Evidence-Based, Animal-Centred Habitat Design

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Evidence-Based Design

Driving Animal Welfare, Visitor Engagement and Risk Management

1 Habitat quality is key to good animal welfare

Our analysis shows habitat quality accounts for ~75% of the variance in welfare states amongst zoo animals, which in turn accounts for ~40% of the variance in visitor enjoyment

Welfare science, applied ethology, and extensive operational experience form the foundation of our approach to creating environments that address the needs of wild animals, and the expectations of society at large

2 Evidence-based processes drive habitat quality

Our welfare prioritisation framework (AWPIS) is established in the scientific literature, and endorsed by zoos, NGOs, universities, and over 200 experts worldwide

Unlike conventional welfare assessments, AWPIS quantifies the welfare significance of behaviours and cognitive processes, including those absent in captivity

This provides a powerful blueprint to re-shape habitat quality in a way that's relevant to animal welfare

3 Emerging technologies can transform welfare outcomes

AWPIS is recalibrating our understand of what good welfare looks like, transforming zoo design and welfare outcomes, and where required, enabling the deployment of emerging technologies in a highly targeted way

Building on a robust evidential foundation, we are the global leaders in deploying advanced interactive technologies to address the needs of animals

Accounting for a fraction of total build costs, these technologies deliver significant value and can transform welfare, improve health and welfare monitoring, and create unique opportunities for visitor engagement

4 Evidence-based innovation de-risks capital expenditure

Welfare is the most critical standard by which zoos are judged – failure to keep pace with societal and legislative expectations can have devastating impacts

AWPIS is establishing new standards of care that will render existing design paradigms obsolete

Facilities built to prevailing norms risk becoming prematurely redundant compared to evidence-based, animal centred habitats

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Why Work With Us?

The Care for the Rare Approach

Expertise and Experience

Care for the Rare was founded in 2016 by Dr Jake Veasey, an award-winning zoo designer, welfare scientist, behavioural ecologist, and seasoned zoo and aquarium director with over 25 years' experience, supported by a global network of experts

Leaders in Zoo Animal Welfare

Care for the Rare specialises in applying welfare theory to real-world challenges. From publishing research and advising governments on welfare policy to supporting zoo and welfare NGOs in raising standards, we also lead the way in quantifying welfare drivers through our Animal Welfare Fingerprint™ tool

Bringing the Wild to the Zoo

In designing habitats, we bring the functional complexity of the wild into managed environments, creating spaces and systems where wild animals thrive, and visitors are inspired to take compassionate, conservation-driven action

Interdisciplinary, Evidential Approach

Operating at the intersection between animal welfare, conservation and public engagement, Care for the Rare brings scientific rigour to bear in zoo and sanctuary design, welfare assessment and management planning, leveraging expertise from a team of international specialists and proven proprietary processes

Global Impact in Facility Development

With a track record of delivering successful habitat development projects across three continents, Care for the Rare has created comprehensive whole-facility development plans for new and established facilities ranging from Europe's fastest-growing wildlife attraction to some of the largest sanctuaries in Asia and Europe

Unique Output

Combining decades of real-world management experience with the latest advances in welfare science, applied ethology, and evidence-based methodologies, Care for the Rare is leading the way in animal-centred design and the deployment of interactive technologies that is redefining wild animal care, facility design and welfare standards

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Welfare by Design

Driven by Science

Existing Design Conventions are Failing Animal Welfare

Our analysis shows that roughly three-quarters of the variation in welfare states in zoo animals can be explained by habitat quality through its impact on behavioural opportunities

Habitats play a pivotal role in determining the quality of life for zoo and sanctuary animals. However, zoo design typically relies on historical references and existing design and management conventions, rather than cutting-edge science

As a result, zoo welfare management focuses heavily on reactive interventions to address the challenges systematically created by sub-optimal habitats

Prevention is Better than Cure

At Care for the Rare, we focus on solving welfare challenges through design rather than treating them through reactive management

By creating habitats that replicate the species-specific functional complexity of the wild, our aim is to empower animals to manage their motivational states on their terms and achieve welfare outcomes that are unattainable in conventional zoo and sanctuary habitats

Evidence-Based Innovation

Our evidence-based foundation is built on our proprietary AWPIS process, underpinned by decades of zoo, sanctuary, and aquarium design and management experience. This allows us to not only design better habitats, but to redefine what good welfare looks like for animals under human care

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Evidence-Based Innovation

New Insights, New Standards and New Solutions

The Problem with Conventional Welfare Assessments

Historically comparative welfare assessments provided the basis for understanding captivity's impact on welfare, but in non-experimental settings like zoos, they struggle to reliably identify welfare states or drivers – for instance, benefits linked to larger habitats may stem from correlated factors like seclusion, complexity, or choice, confounding the deployment of targeted welfare improvements

Crucially, comparative welfare assessments can't assess the value of behaviours, cognitive processes, and opportunities absent in managed environments which may be critical for welfare

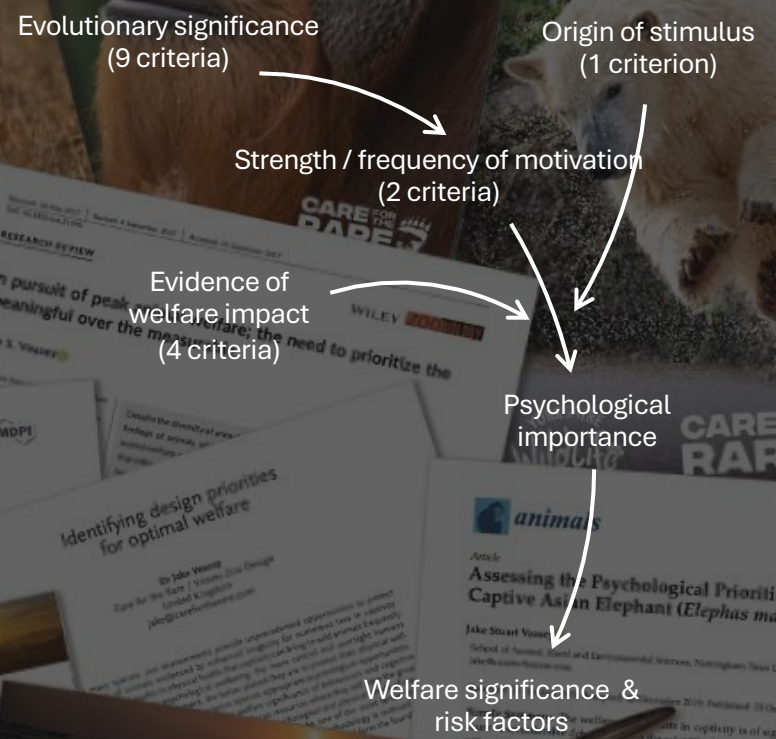
A New Framework for Understanding Welfare

To overcome these constraints, and better inform facility design and management, Care for the Rare developed the Animal Welfare Priority Identification System (AWPIS) to quantify the behavioural and cognitive priorities of wild animals, whether these priorities are met in captivity or not

Rooted in the relationship between evolution, motivation, and welfare, AWPIS combines Delphi-based expert evaluations, big-data insights, and advanced algorithms to assess each aspect of a species' behavioural and cognitive repertoire

Widely published in the scientific literature, AWPIS is endorsed by zoos, sanctuaries, universities, NGOs, and over 200 species and welfare experts from around the world, and is transforming how we understand the needs of animals, and the way we design habitats to ensure they thrive

Animal Welfare Priority Identification System (AWPIS)



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Giving Movement Meaning

Purposeful Travel – A Universal Need

Purpose-driven travel is a universal need

Amongst the most significant of AWPIS' discoveries is the need for animals to travel meaningful distances in pursuit of relevant objectives and opportunities of their choosing

In nature, such purpose-driven travel is the precursor to motivational equilibrium – animals must move to access resources or opportunities they want, as well as to avoid stressors

Such travel takes up large amounts of time, energy and cognitive processing in nature, and remains a need in captivity

How captivity disrupts intentional travel

By providing the physical needs of animals, whilst also compressing the space available to them, captivity has destroyed the relationship between choice, movement, and motivational equilibrium

Captive animals are never far from what they need, and have little control over when or how they access what they want

This is why for many species stereotypic pacing is the dominant stress response to the captive state, with purpose driven travel being so universally frustrated

The Solution

For the first time ever – we are tackling this need – with a now established underlying platform, Care for the Rare are delivering bespoke solutions tailored to the specific needs of individual species

Beyond offering exercise, these habitats empower animals to make meaningful choices with trade-offs in time, energy, and rewards, with travel acting as the mechanism connecting intentions with outcomes and giving choices weight

Supporting complex cognitive processing, geospatial learning, navigation, and opportunities for animals to exert control over their lives, we are not only meeting their physical and psychological needs but setting a new benchmark for animal welfare

Movement Choice Learning Navigation Control Cognition Sociality Contingency Challenge Nutrition Welfare

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Case Study – Amur Tigers

Rewriting Best Practice for a Troubled Icon

New Insights into Old Challenges

Tigers are amongst the most stereotypic of zoo animals – to resolve this, zoos, animal welfare and conservation NGO's convened an AWPIS assessment which revealed that purpose-driven travel and territorial behaviours were more critical to tiger welfare than the traditional focus of hunting-related behaviours

Wild tigers can scavenge or steal food, and as long as these meals are big enough, their drive to hunt is satisfied, however, territorial behaviours are non-negotiable — essential for survival and reproduction, they lack a shut-off stimulus and remain motivated, even in captive environments

Smaller, more frequent meals used to maximise enrichment opportunities don't satisfy a tiger's need to seek food and so increase frustration – explaining why even enriched tigers pace, a behaviour reflecting unmet territorial and food-seeking needs, rather than frustrated hunting behaviours

Innovative Solutions with Broader Applications

These findings have re-written the welfare priorities of tigers, but the link between purpose-driven travel has been shown to be true for other wide-ranging species as well

Lessons learnt here are now being applied to a range species, transforming the welfare potential of managed habitats

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Universal Need

Species-Specific Solutions

New Insights Yield New Solutions

Existing design and management conventions for big cats, including recent shifts to overhead walkways do nothing to address the underlying causes of pacing and impoverished welfare in captive tigers and other wide-ranging species

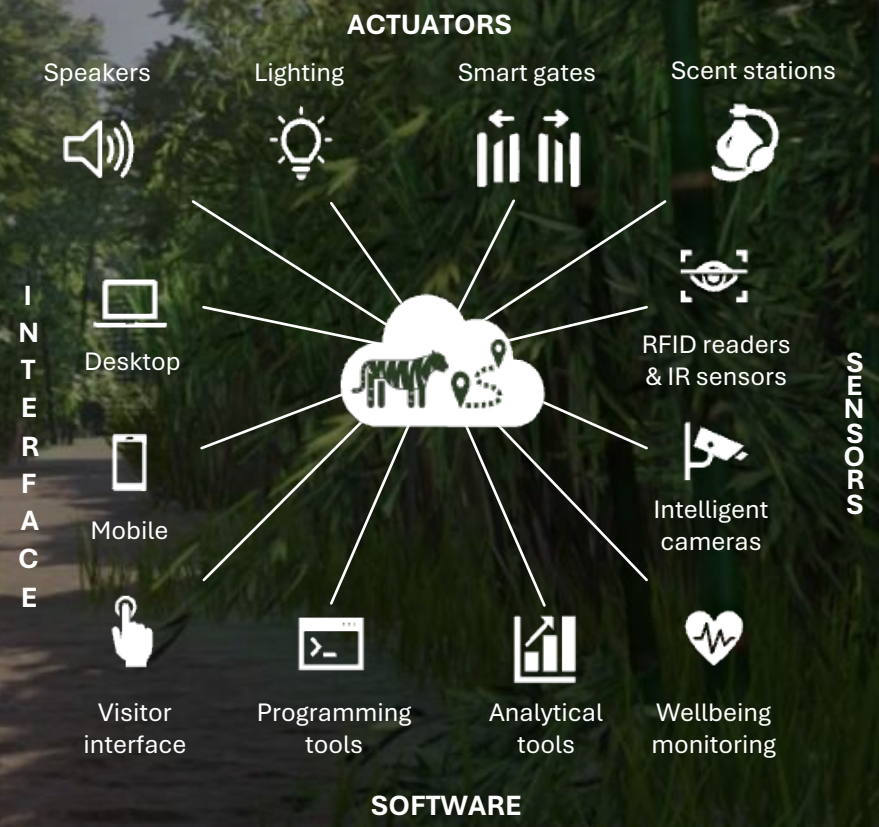
For the first time, habitats are being designed to meet the needs of tigers and other wide-ranging animals. Dynamic living landscapes, comparable in size to large zoo enclosures, require tigers to make cognitively demanding decisions before undertaking extended, complex journeys along multi-sensory simulated 'game-trails', toward a choice of discrete destinations and biologically appropriate opportunities

Species-Specific Applications

This innovative approach reconnects desires with actions, choices with complex cognitive processing, and motivated behaviours with natural contingencies – replicating the functional complexity of the wild in a genuinely impactful manner

Described as the most complex and ambitious interactive environment ever created for any captive animal, this approach combines proven technologies with years of R&D to meet the specific needs of species like tigers subject to habitat compression in captivity – and it's now ready to deploy at scale

The system underpinning this groundbreaking habitat, which equates to less than 10% of the build cost, is now available for adaptation to other species and locations, with projects already underway for a range of species



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Redefining Elephant Habitat Design

Meeting Social, Locomotor & Cognitive Needs

Beyond Existing Standards

Elephant facilities are capital-intensive and subject to intense scrutiny - designs centred around compliance with existing standards risk becoming obsolete as our understanding of elephants' needs and societal expectations continue to evolve rapidly

Insights Driving Innovation

Care for the Rare carried out the first welfare priority assessment for elephants which identified purposeful herd travel over biologically meaningful distances as being critical to the welfare of captive elephants

A choice of extended journeys leading to diverse, context specific outcomes, creates opportunities for meaningful decision-making, reinforcing the role of the matriarch and enhancing social cohesion – a critical component of elephant welfare

With the science and underlying interactive technologies now established, we are poised to create dynamic, interactive habitats that empower elephants to move as a herd toward biologically relevant goals, selected by the herd

New Animal Centred Objectives

Now is the time to establish a new standard for elephant care and facility design - reconnecting complex cognitive processing with group action, goal acquisition, social cohesion and ultimately improved welfare

A Partnership Built on Expertise

The partnership between Care for the Rare and Global Elephant Care combines unparalleled expertise in elephant habitat development, welfare research, public policy, and operational experience

Global Elephant Care's Gerry Creighton has over three decades of elephant management experience and supports some of the most impactful protected contact, positive reinforcement elephant programs around the world. Care for the Rare's Dr Jake Veasey is a widely published authority on elephant welfare and advises governments and NGOs on elephant welfare and conservation policy worldwide. Both bring extensive operational expertise in herd management, habitat design, and the development of groundbreaking management programs to new elephant habitat development projects

Together, they are redefining standards for elephant care and habitat design through their innovative and evidence-driven, animal-centred approach

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Process

Our Unique Design Pathway

Bespoke, Collaborative Solutions

We tailor our approach to meet the needs of species and facilities. Whether working with a zoo's architects and engineers, or with our wider design team, we oversee every step of the process, from design to construction, including regular check-ins, site visits, and ongoing support to ensure seamless implementation and post construction technical support

Evidence-Based, Animal Centred Design

Mindful of existing best practice standards but not limited by them, our process begins with a welfare needs assessment ranging from a desktop AWPIS conducted by our team and zoo staff, to an in-depth evaluation, involving global species experts

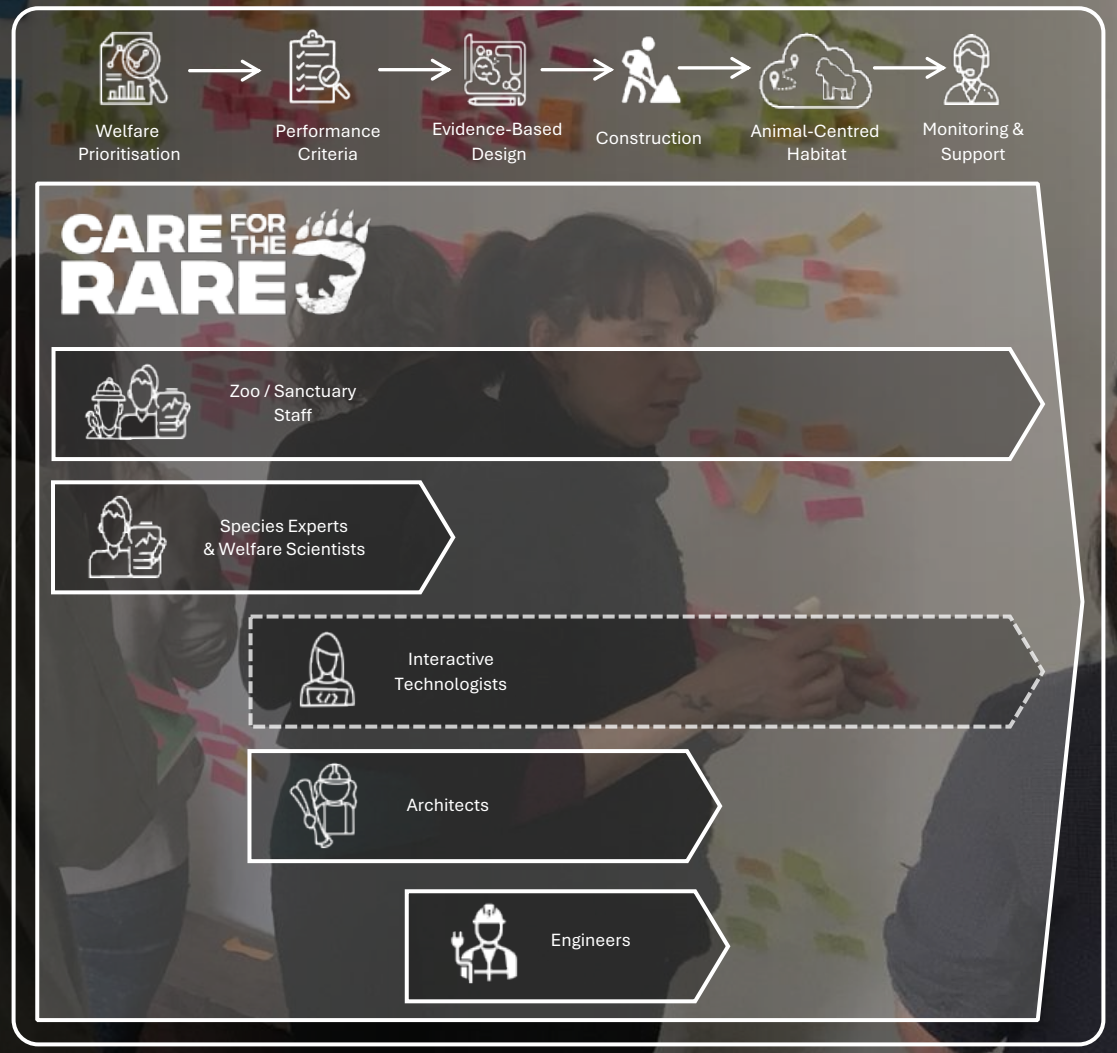
These insights provide the basis of our habitat performance criteria, integrated with institutional requirements, operational constraints, visitor engagement objectives, all supported by the latest interactive technologies as required

Engagement Through Welfare

Our much-cited research established the link between animal welfare and visitor engagement – simply put, visitors enjoy observing "happy" animals displaying natural behaviours, ensuring a win-win for evidence-based, animal-centred design

Future-Proof Animal-Centred Habitats

The result is a uniquely animal-centred, future-proof habitat, surpassing existing best-practice, our habitats are built around the fundamental needs of each species making them resilient to evolving standards



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Find Out More

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