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Influence of varying intensities of natural area on-site interpretation on attitudes and knowledge

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## **6 Comparative Influence of High and Low Intensity On-site Interpretation**

The TTW site and Penguin Island represent two similar natural area sites with a respective low intensity and high intensity use of on-site interpretation. This is both in regard to the interpretive media used at the sites and the number and type of activities available to visitors. While there were differences in intensity of on-site interpretation, influences on knowledge and attitudes were evident in the data collected from the respective sites as presented and discussed in Chapters 4 and 5. Visitor variables in combination with the particular character of the site experiences coloured these influences.

This chapter compares and contrasts the survey results from the TTW and Penguin Island sites, with their respective low and high intensity of on-site interpretation. The comparative discussion is followed by an overall conclusion for the research presented in this thesis.

### **6.1 Survey Respondent Demographics**

Both paired survey samples (TTW and Penguin Island) demonstrated demographic data, including age groups, social groups and gender that were comparable to the broader natural area visitor population in Australia as identified by the ABS (2002). However, there were marked differences in the categories of natural area visitation frequency and repeat visitation between the TTW and Penguin Island samples.

Penguin Island had a much higher proportion of repeat visitor respondents (47%) as compared with the TTW (13%). The significance of this difference was confirmed by a Chi-square analysis that indicated a significant relationship between the proportion of repeat and first time visitor respondents and the site ( $\chi^2 = 50.95$ ,  $df = 1$ ,  $p < 0.001$ ). This was of interest as repeat visitation was a significant factor related to the respondent experience of the site. While first time visitor respondents at both sites were primarily there for the particular activities and experiences offered, repeat visitors had markedly different responses. Repeat visitors to the TTW site were primarily there showing others (54%) while Penguin Island repeat visitor respondents (79%) were primarily

there to experience the island again for themselves with a much smaller proportion bringing others to the site ( $\chi^2 = 13.41$ ,  $df = 1$ ,  $p < 0.001$ ).

Differences in the level of repeat visitation and the reasons for returning may be explained by the activities available at each site. Penguin Island affords the opportunity for a number of recreational pastimes such as fishing, swimming and picnicking and is close to urban areas, thus being easily accessible. In relation to the categories identified by Hendee et al (1971), Penguin Island offers all of the experiences including: appreciative-symbolic (viewing scenery and wildlife); extractive-symbolic (fishing); passive free play (picnicking); sociable learning through the “Penguin Experience” visitor centre (PEVC) and active-expressive (swimming, boating). On the other hand, the TTW site is remote from major urban areas and restricts visitors to a limited range, mainly appreciative-symbolic activities through passive observation and exploration of the natural area with elements of sociable learning provided by signs and information staff.

Authors such as Fakeye and Crompton (1992) and Ballantyne et al (1998) noted that repeat visitors were more interested in socialisation and active recreation in natural areas rather than exploration and observation. Given this, it is logical that a site that does not cater specifically for socialisation or active recreational activities will have a lower rate of repeat visitation than one that does, such as Penguin Island. This is reinforced by the phenomenon of repeat visitors to the TTW site being motivated by social factors (bringing family and friends to experience it) rather than specifically wanting to explore the site again for themselves. Thus, in order to cultivate on-going repeat visitation, it is necessary for a natural area to provide for a range of activities that include opportunities for socially based interactions.

The frequency of visitation to natural areas as estimated by respondents also revealed a key difference between the two sites. The TTW site survey sample included a minority of visitors who had indicated they did not usually visit natural areas (8% of responses). Penguin Island survey respondents all indicated they had some level of regular annual natural area experience, that is, there were none who indicated they did not usually visit natural areas. Excluding the “none” category of annual natural area visitation from site comparisons revealed there was no significant difference between the frequency of estimated natural area visitation and site of visitation. Thus the primary difference

between the sites was that the TTW attracted some respondents who did not usually visit natural areas while Penguin Island did not.

As noted in the limitations section (3.9) the Penguin Island sample was not representative of the total population as it was taken solely from visitors using the ferry as access. Thus, care must be taken if extrapolating these results to the broader visitor population. Given the limitations of the survey sample, frequency of natural area visitation made an interesting point of difference between the survey samples at each site. This was determined to be a function of the location and focus of the respective sites. While the TTW site is marketed with an emphasis placed on its unique engineering structure in a natural area setting, Penguin Island provides primarily for a nature-based recreational experience. A 1992 management plan, for Penguin Island and the surrounding Shoalwater Islands Marine Park, highlighted the natural aspects that attracted visitors and recommended development of the island as a venue for passive, nature based recreational pursuits in this context (Orr & Pobar, 1992). The development of the TTW structure was significantly influenced by the success of similar engineered structures in other locations in terms of attracting tourists and generating a sustainable revenue base (Winfield, 1996). That is, while the TTW site markets a built structure, in combination with natural aspects, as a central motivation for visitation, Penguin Island relies solely on natural aspects (mainly marine wildlife and beaches). Thus, individuals not usually inclined to visit natural areas may be attracted by the unique built aspects of the TTW while the natural aspects of Penguin Island are not seen as attractive (Bixler & Floyd, 1997).

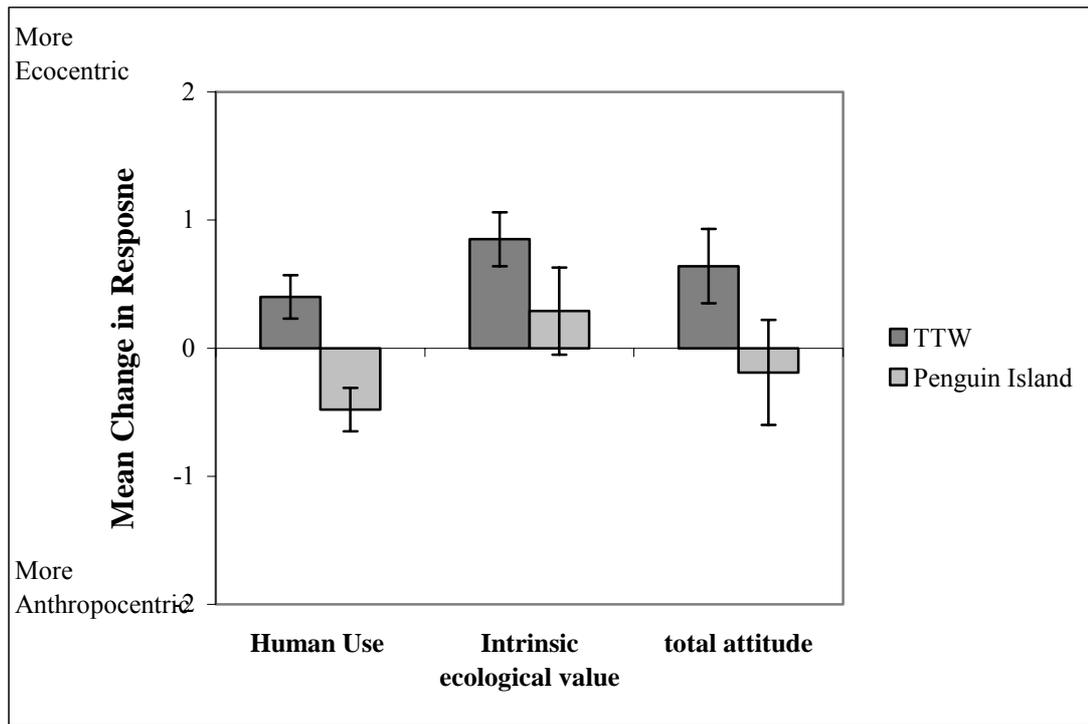
The emphasis at the TTW site on a built facility as a vehicle for a natural area experience attracted people not normally inclined to visit natural areas, and who were therefore not usually exposed to interpretation in the context of a natural area setting. In this way, the TTW may be viewed as a means of accessing a new audience not readily accessible to CALM and the interpretive messages communicated in a natural area context. Such a phenomenon broadens the audience exposed to the agency's interpretation rather than simply 'preaching to the converted' or communicating with visitors familiar with CALM's conservation focussed messages. This opportunity was not evident in the Penguin Island survey sample as all indicated some level of natural area visitation.

The absence of interstate visitors and people who do not usually visit natural areas at Penguin Island were the main points of difference between the two site survey samples. Thus, these groups were removed from the TTW data prior to statistical comparison with the Penguin Island data. This ensured that the visitor samples were comparable in terms of independent variables with no ‘additional variables’ in the TTW data that may skew the results of analysis. After removal of the “interstate” resident group and “none” natural area visitation frequency group from the TTW data,  $n = 188$ . The following sections compare and contrast the environmental attitude, knowledge and attitude to site experience results from Penguin Island and the TTW sites using the modified sample.

## **6.2 Environmental Attitude**

Consideration of the change in environmental attitude measured by the paired survey offered a more meaningful insight than the actual respondent environmental attitude scores as measured before and after the experiences at TTW and Penguin Island. The survey data at both Penguin Island and TTW collected before the respective site experiences demonstrated an ecocentric attitude of respondents toward the environment as did the survey data collected after the experience. The pattern in response to the statements at the two sites suggested respondents were relatively more ecocentric in response to “Human use” of natural areas than when responding to the “Intrinsic ecological value” of natural areas. The disparity in response to the “Human use” statements as compared with the “Intrinsic ecological value” statements was markedly less after the site experiences than before the experiences at both sites. However, while the before and after experience environmental attitude data were similar for the respective sites, the manner of change in response was quite distinct.

The paired survey data enabled changes to be calculated at the individual respondent level as opposed to simply deducting the sample population mean taken after the experience from that taken before. Examining the mean individual change in environmental attitude revealed that respondents were influenced significantly differently by the respective sites in relation to the “Intrinsic ecological value” ( $z = -2.97, p < 0.01$ ) and “Human use” statements ( $z = -2.60, p < 0.01$ ). The difference in the change in response to “Total” environmental attitude evident in Figure 6.1 was also significant according to the Mann-Whitney Test ( $z = 2.40, p < 0.02$ ).



**Figure 6.1: Mean individual change in rating of environmental attitude statements categorised by site.**

It was postulated that the difference may have been due to the much higher proportion of repeat visitors to Penguin Island as compared with the TTW. Repeat visitors may express different attitudes to first time visitors given the different context and purpose of their visit. However, no significant relationship was found between repeat visitation and environmental attitude as measured within each site survey sample and between the two site samples

The interest in the different influence of each site on environmental attitude lies in the fact that both the TTW site and Penguin Island promote a strong conservation message to visitors in terms of the physical design and on-site interpretation messages. In accordance with these messages, the measured change in environmental attitude response of the TTW sample indicated an increased ecocentric response across all three components (“Human use”, “Intrinsic ecological value”, “Total” attitude score). On the other hand, the Penguin Island survey data demonstrated a significant anthropocentric shift in response to the “Human use” of natural areas as measured by the environmental attitude scale. The comparison of environmental attitude change between the TTW site and Penguin Island suggest a diametrically opposite survey response after experiencing the respective sites despite the similar emphasis on natural area conservation. This is particularly interesting when considering that Penguin Island has a much more intensive

investment in on-site interpretation, with an ecological conservation theme than the TTW site while the TTW site is highly developed. As the visitor demographics included in analysis and response data collected before the experience were not significantly different between the sites, the difference in measured change in environmental attitude was likely to be related to the different experiences afforded by the sites.

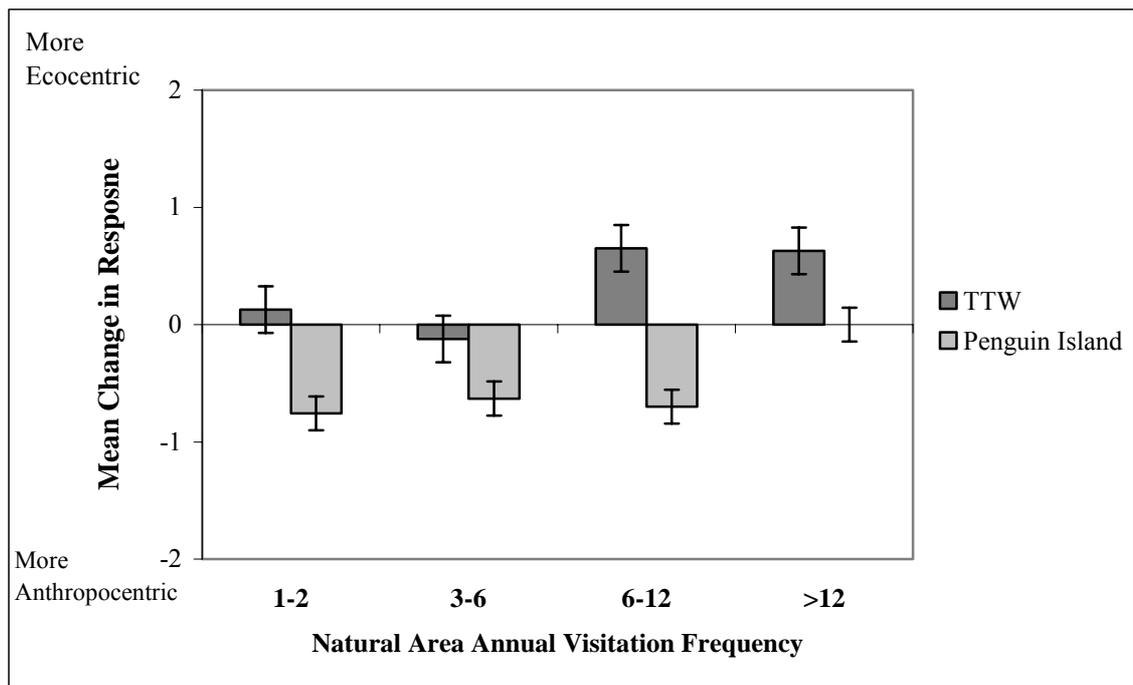
Evison (1981) argued that the character of managed natural areas, and the manner of interaction between people and nature they promote, influenced visitor environmental attitudes to an equal or greater extent than the media installed at a given site. Field & Gough (1998, p39, 40) suggested a similar idea when discussing the visitor experience of the tree top fire lookouts in the southwest forests of Western Australia. Display shelters in the area provide interpretation and information relating to the natural and social history of the sites but the actual experience of climbing to the top of the tree gives visitors a “feel” for the dangers and exertions of the forester’s job. Howard (1998) also commented on the importance of the actual experience visitors take part in as a significant aspect influencing the success of interpretation and other forms of communication. That is, immersion in an experience shapes the manner in which on-site interpretation influences the visitor.

Ultimately, the TTW presents a natural area in the context of a ‘look but don’t touch’ manner, effectively a ‘tree museum’. This effect was created by containing visitors within built structures that act as a physical barrier between the people and the natural area attraction. The ecocentric shift toward “Intrinsic ecological value” concepts at the TTW site appears to be in contrast to the highly developed character of the site with its overt engineering infrastructure that appeals to people not usually attracted to natural area experiences. However, the large economic and engineering investment in a built facility located in a geographically isolated forest of rare trees may have heightened the sense that the ecosystem it represents must be of value. Thus the structure seemed to convey perhaps more of a preservation (rather than conservation) message in terms of the intrinsic value of the forest. That is, the Tingle Forest at the TTW site is presented as a valuable ecological specimen preserved for passive appreciation of its intrinsic value rather than its utilitarian worth to humanity.

On the other hand, Penguin Island functioned within a recreational context, in which visitors actively interacted with the natural area. Visitors are able to literally immerse themselves in the environment at Penguin island owing to the primarily aquatic based activities available. Hence the influence on attitudes at this site appeared to manifest as ‘conservation through responsible use’ of the natural environment. Therefore, while media may be used to disseminate messages relating to certain themes and concepts, the context of the site experience creates the paradigm in which the messages are interpreted or placed. This seems to be the case despite the intensity of interpretation used. Consequently, the character of the site design (and activities offered) may be of more importance in influencing attitudes than on-site interpretation.

#### *6.2.1 Environmental attitude and frequency of natural area visitation*

The measured environmental attitudes of respondents at each site were significantly, but moderately, correlated with the level of annual natural area visitation. Respondents who were more frequent natural area visitors tended to have more strongly held ecocentric environmental attitudes than the less frequent visitors. This relationship appeared to extend to the magnitude of change in environmental attitude after experiencing the sites. A striking point of difference in environmental attitude response to the respective sites was the changes in regard to the “Human use” statements (Figure 6.2). The ecocentric shift in response of TTW survey participants was greatest with the most frequent natural area visitors. In contrast, the significant anthropocentric shift in response to the human use statements at Penguin Island was greatest with the less frequent natural area visitors while the most frequent visitors demonstrated no change.



**Figure 6.2: Mean change in response to human use attitude statements based on individually paired changes at each site.**

When comparing the two sites, there was no significant difference in mean individual change in response to the “Human use” environmental attitude statements between the “1-2” and “3-6” TTW groups and the “>12” Penguin Island group. Comparison of each respective group response between sites indicated a significant difference based on Mann-Whitney tests at  $\alpha = 0.05$  (Table 6.1).

**Table 6.1: Comparison of change in response to human use statements categorised by natural area visitation frequency**

Frequency of annual natural area visitation	Mann-Whitney U Test	
	z score	p value
1-2	-2.13	0.03
3-6	-2.06	0.04
6-12	-2.18	0.03
>12	-2.21	0.02

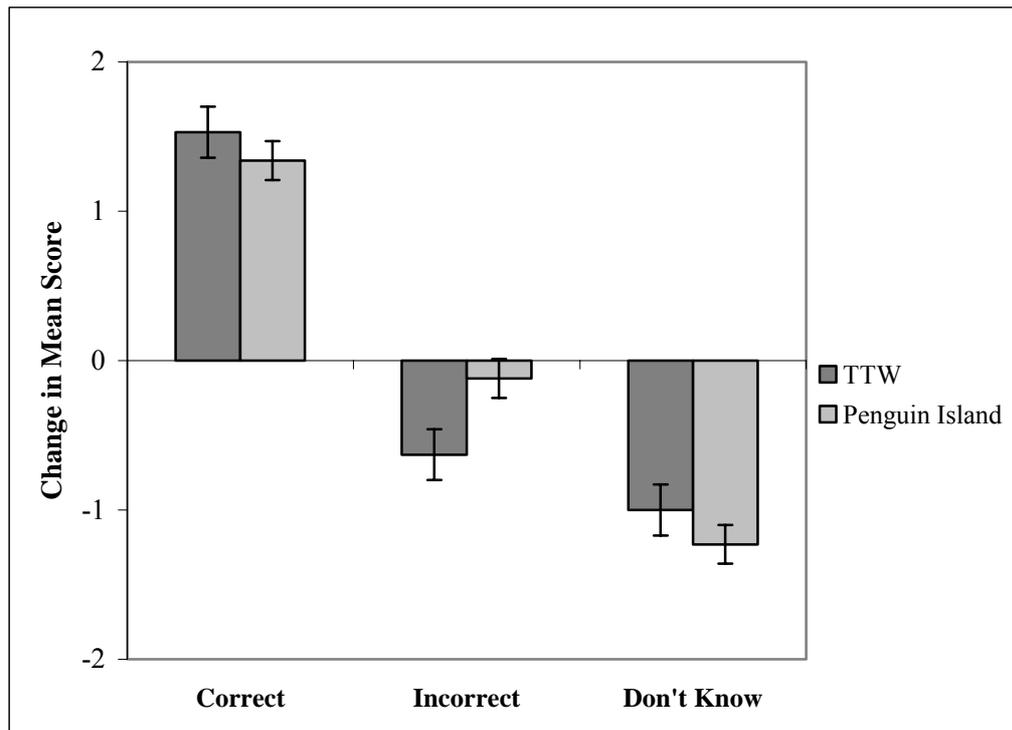
Strongly held attitudes are more difficult to influence and are thus less likely to alter in the short term as a result of exposure to a single experience (McGuire, 1985). This is

especially so if the influencing factor is contrary to the attitude held by the individual. Therefore, the salient ecocentric attitudes of the most frequent natural area visitation group were less likely to be influenced than the less definite attitudes of the infrequent natural area visitors immediately after the site experience. This effect was possibly amplified at Penguin Island owing to the apparent anthropocentric conservation ethic that was ideologically contrary to the mean environmental attitude held by frequent natural area visitors. Thus while past experience in natural areas significantly influenced expression of environmental attitudes, there seems to be a relationship whereby the character of the site experience determines the magnitude of change. This concept is supported by authors such as Tilden (1957), Emmons (1997) and Bowers (2000) who emphasised the importance of situational context as part of any environmental education or interpretation experience. This may also relate to the “discounting cue” effect discussed by Watts and McGuire (1964) and Gruder et al (1978) where the immediate influence of a communicated message is heavily affected by the character of the source. Where the attitudinal stance of a source was perceived to be in opposition to the attitude held by the audience, the audience would discount the information. Extrapolating this to the context of communication generated by a site experience (as an equivalent to the context of attitude related to a source of communication), it may be surmised that where an experience creates a context that is in opposition to attitudes held by visitors, communicated messages may be discounted and thus have little immediate positive influence on the respective visitor.

### **6.3 Knowledge**

Measurement of knowledge in this thesis was based on the ability of respondents to recall facts included in the on-site interpretive media. Knowledge was measured using a quiz style format, as explained in sections 1.4.3 and 3.3.3. The respondents selected either true, false or don't know in response to a series of factual statements based on interpretive media designed by site management.

Comparison of the influence of the TTW site and Penguin Island on knowledge acquisition indicated no significant difference in terms of the number of correct responses before or after the experience. Calculation of the mean change in individually paired knowledge scores indicated that each site had a positive influence with a mean “Correct” score change of approximately +1.5 (Figure 6.3).



**Figure 6.3: Mean change in individual knowledge scores compared between the TTW site and Penguin Island.**

This is interesting given the contrast in intensity of interpretation between each site, though the higher intensity of interpretation at Penguin Island may be somewhat counteracted by a greater focus on a variety of active recreational activities. However, the survey results demonstrated that the majority of respondents experienced the PEVC and all ferry users were provided with a commentary about the island by the operator. Thus Penguin Island visitors were exposed to more intensive interpretation than those at the TTW even if they did not visit the PEVC or access the numerous other sources of interpretation available on the island. The findings therefore suggest that knowledge gain (at least as measured by a fact quiz) is not entirely reliant on the intensity of interpretation an individual is exposed to. It would seem that measurement of knowledge gain is more a measure of efficiency of media design rather than a measure of extent of influence of the interpretive messages. Therefore, measurement of knowledge gain is only important if information transferral is the objective of the on-site media assessment.

The character of the site experience influenced the reasons for visitation, and this in turn influenced visitor receptiveness to knowledge acquisition. This was highlighted by the phenomenon whereby all surveyed Penguin Island visitors experienced the PEVC

irrespective of their main reasons for visitation. This scenario was a result of including the price of entry to the interpretive centre in the ferry crossing ticket as described in Chapter 3 (section 3.1.2). Thus, a superficial homogeneity of experience was created where all respondents were exposed to the same interpretive activity at some point during their experience. However, those visiting the island specifically for learning and exploration had a greater knowledge gain than those visiting for other recreational pursuits.

Authors such as Hendee et al (1971) and Ballantyne et al (1998) identified relationships between the receptivity to learning and visitor reasons for visiting natural areas. They categorised groups specifically relating to learning and exploration along with other types of recreational activities. The authors found that those interested in recreation were not receptive to learning, a notion supported by the findings of this thesis. Respondents visiting Penguin Island who for reasons relating to active recreational pursuits were less inclined toward knowledge gain than those specifically seeking a learning experience. This was despite both groups being exposed to at least two interpersonal interpretive activities, the 'most powerful' form of interpretation in terms of influencing visitors (see Chapter 2 section 2.6.3; also Hall and McArthur, 1998, p176). This suggests that a natural area site that offers a range of activities, in addition to interpretation, will effectively influence only those that are specifically interested in learning irrespective of whether all visitors are exposed to interpretive media.

The TTW site offers a low intensity but homogenous experience in terms of the limited activities and interpretation available at the site. Given the limited scope of activities available at the site, respondents' reasons for visitation were similarly limited in range. Reasons for visitation of TTW respondents were primarily exploration and learning based. Thus the variation in reasons given for visitation to the TTW site was not associated with influences on the extent (or lack of) knowledge gain.

This suggested that a natural area offering a singular (or homogenous) experience will effectively transfer knowledge of the natural area in the short term, even with a low intensity of interpretation, because the limited activities available limit the reasons for visitation. A site such as Penguin Island that offers a broad range of activities, some of which contravene receptiveness to on-site interpretation, will only influence the knowledge of those visiting for the specific reason of learning. That is, the TTW

arguably could positively influence the knowledge gain for a greater proportion of the visitor population, than Penguin Island, owing to the specific exploration and learning based activity it offers that limit the reasons for going to the site.

Interestingly, while the TTW site limits activities (and thus reasons for visiting) to learning and exploration, the two styles of walk trail offered by the TTW site was significantly related to the influence on respondents' knowledge. The more regimented, narrow and strictly one-way nature of the TTW walk trail was less conducive to knowledge gain than the AEW, which offered more space and freedom of movement. The AEW design, with its wider boardwalks and meandering course and choice of direction, may have reduced the visitor perceptions of crowding during the walk trail experience.

Casual observations made, and personal experiences of the researcher, during survey periods indicated crowding may be a problem on the TTW structure during peak visitation times. Crowding became especially evident when coach tour buses arrived at the site (approximately 10 per day during peak times) with groups of up to 50 people attempting to access the TTW simultaneously. The crowding was a product of large numbers of visitors in combination with the narrow catwalks (about 1m wide) and limited space on the viewing platforms on the TTW. The limited space for movement meant visitors wishing to continue along the walk trail must either push past others in the confined space or wait for those in front to move on. Additionally, those wishing to pause and observe the surrounding forest must either tolerate a stream of visitors brushing past or feel obliged to move on. The close proximity of others and the loss of autonomy through the inconvenience created when pausing on the catwalks are key components that function to create feelings of crowding (McManus 1998). Crowding then generates stress and negative feelings in visitors. Tilden (1957), Evison (1981) and Hammit (1981), among others highlighted the importance of providing positive natural area experiences to promote visitor engagement (including learning). From this, it may be surmised that an experience associated with crowding, such as the TTW trail, reduces the likelihood of positively influencing visitor knowledge.

Aside from the variation in experience between the AEW and the TTW, the limited natural area experience combined with low intensity interpretation appeared to be as effective in knowledge transferral as the combination of a broad range of activities and a

higher intensity of interpretation. If a site offers a single type of experience, visitors will expect this and respond accordingly. If the site offers a range of experiences, the visiting population will be divided amongst those wishing to learn and explore and those wishing to participate in other activities. The use of innovative media, or inclusion of the cost of interpretive activities in the entry fee, may encourage all visitors to take part but those motivated by learning benefit to a greater extent than those not. A site offering a singular experience seemingly does not need to rely as much on innovative media to attract attention compared to a site offering a range of experiences. Therefore, a site offering a range of experiences requires investment in a broad range of media to achieve knowledge transferral objectives while a site with a limited or singular range of activities does not.

Knowledge gain and environmental attitude were not significantly related. This result confirms the findings of earlier studies such as Burrus-Bammel (1978) and Howard (2000). All respondents, at both of the sites, who used on-site media demonstrated an increase in knowledge irrespective of any attitudinal change. Measurement of knowledge gain is more a measure of efficiency of media design rather than a measure of extent of influence of the interpretive messages. Therefore, measurement of knowledge gain is only important if information transferral is the objective of the on-site media assessment. However, on-site interpretation, in aiming to create meaning for the visitors' experience, also involves influencing attitudes. If attempting to assess this aspect of the influence of on-site interpretation on visitors, it is thus not necessary to measure the level of factual knowledge gained.

The following section discusses the influence of Penguin Island and the TTW site on respondent attitudes to the respective sites. For the purposes of comparison, the statements that make up the attitude to site experience component of the survey have been altered during analysis from referring to the natural area site specifically (e.g. "Beauty of island"/"Beauty of forest") to a more generic statement (e.g. "Beauty of site"). "Site" is intended to represent the natural area experiences of the TTW and Penguin Island specifically.

#### 6.4 Attitude to Site Experience

A fundamental experiential difference between the TTW and Penguin Island exists in the variety of activities available. This appeared to influence respondent attitudes toward the respective sites in some ways but not others. Respondents at both sites rated the “Beauty of site” as an important aspect of their experience. Respondents at both sites also rated the “Help protect site” aspect moderately and seemed to increase this rating after their experience. This perhaps relates to comments by Heimstra and McFarling (1974) who hypothesised that people visit natural areas to “reconnect” with nature and escape the relative monotony of urban living.

There were three aspects rated significantly differently in the responses to each site before the experience that reflected on the particular character of what each site offered. Rating of “Recreate at site” was rated significantly higher by Penguin Island respondents relative to TTW respondents ( $z = -5.22, p < 0.001$ ). This highlighted an apparent difference between the two sites as natural area destinations where the respondent attitude toward Penguin Island was as a recreational destination while TTW was less so. Similarly, TTW respondents rated the “Pristine site” aspect significantly higher than Penguin Island respondents ( $z = -2.43, p < 0.02$ ). This seemed to reflect on the passive observation based experience at TTW, centred on admiration of the forest (tree museum), while Penguin offers active recreation in a natural area context perhaps meaning pristine nature is not as high a priority.

TTW respondents rated “Beauty of site” as significantly more applicable than Penguin Island respondents before the experience. This again suggested the aesthetics of the natural surroundings are more important for TTW respondents than those at Penguin Island ( $z = -2.28, p < 0.05$ ). The focus of the TTW site on observation and exploration of the forest contrasted with Penguin Island’s more active range of experiences, which in turn affected visitor attitudes toward the site as an experience.

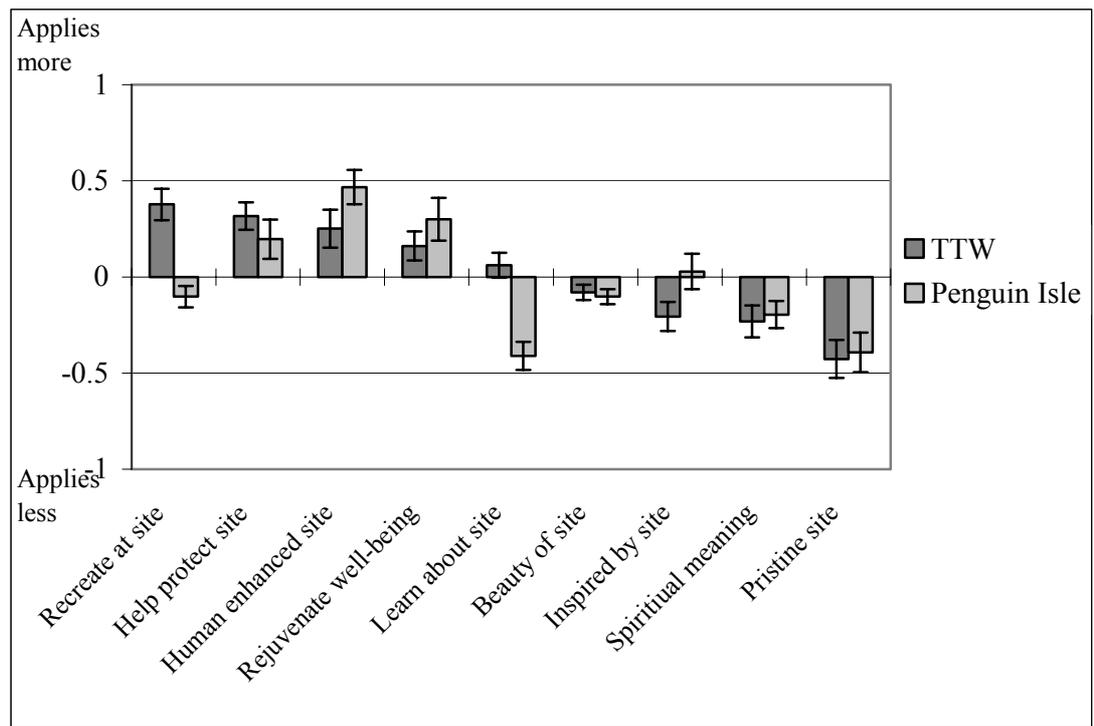
It was interesting to note that change in the visitor rating of the “Learn about site” aspect of the experience was either increased or remained consistently high in the TTW survey results while Penguin Island data indicated a significant greater decline in rating after the visit ( $z = 4.46, p < 0.001$ ; Figure 6.4). This result is of interest when considered in the context of the respective intensities of on-site interpretive media used. Penguin Island’s relatively high intensity of interpretation seems not to have encouraged

attitudes toward the site as a learning experience, but rather attitudes were significantly reduced in this context after the experience.

It seems that the context of the visit, which forms the major difference between the two sites, has influenced visitor perceptions of the learning aspect of the site experience. This may also relate back to the differences in opinion between Moscardo and Woods (2001) and McKercher (1993). McKercher (1993) stated that natural area visitors were simply leisure consumers and are not seeking intellectual enlightenment. Moscardo and Woods (2001) later asserted that visitors to natural area sites were increasingly expecting educational style experiences, as was evident in the popularity of on-site interpretation such as that offered by the Skyrail in Queensland, Australia.

This study suggests that the context of the site may influence the priority of learning about the natural ecology of the area in question. For example, Moscardo and Woods' (1998) opinion that natural area visitors were increasingly actively seeking knowledge through educational experiences was based on research at the Skyrail. The Skyrail is a high profile, passive observation experience comprised of a ride in a cable car over the canopy of a tropical forest with several stops incorporating boardwalks through the forest and interpretation centres. In other words, the Skyrail offers a somewhat similar experience to the TTW except on a much larger scale with more infrastructure and on-site interpretation. The reason for visiting the Skyrail must therefore be primarily limited to learning and exploration, as with the TTW. Thus, most of the visitors to Skyrail would probably be interested in accessing interpretation to learn about the forest, which was reflected in the observation of Moscardo and Woods (1998) that natural area visitors were increasingly and actively seeking educational experiences.

This may not be so for other natural area destinations that afford experiences alternate to, or other than, those related to learning and exploration. That is, the "leisure consumer" claim by McKercher (1993) could be supported by data collected from Penguin Island where a significant number of visitors visit the island for reasons other than education owing to the diversity of activities offered. Even when exposed to on-site interpretation, the reason for visiting appeared to override the receptivity to interpretation. Thus, the character of the site may determine whether it is visited primarily by "leisure consumers" or those actively seeking a learning experience.



**Figure 6.4: Mean individually calculated change in paired survey ratings of attitude to experience of TTW and Penguin Island.**

Respondents at both sites decreased their rating of the “Pristine site” component. This may reflect the small size of each site coupled with the large number of visitors confined to specific areas. Confinement of visitors to small areas coupled with large visitor numbers might often impinge upon enjoyment of the natural aspects of the natural area (Morgan & Lok, 2000). It was interesting to note that the rating of the “Pristine site” aspect was not significantly correlated with any other aspects of the experience at either site. This suggested that while the character of the sites did not positively influence attitudes in terms of experiencing a pristine natural area, this was not associated with other aspects of the experience such as “Beauty of site” and “Inspired by site”. Thus the rating of “Pristine site” before the experience may reflect an underlying urge to get back to nature, as mentioned by Heimstra and McFarling (1974) among others, while the reality of the experience does not afford this opportunity, but does not negatively impact on other aspects of the experience.

It seems that the experiential context of the site had a greater influence on respondents than the intensity of interpretation. This was demonstrated by the attitudes to each site as a learning experience being statistically the same before the experience. This was followed by a significant reduction in rating of Penguin Island, with its intense on-site interpretation, as a learning experience while the attitude in this regard to the low

intensity TTW site remained unchanged after the experience. The relationship between interpretive media used and the influence on respondents is discussed in the following section.

A point of interest for the site managers and CALM might be the apparent decline in the rating of approximately half the site attributes measured. The instance where the rating of these attributes was reduced independently at both sites may be of concern in relation to achieving the objectives of the on-site interpretation. Problems may arise if the design of the site and the experience it offers does not complement the on-site interpretation. The relationship between the influence of the site on the respondents and the design of the site is discussed in section 6.6

### **6.5 Diversity of Media and Visitor Influence**

Various respondent types preferred differing media or combinations of media as demonstrated at Penguin Island. Media preferences relate to preferred methods of acquiring information, which, in turn, may generate a greater efficiency of message transferral. While the TTW site used only one main type of media (text based) this should theoretically restrict the influence on the visitor population, as it would exclude those who prefer other forms of interpretation. This appears to have been compensated for in the character and design of the site. All visitors to the site participated in the same activities generally in the same sequence as determined by the one-way TTW walk trail loop followed by the lower profile AEW loop. While visitors bring their own meaning to a site, this is subsequently influenced by the manner in which the site is experienced. In contrast, paying visitors who take part in swimming or fishing at Penguin Island may form a different view of the island in relation to those who simply undertake the walk trails or picnic on the island. The TTW effectively determines that all visitors to the site partake in the same walks in the same sequence. The museum like experience of the TTW therefore may encourage a greater receptivity to the signs while the recreational variety of Penguin Island requires varied media to encourage engagement by visitors.

The adoption of a multimedia approach at Penguin Island appeared to primarily cater to the preferences of respondents in selecting media they found most attractive or useful. This mirrors the sign trial at the TTW where addition of signs along the TTW did not

significantly influence attitudes or knowledge but did result in fewer suggestions for more signs and information. Similarly, the differences in attitude and knowledge influences of the various types of media used at Penguin Island was more related to the type of respondent using that resource rather than any intrinsic advantage of a particular mode of communication. While the Touch Tables were universally popular, the extent to which respondents engaged with more detailed information sources depended on variables such as repeat visitation, social group and past experience in natural areas. Thus, as with the addition of trail-side signs at the TTW, provision of various media at Penguin Island appeared to be more related to visitor satisfaction rather than extent of influence within the context of this survey. The use of a broad range of media at Penguin Island may operate to some extent in attracting those who would otherwise show no interest but as non-paying visitors were not surveyed, this lies outside the bounds of this thesis.

While most visitors surveyed at Penguin Island accessed some form of on-site media, the main focus of the site was as a recreational destination. In this sense, Penguin Island represents a destination primarily designed for McKercher's (1993) "leisure consumers". The TTW is essentially comprised of observational activities within the confines of strictly defined one-way walk trails, placing the focus of the site into a largely learning context. This correlates with the Sky Rail experience, described by Moscardo and Woods (1998) in which visitors travel along a one-way path experiencing interpretive and other media in a sequential manner and maintaining a largely passive observational role that encourages the attendance of those 'actively seeking educational experiences'. The extent to which on-site interpretive media is used by visitors appears to be intimately linked to the design (hence experiential) focus of the site where installation of a high intensity of interpretive media in itself does not equate with a higher level of use by, or greater influence on, the visitor population as a whole.

## **6.6 Site Design and Influence**

The responsiveness to on-site environmental interpretation is related to the main reasons for visitation and the main reason for visitation is, in turn, influenced by the site design and activities available. As demonstrated by this research, the same conservation message, presented in different experiential contexts may have entirely different outcomes in terms of influence on the respondent. Therefore, site design and the

character and extent of influence on individuals is fundamentally linked to natural area site design. Authors such as Evison (1981) and McArthur and Hall (1993b) highlighted the significant influence of site design to the visitor experience. It is thus logical that planning of natural area sites, must incorporate any intended educational agenda from the conceptual stages, rather than adding them at a later stage. That is, the type of activity determined by the site design is as much a part of the educational experience as the medium and intensity of interpretation.

This concept may appear straight forward, but when placed in the context of natural area management in Australia, certain complexities become evident. To use a specific natural area management agency example, the two sites used in this research have been public natural area destinations for many decades prior to the establishment of the department of CALM. Penguin Island and the TTW have a long tradition of visitation that revolves around particular styles of experience specific to each site, which arguably did not include conservation as a primary goal. This point is highlighted by the collapse of an iconic tree in the Tingle Forest near the contemporary TTW site that was a direct result of visitor impacts (Winfield, 1996). Similarly, Penguin Island was severely ecologically and physically degraded by its long history of recreational use prior to the infrastructure modifications installed by CALM in the mid 1990s (Orr & Pobar, 1992; Dans, 1996-97). Thus, the agency effectively inherited the social history of these natural areas, which did not include an effective conservation ethic, upon which the legislative mandate requires a strong conservation ethic to be applied (CALM, 1996a; CALM, 2000).

As CALM is a custodian of the public estate, their management approach must theoretically reflect the public interest. This is demonstrated by the management plan for the ecologically sensitive Shoal Water Islands Marine Park that includes Penguin Island emphasising the strong recreational tradition of visitor use of the island (Orr & Pobar, 1992). The built facilities and management style were thus designed to incorporate this tradition. From this it is apparent that site design may be influenced by visitor demand. If this demand does not include an educational agenda, as suggested by the leisure consumer concept of McKercher (1993), attempts to impose such objectives will be strongly flavoured by the design dictated by the social history of the site.

The TTW site is an example in which the character of the experience was dramatically altered to cater for urgent action to ensure ecological conservation (Winfield, 1996). Where visitors once roamed freely through the Tingle Forest, they are now strictly confined to predetermined pathways. Despite this, the fundamental reason for visiting the area to experience the forest and see the trees has not been changed. Rather, CALM has taken the experience and refined it. The exploration and learning tradition of the experience had been preserved and opportunistically lends itself to the conservation messages put in place by CALM relatively recently. Therefore, while the natural area site design and experience influences the manner in which visitors interpret educational communication, site design and experience is itself influenced by the history of visitation.

## **6.7 Conclusion**

This thesis set out to determine the immediate influence of varying intensities of casual on-site interpretation on surveyed visitors at two natural area sites, the TTW site and Penguin Island. This was framed in the context of measurement of environmental attitudes, knowledge and attitude to the site experience. The attitude and knowledge components form a core part of the intended sphere of influence of environmental interpretation on visitors to natural areas.

Assessment of this aspect of casual interpretation at natural area sites has been highlighted as a significant gap in management agency evaluation of the success (or otherwise) of casual on-site interpretive media. Most management agency assessments of natural area sites focuses primarily on economic and environmental management and marketing related concerns (e.g. visitor satisfaction). This is despite many agencies in Australia and New Zealand having natural area site objectives relating to influencing attitudes and knowledge through use of interpretive media to add meaning or “enrich” the experience of the visitor. This thesis has provided a foundation for addressing this gap in assessment of casual on-site interpretation.

Measurement of the influence of interpretation on visitor attitudes and knowledge immediately before and after a site experience enabled a direct link to be made between the measured influences and the specific site and its associated interpretive media. The ability to directly link influences on visitor attitudes and knowledge to a specific natural

area experience affords natural area managers the opportunity to gain an insight into the effectiveness of the interpretation methods used at the site in this context. Evaluation of the influence of on-site interpretation using mail-back surveys and other delayed response methods cannot be directly linked to a particular site owing to the possibility of the respondents being exposed to other influencing factors in the intervening time. Being able to link specific on-site interpretation to particular influences on visitors may function to aid the management agency in the evaluation of the nature of success, or otherwise, of the interpretive media used.

Both the TTW and Penguin Island sites were found to influence respondents in different ways. However, the differences related directly to the character of the site experience and visitor variables more so than the intensity of on-site interpretation. Frequency of natural area visitation was found to be a significant factor in relation to the influence of the site as was the reason given for visitation and the type of activities undertaken. The latter variables are directly related to the activities (and therefore, experience) the sites offer.

It seems that the influence of on-site interpretation does not rely on investment in a high intensity or variety of on-site interpretation but is more determined by the context of the site experience and the type of visitors it attracts. The TTW offers a low intensity of primarily text based on-site interpretation coupled with a restriction of activities to a passive observational experience of the forest. The site has a distinctive walk trail in the form of the TTW structure that functions as a draw card for a range of visitors, including individuals who are not usually inclined to visit natural areas. The TTW site influenced respondents in terms of encouraging a more ecocentric view of the human use of the surrounding forest. This was perhaps a function of the museum style experience where visitors observe the natural attraction from behind physical barriers, giving the impression of a forest that should not be touched by people, a preserved specimen. It seemed that this was a function of the experiential context of the site more than the influence of the conservation messages in the on-site interpretation alone.

The effect of experiential context was highlighted when comparing the TTW site with Penguin Island, a site with a much higher intensity of on-site interpretation communicating a strong conservation message to visitors. In contrast with the limited activities offered at the TTW site, the diverse range of recreational activities offered by

Penguin Island flavoured the influence of the site experience on respondents. This was evident in the anthropocentric shift in attitudes toward the human use of the environment despite the intensive use of on-site interpretation focussed on conservation of the natural area as an important breeding ground for marine fauna. It seems that the conservation message was received in the context of active recreational use of natural areas.

In terms of the experience offered by the TTW, Penguin Island and other natural area destinations in WA, CALM has inherited the social history along with the responsibility for management. The social history flavours the context of the site experience and the meaning visitors take from the conservation messages communicated through on-site interpretation. That is, Penguin Island has a long history as a destination for active recreation while the TTW site is located in an area with a long history as a place to admire the large trees. Installation of interpretation on-site, irrespective of the intensity and the type of conservation messages, will be significantly affected by the history of use.

#### *6.7.1 Recommendations for natural area managers*

The main message for site managers rising from this research is based on the relationship between the activities a site offers and the objectives of interpretation. On-site interpretive media design should be incorporated into the total site design at the planning stage rather than as a post hoc add-on as is commonly practiced. This will ensure that the presentation of the on-site interpretation will meld with the site design and activities through careful consideration of what is most appropriate for the specific site.

The intensity of interpretation needs to be balanced with the issue of visitor satisfaction. While low intensity interpretation appeared to significantly influence respondents, it caused some angst amongst a significant proportion of respondents at the TTW site. A low intensity of on-site interpretation led to dissatisfaction with the availability of information about the site. Addition of trail-side signs reduced the concern expressed by respondents about the lack of accessible information. This suggests that the type and level of interpretation should take into account what is expected by visitors when designing an experience in order to address satisfaction.

Finally, assessment of the extent of influence of casual on-site interpretation on attitudes is complex and the development of a simple tool to do this may be difficult to achieve. Although this research was based on a survey instrument intended as a rapid and relatively simple method of attitude assessment, considerable time and specialised knowledge was required to collect and analyse the data. This may mean that use of on-site staff in the assessment of interpretation in this sense may not be a practical option owing to lack of time and expertise.

### *6.7.2 Further research*

The research presented in this thesis has highlighted several areas for future research to shed further light on the relationship between visitors and natural area experiences. Examination of the relationship between experiential context, visitor attitudes toward the learning aspect afforded by the site and the actual extent of knowledge gain by the visitor using more in-depth methods such as discussion groups and personal interviews may provide a more detailed insight. While this would afford greater understanding of the influence of the site on visitors, the methodology may prove difficult to apply in a manner that allows before and after measurement of attitudes and knowledge without a significant reactivity bias. Self reporting of changes in knowledge and attitudes after an experience may not be fully reliable owing to the tendency for survey participants to provide ‘the correct answer’.

This research indicated that crowding may have a detrimental effect on the receptiveness of visitors to on-site interpretation. This was assumed to rise from generation of negative feelings that in turn, create a poor learning environment. Further research into the relationship between crowding and influence of on-site interpretation at natural area destinations may be warranted. In relation to this, investigating the factors behind how visitors perceive a site as a learning experience versus how much they actually learn may be of interest in terms of site design and interpretation.

This thesis was based on surveying visitors exposed to a given level of on-site interpretation within a particular experiential context. Investigation of the intensity of on-site interpretation natural area visitors expect in varying experiential contexts may assist in identifying appropriate intensities and types of on-site interpretive media for

given sites. This could include experiences such as dive trails that combine interpretation with an intensive activity.

Another avenue for further study lies in the relationship between influence on natural area visitors and on-site interpretation. This thesis focussed on the quantity of interpretation but did not consider the relationship between the quality of interpretation and influence on the visitor. Such research may first require the development of a tool for assessing the quality of interpretation at a site, then a method for relating quality with influence on visitors.

There are a variety of other potential areas of more detailed research in relation to visitor characteristics and the influence of on-site interpretation. This might include demographics, motivations, types of activities, group size and recreation activities available. While some of these aspects were considered in this thesis, this was in the form of very basic data or speculation.

Finally, investigation of the influence of a range of given intensities of interpretation on visitors within a particular experiential context may shed further light on the subject matter within this thesis. For example, investigating the influence of a site that has a limited range of activities but with a high intensity of interpretation, such as the Skyrail in Queensland, relative to a site such as the TTW. Alternately, the same study could be conducted on a site with a broad range of activities combined with a low intensity of interpretation.

This thesis has explored the influence of different intensities of natural area on-site interpretation on attitudes and knowledge. Some clear lessons for natural area managers have been highlighted in terms of the relationship between site design and interpretive design. The complexity of the factors involved, including: site design and available activities; past experience of visitors in natural areas; and intensity and diversity of on-site interpretation provide opportunities for further research and exploration of the relationship between natural area sites and influence on visitor attitudes.