

# Marketing Insects: Can Exploiting a Commercial Framework Help Promote Undervalued Insect Species?

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## Abstract

*The potential decline of insects and their contribution to ecosystem services is a matter of immense concern. Reversing the current degradation of the natural world will require substantial attitudinal and behavioural shifts, but for this to occur people will need to buy-in to decisions and choices that may be less desirable than those they currently make. People will also need to appreciate the importance of ecosystems, habitats and species that are currently regarded as uncharismatic, including of course a great many insects and other invertebrates. To do this requires a radical shift in our approach to marketing the natural world in general and insects in particular. We propose adopting the approach used so successfully in commercial marketing; the 4Ps framework (product, price, place and promotion). We outline examples of how this would result in more informed and effective ways to market biodiversity, expanding focus away from species traditionally considered charismatic. The public perception of insects, a group that includes some of the most loved and many of the most disliked taxa on the planet, could potentially be substantially improved by the use of this approach. If such a marketing strategy can raise their perceived value, it follows that the public may care more about insects and empower conservation action.*

The natural world is being impacted by human activity at an unprecedented rate. Ecosystems are being degraded by anthropogenic activities and one million animal and plant species are now threatened with extinction worldwide. The accelerated rate of species extinctions has been described as “ominous”, resulting in the erosion of “the very foundations of our economies, livelihoods, food security, health and quality of life worldwide” (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Chair (IPBES, 2019)). We are aware of the damage we have caused and the dismal projections for the future; we even have solutions to reverse (or at least slow down) these negative environmental trends. Our problem is one of inaction. To avoid eroding the natural resources on which we depend, pro-environmental attitudes and behaviours require active engagement at all levels, from individuals to governments. For this to occur, people need to “buy in” to decisions and choices that may be less desirable than the choices they make currently. This presents a difficult problem: how to persuade people to make changes for a greater good that may run contrary to their individual desires.

One approach used to persuade policy makers and the public to “buy in” to pro-environmental attitudes and behaviours involves giving nature a value or price. Some conservationists and scientists have embraced this idea by attempting to quantify the economic value of specific facets of nature through frameworks like ecosystem services. However, valuing nature usually requires the

reduction of natural complexity to a single, simple economic value, and often only targets a small sector of the natural world (such as crop pollinators). New approaches are urgently needed to motivate more pro-environmental attitudes among individuals, organisations, businesses and governments. Here we suggest that a commercial marketing approach could be effective in changing the way people view the unloved, unappreciated or unnoticed parts of nature, words that sum up most people's view of insects. Informed marketing of nature could promote pro-environmental attitudes and behaviour in diverse groups of people, across the spectrum of the natural world. Just as a commercial product needs a tailored form of marketing for a specific consumer audience, we propose that tailored promotion of the different facets of the natural world to its 'consumers' may be effective in achieving the large-scale shifts in pro-environmental attitudes and behaviour required for our successful stewardship of the natural world. Although we focus on the power of marketing to change attitudes to biodiversity, the same framework could have impact on other important environmental issues, like attitudes to plastics, transport and diet choices.

### **The Problems of Promoting Nature and Pro-environmental Behaviour**

The approach of putting an economic value on nature in order to promote pro-environmental attitudes is inspired by economics (e.g. Daily et al., 2000). This idea is straightforward enough: if humans see utility in a commodity (in this case nature) then they are more likely to perceive it as important and act in ways that will preserve or enhance its value. Despite being intuitively seductive, putting an economic value on nature is controversial (e.g. Bolderdijk et al. 2013; Evans et al., 2013; Byerly et al., 2018). Nonetheless it has been adopted to a greater-or-lesser extent by both the public and scientific communities through discussions on the natural capital of a species or habitat, or the ecosystem services they offer (defined as how a species/habitat contributes to the quality of human life and wellbeing) (Costanza et al. 1997; Egoh et al., 2007). However, non-economic values may promote more pro-environmental behaviour than putative price tags (Bolderdijk et al., 2013; Crompton et al., 2014). One negative consequence of this "nature valued" approach is that pro-environmental discourse tends to become focussed on components of the natural world that have obvious monetary values which are relatively straightforward to calculate (e.g. forests for logging; honeybees for pollination), and on those species and ecosystems that are "charismatic" and appealing to the public (Redford et al., 2009). Species that are perceived as uncharismatic, as pests, as ugly, or as potentially or actually dangerous (e.g. flies and wasps), or ecosystem components that are complex and "boring" (e.g. soil) struggle to gain traction in what is a crowded marketplace (Sumner et al., 2018). It is hard for example to convince people that wasps are important when the media is overloaded with imagery of whales and tigers.

The power of commercial marketing in influencing what we choose to consume, and in changing our behaviour, is remarkable and the world's largest companies know its value all too well (Blythe and Martin, 2019). To sell any commercial product, be it a soft drink or a mobile phone, requires that potential buyers know about the product and care about it enough to part with their money. The massive global success of companies such as Apple™ and Coca-Cola™ is a testament to the power of modern marketing techniques. It is also a clear indication of the ability of companies to generate brand awareness and loyalty and to convert these into sales.

To some extent the natural world has been “marketed” but the range of species benefiting from this approach has so far been severely limited: felids, wolves, primates, elephants, pandas and giraffes, for example, dominate the top 10 species deemed to be charismatic by public survey and analysis of imagery used by zoos and by film media (Albert et al., 2018). Perhaps though positive feedback (whereby appeal leads to exposure, which leads to further appeal), the large, exotic, terrestrial mammals (the so-called “charismatic megafauna”) have become flagship species, inexorably linked with conservation actions throughout the world (Skibbins et al., 2013). In contrast, most invertebrate taxa (what might be termed the “uncharismatic microfauna”) suffer from a negative public perception despite their ecological significance. Few invertebrates have much of a public profile at all and those that do so are often held in some degree of contempt: wasps sting, mosquitos spread disease, spiders bite and so on (Lockwood, 2013; Leather, 2015). An exception to this perception is the bees, especially honeybees and bumblebees, which do enjoy considerable public support largely perhaps because of an increasing awareness of their role as pollinators (Sumner et al., 2018). Aside from bees, however, there are no invertebrate species that approach the charismatic megafauna in terms of having marketing power for conservation actions. Invertebrates are just one of many facets of the natural world which lack a positive public profile; the same scenario applies to microbes (Hunter, 2016), soil (Monbiot, 2015) and plants (Balding and Williams, 2016). A cherry-picked-promotion of the natural world will not achieve the large-scale attitudinal and behavioural shifts that we require to maintain the structure, function and utility of our planet.

The principles of commercial marketing provide a powerful framework to engage the public, policy-makers and science funding bodies with a wider spectrum of the natural world, especially for the relatively uncharismatic species and systems. These principles already underpin “social marketing”, where marketing techniques are used to influence people and change behaviour in a variety of contexts including health and the environment (e.g. Mckenzie-Mohr, 2000; Byerly et al., 2018). An explicit framework based on the fundamentals of commercial marketing could provide a tailored approach for marketing *specific* species, habitats and ecosystems. We propose that carefully tailored

marketing strategies built on the successful principles of commercial marketing that are specific to individual insect species or taxa have the potential to change our perception, attitude and ultimately our behaviour towards more overlooked components of the natural world.

### ***The Marketing Framework – the four Ps.***

The prevailing and most enduring marketing model is known as the “marketing mix”, or the 4 Ps, and it has long provided a framework for decision-making in the commercial marketing process (Borden, 1964). The 4 Ps are Product, Price, Place and Promotion. Each category is a clear and separate process underpinned by knowledge of the product and the market. Although the marketing mix has been criticised (e.g. by Constanides, 2006), and calls have been made to reinterpret the 4Ps in the modern business world (Ettenson et al. 2013), it is still widely used. When Brown et al. (2018) asked “Are the 4Ps finished?” their answer was clear: “If you mean finished, as in over and done with, the answer is assuredly no!”. Although there are other marketing models that suit modern economies (e.g. SAVE - solutions, access, value and education (proposed by Ettenson et al., 2013)) we suggest that the 4Ps approach provides a simple, intuitive, and useable framework for all those with a stake in the natural world.

*Product* is perhaps most fundamental of the 4Ps; it is defined as how an item satisfies the customer’s wants or needs (Borden, 1964). We *need* toilet cleaner to keep our bathrooms hygienic; we *want* the latest smart phone because it has more functions. When marketing insects, it is the organisms that are the ‘product’ but the scope of wants and needs for these ‘products’ tends to be limited. Honeybees (*Apis mellifera*) provide a good example: the media has done a great job in helping people realise they *need* (and even *want*) ‘bees’, but this attention is mostly focussed on a single species and ignores the other 20,000+ bee species, most of which are also vital pollinators but have very different needs from honeybees (Rader et al., 2016). People also know that they *need* trees to absorb carbon dioxide and counteract climate change but they also *want* trees and greenery because they enhance our well-being (Nilsson et al., 2011). But to what extent do people *want* wasps or know how much we *need* parasitoids in the wider ecosystem? If people do not *want* spiders, flies or wasps is this largely because they don’t appreciate how much they *need* the services provided by these organisms? There is also the problem of a lack of general understanding of the sheer diversity of most insect groups, and the use of broad names like fly or wasp to describe entire groups. This diversity of course is also reflected in their different ecology and their potential role as a product.

The biases and gaps in our understanding of how consumers value insects as a product limits our ability to market many of them; or in other words, a lack of knowledge of public understanding and

appreciation of aspects of the insect world severely hampers our ability to engage people with those aspects. In commercial terms we lack the knowledge base for an effective marketing strategy: we need to know more about *why* our potential customers might want a specific insect. It would, after all, be commercial suicide to bring a product to market without this most fundamental of knowledge. An important first step in developing this knowledge is likely to be defining the range of values insects have, from measurable goods and services to less tangible concepts like beauty or the positive impact nature in general has on our mental health and well-being (Bae et al., 2015; Capaldi et al., 2015). The hardest cases are how to market those insects that are perceived by most people as having zero, or negative value by any measure. In these cases effective *promotion* (see below) of the product's benefits is required, to counteract the negative perceptions. Only with the quantification of the "needs and wants" of the public though can we hope to develop this first facet for a robust marketing framework.

*Price:* Effective marketing requires the right price tag to be attached to a product. A price too low, and the consumer considers it disposable or poor quality; a price too high and the consumer dismisses it as unobtainable. But can we really put a meaningful price on insects? This question continues to evoke strong discourse among scientists and the public but we suggest that a price can be put nature if the consumer '*needs and wants*' that specific product, and if we understand the nature of the values that underpin these needs and wants. Ways to evaluate price include sizes of donations to conservation appeals, crowdsourcing and citizen science success and memberships of conservation and wildlife societies/charities (MacDonald et al., 2015). This "willingness to pay" framework has been explored in vertebrate conservation (e.g. Subroy et al., 2019) and applied to invertebrates (e.g. solitary bee conservation in the US (Penn et al., 2019)) but further studies are needed if we are to assess price in this way. A less tangible demonstration of price is the time and effort that consumers are willing to invest in a particular product. For example, making gardens insect-friendly requires time, effort and money and in a very real sense provides a measure of the price people are willing to pay. Engagement in insect-related citizen science projects and other activities relating to specific organisms might also provide some quantifiable measures of price in this context. Likewise, we can measure how people change their behaviour, for example managing their gardens for insects rather for neatness. Studies that examine such behaviours and their overall price would start to provide an understanding of public behaviour, perception and motivation to inform marketing strategies for different insects.

*Place* in marketing relates to how and where products are sold and to factors like market coverage. A product presented to a prospective consumer in the wrong place (or time) could have negative impact on the future marketability of that product as potential consumers make unconscious

assessments of a product's worth. Context can have a profound impact on the effectiveness of the same marketing approach and whether a specific context has a positive or negative impact on the effectiveness of the marketing can be 'product' specific. For example, marketing the importance of insects to people at a children's play park (where parents may be concerned about their child being stung) is less likely to be as effective as the same approach at a woodland activity centre (where parents are actively encouraging their kids to interact with nature). Timeliness is also important: current affairs and events can influence people's perception of nature's value at that particular point in time (Carvell et al., 1998). Many efforts to market nature to the public take place in contexts where the audience is already largely pro-environmental in their behaviour (e.g. at wildlife sanctuaries or through nature organisations) and by restricting reach to the already "buying market" such approaches can have only limited impact. Of course, place in the modern world means more than physical location: online spaces, including social media, and shared activities such as citizen science also count here and provide valuable opportunities to engage and inform (Bonney et al., 2016).

Determining the most appropriate place to market a particular facet of nature is a challenge. This is especially so for the less-known or less-loved six-legged products of nature. Currently we have no firm knowledge of the sources people use to get information (actively or passively) on most of nature's products, and how those channels shape public perception of that product's value (economically and otherwise) and worth. Understanding how cultural perceptions, unconscious associations and previous experience influence human receptiveness to products is central to effective marketing (e.g. a product's country of origin influences perception of that product (Knight and Calantone, 2000)). Applying these same criteria to insects, in a product-, culture- and context-specific manner is a critical component in the toolkit for successful marketing of the natural world and promoting pro-environmental behaviour across the globe.

*Promotion:* How is the product advertised to consumers? What strategy for public relations is most appropriate? These questions are central to many modern businesses. Successful promotion relies on knowing the needs of the target market and tailoring messages to them that are delivered through channels appropriate for that audience. To a large extent Promotion therefore makes use of knowledge crucial to the other "Ps" as well as developing more message-specific knowledge. It is here that we perhaps entomologists have most to learn from the world of marketing. We currently lack knowledge of Product, Price and Place for most insects and so we also lack the insights required to for successful promotion, specifically, what types of messages will prove the most effective marketing slogan for a particular species, audience and context? Under what circumstances would emphasising ecological value work better than the nudging of pure curiosity, or stressing human-

value resonate better than a ‘wow-factor’ approach? The marketing toolkit clearly shows that different audiences have different perspectives on subtly different products. To market insects in a way that changes behaviour, we need to understand how to tailor the right message to the right audience (Figure 1).

### **Implementing a 4Ps Framework for Marketing Nature**

Using the skills and tools of biodiversity science, economics, social science and psychology, interdisciplinary teams have the means to gather the data required for the first three components of the marketing framework. Big-data generation, meta-analyses, critical thinking, experimentation and modelling are all essential methods to gather information on the product and price of different facets of nature. Social scientists have the skills to understand ‘*place*’. *Promotion* is arguably the most challenging part of marketing insects, especially for species and habitats perceived as uncharismatic, and is an area where entomologists would benefit from explicit and focussed collaborations with marketing and advertising experts.

The arena of science communication is perhaps one of the more immediate conduits for scientists to implement the 4Ps approach for marketing insects. Entomologists are readily encouraged to pitch their work to a diverse lay audience, by their employers, charities and funders. Inadvertently, many ento-communicators already borrow from the marketing toolkit in outreach activities. For example, wasps are a *product* that people need (and should want), because they provide sustainable pest-control; the *price* of losing species comes into sharp focus when explained in terms of effects on crops (*‘price’*); fascinating facts help *promote* the charm of an obscure insect; and usually the ‘*place*’ is already appropriate for selling the pitch, being a science festival or museum event perhaps with an already-engaged audience. Teaming entomologists who are committed to outreach with marketers would be a first step forward in implementing a marketing framework for insects that reaches a wider audience and has greater impact.

### **Conclusions**

It is now clear that we need to see rapid and large-scale shifts toward more pro-environmental behaviour if we are to have a successful future relationship with the natural world (IPCC, 2019). We suggest that making use of the well-established marketing frameworks, like the 4Ps, could make us more effective in how we design and deliver messages on the value and importance of biodiversity, with a particular focus on insects, a group that includes some of the most loved *and* also most disliked taxa on the planet. Effective marketing of insects to “key consumers” has the potential to change people’s behaviour and to promote more pro-environmental attitudes and actions. Adopting



an explicit marketing approach is a low risk-high reward solution to the problems of selling insects to an often-reluctant public.

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Figure 1: The four Ps of the Marketing Framework as applied to social wasps. Understanding wasps as a product and the public's relationship with wasps (*product* and *price*) leads to insights valuable in developing effective *promotion*, in suitable *places*, leading to changes in attitude and behaviour. Image free from <https://pixabay.com/photos/wasp-german-wasp-vespula-germanica-538470/>