

## Effective engagement of conservation scientists with decision-makers

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This chapter offers advice on how the conservation science community can effectively engage with decision-makers. The rationales for why we, as scientists, need to do this have been widely discussed in the literature. Often, the reasons offered are normative, pragmatic, or instrumental (de Vente, 2016); in other words, there is a belief that engaging with decision-makers leads to better informed, more acceptable decisions. Indeed, better engagement may lead to the greater uptake of evidence for conservation decisions, something which some scholars argue is a priority for effective management (e.g. Gardner *et al.*, 2018; Sutherland and Wordley, 2017).

Engagement with decision-makers of all types is needed because scientific evidence rarely influences policy and practice in a straightforward way; rather it is consulted in a ‘messy’ decision-making progress alongside other forms of knowledge, interests, beliefs, pragmatics, and other factors (Adams and Sandbrook, 2013; Evans *et al.*, 2017; Lawton, 2007; Rose, 2014a). This is particularly true in the case of complex problems such as biodiversity conservation, where the science is often uncertain, solutions are not readily apparent, and the implementation of conservation interventions affects a range of stakeholders with different values and interests (Alford and Head., 2017; Jarvis *et al.*, 2015a; Maron *et al.* 2016; Rose, 2018). Appreciating and understanding this complexity is a necessary step for scientists who

wish to learn how they can most effectively engage with and influence conservation decision-making (Evans *et al.* 2017; Toomey *et al.* 2016).

Effective engagement with decision-makers can facilitate the use of scientific evidence in decision-making, while building support for interventions that are to be implemented on the ground (Bodin, 2017; de Vente, 2016; Roux *et al.*, 2017). Indeed, there has recently been renewed calls for a ‘new kind of science’ (Keeler *et al.*, 2017) which is more democratic and inclusive, and explicitly recognises the need to engage stakeholders in the production and utilisation of scientific knowledge (Enquist *et al.*, 2017; Hallett *et al.*, 2017; Wall *et al.*, 2017).

We define engagement as the process by which decision-makers and other stakeholders (including scientists) influence how and what decisions are made. Engagement is a key component of doing conservation work, since conservation decisions will always affect, or be affected, by people (Kareiva and Marvier, 2007; Kothari *et al.*, 2013). Poorly conducted engagement however, has the potential to lead to detrimental outcomes (Bodin, 2017; Reed *et al.*, 2017; Young *et al.*, 2013), for example by failing to include all decision-makers in a representative, valued way, or by reinforcing existing power imbalances and inequality (e.g. Brockington, 2007; Chambers, 1997).

So, what does “effective” engagement look like? Communication is unsurprisingly a fundamental component. Differences in organisational culture, incentives and language can make it difficult for decision makers and scientists to understand one another (Caplan, 1979; Head, 2015; Newman *et al.*, 2016), and this can lead to scientific evidence being mismatched with the needs of policy-makers and practitioners (Jarvis *et al.*, 2015b). Many other studies in conservation have noted that academic science is not always immediately relevant for practitioners (see Walsh *et al.*, 2015). Difficulties in communication include science being presented in jargonistic, unusable formats (Marshall *et al.*, 2017; Walsh *et al.*, 2015), the lack of open access publishing (Arlettaz *et al.*, 2010), communicating only in one language (Amano *et al.*, 2016), and poorly communicated policy demands (Neßhöver *et al.*, 2016). Overall, Farwig *et al.* (2017) found that major differences in workflows, background, and objectives create a ‘research-implementation gap’ (Cook *et al.*, 2013; Jarvis *et al.*, 2015a) which is difficult to bridge. Rose *et al.* (2018a) found agreement on the major barriers to the use of evidence in conservation policy amongst policy-makers, scientists, and practitioners, but noted that solutions needed to be implemented.

Effective engagement is not simply a matter of improving communication (Cash *et al.*, 2002; Evans *et al.*, 2017). Knowledge is inevitably co-produced (Miller and Wyborn, in press) by multiple groups of people through an iterative process of knowledge exchange, mutual learning, negotiation and adaptation (Beier *et al.*, 2016; Cash *et al.* 2002; Wyborn, 2015). While scientists cannot change the fact that scientific evidence is (necessarily) just one input into conservation decision-making, through effective engagement, it is possible to influence how and what knowledge (and decisions) are co-produced (Miller and Wyborn, in press).

Although it is impossible to construct a framework for good engagement that will work in all contexts (Bodin, 2017; de Vente *et al.*, 2016; Reed *et al.*, 2017) common principles of effective engagement, include trust, reciprocity, respect, transparency, clear benefits to participants, co-learning, and identifying all necessary decision-makers (see Table 1 on page XX – de Vente *et al.*, 2016; Enquist *et al.*, 2017; Reed *et al.*, 2017; Roux *et al.*, 2017; Sterling *et al.*, 2017). Engagement processes should be sensitive to cultural context, power relations, and seek to disrupt existing inequalities, rather than reinforce them (Reed *et al.*, 2017; Sterling *et al.*, 2017).

In this chapter, we seek to illustrate common principles of effective engagement using several case studies. We first describe in more detail who decision-makers in conservation are, and how to ensure they are all identified and effectively engaged in a particular context. Next, we outline four case studies which provide examples of good engagement: the development of environmental offsets policy in Australia; community engagement in carnivore conservation in Costa Rica; participatory marine spatial planning in New Zealand; and the development of a code of conduct for marine conservation globally between researchers and NGOs. We conclude by providing ten ‘top tips’ for engaging with decision-makers, by drawing on the literature, aforementioned case studies, and our own experiences.

### **Who are decision-makers in conservation?**

Conservation decisions are made by various individuals and organisations at different levels of governance (Evans *et al.*, 2017; Newell *et al.*, 2012). Throughout this chapter we use ‘decision-makers’ as an umbrella term to refer to the multiple groups that are involved in conservation policy and practice. The decision-makers involved in a particular conservation issue will vary, as will the local cultures, priorities, knowledge types, values and workflows. Engagement with decision-makers is more likely to be effective if scientists first work to gain an understanding

of who may affect or be affected by conservation decisions in a particular context (Enquist *et al.*, 2017; Sterling *et al.*, 2017; Waylen *et al.*, 2010).

It cannot be assumed that good practice for working with one type of decision-maker is transferable to working with another (de Vente *et al.*, 2016; Reed *et al.*, 2017). For example, it is likely that the most appropriate approaches will differ between a government policy-maker, an NGO practitioner, an academic researcher, a farmer, and a local resident. Decision-makers will use varying language, hold particular, and personal, worldviews, and be part of different decision-making cultures (Blicharska and Grandin, 2015).

Before engaging, a representative list of key decision-makers needs to be created. Reed *et al.* (2009) argue that three stages of stakeholder analysis are required at the start of collaborative forms of engagement: (1) identify all key actors, (2) differentiate between them by working to understand individual workflows, values, cultures, and interests, and (3) understand relationships between actors, to help build alliances or prevent conflict (see also Colvin *et al.*, 2016). A range of methods can be used to map influential decision-makers (see Reed *et al.*, 2016 for a typology), including interviews, focus groups, Q-methodology, community workshops and the Delphi technique (Amit and Jacobson, 2018; Mukherjee *et al.*, 2018; Nyumba *et al.*, 2018; Young *et al.*, 2018). Such techniques can help to identify key decision-makers, elucidate how different individuals use and value their land, understand their views on conservation, and manage differences between groups.

There is also heterogeneity within groups of decision-makers. For example, in the context of tropical reforestation, Lazos-Chavero *et al.* (2016) noted that cattle ranchers vary by their age, herd size, and educational background. It proved important to engage with a representative group of cattle ranchers because the workflows and priorities of farmers varied with farm size and this influenced uptake of management practices. Indeed, the literature details many such cases where knowledge exchange with practitioners or the public was ineffective because groups were assumed to be homogeneous (Chilvers and Kearnes, 2016). Taking account of intra-group heterogeneity, as well as inter-group variance, thus adds an extra challenge to collaborative processes.

### **Case studies of good engagement**

Many good examples of effective engagement in conservation exist in the literature ranging from terrestrial (Fraser *et al.*, 2006), freshwater (Nel *et al.*, 2016), and marine systems (Granek and Brown, 2005). The nature of these successes varies from fostering an increased interest in conservation or natural resource management from local communities (e.g. Fraser *et al.*, 2006; Granek and Brown, 2005, Roux *et al.*, 2017), traditional knowledge being valued alongside scientific information, also fostering inclusivity and trust (Granek and Brown, 2005), to the formation of better decisions (Fraser *et al.*, 2006; Nel *et al.*, 2016).

Here, we highlight four further case studies where engagement with decision-makers has helped conservation. We chose these four to present examples of engagement with different types of decision-maker: firstly with government policy-makers, secondly with stakeholders at the community level, thirdly with multiple stakeholders at a regional level, and fourthly with multiple stakeholders at a global level.

#### **Engaging with policy-makers: development of the Australian Environmental Offsets Policy**

In 2012, Australian academic researchers formulated a calculation-based approach that set a new standard for determining environmental offset requirements. In collaboration with federal policy-makers in the Australian Department of the Environment, the calculation approach was developed into a tool for making fair and robust decisions about offsets. This became the Offsets Assessment Guide, which underpins the Australian Environmental Offsets Policy (2012) and remains the tool for determining offsets for significant impacts on more than 1,800 threatened species and ecological communities in Australia (Gibbons *et al.* 2015; Miller *et al.* 2015). This collaborative effort between academics and policymakers was enabled by long term, effective relationships, significant government investment in research specifically to improve environmental decision-making<sup>1</sup>, support of senior executive members of the Department, and a decade of scientific research led by the research team and many colleagues.

Environmental offsets are routinely used as a tool to compensate for unavoidable impacts on biodiversity as a result of development activities such as mining, urban development and agricultural expansion (Maron *et al.*, 2016). In Australia, offsets have been used as conditions of development approval by state and federal governments since the early 2000s (Evans, 2016;

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<sup>1</sup>Specifically, through partnerships with the Australian Government's Commonwealth Environmental Research Facilities (CERF) program (2004 to 2008), National Environmental Research Program (NERP, 2011 to 2015), and National Environmental Science Programme (NESP, 2016 to 2020).

Maron *et al.*, 2015). Regulatory decisions under Australia's federal environmental law was guided by a draft policy from 2007 onwards, but stakeholder dissatisfaction with this framework led to a policy review and development of a new draft environmental offsets policy in 2011 (Miller *et al.*, 2015).

Stakeholder consultation led by the federal Department of the Environment indicated broad stakeholder agreement with the new draft policy principles, but also a clear desire for a scientifically robust framework for estimating offset requirements (Miller *et al.*, 2015). The Department then approached academic researchers Maron, Evans, Gibbons, and Possingham to develop an offset calculation framework that would enable impacts to threatened species and ecological communities to be adequately and effectively compensated, gave effect to the policy principles, and was accessible and easy-to-use for all stakeholders (Miller *et al.*, 2015).

The development of the Offsets Assessment Guide was highly collaborative and iterative. Each major revision of the calculation framework produced by the academic researchers was tested by federal government operations staff to ensure ease of use, applicability to a range of decision contexts, and adherence to the policy principles. This process of co-design enabled mutual learning and fostered a shared understanding of the different constraints and incentives which policymakers and academic researchers work under. There was intense negotiation, compromise, and robust debate. The researchers had to operate under a much shorter timeframe than what is normally permitted in academia, and learned to appreciate the government decision processes and ministerial requirements. The Department of the Environment recognised the need for the collaboration to result in academic publications for the researchers, and publication of work in the academic literature was considered a priority (Miller *et al.*, 2015).

The research outcomes have now shaped environmental offsetting around the world (Cowie *et al.*, 2018; IUCN, 2016; Maseyk *et al.*, 2016). The researchers continue to work with governments, industry, local communities and international convening bodies to boost public and policymaker capacity to engage with environmental offsets. The final independent report to the Australian Government on the \$154M National Environmental Research Program highlighted this work as one of the Program's most important impacts (Spencer *et al.*, 2014):

*“The Offsets Calculator has provided a useful tool to improve the efficiency and effectiveness of regulating development under the EPBC Act by assessing the suitability of offset proposals and assisting with planning and estimating future*

*offset requirements... The department credits the standing, expertise and assistance of the NERP Environmental Decisions Hub in building stakeholder understanding, trust and acceptance of the offsets policy and calculator, including by industry, NGOs and the jurisdictions. Stakeholder acceptance is crucial to its successful adoption and implementation of this policy.”*

### **Engaging local communities: co-existence with large carnivores in Costa Rica**

Amit and Jacobson (2018) present an example of community engagement in a project designed to facilitate co-existence between large carnivores (Jaguars and Pumas) and people in Costa Rica. Through the use of a group decision-making technique based on the Delphi process (see Mukherjee *et al.*, 2015), they engaged 133 members of seven communities, as well as 25 multidisciplinary experts from government, NGOs, and academic science. Four decision-making rounds were undertaken:

1. Round one – community representatives were identified by using a database of ranches with the potential for big cat attacks on livestock. After selecting two ranchers and two community leaders from each of seven ‘attack hotspots’, further participants were identified in consultation with them. At a workshop held at the University of Costa Rica, these local representatives were used to define the project agenda, to identify the major problems, and to brainstorm potential solutions. Draft solutions to incentivise co-existence were developed.
- 2/3. Rounds two and three – the draft incentives were reviewed through online questionnaires sent to a panel of multidisciplinary experts (NGOs, academics, government). The draft list of incentives was iteratively developed based on the opinions of these experts.
4. Round four – a workshop was held with the communities in each of the seven ‘attack hotspots’. They had an average duration of three hours and were conducted by five facilitators at venues such as schools and community halls. Through anonymous voting, and a satisfaction questionnaire, the study team were able to test for consensus, and the willingness of participants to pilot particular incentives.

Detailed results, and other methodological information, are presented in the original paper (Amit and Jacobson, 2018). However, initial conclusions appeared positive. The authors claim that their structured, bottom-up communication process stimulated social learning in a trusting, transparent, collaborative environment. Although one community declined to take part in future research, citing a lack of information provided in the process, the study team argued that the list of incentives for co-existence was able to integrate issues of governance, equity, and social norms. As a result, support for the incentives, and for working in a trans-disciplinary way, was strengthened in many of the communities.

### **Engagement of multiple stakeholders and decision-makers at a regional level: the Sea Change—Tai Timu Tai Pari marine spatial planning process.**

In 2000, the Hauraki Gulf Marine Park (HGMP) was established to recognise the national significance of the Hauraki Gulf / Tikapa Moana (also known as Te Moananui-ā-Toi) in New Zealand. However, while a number of management plans were developed over the years to mitigate key threats in the HGMP, they were never implemented. This lack of implementation was due to a lack of stakeholder involvement, weak governance, and ineffective management (Hauraki Gulf Forum, 2011, 2014).

In response, Sea Change—Tai Timu Tai Pari was developed in 2013 as a new marine conservation and spatial planning process for the region. In contrast to previous planning efforts, Sea Change—Tai Timu Tai Pari was created as a collaborative, stakeholder-led, co-governance process to design, develop and action a new plan for the HGMP. A Stakeholder Working Group and a number of issues-based roundtables were established to navigate the co-development of the plan alongside extensive engagement with mana whenua, technical experts, local communities, and stakeholders across a range of issues and priorities. This work was supported and assisted by five key partner agencies, including the Hauraki Gulf Forum, Waikato Regional Council, Auckland Council, the Ministry of Primary Industries, and the Department of Conservation. In addition, Jarvis and Bollard were invited to collaborate with Sea Change—Tai Timu Tai Pari to develop participatory tools and approaches to enhance public and stakeholder engagement, while incorporating local knowledge and diverse values, views and priorities into the planning process (Jarvis *et al.* 2015a,b; Jarvis, 2016). The final plan was released in April 2017 (Sea Change—Tai Timu Tai Pari, 2017).

Effective engagement and collaboration was seen as critical for the Sea Change—Tai Timu Tai Pari process and the development of the plan. This highly collaborative approach required

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negotiation, perseverance, and sacrifice, in addition to the vision and commitment offered by those involved. While some work is already underway, the next step of the plan will be broad implementation across all goals and key principles. Strong and effective co-governance will be key to continuing engagement and effective implementation. There are high hopes that mana whenua, communities, agencies, and government will continue to work together to protect and conserve the future of the HGMP, support healthy and prosperous communities, and safeguard this precious taonga.

#### **Engagement of researchers, practitioners and NGOs at a global level: developing a code of conduct for marine conservation.**

As marine conservation gathers pace around the globe to achieve our conservation targets and the Sustainable Development Goals (SDGs), there is a risk that these efforts may fail to engage stakeholders and local people effectively. As a result, some actions taken may undermine the rights, dignity and freedoms of local people by not considering their needs or involving them in conservation processes. In response, a code of conduct (COC) was developed to provide a social baseline for how marine conservation should be undertaken, while raising the profile of effective engagement practices and the need for community and stakeholder involvement (Bennett *et al.*, 2017a).

The COC was developed to promote fair governance and decision-making, support social justice and promote transparency and accountability in our marine conservation actions. This includes principles of human rights, indigenous rights and food security, as well as ensuring that marine conservation is done in a fair, inclusive way, and that local people are supported. The COC has the potential to have wide ranging impacts in the way scientists and practitioners undertake marine conservation to ensure it is socially just and environmentally effective.

To develop the COC, the three lead authors of the proposed code of conduct undertook an initial scoping review and prepared an initial list of principles for discussion with the broader marine conservation community (Bennett *et al.* 2017a). Next, they convened a meeting with a diverse group of the world's leading experts in marine conservation at the IUCN 2016 World Conservation Congress in Honolulu, Hawaii, to debate what is considered acceptable and unacceptable in marine conservation with researchers and practitioners from universities, non-profit organisations and government agencies from around the world. The final list of principles was agreed after several rounds of iterations with the authors and workshop participants,

incorporating a thorough review of peer-reviewed literature, conservation policies and procedures and foundational policy documents.

The COC (Bennett *et al.* 2017a) was the result of this collaborative process, and was communicated in a wide variety of formats to different media around the world, presented to policy-makers, and discussed at high-level meetings, such as the United Nations (UN) Ocean Conference in June 2017. As a result, the COC has already been adopted as guiding principles for the Global Environment Facility (GEF) Blue Carbon Project (GEF, 2017), with partners and beneficiaries that include the United Nations (UN), 40 NGOs and a number of academic institutions, practitioners and members of the scientific community. The aim is that, by 2020, all blue carbon projects will be developed following the COC to ensure they are fair, socially-just and accountable, while also enhancing environmental effectiveness. Engagement and discussion around the COC is ongoing. The goal is to establish the COC as a clearly articulated and comprehensive set of social standards to guide our actions at multiple scales and ensure we achieve our marine conservation goals through effective engagement, fair decision-making, accountability and inclusive participatory processes.

### **Ten tips for achieving good engagement**

There have been few attempts to derive general principles of effective engagement from examples implemented in practice (Nguyen *et al.*, 2017; Reed *et al.*, 2017), as environmental management is such a context-specific endeavour (de Vente *et al.*, 2016). As such, Reed *et al.* (2009) suggest that approaches to engagement should be flexible, adaptive, and iterative based on local circumstances. With this in mind, we highlight ten tips based on the case studies, the literature, and from our own experience (see also Table 1 for key factors identified in five other studies).

#### **1. Know who you need to talk to**

This important theme of inclusivity is commonplace in the literature (see Table 1). All relevant decision-makers need to be engaged with, or else vital knowledge may be missed, or unnecessary conflicts caused (e.g. de Vente *et al.*, 2016; Enquist *et al.*, 2016; Lazos-Chaveros *et al.*, 2016; Reed *et al.*, 2017). The composition of key decision-makers will always vary with context, and may depend on the specific impact that is sought, but robust stakeholder analyses should be conducted before commencement of work (Reed *et al.*, 2009; de Vente *et al.*, 2016).

If time or resources are short, then decision-makers may be classified by the extent to which they are affected by a conservation issue (Reed *et al.*, 2009), as Amit and Jacobson (2018) did by identifying ‘predator attack hotspots’.

Once decision-makers are identified and engaged with, scientists should seek to differentiate between different groups, and understand relationships between them. Part of this process can be an attempt to understand their workflows, their values and culture, and even the constraints under which they work. Once groups have been differentiated, then different styles of engagement and conflict management might be needed to work with each (Blicharska and Grandin, 2015). Furthermore, an appreciation and understanding of political, social, and cultural context is always useful (Sterling *et al.*, 2017).

## **2. Engage early, with clearly defined aims**

Decision-maker engagement must have a clear purpose in order for all participants to work together towards a clear goal and outcome (Enquist *et al.*, 2017). Involving decision-makers at an early stage of a project may provide ownership of a project to local communities, building support, legitimacy, and trust, as well as leading to the production of relevant, ‘use-inspired’, or ‘actionable’ knowledge (Beier *et al.*, 2016; Wall *et al.*, 2017). The need for local community-led engagement was, for example, illustrated by the examples of human-carnivore co-existence in Costa Rica (Amit and Jacobson, 2018), marine conservation in New Zealand (Jarvis *et al.*, 2015a, 2015b), and in the biodiversity offsetting project stimulated by the Australian Department of the Environment (Miller *et al.*, 2015).

## **3. Decision-makers should find it easy to engage**

Participation for all decision-makers must be easy (de Vente *et al.*, 2016). For example, meetings should be held in a convenient place for all and project timescales should consider the busy and varied workflows of all decision-makers involved, so as not to dis-incentivise engagement. Language should also be geared towards participants, and thus a common language and understanding should be developed wherever possible (Amano *et al.*, 2016; de Vente *et al.*, 2016). While we do not necessarily condone offering financial incentives for attendance, researchers could at least consider what the relative advantage of engagement is

for decision-makers and cover costs at the very least (particularly where poorer communities are being involved) – for example, what do different decision-makers gain from being part of the process?

#### **4. Embrace and include multiple knowledge(s), perspectives, and worldviews**

Engagement with decision-makers must be meaningful, and the perspectives and opinions of all stakeholders must be genuinely valued throughout the process (see all studies in Table 1). Participation should not merely be tokenistic. The first step towards this is humility on the part of researchers, which fosters a genuine sense to learn from others, while also accepting and appreciating that science is just one input into policy and practical processes. In their study of co-management in South African freshwater ecosystems, Roux *et al.* (2017) warn against perceived scientific authority, and an attitude that bemoans some decisions made by policy-makers and other stakeholders as irrational if they are not ‘evidence-based’. The second step is to find ways of integrating multiple knowledge types into a project, including lay and indigenous knowledges, and local experiential knowledges, and ultimately fostering respect and understanding across different values and motivations (Sterling *et al.*, 2017). The final step is to be able to reflect on your own values and motivations as a conservationist and be prepared to learn from those held by others (Bodin, 2017).

If these steps are followed, then it is more likely that a truly collaborative spirit of co-operation will be achieved, which will help to build common understanding of an issue. This will not always mean that everyone agrees, but it will still be possible for all participants to understand each others’ point of view. Such a collaborative spirit has been shown to help a range of conservation projects, including in the highlighted case studies above.

#### **5. Think hard about power**

As researchers, we must do more than simply speak truth to the most obvious powers-that-be (Chambers, 1997); rather, we should seek to understand precisely how communities work, something that can usually only ever be achieved through long-term engagement (e.g. using ethnography). Lazos-Chavero *et al.* (2016) found that paying attention to gender, generational, and power disparities in a given region was essential to the success of tropical reforestation

schemes. Furthermore, Kleiber *et al.* (2015) showed that including women in the management of fisheries is essential for conservation success because a significant proportion of fishers are women (something that had often been ignored in previous studies). Indeed, redistribution of power across decision makers and other stakeholders may be crucial for developing effective engagement processes.

#### **6. Build mutual trust**

This theme is just about universally accepted in the literature and needs little explanation (see Table 1). Without mutual trust, transparency, and respect, then engagement exercises with decision-makers are doomed to failure. Although Lacey *et al.* (2018) warn against too much trust (e.g. because this could lead to facts being accepted on ‘blind faith’), it is logical to expect that relationships built on trust will yield better results. This is because participants will feel valued and able to challenge the opinion of others. Good practices for building trust include respecting participant confidentiality, following through on promises, and committing to long-term engagement if it has been offered.

#### **7. Good facilitation is key**

Engagement processes need to have good facilitators (de Vente *et al.*, 2016). As illustrated by guides on how to conduct participatory methods such as focus groups (Nyumba *et al.*, 2018), the facilitator plays a key role in managing group dynamics, encouraging stakeholder input, and building trust. A good facilitator will be aware of potential sensitivities within the group (Gibbons *et al.*, 2008) and be able to skilfully avoid and manage conflict, which is so important for a healthy engagement process (Amit and Jacobson, 2018). In controversial cases in particular, which are not unusual when dealing with the complex problem of biodiversity loss, the potential for conflict is more pronounced.

#### **8. Learn new skills for good engagement**

Good engagement and facilitation is helped if the individual is a good communicator. As individuals, it will become increasingly important to be trained in a range of different skills (as

per Jackson *et al.* 2017) and be able to communicate differently with different people. In doing so, it is important to recognise that conservation can greatly benefit from better use of qualitative methods that improve communication, enhance engagement, and give voice to others (Mukherjee *et al.* 2018). However, it may not be possible for individuals to learn all the different skills key for good engagement themselves. Therefore the development of truly inter- and trans-disciplinary teams could be one approach to bring all the necessary tools and skills together and co-design research that truly integrates the natural and social sciences (Bennett *et al.*, 2017b, 2017c) while engaging with stakeholders from the outset and throughout conservation processes (Reed *et al.*, 2017). Where scientists feel unable to facilitate engagement processes effectively, much of the literature suggests using knowledge brokers (alternatively called boundary spanners or bridging agents; Bednarek *et al.* 2018; Cvitanovic *et al.* 2015; de Vente *et al.*, 2016; Roux *et al.*, 2017). These individuals have the skills to speak different languages and to bridge the gap between varying backgrounds, cultures, and interests.

#### **9. You don't have to reinvent the wheel – consider making use of existing spaces and opportunities.**

In conservation, there are several good schemes which encourage scientists to engage better with decision-makers, across research, policy and practice (see Elliot *et al.* (2018) for a global database of 650 conservation capacity initiatives). Such schemes have been developed to reflect requirements for the foundational skills necessary for good engagement, while also providing existing opportunities for conservationists to develop their own capacity for effective communication, interpersonal interaction, and boundary crossing. By making use of such schemes, conservation scientists can develop their engagement skills while also being able to better adapt to the changing needs of conservation.

An additional point worthy of consideration is whether conservation researchers make the most of existing informal spaces of engagement to harness the views of decision-makers. Chilvers *et al.* (2017) criticise engagement processes for usually being established on the terms of researchers. In other words, groups of stakeholders are assembled to talk about an issue that is framed and defined by researchers or policy-makers, such as through public forums (see Chilvers and Kearnes, 2016). Very rarely do we seek to 'listen in' on existing spaces of public participation (e.g. in the village hall, in the pub, on social media) to see what people are concerned about. Could the same criticism be levelled at conservation engagement exercises?

Do we seek to assemble groups of decision-makers to discuss conservation issues that we have already framed, rather than asking, for example, local communities to devise the questions of interest (see tip 4)? We suggest that it is important to consider these questions in order that engagement exercises are led by communities, rather than done to them.

### **10. Don't give up!**

The need for long-term engagement is commonly highlighted in the literature (see Table 1). One important aspect to take from our recommendations is that they will not always yield immediate, tangible rewards, but this should not be the sole aim of practising good engagement. Rather, ongoing, long term engagement can lead to a change in the overall policy framing of problems and solutions (Rose *et al.* 2017), something which can occur diffusely over long timescales (Owens, 2015). Reed *et al.* (2017) argue that engagement in controversial issues, where people hold deep core values, will need to be more long-term (de Vente, 2016; Roux *et al.*, 2016). It can take some time to build trust and the confidence for stakeholders to contribute, and continued engagement after implementation is usually required for conservation projects (Lazos-Chavero *et al.*, 2016). So it is vital not to give up; as Amit and Jacobson (2018) argue 'participatory decision-making has an inherent phase of struggle and frustration', which is perfectly normal. Sterling *et al.* (2017) further describe knowledge co-production as a 'slow' process because it requires long-term committed engagement from all sides.

However, it is also important to note that flexibility of process is also important (Sterling *et al.*, 2017). When inviting decision-makers to contribute to a project, the outcome might be different to the one that the researcher envisaged. Indeed, since you are incorporating multiple values and perspectives into decision-making, the unexpected may be the norm. Most importantly, expect the unexpected and don't give up!

We acknowledge that it is not easy for conservation scientists to initiate and manage collaborative research projects, particularly those that work with a variety of stakeholder groups outside of academia. There are certainly challenges in achieving the new kind of science that Keeler *et al.* (2017) envisage (or in embracing the 'post-normal' reality, see Colloff *et al.* 2017; Rose, 2018), which would be more inclusive of people beyond academia. This includes practical difficulties (e.g. time, money) of engaging decision-makers (Sutherland *et al.*, 2017), as well as the challenge for conservation scientists of developing the skills needed to engage

with people, a task for which many of us are not traditionally trained (Jackson *et al.*, 2017). Furthermore, being actively involved with decision-makers might not be something that appeals to individual conservation scientists. Although the boundaries between science, policy, and practice are fluid (Rose, 2014b; Toomey *et al.*, 2016), scientists sometimes worry about moving beyond their comfort zone. Yet, if there is a scientific discipline in which advocacy is easier to do, then it should be mission-driven conservation biology (Rose *et al.*, 2018b; Soulé, 1985).

Ultimately, achieving effective engagement and conservation impact may mean changing the way conservationists work, including those housed in universities and research institutions. One significant challenge is for academic conservation scientists to find the time, motivation, and support to engage decision-makers (Chapin, 2017; Keeler *et al.*, 2017; Littell *et al.*, 2017). Often, academics are not rewarded adequately for producing tangible impacts (Jarvis *et al.*, 2015a; Tyler, 2017), and so-called impact agendas are still widely side-lined in favour of career-enhancing academic publication. But there is no real reason why impact cannot be better incentivised, and new opportunities developed to explore the different ways we can better navigate science, policy, and practice. Why, for example, can't academic departments have dedicated policy teams to highlight policy demand, and to foster collaboration with decision-makers? A new kind of conservation science could certainly be re-imagined, which would reward outreach and incentivise inter-, multi- and trans-disciplinary collaborative work. Where we are unable to invest the time to engage with decision-makers ourselves, we could make much better use of knowledge brokers or boundary spanners (Bednarek *et al.*, 2018).

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