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Charles Sturt University



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A review of the concepts of enjoyment,
appreciation and understanding as
applied to Victoria's Marine
Protected Areas (MPA)

Report No. 71

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Report commissioned by Victorian Environment Assessment Council

Report to Victorian Environmental Assessment Council to inform the VEAC Marine Investigation

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Disclaimer

The views expressed in this report are solely the authors, and do not necessarily reflect the views of Charles Sturt University, VEAC or any other organisation related to Victorian Marine Protected Areas.

List of Acronyms (need to order alpha)

EA&U – enjoyment, appreciation & understanding

MPAs – Marine Protected Areas

MEA – Millennium Ecosystem Assessment

MNP&S – Marine National Parks & Sanctuaries

PV – Parks Victoria

PAMEs - Protected Area Management Evaluations

VEAC – Victoria Environmental Advisory Council

Executive Summary

Introduction

The Victorian Environmental Assessment Council (VEAC) is undertaking an investigation into the outcomes of the establishment of Victoria's marine protected areas (MPAs) (Figure 1). VEAC's 'Marine Investigation' will examine and assess: the performance and management of Victoria's MPAs in meeting their establishment purposes, and ongoing threats and challenges to the management of these areas. This report is relevant to the MPAs establishment purposes of providing opportunities for recreation and education associated with enjoyment, appreciation and understanding (EA&U) of the natural environment in Victoria's MPAs.

To inform VEAC's investigation of Victorian MPAs, a Charles Sturt University (CSU) team of Professor Allan Curtis and Dr Penny Davidson was contracted to provide an expert review of the concepts and critical analysis of existing information related to the EA&U objectives for Victoria's existing MPAs.

The core of this report is a review of the literature that provides a theoretical understanding of 'enjoyment', 'appreciation' and 'understanding' (EA&U) of the natural environment. An interpretation of current best practice with respect to evaluating EA&U across three key stakeholder groups follows. The three key stakeholder groups are onsite visitors, virtual (or off-site) visitors and non-visitors. Critical comment is also made regarding ongoing challenges and threats to achieving 'enjoyment, appreciation and understanding' purposes.

Victoria's MPAs contribute to Victorian's recreation options. Pont et al. (2012) indicate that 19% of Victorians visited MPAs in the last 12 months. Maddern (2012) established that 41% of people who visit marine national parks and marine sanctuaries will do so once every month or more (another 30% visit about once every six months). The landscape associated with MPAs (i.e. coast) is very familiar to many people, but the visitor experience has different aspects to that for a terrestrial protected area. Many access issues will be the same (e.g. bad weather, requirement of specialised equipment to visit the site) but on the other hand the majority of a MPAs – the underwater environment – receives visitation by a very small proportion of the population, and then only to part of the underwater environment. MPAs are frequently experienced through a surface vista, or by recreational boaters/fishers as a thoroughfare and resource¹. This means that despite considerable familiarity with coastal environments the MPAs purposes of understanding and appreciation commences with a lower base line of knowledge in the community than for terrestrial protected areas.

Approach

As MPAs have these distinctions it was requested that we ensure the full spectrum of visitors is considered, and so for this review visitors and non-visitors were considered across a range of 'types': onsite visitors (recreation, aesthetic, education, volunteer), virtual visitors (also includes education and volunteer), and non-visitors.

¹ Fishing is permitted in multiple-use marine parks, marine reserves and marine and coastal parks.

Our approach has been to summarise relevant national and international literature to provide an overview of the theoretical understanding of EA&U of the natural environment, with a focus on MPAs. We then provide an interpretation of the state of knowledge in this field internationally and nationally, specifically identifying ways that EA&U have/ can be measured; and the data that should be collected according to current best practice to inform evaluation of the achievement of the goal of EA&U of Victoria's MPAs.

Enjoyment

Enjoyment is taken to be synonymous with pleasure, fun, good feeling, flow, having one's desire fulfilled; it involves the yielding to involuntary inclination and intrinsic motivation, and is directed toward an object or activity/event (Lin et al. 2008a; Poldichak 1991). There appear to be three research approaches relevant to visitor enjoyment. These include:

1. A focus on visitor satisfaction and motivation rather than enjoyment especially in an outdoor recreation or park context;
2. Identification of the factors that contribute to enjoyment used by leisure, health and marketing studies; and
3. A more recent focus on enjoyment as an emotional experience as either the emotional dimension of satisfaction, or the 'feeling' you had in response to an experience.

If the goal is to assess visitor levels of enjoyment then a clear and focused approach assessing enjoyment rather than using another concept is required. The clearest approach in the literature, other than a single global question asking about the level of satisfaction, is Lin et al.'s (2008a) construct of enjoyment, which presents enjoyment as having the three dimensions of engagement, positive affect and fulfilment.

We suggest that an instrument that measures enjoyment of the MPAs experience should span across the dimensions of fulfilment, positive affect and engagement where these concepts are defined as:

- Engagement: the level of attention given to an activity, where higher levels of attention are associated with higher levels of enjoyment.
- Positive affect: a positive feeling such as pleasure, happiness, or contentment.
- Fulfilment: of a need or desire, either conscious or unconscious (Lin et al. 2008a).

Appreciation

Appreciation is a positive evaluation or positive attitude toward some object/thing (Cross 2005; Ham 2009; Maio et al. 2003). The measurement of appreciation of natural environments in a MPAs involves the measurement of positive attitudes to natural environments in the MPAs. It is likely that appreciation and understanding associated with natural environments in MPAs is of interest because 'understanding can lead to appreciation and appreciation can lead to protection' (Ham 2009).

Cross (2005) suggests that attitudes are held about, or related to, particular objects. For that reason we suggest that the evaluation of appreciation of the MPAs should focus on measuring the extent

and level of positive attitudes toward the place, environment and larger system of MPAs. We therefore recommend against measuring appreciation of the 'experience' as that approach would begin to confuse the measurement of 'appreciation' with the measure of 'enjoyment', the latter focusing on the experience.

Measurement of the outcome of appreciation of natural environments in Victoria's MPAs would use accepted practices for the measurement of attitudes, where the place and the natural environment in Victoria's MPAs are the attitude objects, and might also include measurement of ambiguous attitudes toward MPAs. Exactly what the attitude objects will be should be determined in consultation with the managing agency but might include attitude objects such as:

- Attitude to natural environments in marine protected areas in general
- Attitude to a specific beach / bay / headland
- Attitude to specific habitat found within Victorian MPAs e.g. mangroves

Understanding

Understanding occurs when we can grasp how bits of knowledge are inter-related, and we can put the knowledge to use, or explain it to others. Understanding is therefore a relatively in-depth form of knowledge. At a basic level knowledge is about having either information or skills. Understanding involves a more sophisticated set of cognitive abilities and refers to the set of beliefs or schema we use to make sense of knowledge (Petty et al. 1981).

It is possible to "test" understanding, including by asking people to problem solve or to discuss an issue or explore the factors influencing an event. In a non-formal education context however there are ethical issues about 'testing' an informant's knowledge or understanding, such as knowledge and understanding associated with MPAs. In some circumstances 'tests' can be seen as inappropriate approaches to research and may also result in informants being uncooperative, perhaps even deliberately providing misleading information.

We have interpreted that the MPAs purpose is to facilitate understanding of the marine park environment, place and system. Understanding is most appropriately measured against the key topics associated with the individual parks, and activity that the respondent is undertaking. A potential approach is for survey respondents to be asked to indicate the extent they have either "no knowledge", "very little knowledge", "some knowledge", "sound knowledge (i.e. sufficient to act)" or "very sound knowledge (i.e. could give a detailed explanation to others)". This method has achieved high response rates and the differences in knowledge and understanding held by participants identified have been confirmed through workshops and interviews (Curtis et al. 2008; Rogers et al. 2010; Schindler & Wright 2000).

Best practice assessment of enjoyment, appreciation and understanding

There are no obvious examples in the international literature of best-practice for the specific measurement of EA&U in the context of protected areas. Although these are common objectives utilised in the wider international research literature (as a product of matching IUCN purposes) there doesn't appear to be a consistent approach to their evaluation. In part, that gap reflects the reality

that any research instrument examining these topics will need to be developed for the specific context where it is to be applied (e.g. an isolated marine park in a developing country versus a terrestrial protected area adjacent to large urban population in a developed country). Hockings (2006) and Pomeroy et al. (2004) provide frameworks for developing an evaluation that may be adapted for Victoria's MPAs. Parks Canada is beginning to develop consistent summary measures but these are part of 'summative' evaluations and provide little in the way of feedback that will help the managers improve EA&U for MPAs. A more common approach is for managers of protected areas to assess visitor outcomes using the constructs of satisfaction and benefits.

Threats and challenges to achieving enjoyment, appreciation and understanding

The following threats and challenges to achieving EA&U in Victoria's MPAs were identified from our reading of the available literature associated with protected areas, and MPAs.

- Disenfranchised recreationists may not understand or support the decision making behind the creation of MPAs may be less likely to appreciate the MPAs (Sant 1996).
- User conflict is a perpetual problem for protected areas and open space management (Brown et al. 2006; Clark & Stankey 1979), no less so for MPAs. The more types of recreation activities allowed in MPAs the greater is the chance of user conflict.
- Crowding, a commonly cited leisure issue, especially in sites where one of the dominant motivations for visiting is to find 'peace and quiet'.
- Inadequate physical access (road access, boat access, walking access, equipment) can be a barrier to EA&U. Additionally, the environment in Victoria's MPAs could itself be a barrier (e.g. areas with high wave energy, cold water, and requirement for specialised equipment).
- Social Access (information, cost, skill, confidence, companionship). Two of the most commonly cited reasons for people not participating is that they had not heard about the opportunity or that they had no-one to go with. Commercial operators (e.g. dolphin tours boats) provide ways to overcome a number of access barriers – they provide the physical means to access a site, the specialist equipment if needed, supportive companionship, instruction if needed, and knowledge of the area. Commercial operators have additional financial costs for the visitor consequently increasing the financial barriers (or challenges) to enjoyment in marine protected areas.
- Social, financial, physical and psychological constraints to accessing computers and other media, as well as off-site forums for the virtual visitor.
- Issues of safety impact on visitors' perceptions, choices, and experience.



Figure 1: Victorian Marine Protected Areas (Source: Victorian Environmental Assessment Council 2012)

1. Introduction

The Victorian Environmental Assessment Council (VEAC) is undertaking an investigation into the outcomes of the establishment of Victoria's marine protected areas (MPAs) (Figure 1). VEAC's 'Marine Investigation' will examine and assess: the performance and management of Victoria's MPAs in meeting their establishment purposes, and ongoing threats and challenges to the management of these areas. This report is relevant to the MPAs establishment purposes of providing opportunities for recreation and education associated with Enjoyment, Appreciation and Understanding (EA&U) of the natural environment in Victoria's MPAs.

To inform VEAC's investigation of Victorian MPAs, a Charles Sturt University (CSU) team of Professor Allan Curtis and Dr Penny Davidson was contracted to provide an expert review of the concepts and critical analysis of existing information related to the EA&U objectives for Victoria's existing MPAs. The core of this report is a review of the literature that provides a theoretical understanding of 'enjoyment', 'appreciation' and 'understanding' of the natural environment. An interpretation of current best practice with respect to evaluating EA&U across three key stakeholder groups follows. The three stakeholder groups are onsite visitors, virtual (or off-site) visitors and non-visitors (Figure 2).

There are likely to be multiple audiences this final report: those who are interested in performance measures of the MPAs' purposes; those who want to know how to improve the experience of the visitors and build relationships with potential MPAs users; and community stakeholders, including friends groups, who contribute to MPAs engagement. The park manager audience is expected to require more detail regarding how outcomes can be improved. That is, managers will want to know who visits, their level of EA&U, and the factors that influence EA&U. Consequently we have incorporated comment on measurement of contributors to enjoyment, understanding and appreciation as well as measurement of the levels of these outcomes.

Establishment of marine protected areas

The first Victorian marine protected areas were the Harold Holt Marine Reserves in Port Phillip Bay (VEAC 2012). Additional MPAs were designated in the period 1981 to 1991 but the majority of Victoria's MPAs were established in 2002. Today, 11.7% of Victorian state waters have protected area status (VEAC 2012). Victoria's MPAs have many names: Marine National Parks, Marine Sanctuaries, Marine Parks and Marine Reserves, Marine and Coastal Parks. VEAC's review of Victoria's MPAs distinguishes between these categories based on whether they allow 'consumptive' use of the resource or whether they are 'no take' zones. There are 24 no-take MPAs (Marine National Parks and Marine Sanctuaries) and six multiple-use MPAs (Marine Parks, Marine Reserves and Marine and Coastal Parks). For the most part, this report refers to Marine Protected Areas (MPAs) more broadly as there is no literature or research that utilises these categories. However, these are very important distinctions to the EA&U purposes and should be considered in future research. For example, recreational fishing can take place in the multiple-use areas, but not in the no-take areas. The ability (or otherwise) to undertake a particular recreational activity could well affect the visitor's enjoyment experience, and their appreciation of these areas, and should be

considered in attempts to understand the visitor experience and assess the achievement of the EA&U purposes across the different levels of protection.

The enjoyment, appreciation and understanding objectives for Victoria's MPAs are variously worded across the legislation and individual management plans. For example the management objectives for marine national parks and marine sanctuaries as defined in the Act – Schedule 7 or 8 of the National Parks Act, detailed in Sections 4 and 17D of the Act include: 'to make provision in accordance with the foregoing for the use of parks by the public for the purposes of enjoyment, recreation or education ...' and 'provide for the use, enjoyment and understanding of marine national parks and marine sanctuaries by the public; promote an understanding of the purpose and significance of Marine National Parks and Marine Sanctuaries' (Parks Victoria 2007a, p. 42). The National Parks Act requires the managing organisation "to preserve and protect the natural condition of the park and its natural and other features and, subject to this, to provide for the use of the park by the public for enjoyment, recreation and education." (Parks Victoria 2007a, p.4).

The objectives for individual MPAs are often more explicit. For example, the Discovery Bay Management plan identifies the objective of:

... providing information, interpretation and education can help orientate and inform visitors, increase visitor enjoyment and satisfaction, foster an understanding and appreciation of the special natural and cultural values of the park building understanding of management activities, and help visitors to experience the area in a safe and appropriate manner. (Parks Victoria 2007, p. 20).

In the management directions 'visitor enjoyment will be enhanced by appropriate management of recreational activities. Recreational opportunities will be provided in accordance with Table 1.' (Parks Victoria 2007a, p. 7). So MPAs have been established for a range of purposes and the facilitation of recreation and education type activities is just one purpose and they must only be provided in ways that don't jeopardise the achievement of conservation objectives.

Recreation and education uses of the marine protected areas

Victoria's MPAs contributes to Victorian's recreation options. Pont et al. (2012) indicate that 19% of Victorians had visited MPAs in the last 12 months. Maddern (2012) established that 41% of people who visit no-take marine national parks and marine sanctuaries (did not include multiple-use marine parks and reserves, and marine and coastal parks) will do so once every month or more (another 30% visit about once every six months). Nevertheless, it is important to remember that MPAs are different to terrestrial protected areas and that those differences impose important constraints in terms of access and EA&U outcomes.

Constraints to accessing MPAs

MPAs are distinct from terrestrial protected areas in a number of significant ways for the purpose of considering EA&U. In contrast to other protected areas (e.g. Alpine National Park or Grampians National Park), most of us have experience of the coastal landscape through visits to beaches. Indeed, Brook and Pole (2012) found that over four out of five Victorian's visited the coast in the last

12 months. So it is useful to remember that the landscape associated with MPAs is very familiar to most Victorians. It is also important to recognise some of those visiting MPAs will be doing so to undertake a leisure activity which, for them, has little to do with the protected area status of the water (e.g. surfers at Bells Beach in Point Addis Marine National Park).

‘The marine environment largely remains unknown and mysterious to Victorians’ (Ipsos 2007 Wave 3: 25). It is true that most Victorians visit the coast, but few people access the underwater environment of MPAs and that element of MPAs is likely to be poorly understood. For most people their understanding of the underwater environment is likely to derive from formal education or television documentaries. This means that despite considerable familiarity with coastal environments, understanding and appreciation of MPAs commences from a lower base than is the case for terrestrial protected areas.

Many people will have experienced marine areas prior to their designation as MPAs. While recreational values of those areas are typically expected to be a continuation of pre-existing values, that is not always the case. Declaration of MPAs may disrupt existing patterns of recreation and enjoyment of those areas for some people (e.g. fishers if a no-take MPA is declared). On the other hand, declaration of MPAs may lead to increased awareness of the biodiversity in an area and that awareness may lead to increased interest in visitation and provision of services to support recreation (e.g. commercial whale watching tours).

It is probably useful to distinguish between the aesthetic-visitor who will enjoy the view of marine park scenery from the beach or road but not actually enter the marine park and the engaged-visitor who will enter the marine park either in or on the water (or intertidal space). Access issues for the engaged visitor are considerable: the visitor needs to have the confidence, skill, financial resources and equipment to effectively access the aquatic environment, and some MPAs, such as The Arches Marine Sanctuary, which are difficult to access even by water will experience less visitation than those MPAs easily accessed from the shore such as Ricketts Point Marine Sanctuary. In addition the recreational boaters will require a safe boat ramp to enter and exit the water. Most MPAs are not located adjacent to high density populations and require the visitor to travel considerable distances for recreation.

As with terrestrial parks and sanctuaries, where recreational activities mainly take place in an outdoor environment, the EA&U outcomes in MPAs are significantly influenced by the weather – a snorkel on a sunny day is a different experience to a snorkel on a windy or rainy day. In Victoria the MPAs visitor experience will also be affected by tide, swell conditions, and cold water for much of the year, all of which add to the hazard (and sometimes pleasure) of the activity and sometimes prevent the activity from commencing.

In addition to the internal access issues (being able to utilise the MPAs environment) and external access issues (being to get to the MPAs environment) there are also issues around ‘who’ generally gets access. A person’s socio economic situation (e.g. household income, employment status) will influence their ability to visit MPAs (Pont et al. 2012).

Different experience types

EA&U may be outcomes experienced by the on-site visitor most usually as a recreationist, student or volunteer. EA&U may also be experienced by persons who are not visiting, or have not visited, the

site such as people who value the site simply because it exists, schools that use virtual and other media to teach about the MPAs, and stakeholders who have an interest in, but perhaps do not use, the MPAs (e.g. habitat for endangered species). The EA&U of people who visit MPAs, even though for different purposes, will have common dimensions of access issues and experience type.

The MPAs outcomes of EA&U for the non-visitor may overlap with on-site visitors, but there will be different forms of access and associated issues. As such the EA&U of these two cohorts are likely to be different and measured in different ways. Virtual visitation to MPAs can occur through visits to aquarium, museums, zoo displays and the internet. Parks Victoria manages Victoria's MPAs and utilises Facebook, Twitter, Flickr and YouTube to connect with visitors and non-visitors of all Victorian protected areas. In collaboration with Museum Victoria they have collected high quality imagery and video of Victoria's marine national parks and sanctuaries and made that material available on-line and in the Museum. (see <http://parkweb.vic.gov.au/park-management/environment/research-and-scientific-management/marine-monitoring/under-the-lens>). Parks Victoria currently has posted four marine related YouTube videos with 68 to 138 views (Appendix 1). Possibly more visited are the 'Teacher resources' and 'Info for students' available on the Parks Victoria website.

Other forms of education activities associated with the MPAs include ranger guided tours, commercially run tours, primary and high school activities, I Sea I Care ambassador program, fossil digs, citizen science activities and volunteer conservation activities (Appendix 2). Overlapping with educational activities (e.g. citizen science) are the MPAs volunteer experiences. Also called 'serious leisure' (Stebbins 1982), volunteering is an activity that may be undertaken for a number of reasons, involves pro-social behaviour, is done of one's own free will and without monetary reward, in order to benefit another person, group or cause (Measham & Barnett 2007). Volunteer activity associated with MPAs includes the work of friends groups, citizen science activities, dedicated conservation or monitoring groups as well as the volunteer activities undertaken by existing groups (e.g. Diving Clubs or Birdwatchers) (Appendix 3).

The available data suggest that whilst there are numerous education opportunities linked to MPAs, and numerous volunteer groups, these types of visitors are relatively few compared to the recreation-motivated visitors. The most popular recreation activities in MPAs are: walking 56%, swimming 34%, sightseeing 26%, fishing 10%², snorkelling 9%, surfing 8%, exploring 6%, boating 6%, photography 5%, picnic 5%, camping 4%, walking the dog 4%, bird watching 3%, cycling 3%, kayak/boogie boarding 2%, education 2%, scuba 1%, scientific 1%, dolphin tour 1%, other 10% (see also Appendix 4).

There appears to be no coherent set of data that counts visitor numbers to Victoria's MPAs. For example, with respect to the education visitor the Parks Victoria records indicate that 8013 people participated in face-to-face, on-site interpretation or extension activities in 2011-12, assuming there were no repeat visitors this would be equivalent of 1.4% of the population³ (Parks Victoria 2013). However these data cover a limited number of activities and misses those people who may have attended museums, or visitor centres and certainly ignores those who 'accessed' the MPAs through

² Note this is illegal in Victoria's no-take marine national parks and sanctuaries

³ Based on 5.62 million population in Victoria – Spatial Analysis and Research (2012)

the internet. Additionally, the Maddern study (2012) and ongoing Community Perception Monitor do not include the multiple-use MPAs.

Visitor numbers will provide useful data in a visitor monitoring approach that also includes focused measures for the EA&U, enabling assessment of the EA&U outcomes in Victoria’s MPAs.

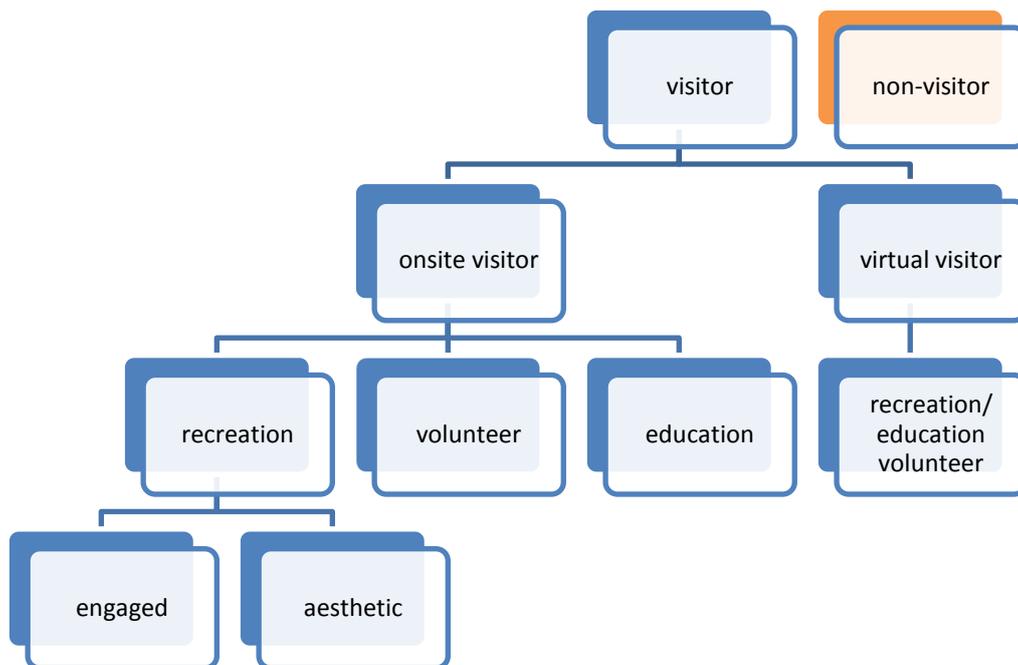


Figure 2: Visitor and non-visitor categories of interest to this study

Approach used in this review

As MPAs have these distinctions it was requested that we ensure the full spectrum of visitors is considered, and so for this review visitors and non-visitors were considered across a range of ‘types’: onsite visitors (recreation, aesthetic, education, volunteer), virtual visitors (also includes education and volunteer), and non-visitors.

The approach taken in this critical review has been to summarise relevant national and international literature to provide an overview of the theoretical understanding of “enjoyment, appreciation and understanding” of the natural environment, with a focus on marine protected areas (MPAs). This overview considered both the visitor and non-visitor and reflects the synergies between the activity (recreation and education) and the experience (EA&U). We have reflected on the existing recreational visitation to Victoria’s existing marine protected areas; incidental visitation; educational activities; tourism; community involvement; visitor and non-visitor attitudes; and community engagement. The review then provides an interpretation of the state of knowledge in this field internationally and nationally, specifically identifying ways that “enjoyment and appreciation” have/

can be measured; and the data that should be collected according to current best practice to inform evaluation of the achievement of the goal of “enjoyment and appreciation” of Victoria’s MPAs. We have also documented additional insights related to ongoing challenges and threats to achieving the EA&U establishment purpose.

Key terms used

There are a number of key terms and concepts used in this report, some of which have different meanings in the literature. However for this report we have used these terms to mean the following.

Enjoyment: Is synonymous with pleasure, fun, good feeling, flow, having one’s desire fulfilled, and the yielding to involuntary inclination; and involves intrinsic motivation and is directed toward an object or activity/event (Lin et al. 2008a). Lin et al. (2008a, 2009) theorise that enjoyment occurs when the individual experiences engagement, a positive affect and fulfilment.

1. Engagement: the level of attention given to an activity, where higher levels of attention are associated with higher levels of enjoyment.
2. Positive affect: positive feeling such as pleasure, happiness, or contentment.
3. Fulfilment: the satisfaction / meeting of a need or desire, either conscious or unconscious (Lin et al 2008a).

Understanding: Is the way we think about something – a set of beliefs or schema. It is with an ‘understanding’ of how bits of knowledge relate that allows knowledge to be put to use, it is being able to apply one’s knowledge.

Appreciation: Is a positive response or attitude to something or someone.

Satisfaction: In the leisure and parks field has frequently be measured through the customer service quality approach to assess the quality of visitor experience. Satisfaction occurs when the perceived ‘service’ matches expectations (Burns 2003).

Motivation: Is another concept frequently addressed in recreation literature where understanding the reasons for engagement in an activity can assist managers improve visitors’ satisfaction and enjoyment (Caldwell & Anderek 1994).

Attitudes: Is the evaluation of something as being good or bad, right or wrong etc. Liking, loving, disliking, appreciating are all assessments based on attitudes (e.g. capital punishment is barbaric and should be stopped).

Values: Can be separated into held and attached values. Broadly speaking, held values are the guiding principles that we attempt to live by (e.g. a fair go for everyone). On the other hand, we attach different levels of importance (and for different reasons) to parts of the environment (Seymour et al. 2011) (e.g. a beach where family regularly swims).

Belief: Describes our view of what ‘is’ true (e.g. we believe the world is flat).

Knowledge: Consists of information or skills acquired through conceptual learning or experience; knowledge can be implicit or explicit.

Volunteering: Is pro-social behaviour, done of one's own free will and without monetary reward, to benefit another person, group or cause (Measham & Barnett 2007).

2. Literature review

The literature review drew on research papers from a number of disciplines and fields; primarily psychology, outdoor recreation and visitors in protected areas (see the full list below in **Error! Reference source not found.**). We identified key literature using a combination of approaches, including drawing upon our existing knowledge and that of the VEAC team; searching through specific journals; using the ProQuest data bases and searching using key words; and web searches to identify “grey literature (i.e. relevant publications outside peer-reviewed journals). The focus of this review was how the constructs of EA&U are conceptualised and measured. Google Scholar was also used to track down individual references that had been cited in other work, but were difficult to access.

The literature reviewed was drawn from the following disciplines:	
Leisure theory	Psychology
leisure enjoyment	Interpretation evaluations
leisure satisfaction	Museum evaluations
Tourism satisfaction	Stakeholder analysis/evaluation
Park visitor satisfaction	Contingency valuation
Existing park evaluations	Volunteering
Marine park evaluations	

Figure 3: Disciplines reviewed in this review

2.1 Enjoyment

Conceptualisation of enjoyment

The most frequently cited reasons to visit protected areas are not to be educated or learn more but to enjoy the solitude or engage in a favourite activity (Anderson & Fulton 2008; Manfredi et al. 1996). There are important exceptions to this generalisation, including visitors wanting to learn whilst on commercial tours (Lück 2003). Enjoyment is taken to be synonymous with pleasure, fun, good feeling, flow, having one’s desire satisfied; it involves the yielding to involuntary inclination and intrinsic motivation, and is directed toward an object or activity/event (Lin et al. 2008a; Poldichak 1991). A defining aspect of enjoyment though is that it is usually focused on an activity that one is engaged in (Lin et al. 2008a; Poldichak 1991). That is, a person is usually enjoying ‘something’. Hence we propose that the measurement of enjoyment is relevant for the visitor and virtual visitor, but not for the non-visitor.

The most frequently adopted approach to measuring ‘enjoyment’ uses a single item (Lin et al. 2008a; Poldichak 1991). For example the Ham & Weiler’s (2005) interpretation toolkit asks whether or not the tour was ‘enjoyable’ using a single item. Other fields of studies that are interested in measuring enjoyment are computer gaming, marketing, education and health education (Cummins 2007; Jegers 2007; Macvean 2011; Rahinel & Redden 2012).

There appear to be three research approaches relevant to visitor enjoyment. These include:

1. A focus on visitor satisfaction and motivation rather than enjoyment especially in an outdoor recreation or park context;
2. Identification of the factors that contribute to enjoyment used by leisure, health and marketing studies; and
3. A more recent focus on enjoyment as an emotional experience as either the emotional dimension of satisfaction, or the 'feeling' you had in response to an experience.

There seems to be an assumed equivalency between satisfaction and enjoyment with researchers preferring or equating satisfaction to enjoyment (Lee et al. 2004; Ryan & Cessford 2003). Tonge & Moore (2007, p 768) state that 'overtime satisfaction has become the principal measure of the quality of a visitor's experience'. Powell & Ham (2008) link enjoyment and satisfaction together, although they don't present them as the same construct. Ryan and Cessford (2003) developed a park satisfaction tool where enjoyment is measured but how it relates to the focus of their approach (i.e. satisfaction), is not explained.

Alternatively instruments such as the Recreation Experience Preference (REP) scales 'are intended to measure the types of psychological goal states desired by recreationists' (Manfredo et al. 1996 p 204). The REP studies (e.g. Manfredo et al. 1996; Tarrant et al. 1994; Weber & Anderson 2010) avoid focusing on a particular 'desired state' (such as enjoyment) attained from the recreation experience but rather identify a number of common desired states in outdoor recreation and protected areas. Examples of these desired states include opportunity for solitude and escape from personal pressure (Weber & Anderson 2010). However, these states might also be described as enjoyment derived from solitude, and enjoyment derived from escape from personal pressure and so forth.

Another research focus examines the contributors to enjoyment rather than the aspects of service quality that provide satisfaction. It is clear that, depending on the context, many factors contribute to enjoyment. Craike et al. (2010) found that the enjoyment of a leisure experience is attributable to three dimensions: the inherent enjoyment of the activity, enjoyment of the environment, and enjoyment of the social experience. An example may be a game of tennis where the player might enjoy the game itself (activity), enjoy being outside on a sunny day (environment), and/or enjoy the company of the other players (social experience). These dimensions are common to any leisure experience but each component may contribute at different levels. Another study (Sickler & Fraser 2009) examined the factors that contributed to visitor enjoyment at a zoo.

If the goal is to assess visitor levels of enjoyment, as is the case with EA&U for Victoria's MPAs, then the focus must be on enjoyment rather than another concept. However, the REP and other literature identify some of the key factors contributing to enjoyment and exploration of these factors will be important for managers attempting to identify ways to improve enjoyment outcomes. Studies in outdoor recreation and protected area management of satisfaction, motivation, and enjoyment have clear links as depicted in Figure 4. We suggest that the satisfaction and motivation studies provide well founded frameworks for the development of survey items (i.e. scales) to explore relationships between enjoyment and factors thought to influence enjoyment (e.g. Ryan & Glendon 1998). It is also important to distinguish those factors that managers might be able to influence (e.g. access, awareness) and those less amenable to intervention (e.g. held values, past use of MPAs) but which the manager needs to know about if they are to effectively engage potential visitors, and enhance the enjoyment of visitors.

Our view is that Lin et al. (2008a) provide the best approach to measuring enjoyment. Their conceptualisation of enjoyment has three dimensions: engagement, positive affect and fulfilment. Our view is that the multi-dimensional (and multi-item) approach of Lin et al. (2008a) is a valid and reliable approach (see below).

An instrument that measures enjoyment of the MPA experience should span across the dimensions of fulfilment, positive affect and engagement where these concepts are defined as:

- Engagement: the level of attention given to an activity, where higher levels of attention are associated with higher levels of enjoyment.
- Positive affect: a positive feeling such as pleasure, happiness, or contentment.
- Fulfilment: of a need or desire, either conscious or unconscious (Lin et al. 2008a).

We endorse Lin et al.'s (2008a, 2009) construct of enjoyment for a number of reasons:

1. Apart from global statements exploring enjoyment it is the only approach that focuses on measuring the level of enjoyment experienced rather than the factors that contribute to enjoyment.
2. Other research, associated with protected areas and visitor studies, has used similar dimensions for a similar purpose although they were selected to measure the quality of the visitor experience (Ham & Weiler 2005; van Dijk et al. 2012).
3. Lin et al.'s (2008a) analysis established that the three dimensions (engagement, positive affect and fulfilment) were strongly correlated and therefore related, but the three factors were also unique suggesting that they are indeed separate dimensions that contribute to an overall sense of enjoyment
4. The use of a scale which doesn't incorporate elements of the activity type allows comparison across different visitor / stakeholder types and can be used for the recreation visitor, the volunteer visitor, the 'student', and the virtual visitor (enjoyment won't be measured for the non-visitor).

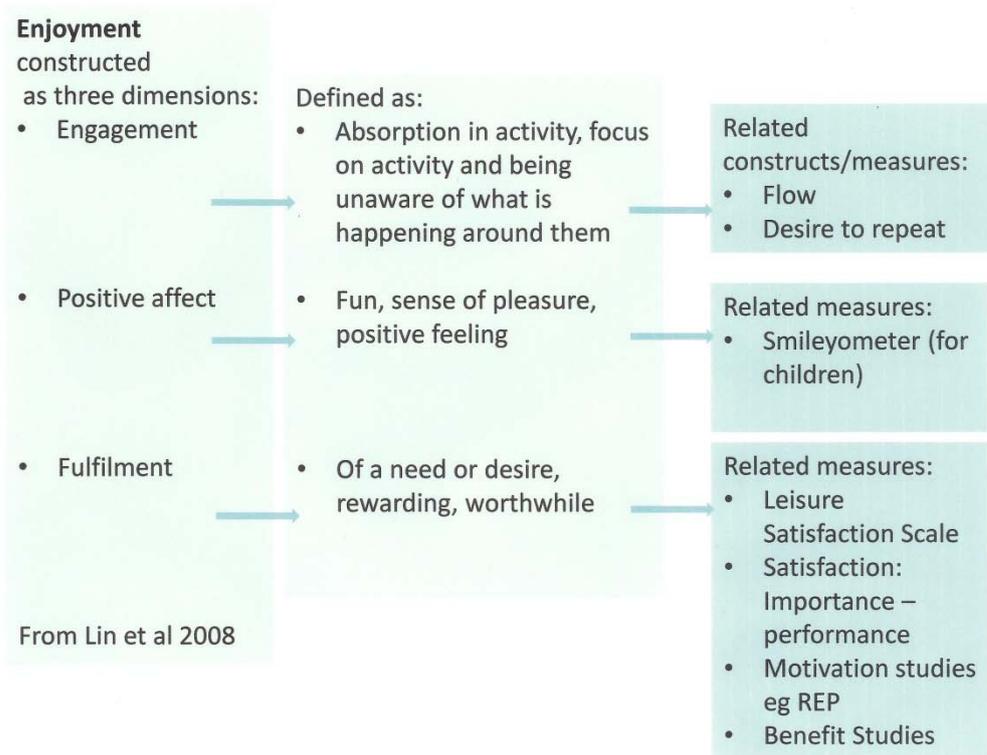


Figure 4: Dimensions of the construct ‘enjoyment’

Measurement process for enjoyment and illustrative items

We have adopted the Lin et al. (2008a) model of ‘enjoyment’ and suggest the measurement of their dimensions of engagement positive affect, and fulfilment. Our view is that these dimensions are best measured by developing Likert-type scales where the respondent indicates their level of agreement to a series of statements (i.e. items) (Lin et al. 2008a, 2009) (Table 1). Lin et al. (2008a, 2009) employ 14 items to measure the level of enjoyment: 4 items for engagement, 4 items for fulfilment and 6 items for positive affect. By way of example we have included some of these items in Table 1. Of course, the following are suggested items, and are as yet untested in the MPAs context.

Table1: Example items to measure the level of enjoyment for recreation visitors, volunteer visitors and virtual visitors

Items (respondent would select up to 3 or 4 activities e.g. snorkelling, rock pool rambling, swimming to address these questions)	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Dimension
During the activity I was deeply engrossed						Engagement
During the activity I concentrated fully						
During the activity I felt happy						Positive affect
During the activity I felt content						
The activity was worthwhile						Fulfilment
The activity was fulfilling						

To measure enjoyment the survey respondent would likely be first asked to assess the enjoyment of the overall experience and then to focus on one to three specific activities which were important to them and that they undertook on the day or at the time of their most recent ‘visit’ (as it may be virtual). The focus on specific activities provides greater clarity about variations in levels of enjoyment and the factors that influence enjoyment.

Survey design (implemented by post, telephone or face-to-face) would draw on discussions with managers, observation from field visits, Park Victoria sponsored studies (e.g. Newspoll 2004), and other studies (Maguire et al. 2011; Pforr et al. 2007) to identify the likely visitor activities in, or associated with (if virtual), a specific MPAs or set of MPAs. As flagged above, the visitor monitoring program should include measures of the factors influencing enjoyment.

While we recommend direct measures of visitor enjoyment it is possible to draw inferences from other data, including the number and duration of visits, particularly the extent of return visits. The assumption being that a defining dimension of the leisure/tourism experience is pleasure or enjoyment, leading to continued voluntarily participation in the activity/experience. Hence if people continue to use and undertake leisure or tourism in MPAs we could assume they are having enjoyable experiences. Visitation records provide useful data for managers for a number of reasons (e.g. guides the quantum of facilities and services to provide) but can also be a surrogate measure for how popular and how much people enjoy a particular protected area. See Griffin et al. (2010) for recommendations regarding the collection of visitation data.

2.2 Appreciation and Understanding

Appreciation

Appreciation is a positive evaluation or positive attitude toward some object/thing (Cross 2005; Maio et al. 2003; Ham 2009). The measurement of appreciation of natural environments in MPAs involves the measurement of positive attitudes to natural environments in the MPAs. It is likely that appreciation and understanding associated with natural environments in MPAs is of interest because 'understanding can lead to appreciation and appreciation can lead to protection' (Ham 2009).

Cross (2005) suggests that attitudes are held about, or relate to, particular objects. For that reason evaluation of appreciation of natural environments in MPAs should focus on measuring the extent and level of positive attitude toward the place, environment and larger system of MPA. We advise against measuring appreciation of the experience as that approach would confuse the measurement of 'appreciation' with the measure of 'enjoyment', the latter focusing on the experience.

There is conflicting evidence regarding the influence of attitude on behaviour. Some studies demonstrate attitude does influence behaviour (Fishbein & Yzer 2003) whilst others indicate that the influence of attitudes on behaviour is only moderate (Cross 2005) (Figure 5). Attitude is just one dimension in the model of behaviour; attitudes are necessary but not sufficient conditions for particular behaviours (Heberlein 2012).

Nevertheless where people have non-ambivalent attitudes toward an attitude object (hold just positive or negative attitudes) the attitude is more likely to predict their behaviour; where the attitude is 'accessible' (for example associated with a direct experience) it is more likely to predict behaviour; where attitudes are consistent with beliefs they are more likely to predict behaviour; and where they are highly embedded (associated with attitude relevant information such as beliefs, memories, expectations) they are more likely to predict behaviour (Maio et al. 2003). It is also known that some people will derive their attitudes from their cognitive response, others from their affective responses and others equally from both (Maio & Haddock 2010). It has also been shown that direct contact or involvement with the attitude object (e.g. a MPAs) influences attitude-behaviour consistency (Petty et al. 1997) and attitudes based on direct experience are more deeply held (Tarrant & Green 1999).

It is possible that people hold negative attitudes towards MPAs. Negative attitudes may be the result of altered resource access or concerns about the intrusion of regulation. Affected people may indicate that those changes, as a result of the declaration of MPAs, have negatively impacted on their "enjoyment and appreciation" for a variety of reasons, including:

- that they now need to comply with rules/regulations or risk fines/ loss of property/ imprisonment whereas they were previously self-regulated or regulated by local social norms;
- they have experienced interruption or termination of family or local traditions that are valued for a variety of social and economic reasons (e.g. poor people may fish to provide cheap food); and
- that some activities can no longer occur (mostly related to no-take areas, but can also relate to access and right of occupation) and that these activities might be important for recreation or expression of other values.

In addition, it is possible for people to hold both positive and negative attitudes toward an 'attitude object' (Ajzen 2001; Kaplan 1972; Maio et al. 2003). People's responses to protected areas might be both positive and negative. It is therefore important for those evaluating appreciation through surveys to consider the possibility that some stakeholders hold negative **as well as** positive attitudes and that these may be highly embedded due to past experiences. For example, a snorkeller may express attitudes that the MPAs natural environment is good because it supports a diverse range of fish life, but may also express the attitude that the MPAs natural environment is bad because the water temperature is extremely cold.

Perhaps of equal relevance to appreciation is the concept of loyalty. There is an increasing interdependence between the visitor and protected area management in terms of economic support (income from visitation), political support for the protected areas (and therefore ongoing resources), contribution to management decision making, volunteer contribution to on-ground management tasks, and promotional effect of the satisfied visitor (Moore et al. 2013). These acts of loyalty from the visitor are derived from a positive attitude toward the park.

Measuring process for attitudes and illustrative items

The complexity of Ajzen and Fishbein's model (Figure 5) reminds us to be very clear about articulating the purpose of measurement, and very clear about what it is that needs to be measured to inform an evaluation of the effectiveness of management toward the achievement of this outcome. Attitudes will change depending on the context and how people perceive that context, and so are described as context dependent and relatively temporary constructs. One of the earliest, and most common approaches to measuring attitude is through the use of the Likert scale (Cross 2005; Maitland 2008), indeed the Likert scale was designed to measure attitudes. Likert scales include a number of attitudinal statements about an 'object' (or Likert items) and ask the respondent to indicate their level of agreement with these statements (Table 2). The features of the Likert Scale are that:

- It presents a stimulus statement(s) expressing an attitude or opinion to an 'object'
- It contains bipolar response categories of varying levels of agreement or disagreement
- Response category points are individually labelled e.g. strongly agree, agree, neither agree nor disagree, disagree, strongly disagree)
- The descriptive text of these labels is selected to make the intervals as equidistant as possible (Brill 2008)

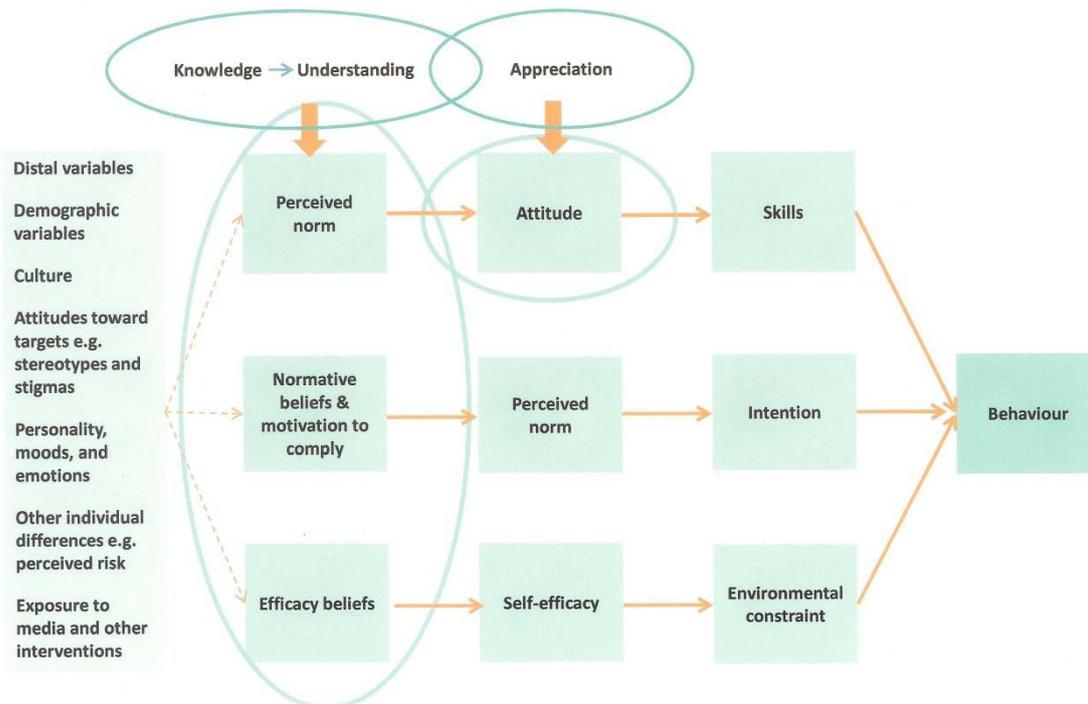


Figure 5: Relationship between understanding, attitude and behaviour, adapted from Fishbein & Yzer 2003.

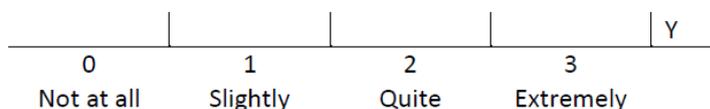
Another commonly used instrument to measure attitude is the semantic differential (Cross 2005) where the respondent is asked to describe their attitude to an 'object' using the sets of bipolar adjectives provided. This approach is suited to measuring affective and cognitive aspects of attitudes (Maio & Haddock 2010). As explained above, it is important that approaches to measuring appreciation address the issue of ambivalence (Maio & Haddock 2010).

Attitudes can be measured by ascertaining degrees of support for, or opposition to, the attitude item (as per Suman et al. 1999). To avoid any confusion with satisfaction related to the tangible features of the marine protected areas appreciation attitude items will focus on the overall place and purpose and not include items relating to experience. Measurement of the outcome of appreciation of natural environments in Victoria's MPAs would appropriately use accepted practices for the measurement of attitude, where the place and the natural environment in Victoria's MPAs are the attitude objects. Exactly what the attitude objects will be should be determined in consultation with the managing agency but might include attitude objects such as:

- Attitude to natural environments in marine protected areas in general
- Attitude to a specific beach / bay / headland
- Attitude to specific habitat found within Victorian MPAs (e.g. mangroves, seagrass)
- Attitude to purpose of looking after examples of Victoria's natural environment
- Attitude to natural environments in a particular no take MPAs

An item might be worded as in Figure 6.

Considering only the positive (Y) qualities of the natural environment in marine protected areas and ignoring its negative (X) ones, evaluate how positive (Y) its positive qualities are on a 4 point unipolar positive (Y) scale:



Considering only the negative (X) qualities of the natural environment in marine protected areas and ignoring its positive (Y) ones, evaluate how negative (X) its negative qualities are on a 4 point unipolar negative (X) scale:

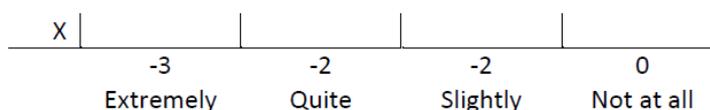


Figure 6: Example Ambivalent attitude scale (derived from Kaplan 1972)

Other attitude items could be assessed using the uni-dimensional scale, examples are provided in Table 2.

Table 2 : Example of Likert scale items to measure attitudes associated with MPAs

Indicate your level of agreement to the following statements by ticking the appropriate box:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
The natural marine environment is valuable in its own right					
I appreciate the natural environments in no-take MPAs					

Understanding

Understanding occurs when we can grasp how bits of knowledge are inter-related, and we can put the knowledge to use, or explain it to others. Understanding is therefore a relatively in-depth form of knowledge. At a basic level knowledge is about having either information or skills. Understanding involves a more sophisticated set of cognitive abilities and refers to the set of beliefs or schema we use to make sense of knowledge (Petty et al. 1981).

Measuring understanding, as opposed to knowledge of facts or possession of skills can be difficult. Some 'facts' are commonly accepted as true and it is possible to assess whether someone 'knows'

something, including through written or verbal responses to a question or by asking someone to demonstrate a skill and meet minimum standards of competency. As we move toward 'understanding' our explanations of relationships and processes, which are often evolving across society, may be contested. It is possible to "test" understanding, including by asking people to problem solve or to discuss an issue or explore the factors influencing an event.

In a non-formal education context however there are ethical issues about 'testing' an informant's knowledge or understanding, such as knowledge and understanding associated with MPAs. In some circumstances 'tests' can be seen as inappropriate approaches to research and may also result in informants being uncooperative, perhaps even deliberately providing misleading information.

In their work with rural landholders engaged in forestry and agriculture, Curtis (e.g. Curtis & De Lacy 1996; Curtis et al. 2008; Rogers et al. 2010; Mazur et al. 2013) and Schindler (e.g. Schindler & Wright 2000) have opted to ask informants to self-report their knowledge and understanding. These authors have asked respondents to identify where they sit on the spectrum of knowledge and/or understanding for specific topics, ranging from the relatively straightforward (e.g. How to collect soil samples) to the more complex (e.g. The role of woody debris such as snags in rivers and streams; the explanation provided by scientists to explain global warming). As part of the scales employed by Curtis, survey respondents are asked to indicate the extent they have either "no knowledge", "very little knowledge", "some knowledge", "sound knowledge (i.e. sufficient to act)" or "very sound knowledge" (i.e. could give a detailed explanation to others). Over a long period of time (i.e. from 1994 to 2013) these authors have found this approach to achieve high response rates in that almost all survey respondents complete these items; respondents are able to distinguish between topics using the set of response options; differences in knowledge and understanding identified through workshops and interviews are confirmed; and expected relationships between knowledge and/or understanding and independent variables such as values, occupational identity and engagement in Landcare and property planning have been revealed. We are confident in recommending this approach to measuring knowledge and understanding as being ethical, valid, reliable and cost effective.

Measuring process for understanding and illustrative items

We have interpreted that the MPAs purpose is to facilitate understanding of the marine park environment, place and system. Understanding is most appropriately measured against the key topics associated with the individual parks, and activity that the respondent is undertaking. As such the questions that might be asked could include those suggested in Table 3.

Table 3: Example items that could be used to measure understanding for Victoria’s MPAs

Indicate what your level of knowledge or understanding is for the following items by selecting the most appropriate response option [for each topic, place a tick in the best option from the 6 columns)

Knowledge / understanding topics	Not applicable	No knowledge	Very little knowledge	Some knowledge	Sound knowledge (sufficient to act)	Could give a detailed explanation to someone else
The role of the sea grasses in the bay of the MPAs						
Stages in the lifecycle of a dolphin						
The snorkelling locations that have the most variety of fish						
Impact of run off from farms and roads on marine ecosystems in the MPAs						
Ways for individual dog walker / fisher /... to help protect the MPAs						
Difference between multi-use MPAs and no-take MPAs						

Other topics might include importance of less spectacular habitats, like mud, or importance of different species in the way natural ecosystems function, or importance of conservation of marine and heritage (e.g. wrecks) sites.

2.3 Current approaches to measuring visitor outcomes in protected areas

The current approach to measuring visitor outcomes in protected areas and/or natural areas (predominantly terrestrial) focus on either the benefits and/or visitor satisfaction that arise from the visit. Protected area management agencies know that there are relationships between the attributes of the setting and the socio-psychological outcomes for the visitor but the outcomes are never certain as the 'actual production of the outcomes remains with the visitor' (McCool et al. 2007. p. 23). The benefits approach places 'enjoyment' as just one of a broader suite of benefits. A review of benefits-based management can be found in McCool et al. (2007) and examples of this approach include the Crilley et al. (2012) study in Kakadu.

Benefit studies emerged in the 1980s with the original work undertaken by Bev Driver and colleagues and the development of the Recreational Experience Preference Scale (Manfredo et al. 1996). Included are benefits to individuals (e.g. connecting with nature, being physically active, socialising, enjoyment, stress relief) and benefits to society (e.g. the conservation of cultural and natural heritage, generation of employment, healthier communities) (Moyle et al. 2012).

The benefits approach has also been used in monitoring and exploring the volunteer experience (O'Brien et al. 2003; Townsend & Moore 2005). So for example the direct benefits may include pleasure or enjoyment, a sense of contribution, increased social networks and sense of belonging (Maller et al. 2008; Townsend & Moore 2005). In addition the volunteer activity benefits the organisation, community and contributes to social capital (Moore et al. 2007; Townsend & Ebdon 2006).

The other commonly used approach to measuring visitor outcomes is the measurement of visitor satisfaction, and more recently loyalty. Satisfaction is a key performance indicator used by many park management agencies, (e.g. Bryce Canyon National Park Visitor Report (Holmes et al. 2010)), and is frequently measured when a provider wants to understand their 'consumer' or user because satisfaction has been shown to be the antecedent of loyalty and repeat use/purchase (Taplin 2013).

There are three main approaches to measuring satisfaction. The first approach is to employ a single global question asking the visitor to rate their satisfaction (e.g. Moyle & Croy 2007). The second approach is to employ items that examine factors that detract from the experience (e.g. litter on the beach) also called dissatisfiers (Table 4). Dissatisfiers associated with an outdoor recreation experience are typically the facilities and infrastructure (e.g. Tonge & Moore 2007; Archer & Griffin 2004; Archer & Griffin 2005; Griffin & Archer 2005 measurement of importance-satisfaction). Measurement of satisfaction through the service quality approach provides a sound framework for assessing the influence of barriers or 'dissatisfiers' which are most easily influenced by management (Burns et al. 2003; Ryan & Cessford 2003; Taplin 2013; Tonge & Moore 2007; Tonge et al. 2011). MPAs have little opportunity and/or need to provide facilities but the facilities provided at the terrestrial access points may be perceived as relevant to the MPAs experience. This approach will typically address facets of the service that management can modify (e.g. availability of car parking and boat ramps, toilet cleanliness).

The third approach is the measurement of the aspects of the experience that 'build' satisfaction, also called satisfiers. There are also numerous studies of the benefits of recreation that measure the

‘satisfiers’ or contributors to a positive experiences, which are less easily influenced by management (Weber & Anderson 2010; Manfredi et al. 1996; Crilley et al. 2012; Anderson & Fulton 2008; and some that explore both concepts (Alegre & Garau 2010)). For example, the REP (Recreation Experience Preference) framework, which includes the items of opportunity for solitude, escape from personal pressure, learning, enjoying nature, and family togetherness (Weber & Anderson 2010), can be used as the starting point for the development of a specific MPAs survey instrument. Application to leisure and parks has taken a variety of approaches: measuring expectation-performance (Hamilton et al. 1991) or importance-satisfaction (Tonge & Moore 2007) or importance-performance (Burns et al. 2003; Crilley et al. 2012). See Oh (2001), Ryan & Cessford (2003), Alegre (2010) for further comment on satisfaction measures.

Table 4: Items used elsewhere that might be suitable for Victoria’s MPAs to measure the satisfiers and dissatisfiers contributing to the experience of enjoyment (NB appropriate for the recreation visitor but not the volunteer visitor)

Importance	Not at all important		Neither important or not important		Extremely important	
Level of noise						Satisfiers
Opportunity for solitude						
Safe boat ramp						Dissatisfiers
Car parking						
Satisfaction	Low				High	
Level of noise						Satisfiers
Opportunity for solitude						
Safe boat ramp						Dissatisfiers
Car parking						

In terms of the appreciation and understanding purposes of protected areas the current dominant approach is derived from interpretation evaluations; interpretation being that activity undertaken by protected areas specifically to ‘communicate ideas and feelings which help people understand more about themselves and their environment (Interpretation Australia 2013). One of the original objectives is ‘to increase visitor’s understanding, awareness and appreciation of nature, of heritage and of site resource (Knudson et al. 1995 cited in Wearing et al. 2007: 3). The desired outcome of a successful interpretation experience is ‘appropriate attitudes and behaviour patterns’ (Wearing et al. 2007: 3). The research is ambivalent regarding the extent that knowledge and understanding influences behaviour. In some circumstances knowledge isn’t enough to change behaviour, and attitudes and values first need to be influenced (Madin & Fenton 2004). Other work indicates that knowledge makes a difference to behaviour (adoption of biodiversity conservation and sustainable farming practices), especially if people are engaged in social learning processes (Curtis & De Lacy 1996; Curtis & Mendham 2011).

Skibins et al.’s (2012) meta-analysis of interpretation best practice found that interpretation does seem to influence knowledge (understanding), but less so re appreciation (positive attitudes). But Skibins et al. (2012) are critical of the short term nature of these evaluations, and as Christensen et al. (2007) note it is as equally possible that people who have stronger positive attitudes to aspects of

the natural environment participate in the interpretation or other programs. Powell et al. (2009) note that research does suggest that impact on knowledge, attitude and intentions are partly determined by the socialisation processes associated with gender, age, education, nationality, residence characteristics, previous nature-based tourism experience, previous trip participation, and previously held knowledge, attitudes, and behaviours (e.g. Ewert 1998; 1987; Kellert & Berry 1987; Stern & Dietz 1994). Interestingly there appears to be a relationship between enjoyment and learning with increased enjoyment being positively related to increased learning (Lin et al. 2008b).

There is a well-developed research literature spanning the different types of interpretation (signs, guided tours, self-guided tours etc.) and protected area management agencies will very often undertake an evaluation of a specific interpretation program that they offer (e.g. of their guided tours) (e.g. Ham & Weiler 2005; Hughes & Saunders 2005; Madin & Fenton 2004). For a critique of the approaches see Skibins et al. (2012). There is a more recent move however for protected area agencies to incorporate appreciation and understanding components in a more global visitor and/or community monitoring program. So for example the USA National Parks service undertakes systematic visitor monitoring where they seek visitor satisfaction ratings for:

- Overall quality of visitor services, facilities and recreation opportunities
- Visitor centre
- Exhibits
- Combined park facilities
- Park map or brochure
- Ranger programs
- Combined visitor services
- Learning about nature, history or culture
(questions that relate to appreciation and understanding only) (Parks Studies Unit 2009)

and Parks Canada State of the Park summary includes the measures of:

- Visitor: the number of visits
- **Visitor: whether visitors felt they had learned something**
- Visitor: level of enjoyment
- Visitor: level of satisfaction
- Visitor: meaningfulness of the park to the visitor
- **Community: appreciation and understanding** (measured through the outputs of educational programs)
- **Community: level of support for Parks Canada** (measured through outputs of stakeholder engagement activity). (Parks Canada 2011)

The fostering of visitors who appreciate the natural environment in MPAs and understand the conservation purposes and issues is clearly of benefit to managing agencies, and potentially of benefit to the visitor (learning benefit, possibly sense of belonging or achievement). Moore et al. (2013) explore the importance of appreciative visitors to protected areas using the framework of the 'loyal visitor'. They argue that it is insufficient to report on satisfaction alone because loyalty

outcome indicators of repeat visits, recommending the destination to others, and willingness to pay more are of primary interest. Also the concept of loyalty captures a broader range of variables than does satisfaction; it includes satisfaction, service quality, place attachment, destination image, value for money, involvement in activities and quality of experience (Moore et al. 2013).

Achievement of all three purposes has a benefit to the managing agency – enjoyment theoretically will result in a satisfied and loyal visitor (repeat and word of mouth promotion etc.), and appreciation and understanding will result in a caring visitor who supports (word of mouth, volunteering, follows rules, may donate to related organisations, lobby their members etc.) the conservation effort. The critical question is how the management organisation ‘frames’ their objectives therefore proscribing the indicators or measures of outcomes.

It seems pertinent here to also mention the Griffin et al. (2010) overview of visitor monitoring in Australia and the knowledge gaps that they have identified:

- Assessing economic value of protected areas
- Assessing attitudes of broader community
- Understanding needs and behaviour of particular user groups.

Other gaps include understanding the virtual visitor, the volunteer visitor and the existence and/or effect of ambivalence in visitor attitudes.

2.4 Use and non-use values

An alternative approach to measurement of enjoyment and appreciation (not understanding) involves the use of economic tools and/or methods. Protected areas typically operate outside the market-based system (except for tourism within those areas) and so the value of the protected area is not easily measured in dollar terms. However, there are techniques that economists employ to quantify both the use and non-use values of protected areas (Figure 7). We will provide a brief overview of those approaches but do not advocate their use as an ongoing evaluation technique for the purposes of measuring enjoyment and appreciation.

Economists can quantify the value of protected areas in economic terms based on use values or non-use values (Figure 7). Enjoyment, which we have defined as arising from a direct or virtual experience of the protected area is a ‘direct use value’ and would be relevant for the visitor, virtual visitor and volunteer visitor. It is possible to use, for example, contingent valuation or the travel-cost method (Ariza et al. 2012; Marvasti 2013) to estimate the dollar value for the level of enjoyment for each of the category of visitor. The level of appreciation however may be based on

direct use values (ecosystem services; tourism income and employment), indirect use values (long term benefit that arises from the physical exercise), option values (potential for food and medicine in the future) and existence values (valuing the existence of the place for its own sake, or species within or that use that environment). There is also a body of research examining ways to quantify the ecosystem services (fresh air, quality food, waste disposal etc.) provided by the environment (Loomis et al. 2000). Measuring non-use values, including existence values typically involves contingent valuation where people are asked ‘what would you do if ...’ (Bennett et al. 2007; Magnan et al. 2012; Oh et al. 2008). For example, respondents to a survey may be asked how much they would be willing to pay to ensure that a particular habitat or species or vista is conserved and/or maintained. At this stage identifying dollar value equivalents for EA&U outcomes for Victoria’s MPAs does not appear to be useful.

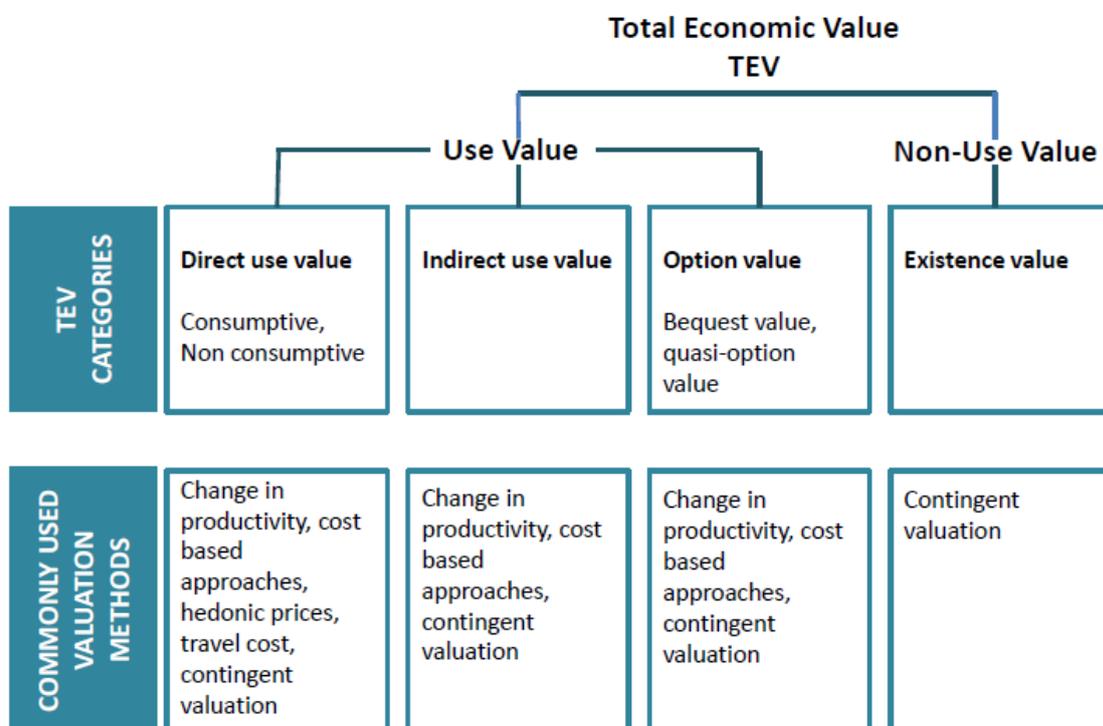


Figure 7: Overview of non-market values (Source: From MEA 2003 p. 132 Ecosystems and human wellbeing <http://www.unep.org/maweb/en/Framework.aspx>)

2.5 Coastal studies

Little is otherwise known about people's EA&U of MPAs across the globe. Maguire et al.'s (2011) interest in the coast as a destination found that the desired features and most significant positive factors are the natural features of: high water quality, no litter, sandy beaches, opportunities to view wildlife, and pristineness. Most studies focus on general beach use (e.g. Roca & Villares 2008); establishment and response to marine protected areas (Salmona & Veradi 2001; Sant 1996; Suman 1999); boaters (Dalton & Thompson 2013; Gray et al. 2010); and specific tourism activities (Barney et al. 2005; Lück 2003; Madin & Fenton 2004; Orams 1997; Sutton & Bushnell 2007).

3. Measuring enjoyment, appreciation and understanding outcomes for Victoria's MPAs

We are aware that Parks Victoria has adopted a management approach that focuses on outputs and outcomes (Figure 8) which reflects the worldwide adoption of Protected Area Management Evaluations (PAMEs). The starting point for any monitoring approach therefore is to have clear and explicit objectives, the achievement of which will become the object of the evaluation or monitoring program and so determine the measures and indicators selected. In this process it would also be useful to explore the assumptions that underpin the objectives (if they aren't clearly stated). So for example, it may be the objective to facilitate a 'high quality visitor experience' to MPAs. This construct is of course overly broad and vague. It is more useful to aim for an 'enjoyable' experience or a 'beneficial' experience. Unfortunately these constructs can be components of each other: the benefits of a social experience or a serene experience producing an enjoyable experience; or having an enjoyable experience being a benefit of the park visit. The review presented above has outlined that whilst the establishment purposes of the MPAs are to achieve visitor outcomes of EA&U the dominant approach to visitor monitoring elsewhere is measurement of the visitor outcomes of satisfaction, benefits and loyalty.

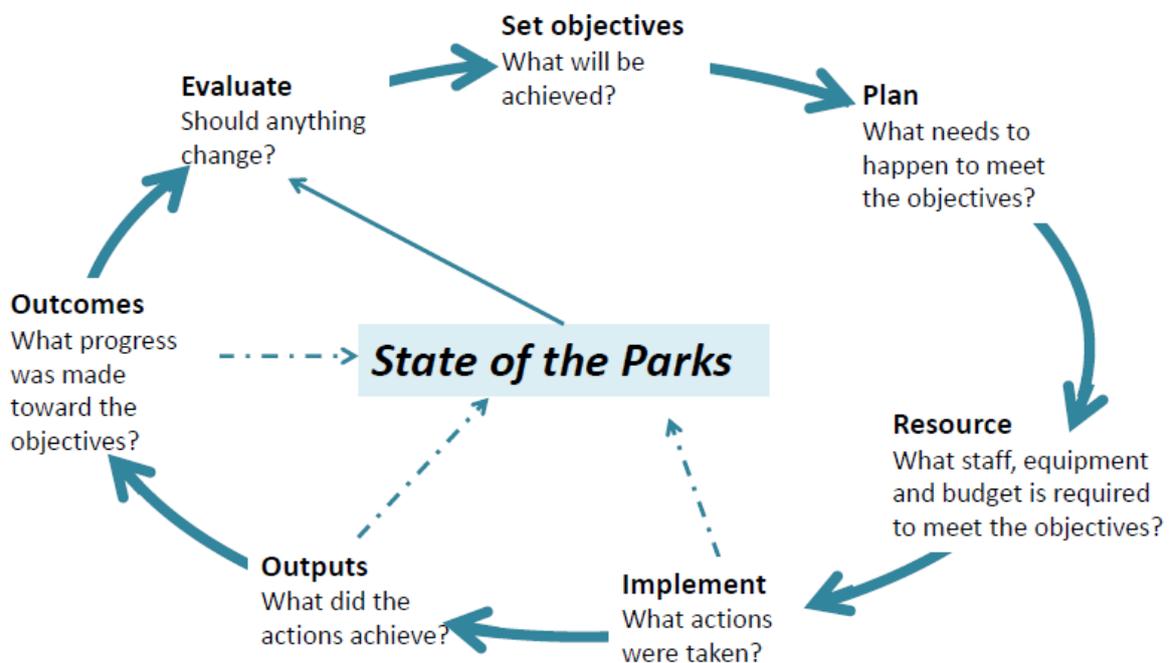


Figure 8: Parks Victoria's management framework, adapted from Hockings et al. 2000, Source Parks Victoria 2007b p. 16.

To assess the outcomes of EA&U for Victoria's MPAs a visitor monitoring framework should be devised that focuses specifically on those constructs and the dimensions of each concept (see above and below). Care should be taken to avoid poorly defined terms such as 'perceptions' which is more of an overarching topic that may represent values, beliefs and attitudes. As we have explained above, it is critical to distinguish between EA&U as the dependent variables, and the factors or independent variables that might influence outcomes for EA&U. Our view is that quantitative measures of EA&U can be developed and included as items in surveys administered face-to-face for on-site visitors and by telephone in the case of virtual and non-visitors. We acknowledge the appropriateness of interviews, focus groups and observations that can provide valuable insights into the nature of EA&U and the factors contributing to EA&U. Indeed, interviews and focus groups should be undertaken as part of the process of developing and pre-testing any survey items.

It is also important to emphasise the need to use multiple items rather than single items to measure each of the dimensions of EA&U. There needs to be a spread of items across the different MPAs experiences, motivations or benefits, attitudes or knowledge. Relying on one or two items is likely to provide unreliable information. For example, simply asking visitors to provide an overall rating of the positive affect of a family visit in an MPAs is likely to be less informative than a series of items that asked for a rating across a range of potential activities that could be part of a family outing (e.g. snorkelling, rock-pool rambles, beach walking).

To ascertain if management strategies have resulted in improvements in EA&U the evaluation will need to be repeated at regular intervals. We suggest that a three yearly interval (as per Legare et al. 2008) is sufficient time for changes to manifest in EA&U and the factors that influence EA&U. Those time intervals will also provide data points to establish trends and identify 'blips' that may have occurred as a result of episodic events that influence Victorian's broader appreciation of the natural environment (such as bushfires or pollution spills). Evaluation of EA&U outcomes should be undertaken across a selection of MPAs that represent the breadth of MPAs types. It may be possible to select MPAs that are typical of those types and these would then become the 'indicator parks' for the assessment of EA&U outcomes for Victoria's MPAs. As such the indicator parks need to include:

- parks from no-take MPAs and multiple use MPAs
- parks that include terrestrial and water only
- parks that are adjacent to urban areas and isolated from urban areas
- representation of the spectrum of major recreational opportunities
- parks that host commercial tourism operators and parks that don't

The collection of data will need to include the breadth of 'visitor' (recreation, aesthetic, volunteer, education, virtual, non-visitor). Data collection will also need to be across high and low visitor periods, such as school and, public holidays and non-holiday periods; and different seasons. These data should be collected from the same locations, on the same days of the week for each repeated evaluation. It would also be useful for the survey to make reference to particular virtual experiences that have been available to the general community such as the YouTube videos or 'under-the-lens' program.

An important distinction in Victoria's MPAs is between the 'multiple-use' MPAs and the 'no take' MPAs. The establishment purposes of EA&U are relevant to both categories of MPAs. We suggest

that the visitor monitoring approach should collect data from visitors to both types in order to provide a comparison of responses. The approach to non-visitors, which would assess appreciation and understanding, should make the distinction between no-take and multiple-use categories of MPAs.

Whilst most MPAs do not include land, visitors tend to associate the land they use when they access the marine national park as part of the park, or certainly part of the experience, hence the land-based activities such as walking and picnicking are included in the MPAs activities cited by visitors.

Engaged visitors, aesthetic visitors and volunteer visitors

Our view is that the best approach is to undertake systematic sampling (Long 2007) of on-site visitors is by intercepting them whilst they are at the MPAs in identifiable sites, such as in the carpark, lookout, or on the beach or a dock/boat ramp. Respondents for surveys/interviews can be selected in a random fashion (e.g. by choosing every 10th person) (similar to the approach used by existing visitor reports). The visitor may be interviewed or asked to complete the survey on the spot, or to complete the survey at home and return by post using an addressed, stamped envelope provided with the survey. Preference should be given to completion on site as Stewart & Hull (1992) found that satisfaction rated at the end of a visit and before the visitor leaves the site will be higher and significantly different to satisfaction rated 3 months later and 9 months later.

Virtual visitors and non-visitors

As with visitors, a random sample is preferred (results are more valid) but may be more difficult to achieve. Given the difficulties of accessing mailing lists our view is that telephone surveys will be more effective because large numbers of households can be contacted and potential respondents screened (selected) on the basis of their visits to MPAs, engagement in virtual activities related to MPAs and their awareness of MPAs (if none, then not interviewed). While we recommend the use of telephone surveys this approach also has its limitations and one of those is the extent that potential respondents are not contactable or choose not to respond and the likelihood that this can lead to bias. Our experience with telephone surveys is that it can take up to nine contacts to achieve one response. We strongly recommended that a reputable polling agency undertake this section of the evaluation. An alternative approach is to use an online survey company.

The virtual visitor is important to consider and plan for as the world shifts to greater provision of virtual engagement. For example, the US National Park Service provides Webrangers, virtual trails, (<http://www.nps.gov/webrangers/index.cfm>) and the Old Faithful Virtual Visitor Centre; and the Australian Queensland Energy Resources offers a Virtual Visitor Centre (<http://www.qer.com.au/discovering/virtual-visitor-centre>). Parks Victoria provides virtual links through YouTube, fishcam, exploreunderwatervictoria on their website. Virtual access offers an immediate but crude measure of visitor engagement through the automatic count mechanisms when someone accesses the site. However, a reliable and valid system of assessing use should be devised in consultation with Information Technology experts. It is possible through their on-line experience they are also offered a visitor monitoring survey to complete, but again there are potential issues of validity and reliability. Another mechanism to evaluate the virtual visitor

experience, as mentioned above, is through a random, community-wide survey which would include questions regarding a virtual interaction with Victorian MPAs.

Focus groups may be another way of gathering information from virtual and non-visitors. The challenge will be in identifying “typical” virtual and non-visitors. Focus groups are a cost-effective way of engaging specific stakeholders and/or cohorts in facilitated discussion to explore a key topic. The weakness is that poor facilitation can allow some individuals to dominate the discussion.

Content of measuring instruments

There may be some common items in the surveys for visitors, virtual visitors and non-visitors, but we expect there would be substantial differences in the survey topics and specific items for these visitor types. We also expect there will be differences in the items used for different MPAs on the basis that different activities may be more or less common (e.g. SCUBA diving on an isolated reef; wading in tidal rock pools close to a major urban centre).

Surveys should also collect background data from the visitor identifying the activities they undertake at the MPAs, frequency and duration of visits, whom they are with, and the time of year. To better understand ‘who’ is using MPAs, socio-economic data such as place of residence, age, education, income range, ethnicity, gender, marital status, work status, lifecycle stage and number of people in the household should be collected. These items can be used in analyses exploring the factors influencing EA&U outcomes and in identifying different visitor segments.

While there may be survey items exploring engagement across a number of activities or topics, our view is that the surveys for visitors should focus on a specific activity or experience and surveys of virtual-visitors should focus on a specific experience. Asking the respondent to focus on a specific activity will make it easier for them to respond and provide data that are accurate. The usual approach would be to ask the visitor to reflect on their current (if contacted on-site as proposed) or most recent visit to MPAs (if contacted off-site). For the evaluation of enjoyment, the approach could be to ask the visitor to reflect on the visit as a whole with respect to enjoyment, and then to reflect on a number (up to 3) of the main activities.

4. Ongoing threats and challenges to achieving enjoyment, appreciation and understanding

The following identified threats and challenges to achieving EA&U are based on our reading of the available literature associated with protected areas, and marine protected areas.

- Disenfranchised recreationists – those who had engaged in recreation activities prior to the MPAs establishment and can no longer undertake some/all of those activities (e.g. fishing or spear fishing). These people may feel that their opportunities for enjoyment have been reduced, and where they don't understand or support the decision making behind the creation of MPAs may be less likely to appreciate the MPAs (Sant 1996).
- User conflict is a perpetual problem for protected areas and open space management (Brown et al. 2006; Clark & Stankey 1979), no less so for MPAs. The more types of recreation activities allowed in MPAs the greater is the chance of user conflict. The issues typically involve one type of recreationist having their experience marred by the presence and activities of another (e.g. snorkellers and fishers (in multiple-use areas), motorised watercraft and swimmers).
- Crowding – one of the dominant motivations for visiting a protected area is to find 'peace and quiet' or a tranquil place. While there may be no actual conflict between recreationists' activities their experience can still be marred if there is a large number of people recreating in the same place at the same time.
- Inadequate physical access (road access, boat access, walking access, equipment) can be a barrier to enjoyment, appreciation and understanding. Additionally, the environment in Victoria's MPAs could itself be a barrier (e.g. areas with high wave energy, cold water, and requirement for specialised equipment).
- Social access (information, cost, skill, confidence, companionship). One of the most important reasons for people not participating in a particular activity is simply that they have not heard about it. For example, most people included in Maddern's research (2012) had heard of MPAs but only 57% of the non-visitors who had heard of MPAs could name one. So one of the significant barriers to people's recreation opportunities is not knowing about the MPAs, what they can do there and how to access it. Another social barrier is that even if people know an opportunity exists they are more likely to try it if they can do so with friends or family. Commercial operators (e.g. dolphin tours boats) provide ways to overcome a number of access barriers – they provide the physical means to access a site, the specialist equipment if needed, supportive companionship, instruction if needed, and knowledge of the area. Commercial operators have additional financial costs for the visitor thereby increasing the financial barriers (or challenges) to enjoyment in marine protected areas.
- There are a range of access issues for the virtual visitor: lack of access to a computer or other means of engaging with virtual media; difficulty accessing the off-site centres such as aquaria and presentations may include financial, social or physical reasons (ref),
- Safety – an ongoing challenge to enjoyment is visitor safety. Victoria's MPAs present the following hazards: harsh climate with strong cold winds, cold water, strong currents, large swells, some poisonous fauna, and often isolated from usual communication options. Perceived safety is an issue as where visitors think they will be unsafe they may decide against the visit. There is also the potential that a visitor's enjoyment will be marred by an accident or

misadventure and the potential that this event leads to 'bad publicity' for Parks Victoria or the site.

- Parks Victoria describes the recreation and education objectives for each MPA in slightly different ways, variously linking recreation with education, and associating recreation with visitor satisfaction. This therefore makes the task of clear and purposeful visitor monitoring for Victoria's MPAs potentially confusing.

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Appendices

Appendix 1 – Park Victoria marine related YouTube posts

Appendix 2 – Examples of education activities associated with Victorian MPA

Appendix 3 – Examples of volunteer activities associated with Victorian MPAs

Appendix 4 – Examples of the range of recreation and education activities associated with Victorian MPAs

Appendix1 – Park Victoria marine related YouTube posts

<http://parkweb.vic.gov.au/connect-with-us/social-media-hub>

Marine pest survey, Popes Eye, Port Phillip Heads Marine National Park

3 months ago from Parks Victoria

120 views, accessed 20/6/13

Diving the Historic Shipwreck Hurricane – Port Phillip Bay

4 months ago

133 views, accessed 20/6/13

Marine life at Beware Reef Marine Sanctuary

Posted 4 months ago

68 views, accessed 20/6/13

Underwater garden at Beware Reef Marine Sanctuary

Posted 4 months ago

138 views, accessed 20/6/13

Appendix 2 – Examples of education activities associated with Victorian MPAs

From *Marine Investigation Discussion Paper* (VEAC 2012)

Primary and secondary schools
Universities and TAFEs

Dolphin Research Institute and its 'I sea, I care' - ambassador program
Marine discovery centre (Queenscliff)

Birding groups e.g. Birdlife Victoria and the Victorian Wader Study Group

Fossil digs

Advice from VEAC staff

- Education; e.g.
 - o On-site visits
 - o In-school or otherwise off-site education
- Awareness raising programs; e.g.
 - o Summer by the Sea (CoastCare Victoria's annual festival includes activities in

MPAs

MPAs e.g. rockpool rambles, snorkel safaris)

Appendix 3 – Examples of volunteer activities associated with Victorian MPAs

From *Marine Investigation Discussion Paper* (VEAC 2012)

Citizen science and community based monitoring (e.g. Sea Search, habitat mapping, species lists)

Coastcare / Landcare / FishCare Victoria

I sea I care - ambassador program

Friends of ... / Marine Care groups

Local environment groups e.g. SANE - Surfers appreciating the natural environment and Swan Bay Environment Association

Estuary Watch

Primary and high Schools

Reef Watch Victoria (e.g. Great Victorian Fish Count)

Bird clubs e.g. Birdlife Australia and Victorian Wader Study Group

Dolphin Research Institute

Appendix 4 – Examples of the range of recreation activities associated with Victorian MPAs

- Types of recreation activities in Victoria's MPAs may include (but is not limited to) (from advice provided by VEAC staff) Tourism; e.g.
 - o Dolphin swims
 - o Bird watching
 - o Scuba tours
 - o Whale / dolphin / seal watching
 - o Surfing classes
- Recreation
 - o Snorkelling
 - o Scuba diving (wrecks and ecological focus)
 - o Rockpool walks/exploration
 - o Beach recreation (e.g. swimming, walking, sunbathing etc.)
 - o Surfing (including Bells Beach, which is in Point Addis Marine National Park)
 - o Boating (motor, personal craft e.g. kayaks, sail boarding and yachting)
 - o Bird-watching
 - o Filming and photography
 - o Viewing from adjacent land areas, scenic flights (e.g. twelve apostles)
 - o Also – in multiple-use areas only – fishing
- Virtual (or off-site) recreation
 - o Viewing the marine park through television documentaries
 - o Accessing Parks Victoria or YouTube and other virtual images and information
 - o Visiting marine aquaria
 - o Attending presentations about the marine parks



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