The Role of Social Marketing and Sustainable Tourism in Reducing Plastic Pollution

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Abstract
Social marketing is increasingly used to address some environmental management issues but there is little evidence of its specific application to reducing environmental pollution such as from waste plastic products. Activity relating to plastic rubbish reduction has been restricted to information-based programmes, with no evidence of resultant behavioural impacts. We review the magnitude of the problems caused by plastic pollution for the environment, particularly for wildlife. We then review the behaviour change strategy options available including demarketing and ways in which social marketing techniques could be used to influence both plastic purchase and disposal. We highlight the potential contribution sustainable tourism could make as a conduit to move people from awareness to sustained behaviour change

Keywords: environmental protection, environmental pollution, sustainable tourism, social marketing, behaviour change.

***Track**: 04 Marketing and Society*

Introduction

The widespread use of plastic products and their disposal represents a major challenge to environmental protection. Plastic is problematic for two reasons. Firstly, plastics are made from petroleum products and therefore their production has implications for fossil fuel use and the associated link with production of greenhouse gases and the impact of the latter on climate change (Clapp & Swanston, 2009), particularly as 4 – 5 trillion plastic bags alone are produced globally each year (Sharp et al., 2010). Secondly, plastic persists in the environment (Müller et al., 2012). We discuss the problem in the Australian context as, unlike many other countries, there is no consistent legislative ban on bag use or 'sin tax' on disposable bags, nor is there uniform container deposit / recycling incentives for bottles and cans across the states. Industry opposes such schemes and in early 2013, successfully challenged the Northern Territory government's container deposit scheme (Clean Up Australia, 2013) in spite of its demonstrable success in South Australia (EPA, 2013). Voluntary reduction of single use bags is encouraged by several organisations (see, for example: EPHC, 2013). South Australia has had a ban on the use of single use plastic bags since 2009, a move that has high ongoing support within the community (Lewis et al., 2010). Other states, such as the ACT and Northern Territory are reportedly considering bans, and some proactive towns and cities, such as Freemantle, have moved to ban bags without waiting for wider state initiatives (Zaw, 2013) but there is no coherent national policy.

Problem Magnitude

In Australia alone, with a population of 23 million, 6.9 billion new bags are used annually, half in the form of single use bags distributed via supermarkets and, while they make up less than 1% of litter and waste at landfill sites, their potential impact on population health and on the environment is substantial (Ayalon et al., 2009). As well as the visual impact of litter, plastic bags can impact on population health through the provision of breeding grounds for disease-carrying mosquitos. They also can provide a means for invasive species to enter new habitats, endangering native species (Gregory, 2009). Plastic bags also have the potential to block drains during heavy rain such as occurred in Bangladesh in both 1988 and 1998, leading to a total ban on their distribution in that country from 2002 (Ellis et al., 2005). Rubbish in marine environments represents a major hazard for marine wildlife, both through ingestion and entanglement (Hardesty & Wilcox, 2011). Over 6 million tonnes of rubbish dumped into the ocean annually; up to 80% of waste on land, shorelines and seabeds is plastic, of which 10% is whole or fragmented plastic bags (Wabnitz & Nichols, 2010). While a wide range of plastics, including polystyrene, plastic bottles and containers have been found in marine environments, plastic bags and small fragments of soft and hard plastics present a specific hazard, for marine turtles who may mistake the bags or soft plastic fragments for cnidarians (jellyfish etc.); and the smaller hard fragments as small invertebrates. Ingesting even small quantities of plastic can kill (Sutton & Turner, 2012).

Plastic is responsible for killing 1 million seabirds and over 100,000 sea mammals each year (Leahy, 2004). Some 267 species, including 86% of all sea turtles, up to 36% of seabirds, and up to 28% of all marine mammals .have been found with ingested plastic (Müller, et al., 2012). Aside from direct mortality, many animals have been found to consume plastics at non-lethal levels, resulting in dietary dilution and thus potential malnutrition (Schuyler et al., 2012). In non-lethal cases it is possible that there are uptake of plastic toxins which could lead to physiological change or tropic, or food chain, level change (Hirai et al., 2011). Untreated leachates of these toxic substances from landfills also presents an additional threat

(Teuten et al., 2009). Plastic plastics do not biodegrade, but rather the items breakdown into smaller pieces which are consumable by organisms. Once consumed animals can be exposed to toxins and these could be passed through food chains (Kataoka, et al., 2012). Plastic bags are also claimed to be serial killers: a bag may be eaten, the animal may then die from such problems as obstruction of oesophagus, but when the animal decomposes, the bag can then be released back into the environment to kill again (Clean Up Australia, 2009). The longevity of the risk to marine life is illustrated by the finding that plastic swallowed by an albatross originated from a plane shot down 60 years earlier and 9,600 km away (Wabnitz & Nichols, 2010).

All species of marine turtle are listed by Australia as matters of national environmental significance and by IUCN as species of conservation concern (Table 1). The ingestion of plastic pollution has recently emerged as a key threatening process for which data are increasing (Schuyler, et al., 2012). Thus actions that can reduce the risks turtles face in the marine environment will help maintain or boost their resilience to other threats and help these species thrive. Previous interventions have been information-based, as the examples in Figures 1 and 2 illustrate. The use of information-based activity is common as a lack of knowledge is seen as a barrier to meaningful behavioural change (Costello et al., 2009). However, while information provision is necessary, it is rarely of itself sufficient to change behaviours (Miller et al., 2010); persuasion and behaviour change motivation interventions are also necessary (Bates, 2010). While knowledge is linked to attitudes, a gap between reported attitudes towards environmental issues and actual behaviours is well documented in the literature (Carrigan et al., 2011). Attitude change towards performing specific behaviours is complex as attitudes are multi-factored and interact with a number of other key factors in influencing behaviour, especially norms (Fishbein & Cappella, 2006) and self-efficacy (Fishbein, 2008). Social norms may override knowledge and even individual desire to change behaviour (Barr et al., 2011), particularly if this would be at odds with observed peer behaviour (Minato et al., 2012). Norms may be injunctive or descriptive; the former focuses on perceptions of what behaviours would typically be approved or disapproved; the latter on perceptions of what behaviours are typically performed (Nolan et al., 2011). Decisions regarding which type of norms to stress can have unintended consequences for message effectiveness. For example, interventions that have attempted to use injunctive norms may have inadvertently have reinforced descriptive norms and the belief that individual actions will not have any impact on the problem (Cialdini, 2007). A further barrier to change may also be a perception that changing one's own behaviour will not make any difference in the face of widespread problems (Semenza et al., 2008).

Table 1: Threatened species status of marine turtle species found in Australian waters

Common name	**IUCN Red List of Threatened Animals).** (International Union for Conservation of Nature, 2008)	**Environment Protection and Biodiversity Conservation Act *(Australian Government, 1999)***	**Queensland Nature Conservation (Wildlife) Regulation (State of Queensland, 1994)**
Loggerhead	Endangered	Endangered	Endangered
Green	Endangered	Vulnerable	Vulnerable
Hawksbill	Critically endangered	Vulnerable	Vulnerable
Flatback	Data deficient	Vulnerable	Vulnerable
Olive ridley	Vulnerable	Endangered	Endangered
Leatherback	Critically endangered	Endangered	Endangered

Figure 1: Two examples of information-based awareness programmes.

http://theyellowbrickroadfreeblog.wordpress.com/2012/10/10/vortex-photogenic-plastic/
plastic-kills-marine-life.jpg http://oceangirlproject.com

Figure 2: Examples of World Turtle Day promotional material

https://www.google.com.au/search?q=world+turtle+day&tbm=isch&tbo=u&source=univ&sa=X&ei=QeTIUauEA-bNiAe4hoDADA&sqi=2&ved=0CFEQsAQ&biw=1920&bih=908

Behaviour Change Strategy Options

Successful solutions to the problem of marine pollution require a multi-faceted intervention. Awareness and educational-based interventions have a role to play in ensuring an understanding of the impact of plastic disposal on marine life and thus encouraging environmentally appropriate choices when it comes to use of plastics such as plastic bags and also in disposing of all plastic waste items (Sheavly & Register, 2007). However, these should be part of a wider programme incorporating demarketing and social marketing approaches in conjunction with wildlife tourism. Demarketing involves using traditional marketing tools in reverse to lower demand for a product or service or to reduce habitual behaviours that have negative personal, societal or environmental impacts (Shiu et al., 2009). It is closely linked to the principles of 'negabehaviours' which involve not taking a specific, non-desirable, action, but replacing the action with a more positive one (Ross & Tomlinson, 2011). The principles of both demarketing and negabehaviours are applicable here. While bonuses for using recyclable bags have been proposed, evidence of their impact on behaviours is lacking (Homonoff, 2012). Strategies such as charging 'sin taxes' or implementing outright bans, as discussed earlier, have obvious appeal and are widely supported (Clapp & Swanston, 2009) and there is evidence of success in several countries, including Macedonia, China, India, Bangladesh, Bhutan, South Australia, American Samoa, and some African countries (Hermann et al., 2011). Their success is, however not guaranteed. The 15 Euro cent tax introduced in Ireland in 2002 has been hailed as extremely successful, being credited with reducing single-use plastic bag volume by 90% (Convery et al., 2007). However, in South Africa, a 46 Rand cent (approximately 5 Australian cents) levy from 2003 resulted in a 90% initial reduction in single-use plastic bag volume, but over time the effectiveness of the levy declined (Dikgang et al., 2012).

Returning to the example of risks to turtles, half of the US population and 36% of Australians visit zoos and aquariums each year (Ballantyne & Packer, 2011). Visits to aquariums, turtle viewing tours and other similar operations would therefore appear to offer potential for behaviour change programs, something that is not currently a part of most viewing experiences. While close interactions with wildlife are frequently sought by tourists (Ballantyne et al., 2009), experiences are aimed at increasing knowledge and understanding-

there is little evidence of deliberate attempts to influence actual behaviours that have environmental impacts (Powell & Ham, 2008). Many tourists are ignorant of the environmental impact of their behaviours while travelling as tourists, let alone the impact of their everyday behaviours on the environment (Miller, et al., 2010). Thus, while wildlife tourism is claimed to have the potential for positive long-term impacts on environmental learning (Ballantyne et al., 2011) and there is evidence of heightened awareness of environmental issues in the short term, enthusiasm declines over time (Hughes et al., 2011); the impact on long-term behaviour appears small if it occurs at all (Lee & Moscardo, 2005). Studies that have predicted positive behaviour change have focused on self-reported intentions, but these are not good indicators of actual behaviours (Hughes, 2013).

There is a growing acknowledgment that communication-based strategies are seldom effective and an acceptance that adopting the principles underpinning social marketing, particularly when underpinned by theory-driven approaches, have been found to lead to more persuasive messages across the range of socio-economic groups (Schneider, 2006). Social marketing utilizes concepts of market segmentation, consumer research, product concept development and testing, directed communication, facilitation, incentives and exchange theory to maximise the target adopter's response" (Andreasen, 2002: 7). As such, social marketing is a framework for designing behaviour change programmes that is flexible enough to be applied to a range of behavioural change issues (Corner & Randall, 2011). Thus, social marketing approaches in the tourism sector would involve segmentation strategies to determine what interventions were most likely to be successful in encouraging adoption of specific sustainable behaviours, such as reducing plastic bag use (Dinan & Sargeant, 2000). Post-visit resources have been found in a single site study to be effective in encouraging people to reflect on their intentions (Hughes, 2011), although further research is needed to determine how far these findings can be generalised.

The identification of relevant theories to guide the development of interventions is important. For example, the somewhat complex Integrative Model of Behaviour Prediction and Change (IM) builds on the widely used (particularly in the health context) Theory of Planned Behaviour but has never been applied in the wildlife tourism context. This Model shares many attributes of its predecessor in explaining behaviour change as the outcome of behavioural intention, and behavioural intention as the outcome of social norms and an individual's attitude to the behaviour in question. The element of perceived behavioural control (PBC) accounts for variance in behaviours with incomplete volitional control i.e. where individual's lack complete control of the behaviour and are therefore unable to change behaviours. The Integrative Model places more stress on the influence of background factors, including, importantly, the role of intervention activity and media exposure (Fishbein, 2008). A key contribution of research underpinning the effective use of this theory is that different population segments may be driven more strongly by attitudinal factors, normative influences or perceived self-efficacy, i.e. ability to change behaviour and sustain the change, indicating that very different intervention strategies may be needed for different population segments (Fishbein & Yzer, 2003). Further considerations illustrated by this model are the relative importance of attitude, perceived norms and self-efficacy.

Directions for Future Research

The linkage of wildlife tourism and social marketing to achieve sustained behaviour change is under-researched (Dinan & Sargeant, 2000) but appears to offer considerable potential. A coordinated trans-disciplinary research agenda is needed to explore the potential of this combination, including the usefulness of theoretical models as noted above. It will be

possible to build on the programs currently offered by wildlife tourism operators, but there is a clear need to identify the specific behaviours that should be targeted for change, together with identification of the barriers to, and potential enablers of, that change. This should be coupled with an understanding of the type of resources different visitor segments would prefer to receive and what forms of assistance in developing and maintaining pro-environmental behaviours would be appreciated. It is likely that a range of materials may be needed in order to determine "*What works, for whom, in what circumstances, and for how long*" (Marteau et al., 2011: 264). Longitudinal studies will be needed to identify across segments what behaviours were or were not successfully adopted and, for the latter, what would enable successful adoption. Further, studies should determine how well behaviour has been maintained and, where it has been discontinued, what factors lead to this.

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