaviours as above) observed on the rare occasions Bashii used the area of his territory close to her territory.

8: Minimal vocalisations.

Triggers of negative behaviour and experience were:

1. People: Unknown staff and visitors
2. Loud noises or busy periods in the zoo
3. Female tiger presence.
4. New environment or changes.

Keepers monitored Bashii's behaviour very closely at all times and then reported the concerns for his welfare state. They reported that he was not integrating into his new habitat or management. There was also concern that this could impact on his physical health long term if he was constantly in a state of defence/unease.

Considerations

Discussions were implemented with the carnivore team, General Manager of Animal Care and Science, Animal Science Manger and the CEO on the concerns for Bashii's welfare state.

The following were the considerations of these discussions:

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- 1: Would he ever be able to fully integrate? Send him back to previous zoo?
- 2: Genetically important to breeding programme, however with his current state introductions were not an option for both tigers' safety and welfare.
- 3: Set a management plan in place specific to Bashii, to ensure successful integration and positive welfare state (main priority).
- 4: Dependent on progress and the success of his integration will dictate whether introductions with the female and if breeding is an option. Should we consider AI?

The plan:

After careful consideration the following was implemented:

- 1: An assessment of Bashii welfare state using the Five Domain model.
- 2: Character profile Bashii. This included sending a questionnaire to his previous zoo to be completed by his carer's, to allow us to build an understanding of Bashii's character.
- 2: Set a management plan in place specific to Bashii, to ensure successful integration and positive welfare state (main priority).
- 3: Continual monitoring of his progress.
- 4: Regular meetings on his progression and consideration one to be implemented if no change.



Photo five: Bashii hidden in habitat. This was a common position when not pacing.

The assessment

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Due to the many variables that Bashii was responding to, an assessment was done on his welfare using the Five Domains model. Breaking down Bashii's different life areas would allow us to directly tackle and manage the variables that were having a negative impact on his integration and welfare, to bring his welfare state and life experience into a positive state.

The Five Domains model allows a structured assessment of an individual animal's welfare by breaking down the different factors of an animal's life into the four physical domains which are health, behaviour, nutrition and environment and the fifth domain which is the affective or mental state. By assessing the four physical domains, this will give an assessment of the fifth domain 'what the animal is experiencing'.

Below is a summary of the assessment of Bashii's welfare state after arrival in Sept 2014.

Welfare assessment: Date: September 2014		
Animal: 1:0 Sumatran Tiger 'Bashii'. 140038.		
Domain	Positive or negative state?	Reasons for result of domain
1: Physical: Health	Neutral	No physical disease or injury. Body score and weight good. Cannot measure impact of overall state internally due to external stress variables.
2: Physical: Behaviour	Negative	Behaviour observed indicate fear, distress and discomfort. Behavioural restrictions due to the latter. Possibly depression?
3: Physical; Nutrition	Positive	Interaction with food and intake very good. See health.
4: Physical: Environment	Negative	See behaviour domain. Finds the habitat challenging. Minimal to no engagement with the environment, not confident. Restricting his choice of use of habitat due to fear.
5: Mental/Affective state	Negative	Only one positive domain. Therefore we can conclude that what Bashii is experiencing is negative.

With the assessment completed it was very obvious that Bashii's welfare state was negative.

We then decided to implement the following management plan:

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1. Remove any variables that cause distress that is possible (different people, visitors and staff), uncertain routine, sudden changes to environment including furnishings, noise and other tiger presence.
2. Carers/keepers: Primary carers to continue to be Loreece Vesty and Jo Richardson, due to positive interactions and relationship building from Bashii with these two staff members. This would provide consistency and security to encourage confidence to build positive relations with other staff in the future. It became very clear that human relations were a high positive reinforce for Bashii to build confidence and calm. **Trust**
3. Habitat: Bashii to be moved to the other habitat (TD8 on plan one). This habitat is smaller in size, and also has some visitor view but is limited, providing a quieter area for Bashii to integrate. Bashii was left with access to off visitor view dens at all times so he had the choice of where he would like to be.
4. Husbandry to be kept regimented and consistent to build familiarity and structure for Bashii, to remove any unknown variables or surprises.
5. Different enrichment to be introduced gradually and with close monitoring of response from Bashii to ensure diversity but keep away from too many unknown variables. **Balance.**
6. Monitor all behaviours daily and correlate data to make assessments on whether he is progressing. Monitoring sheets set up to collect data.
7. Monitor interactions with female tiger. Introductions not to be considered until Bashii was fully integrated and in a positive welfare state.
8. Reassess monthly or sooner dependent on observations.

Character profiling:

The following questions were sent to Bashii's previous zoo, to allow us to build a good picture of what Bashii found positive, what his expectations are, and what we may have to consider removing to habituate him gradually to all variables he was now facing.

Bashii Sumatran Tiger Character profile and behavioural questions

1: What is Bashii's hand rearing history? Percentage of time spent with humans and tigers before maturity?

2: How much interaction/socialisation has Bashii had with other tigers as an adult? Was the interaction with males/females/related/unrelated?

3: What behaviours were observed with these introductions/interactions? Please state both positive and negative. (Please include details of behaviours observed e.g. Submissive, dominant, chuffing, cheek rubbing, aggression etc.).

4: Interactions with female tigers, was the female in oestrus?

5: Were introductions/interactions full contact or semi contact?

6: With introductions/interactions with other tigers, how much involvement did Bashii's keepers have? Observation from monitoring outside tiger enclosure or in with tigers?

7: What was Bashii's behaviour towards people/keepers who were unknown to him?

8: As an adult tiger what was the percentage of Bashii's day spent with keepers?

9: What was Bashii's general demeanour/behaviour?

10: How much time did Bashii have with visitor interactions or being in a visitor viewed habitat and being habituated to large numbers of visitors?

11: Has Bashii at any time shown any signs of stereotypical behaviour, self-directed behaviours or other signs of stress/anxiety? If so were there known triggers?

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12: Were there any behavioural changes observed when Bashii went from full contact to semi contact with his keepers, including personal behaviour and directed behaviours to handlers? As contact minimised did this have an effect on the above?

What we saw:

Once the management plan was implemented, this is what was observed.

Relationships: Bashii built a strong bond with his two core keepers. When these keepers were present he would seek out their companionship and positive interaction behaviour was always observed. Over time any new keepers or other staff that may have to work or be in Bashii's area would always attend and train with these two keepers to ensure positive association for Bashii.

Habitat/Environment: Bashii was more comfortable and relaxed in the smaller, quieter habitat. Bashii was observed investigating over time more and more areas of this space, and utilising it more. Interaction and engagement with environment and enrichment was increasing. Pacing decreased although still present, and Bashii was observed more frequently out in open areas of habitat without any physical or behavioural fear, defence or distress observed.

Husbandry: The consistency of routine improved confidence and reaction to gate and slides being moved. Where previously a slide being open would startle him if not expected, causing flight response, we observed Bashii recalling immediately with this as a cue and a knowing expectation as to what was expected of him and him knowing what was happening at all times.

Presence of other tiger: The behaviour and interaction with the female tiger present in the other habitat was the final variable to habituate. It was clear that for Bashii that human relation and bonds, habituation and comfort in his own territory and having a more 'no surprise' husbandry regime allowed him to become more confident and comfortable, creating a more positive experience for him, therefore removing negative variables by them becoming positive, meant that Bashii could then concentrate on his biggest habituation challenge, another tiger. The two tigers had access to one another on a sensory basis first of smell and vocal, and then we increased this to visual.

Overtime behaviours between the two cats became neutral (ignoring each other) and positive including chuffing, cheek rubbing, flehmen response, heightened excitement with correct body language including ears up right, eyes wide, tail erect and approaching calmly on all fours. Some excitable lunging was observed but all other body language dictated this was not aggressive.

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Photo 6: Bashii observed out in open areas of habitat more frequently

Where we are now:

The journey with Bashii has taken four years. In this time we have constantly assessed his behaviour and his wellbeing using the five domains combined with an understanding of tiger and Bashii's individual character behaviour.

Below is a summary of the assessment of Bashii's welfare state in May 2018

Welfare assessment: Date: May 2018		
Animal: 1:0 Sumatran Tiger 'Bashii'. 140038.		
Domain	Positive or negative state?	Reasons for result of domain
1: Physical: Health	Positive	No physical disease or injury. Body score and weight good. Physically able.
2: Physical: Behaviour	Positive	Behaviour observed indicate confidence, vocalisations, playfulness, content, relaxed, assertive, vocal, engaged and interaction with keepers and female tiger is positive, making choices.
3: Physical; Nutrition	Positive	Interaction with food and intake very good. Engagement with presentation and variety, positive.

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4: Physical: Environment	Positive	Engaged, curious, relaxed, utilising whole territory providing choice.
5: Mental/Affective state	Positive	Vitality, calm, content, playful, secure, confident, engaged, able to make choices. HAPPY...

In May 2018 we introduced Bashii back to the habitat that four years ago was a negative area and experience for him.

The behaviour we saw in Bashii on return to the habitat four years later was like a different tiger.

Behaviours observed 2018:

1. Utilisation of whole habitat confidently. Engagement with varied enrichment and food items and presentation (Show video).
2. No pacing, no abnormal levels of elusive behaviour.
3. More confident with unknown staff and visitors. Will interact or stand confidently. (Show interaction with visitor video).
4. Continual positive interest of presence of female tiger now in his habitat TD8

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Photos seven and eight: Bashii investigating and utilising whole TD1 habitat

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What next?

Bashii and the female tiger are swapping habitats for habituation for introductions.

Introductions for breeding are now on schedule with very positive behaviours being observed between both cats. We have broken the introductions into four stages, accomplished stage one and two, about to approach stage three

Bashii continues to amaze with his perseverance and adaptability to change now.

What did we learn and what should we consider?

1. Don't make assumptions on species, consider the individual and their character
2. Although genetic importance and breeding is such an important part of what zoos do, to provide healthy and viable populations of species, we have to consider that although animal X has to breed with animal Y for genetic purpose, does the situation suit that individual and with all you know of their character, is moving them to a new zoo the right choice for them?
3. Patience and perseverance. Don't give up.
4. Watch and let the animal tell and show **YOU** what its needs are, and implement change to provide that.

Me tiaki, kia ora is an ethos we live by at Wellington Zoo Trust which means if we care, life will thrive. Bashii's story is a living example of our ethos in action for an individual in the bigger picture.

References

- Five Domains model. Dr David Mellor, Massey University, New Zealand.
- ZAA (Zoo and Aquarium Association, Australasia) Animal Welfare assessment accreditation model.
- Tiger, the ultimate guide. Valmik Thapir
- Wellington Zoo Trust Husbandry guidelines

Acknowledgments

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- Simon Eyre, Animal Science Manager, Wellington Zoo Trust.
- Tiger keeping team at Australia Zoo
- Sharon Hatton, Senior Carnivore Keeper, Royal Zoological Society of Scotland.
- ZAA (Zoo and Aquarium Association, Australasia) Animal Welfare accreditation model.
- Dr David Mellor, Massey University, New Zealand. Five domains model.
- Murray Roberts, Keeper, Wellington Zoo Trust photos two, three and five.
- Dani Rae, Carnivore Keeper, Wellington Zoo Trust, photo seven.