Introduction
Enclosure signage within zoological gardens typically includes more than just a species name and an animal image. Information regarding an animal’s diet, lifespan and many other topics of interest are often included. Deciding how to display information on each of these topics offers its own complexities from a design perspective, particularly when legibility and access to information for the wider population are taken into consideration. Zoological gardens must decide how to best present this information to enable it to reach as wide an audience as possible; the wider the audience the more people who will be exposed to the educational conservation message on display. Habitat range maps can help to contextualise an animal’s plight, if their range is decreasing, and offer a visual representation of where a species lives in the wild. It is therefore important that organisations make careful decisions about how they display this form of information to visitors.

Inclusive Design (also referred to as Universal Design) is a concept which promotes the design of products, services, communications and environments which can be used and understood by the largest number of people possible, regardless of age or ability and without a substantial rise in cost (Vavik and Gheerawo, 2009). This concept underpins the discussion within this article. Inclusive Design not only assists visitors such as older people for example, but it also allows conservation information to be digested by the largest possible number of people who visit zoological gardens.

As part of a larger case study research project, the author visited six zoological gardens within the United Kingdom. It was observed that all six housed habitat range maps as part of their enclosure signage. Visits took place between 2010 and 2014.

Colour
Habitat range maps typically utilise colour contrast to highlight an area of residence. This can be a useful approach as long as an appropriate level of contrast is displayed. Berger (2005) suggests that the foreground elements of a sign should have a contrast of at least sixty percent with the background they are displayed against. Clear colour contrast is particularly useful for older people, as our ability to differentiate between colours diminishes as we age (Ethridge, 2005). Furthermore, losing one’s ability to differentiate between colours is a frequent consequence of visual impairment in general (Ethridge, 2005). In most cases habitat range maps will present three distinct colours; one for the world’s oceans, one for land and finally one which highlights an area of residence. The contrast between these three colours should be as distinctive as possible.

One logical starting point with regards to colour is to use a blue for the world’s oceans and a green for land. While this initially appears to be logical, as it assists in contextualising what is presented before a visitor, it may in some cases conflict with the use of colour in different roles elsewhere. Blue is often used to indicate bird signs and green is often used to indicate reptiles and amphibians on signs. What is clear is that zoological gardens must take a holistic approach when deciding which colours to use, not only for habitat range maps, but for all zoological signage. Colour use will link to topics such as branding and way-finding, so in some instances habitat range maps may have to

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be designed using a restricted palette. It is imperative that whichever three colours a zoological garden chooses to use for habitat range map design, they are consistently used throughout a site, to increase comprehension as visitors move from one sign to another.

The colour red was used by five out of the six organisations which were visited, to highlight each species habitat range. Many signs presented red against a white or grey background which represented land mass. Using red or another bold colour allows the most important information (where an animal lives) to be the focus of a visitor’s attention. One of the signs observed presented red against a green background. Although, as previously mentioned, green is an obvious choice for land coloration and red is useful as a bold representation of habitat range, the combination is exclusionary as red/green colour blindness is one of the most common forms of this condition, with the other being blue/yellow colour blindness (Wilkinson, 2005). Whitehouse (2000) describes the complications people face in detail, explaining that the difficulty is not in seeing these colours, but in distinguishing between them when they are in close proximity.

At one of the six zoological gardens visited, dotted lines were used, rather than colour, to indicate habitat ranges. Further research would be required to establish whether people find this easier to read and prefer this design choice. Initial observations suggest that this approach lacks precision when representing an exact habitat range and is also less obvious following a cursory viewing of a sign.

**Scale**

It is customary for those concerned with accessibility to promote visual repetition to increase familiarity and in-turn increase comprehension. Burton and Mitchell (2006) take this position with regards to traditional street furniture. They advocate the installation of classic designs for telephone-boxes and post-boxes so that people understand what purpose these items serve. Mollerup (2005) advocates the repeated use of familiar and established pictograms to increase comprehension. For example, the symbols used on toilet door entrances which are familiar to most people, and therefore understood (Yule, 2014). Taking this line of thought into a zoological context it would be easy to recommend that all sites should present classic and identical world maps when indicating a species range of habitat; however doing so presents a conflict and a problem.

When a species has an extremely limited range of habitat, which is increasingly likely due to human population growth, it is very difficult for sign designers to represent such a minute area on a world map; when they do so visitors are presented with information which is too small to read for many people. Due to this problem maps exist which are continent specific or in some cases even more localised. Displaying a world map is appropriate for a species with a wide habitat range, such as the common raven.

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**Table.** The information provided here is a section of a larger table, detailing key topics with regards to accessible habitat range map design.

<table>
<thead>
<tr>
<th>Zoological Garden</th>
<th>Were Habitat Range Maps Displayed?</th>
<th>How was the Habitat Range highlighted?</th>
<th>Was Supportive Text provided?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoo A</td>
<td>Yes</td>
<td>Dotted Lines</td>
<td>Yes</td>
</tr>
<tr>
<td>Zoo B</td>
<td>Yes</td>
<td>Colour</td>
<td>Yes</td>
</tr>
<tr>
<td>Zoo C</td>
<td>Yes</td>
<td>Colour</td>
<td>Yes</td>
</tr>
<tr>
<td>Zoo D</td>
<td>Yes</td>
<td>Colour</td>
<td>Yes</td>
</tr>
<tr>
<td>Zoo E</td>
<td>Yes</td>
<td>Colour</td>
<td>Yes</td>
</tr>
<tr>
<td>Zoo F</td>
<td>Yes</td>
<td>Colour</td>
<td>Yes</td>
</tr>
</tbody>
</table>

A sign which highlights the use of red and green close to one another
(Corvus corax), but for species such as the Bali myna (Leucopsar rothschildi), which unsurprisingly resides only in Bali, a localised map is required. So although one aspect of Inclusive Design theory would suggest repetition, this concept simply does not function when the limited range of certain species is taken into consideration. Zoological gardens should display either a world map, a continent specific map or in some cases a country specific map, depending on the species in question. World maps are recognisable to most visitors and therefore should not only be used in isolation but also to support the other two aforementioned types of map. Some people may not recognise a map of Cameroon or even one of Africa in isolation, so a supportive world map adds context and helps people establish what information is being presented.

Depending upon the species, it can be useful for geographical focus to include a part of the globe visitors are familiar with. The image accompanying this paragraph shows how at a site in the United Kingdom a map of Africa included the visitor’s own location to offer a familiar visual. This technique can be employed throughout the world; designers simply have to shift the geographical focus.

It is worth noting that even when legibility is considered, habitat range maps can be misleading, particularly if they suggest that a species resides in a larger area than it does in actuality. For example, a species may be endangered but due to its distribution a visual representation of its range can indicate incorrectly that its population numbers are high. Equally, a species may be abundant, but only within a small geographical area, so a map can wrongly suggest a problem which does not exist. This is a poignant concern, as all progressive zoological gardens seek to offer influential conservation information, and to do this information must be clear and not contradictory. Habitat range maps are typically accompanied on enclosure signs by separate information on how threatened a species is. The provision of red list graphics is an example of how this type of data is conveyed. It is important that these two elements of enclosure signage share a symbiotic relationship. This enables sites to indicate a habitat range without misleading people with regards to population numbers. For certain species the contradiction discussed here will be so profound that special attention must be given to the issue during the design process to ensure clarity.

Yew (1991) highlights a three-dimensional tactile globe which was at the time of his publication installed at the Fort Wayne Children’s Zoo, Indiana, USA, as
an interactive geography lesson. People were able to spin the tactile globe and learn about the natural habitat of a species. In terms of accessibility some visitors will not be able to make use of installations such as this due to limited dexterity, for example. Conventional two-dimensional maps present less concerns in this context, however for some visitors tactile globes may offer a heightened experience, for instance if a person has a visual impairment. The preferable solution is for sites to offer two-dimensional maps in all instances and if possible offer three-dimensional ones as a supplement that increases the number of people who can enjoy exploring a species habitat range.

Summary

Habitat range maps can offer a legible form of universal communication and can be used to educate visitors about conservation. Much of the related design decisions are species specific, however by considering the implications of their choices in regards to the topics discussed within this article, designers can enhance the accessibility and impact of the message they present. As a significant and typical component of enclosure signage it is important that more research is undertaken to analyse this topic further.

References


