The scientist abroad: maximising research impact and effectiveness when working as a visiting scientist

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Running title

Maximising research collaboration and impact while working abroad

Abstract

Conservation science is crucial to global conservation efforts, and often involves projects where foreign scientists visit a host country to conduct research. Science can significantly contribute to conservation efforts in host countries. However, poorly conceived and implemented projects can lead to poor conservation outcomes, cause negative impacts on communities, and compromise future research. This paper presents guidance from scientists, managers, and conservation practitioners following the 10th Indo-Pacific Fish Conference, the

region's largest ichthyology meeting where delegates presented many examples of collaborative research. The guidance provided focuses on issues regarding planning and preparation, collaboration and reciprocity, and conduct and protocol. The intent is to provide conservation scientists with practical advice from locally based and experienced conservation scientists and practitioners about how to maximise research effectiveness and conservation benefits when working abroad. A range of activities and approaches are suggested that visiting scientists can adopt and implement to build the relationships and trust needed for effective collaboration with local actors. Building effective collaborations between local actors and visiting scientists can maximise research effectiveness and impact by ensuring that projects address the most important issues and conservation concerns, involve the appropriate people, use suitable methods and approaches, and carefully consider local contexts and ethics. Such projects are more likely to provide lasting benefits to both parties, and enhance conservation outcomes. However, both visiting scientists and local actors need to communicate clearly, be accommodating, and commit to a genuine partnership to realise these benefits.

Introduction

Conservation science is crucial to providing the information needed to inform global conservation efforts (e.g. Sutherland et al. 2018). Many of the most pressing conservation needs occur in developing countries (Brooks et al. 2006), including countries such as the 'large ocean states' which are also extremely vulnerable to global change (Hind et al. 2015). Meanwhile, most global research capacity (in terms of scientists, infrastructure, institutions, and funding) is still concentrated within developed nations (Sanyal and Varghese 2006), and thus many conservation research projects in developing countries are implemented by visiting research teams working abroad (Hind et al. 2015).

Visiting scientists and their research activities can have tangible conservation benefits, and there are numerous examples where researchers who effectively engage with local institutions, government organisations, and communities have built capacity and improved conservation outcomes for the host country (see Laurance 2013). A key factor in success is often effective engagement and collaboration as complex conservation challenges often require meaningful engagement of local collaborators and expertise (Russell and Harshbarger 2003).

Unfortunately, there are also numerous examples of projects that fail, instances where visiting scientists having negative impacts, and even of visiting scientists conducting unethical research in developing countries. There can be significant mismatches between the priorities and agendas of international conservation organisations and the needs and aspirations of local governments and communities. These misalignments can derail projects, lead to distrust and conflict, and compromise outcomes (Rodríguez et al. 2007). Well intentioned researchers may also encounter difficulties due to inappropriate or misaligned research processes, lack of knowledge, and different working practices (Hind et al. 2015). However, examples of purely exploitative research also exist. For instance, well-equipped research teams have arrived in countries (sometimes without permits or immigration clearance), worked independently of established local institutions and communities, and then left without sharing any information (see Heymann et al. 2016). This type of ‘parachute research’ raises many ethical concerns and can even hinder local programs (e.g. Heymann et al. 2016). In some cases, research has been blatantly exploitative and there are well documented examples of ‘biopiracy’ where international researchers have appropriated and even patented Indigenous knowledge and resources without the consent of the resource owners (Timmermans 2003). Furthermore,

publishing sensitive information without due consideration for potential impacts on the local environment, communities, managing agencies and collaborators can have direct conservation impacts for host countries. For example, publishing locations of rare species has contributed to illegal wildlife trading and poaching, even leading to local extinctions (Lindenmayer and Scheele 2017). In response to concerns over exploitation and research impact on local resources and communities, some countries such as Vanuatu have in the past, enacted temporary, nation-wide moratoria banning foreign scientists due to perceived unfair treatment and exploitation (Regenvanu 1999).

For research that requires scientists to work with local communities and/or Indigenous people, there is also an onus on the researchers to commit to ethical research approaches, to explore benefit-sharing options, and to consider potential positive *and* negative impacts of their research (Kelly et al. 2012; Maldonado et al. 2016). While many researchers may be subject to institution based research ethics processes, there are also international drivers to consider. Article 8J of the Convention on Biological Diversity specifically calls for the recognition and ethical use of Indigenous and local knowledge, and equitable sharing of benefits derived from that knowledge. Equitable benefit sharing is also a focus of the Convention on Biological Diversity's *Nagoya Protocol* which promotes fair and equitable distribution of benefits from molecular research. Scientists should be aware of relevant guidelines or protocols that relate to their research.

While the ethics of conservation research have been widely discussed (e.g. Bennett et al. 2017; Russell and Harshbarger 2003; Timmermans 2003), the conduct of visiting scientists remains a topical issue. The benefits and challenges of working as, and with, visiting scientists were subjects of extended discussion at the 10th Indo-Pacific Fish Conference

126 (IPFC) held in Tahiti, French Polynesia in October 2017. The IPFC meetings attract a wide
127 range of delegates from across the Indo-Pacific region and beyond, including fisheries
128 scientists, ichthyologists, managers, and conservation practitioners. The 10th IPFC included
129 586 delegates from 34 countries, and the high species diversity, wide distribution, cross
130 jurisdictional and developing nation context of much of this research provided many
131 examples of visiting scientists working in developing countries. While many such projects
132 presented at the IPFC were recognised as having mutual benefits for visiting scientists and
133 local communities, there were also examples discussed where different approaches would
134 have greatly improved research efficiency and conservation impact. Notable examples
135 revealed included: (i) visiting scientists seeking to confirm the occurrence of species already
136 well known to resident scientists; (ii) visiting scientists that promised collaboration with
137 resident scientists to secure logistical and administrative support, and then disappeared once
138 that support was secured (resident scientists only found out that the research had been
139 conducted when they were asked to review the manuscript); and, (iii) an extreme case where
140 a visiting scientist falsely claimed to be working for a resident scientist in order to secure
141 samples from a local area, and then returned to their home country with the material.
142
143 Meanwhile, some resident scientists recounted favourable experiences where visiting
144 scientists worked with host scientists for mutual benefit. For example, a collaboration
145 between the Global FinPrint Project and Tunghai University (Taiwan) resulted in successful
146 video surveys of sharks and rays in Taiwanese waters. Resident scientists provided
147 administrative and logistical support, and the project provided them with training and new
148 data addressing important knowledge gaps.
149

Researchers should also recognise that both positive and negative experiences can become part of institutional knowledge. In host countries, negative experiences can entrench mistrust of visiting scientists that may compromise future research projects. However, it is equally important that local actors act ethically and are honest when engaging with visiting scientists as effective collaboration requires genuine engagement and trust between both parties. Local actors that are dishonest (e.g. over-promising support, making false claims), who act purely for monetary gain, prestige or influence, or are obstructive, will also erode trust and hinder collaboration. Negative experiences can likewise become part of the institutional memory of external organisations and funders that may reduce willingness to invest research in that location.

Here we present practical advice distilled from discussions with scientists, natural resource managers, and conservation practitioners following the 10th IPFC meeting, Advice was specifically sought from local actors who are citizens or long-term residents of developing countries and territories in the Indo-Pacific about the approaches and processes they felt best promoted effective partnerships between visiting scientists and local collaborators. The aim of this paper is to provide practical guidance about cultivating effective partnerships and collaborations that maximise research efficiency and conservation impact, and to help operationalise calls for improved research approaches (e.g. Bennett et al. 2017). The goal is to empower visiting scientists with practical advice about how to develop high-impact projects that address key conservation issues, successfully engage with local actors and communities, and maximise long-term conservation outcomes. We present this advice in three main areas: planning and preparation, collaboration and reciprocity, and conduct and protocol. These three themes have been contextualised within Ostrom's widely applied principles of robust social organisations and governance systems (Ostrom 2008).

175

176 **Planning and preparation**

177 Conducting research in foreign countries can be challenging, especially where field sites are
178 remote, logistics are difficult, and language and cultural barriers exist. Thorough planning,
179 preparation, and early engagement with local contacts can minimise project delays, reduce
180 the risk of critical errors, and deliver numerous benefits that would otherwise be unachievable
181 (Russell and Harshbarger 2003). For example, prior knowledge of existing projects can help
182 visiting scientists avoid conflicts and confusion that could compromise their project.
183 Collaborations can also lead to collecting more in-depth and thorough datasets that improve
184 scientific rigour and provide context for interpreting data. Furthermore, if conservation
185 scientists want local actors such as management agencies and/or decision making bodies to
186 accept and use research outputs, visiting scientists may need to engage with these decision
187 makers to build trust and legitimacy. Trust and reciprocity are key elements in building the
188 social capital necessary for collective action (Ostrom 2008). To develop trust and legitimacy,
189 and help ensure that research projects are successfully established, visiting scientists should
190 consider actions and approaches described in Table 1. However, effective partnerships
191 require investment and genuine engagement by both parties, and local collaborators and host
192 nations can also take steps to improve how they engage with visiting scientists, and thus,
193 maximise benefits received from projects occurring within their borders (Table 1). Many of
194 the suggestions identified in Table 1 may be formalised in some form of collective choice
195 agreement (see Ostrom 2008) between all project participants, such as formal Memoranda of
196 Understanding (MoUs) (Hind et al. 2015).

197 **Table 1: Advice for visiting scientists and host nations to consider when planning and preparing for field work**

Suggested practices and approaches for visiting scientists	Why this is important
Respect immigration protocols, visa conditions and research permit requirements. Visiting scientists need to be aware of local laws, visa requirements, permits, and permissions. They should also be aware of international agreements such as the Convention on the International Trade in Endangered Species of Flora and Fauna (CITES) which may place specific conditions on the transport of biological material (including imports, exports, and re-exports), and regional or issue specific agreements such as the Nagoya Protocol.	Following national laws shows respect for the host country and reduces the risk of offending local authorities or even breaking the law. This respect can also build trust with local collaborators and agencies. Awareness of CITES and other restrictions and protocols will also help researchers avoid complications in importing samples to their home country, and this evidence may also be required for publication. These requirements are also often compulsory requirements of institutional research ethics approvals, and researchers may face serious institutional sanctions for breaching these requirements.
Practice due diligence and find out about current research and governance contexts, for instance, which researchers and/or institutions are working in the project location or in the same field within that country, and what projects are already in place. Visiting scientists should also clearly identify resource boundaries and local property rights to ensure they understand the local context and make contact with the appropriate resource owners. While some of this information can be found online (especially using Google Scholar™ as	Knowing which research projects and researchers are working in the area can reduce the risk of reproducing efforts or infringing on existing projects. Informed visiting researchers can also then identify opportunities to share resources with other researchers, and even combine or coordinate field work to share costs and reduce consultation fatigue for local communities. Identifying and engaging with local research end users can also help researchers design

many reports may be grey literature), visiting scientists should also make personal contact with local agencies and/or non-governmental organisations (NGOs) to establish direct communication as details about resource ownership and governance are unlikely to be published, local governance structures and protocols may change, and published information may be outdated.	research that meets local needs, and to effectively communicate research outcomes to decision makers. Identifying resource boundaries and property rights is essential for successful collective action and robust social systems (Ostrom 2008). Visiting scientists should work with local collaborators to clarify boundaries and property rights to understand who needs to be contacted, what permissions are required, and to guide benefit sharing. Failure to do so can cause misunderstandings and create conflict within and between communities, researchers, and local authorities.
Engage local collaborators early in the planning process. Local collaborators can provide clear advice about local social, cultural, and political contexts, and about the research needs and knowledge gaps that need addressing. They can also provide local input on project design, and secure partnerships that help broker arrangements. Once relationships are established, they need to be maintained (see *Collaboration and reciprocity*).	Early engagement makes it possible for visiting scientists to understand local research needs, and for these to be integrated into project design. This helps ensure that research delivers real benefits to host countries, can foster genuine engagement by stakeholders, and avoids wasting local capacity on low priority research (Hind et al. 2015). Furthermore, in some regions it can be very difficult to obtain accurate information about relevant local actors, property rights and resource boundaries, field conditions, protocols, and logistics. Local collaborators can save visiting researchers time and expense by providing

	current information and facilitating administrative processes, assisting with logistics, and advising on local protocols. Local collaborators that are trusted by local communities can also be invaluable in brokering relationships that enable access to locations and information that would otherwise be withheld.
Be familiar and respectful of local customs and protocols. Local expectations and protocols (e.g. authority and power dynamics, protocols for access to sites and use of information) should be reflected in project design. Researchers may also need to specifically consider gender issues when planning in-country activities (e.g. Mutimukuru-Maravanyika et al. 2016).	Familiarity with local customs also demonstrates respect for local culture which may help build trust. Understanding local protocols and customs can help the visiting scientist select appropriate methods that may be crucial to obtaining high quality data (e.g. ensuring gender issues or cultural sensitivities are accounted for in survey methods). Respecting local protocols may also be essential to gaining access to samples and sampling sites, community members, and survey participants.
Clearly describe funding arrangements and expectations of each party. Be clear about funding arrangements, potential benefits, and support to be delivered from both visiting scientists and local collaborators. Be explicit about where the funding is coming from, how much funding is available, how and when funds will be distributed, and about the services or products to be delivered by all	Potential conflicts can be avoided when parties are clear about what each is expected to contribute, and what benefits each will receive. This includes clarity about tangible resources (e.g. site access, field support, physical samples) and less tangible resources such as community-owned IP. Just as with common-pool resources described by Ostrom (2008), ownership, boundaries, benefit sharing of project outputs and resulting IP need to be clarified and

parties. The same applies to intellectual property (IP) arrangements about how IP generated by the project is stored and shared.	clearly communicated to ensure the project runs smoothly and that parties benefit fairly. Clarity about funds and payments, expectations, and benefit sharing are also essential to building collective-choice arrangements (Ostrom 2008) where parties agree on the 'rules' about how the project will operate and how benefits will be shared.
Consider risks associated with potentially sensitive information. Visiting scientists should explicitly consider the potential risks associated with sharing what may be sensitive information. This includes considering how to securely store and manage access to data, de-identify data, and what negative consequences could arise from publishing the information. Visiting scientists also need to clarify the processes and approvals that may be required to publish or disseminate data arising through the project. University ethics committees may be able to provide general guidance, but local advice should also be sought for more detailed and specific information. Visiting scientists may need to establish formal agreements with local collaborators about how sensitive information will be managed, used, and disseminated.	Publishing or sharing sensitive information can have negative conservation impacts, and can compromise individuals and communities, individuals. For example, ichthyologists that publish the location and timing of spawning aggregations could expose these aggregations to intensive fishing pressures from external parties and unwittingly erode local rights and resource access, livelihoods, and food security. In some cases, publishing location data has even lead to localised extinction of rare species (e.g. Lindenmayer and Scheele 2017). Visiting scientists may also breach cultural protocols by publishing sensitive information without consent from the appropriate cultural authority. Such breaches can cause serious conflicts that compromise individuals and communities, and break trust between visiting scientists and local collaborators.

Where possible, plan work with resident scientists who are locals rather than expatriate scientists temporarily working in the country. Visiting scientists should try to identify and involve local collaborators who are citizens and residents, and commit project time and resources to support local capacity development.	Resident scientists may have knowledge, cultural understanding, established relationships, and legitimacy that expatriate scientists do not have, and thus may be able to provide additional guidance and support to visiting scientists. Meanwhile, capacity building can have numerous benefits to both visiting scientists and host nations (see Collaboration and Reciprocity). Focusing capacity building on citizens or long-term residents will help build enduring local expertise that may help to maintain project consistency and momentum, build project legitimacy, and reduce the risk of project collapse once visiting scientists or expatriate resident scientists leave (Parsons et al. 2017). Furthermore, building local capacity and expertise should be considered as a distinct long-term conservation outcome at a national scale (Parsons et al. 2017).
Find out about past projects that potential local collaborators have been involved in to ascertain their legitimacy, capability, and reliability. This can be achieved by contacting colleagues, NGOs, and/or networks to find out how potential local collaborators have been involved with previous projects, what roles they have played, and about their performance on previous projects.	Visiting scientists should recognise that a local collaborators' capacity, and ability may vary greatly, and is sometimes un-related to their organisation or their position within it. Misplaced assumptions about a local authority's depth of knowledge, legitimacy, and abilities can cause visiting researchers to waste time and resources and potentially make critical errors. Additionally,

	sometimes the most helpful and knowledgeable local collaborators may be relatively junior staff, post-doctoral researchers, or even students that can be harder to identify as they may not be listed on papers, formal documents, or websites.
Plan adequate time to undertake due diligence, identify local collaborators and expectations, make connections, and build trust. This process can take months or even years, and may require face-to-face meetings that need to be considered in project timelines and budgets. Visiting scientists should also plan time and resources needed to explain the project's relevance and to clarify expectations. This may be especially important for research on broader ecological or theoretical questions that while generally important to conservation science, may not have clear links to local management issues. Time may also be needed for local collaborators and communities to work through their own consultative processes. Visiting scientists should not underestimate how long these processes might take.	Local collaborators may have limited capacity, resources, and interest for supporting projects, and may have distrust of foreigners. Visiting scientists need to plan enough time to build relationships and explain the project to local actors so that they can make informed decisions about their participation. Planning sufficient time and resources to enable consultation and administrative processes to occur is likely to result in better outcomes, more meaningful engagement, and can help generate trust. In contrast, trying to 'rush' through engagement and administrative processes can increase the risk of misunderstandings and errors, may cause offence, and can appear as disingenuous and disrespectful to local actors.
Suggested practices and approaches for local collaborators and host nations	**Why this is important**

Make important information easy to find and keep it up to date. Host nations and local collaborators can greatly help visiting scientists by making clear and current advice and instructions about requirements, contacts, and protocols easy to find. This should include information about what departments need to be informed, which permits may be needed, application fees, and visas, as well as general expectations of authorities and/or local institutions. Providing online information on how to contact authorities and seek assistance, and online application processes will also be very helpful.	Making important information easy to find can greatly help visiting scientists avoid making mistakes and causing misunderstandings. It will also clarify expectations about what local authorities require, and inform foreigners about local laws and customs. While host countries and local collaborators are unlikely to need to participate in every project, local actors are likely to be better informed about research activities if visiting scientists have easy access to basic information about engagement processes, research protocols, and appropriate contacts. Providing this information may also dissuade less principled researchers from proceeding with a project and then claiming ignorance that they were unaware of the proper protocols.
Be responsive to requests for information, and process research permits and other required documents within reasonable periods. Ensure that there are adequate human resources and systems to respond to information requests, process applications, and give quality advice to foreigners.	Visiting scientists are likely to be working on tight timelines with limited budgets that are often driven by external funding agencies and grant requirements (Parsons et al. 2017). These pressures mean that projects may be unable to accommodate excessive delays for administrative processes to be completed. Excessive delays in starting a project may mean that less can be accomplished in the remaining time, which could affect key activities such as capacity building and community engagement.

Being genuine and honest in dealings with visiting scientists and their institutions so that all parties clearly understand capabilities and limitations. Provide honest and accurate information about what support and assistance is possible, the time and resources that local agents or collaborators will need, and what resources will be available.	Visiting scientists may be heavily dependent on local advice and support. Projects can suffer serious delays and problems if visiting scientists have mismatched expectations about what local collaborators can provide. Mismatched expectations can also erode trust and lead to conflict, which in serious cases, could result in visiting scientists abandoning a project and choosing not to pursue further work in that location.
Where relevant, work with visiting scientists to formalise the terms of collaboration. Collaborative arrangements can be formalised though agreements such as Memoranda of Understanding, or by affiliating visiting scientists with local institutions under specific conditions regarding data and benefit sharing, or capacity building. However, these processes should also be completed within reasonable time frames.	Formalising the terms of the collaboration (e.g. expected services, payments, engagement and consultation, management and ownership of IP, authorship, rules for sharing information), clarifies the rules and expectations for all parties. Reduces misunderstandings, minimise conflict. Also creates templates and precedents that can be used in future projects, more efficient.

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Collaboration and reciprocity

Effective collaboration and reciprocity can benefit both parties. For visiting scientists, collaboration can reduce administrative and logistical burdens, foster genuine engagement and participation by local partners, and help ensure that research methods are appropriate (e.g. suitable for the environment, language, culture, season, and location). Local partners can also facilitate access to local knowledge that can only be acquired with an in depth understanding of the local context and culture, policies and politics, and through established relationships with communities or stakeholders. In return, host nations and resident scientists gain assistance and resources to address local needs, build capacity, and make progress towards local aspirations. Collaboration and reciprocity may even be mandatory. For example, the Australian Centre for International Agricultural Research requires that funded projects deliver capacity building and community benefits alongside scientific outcomes (ACIAR 2013). Collaboration and reciprocity may be especially important for conservation research where local actors will be largely responsible for implementing management, and thus, need to be fully engaged in and have ownership of project outcomes and recommendations.

Effective collaboration requires many elements including willingness and trust (Bstieler 2006). Trust may also be enhanced when all parties have a clear understanding of processes and expectations, believe these to be legitimate, and can see that parties are meeting their obligations for collective benefit (Bstieler 2006; Ostrom 2008). Indeed, developing trust and reciprocity may be crucial to building the social capital needed to make collaborative projects work (Ostrom 2008), and lay the foundations for longer-term partnerships that are preferable for conservation outcomes (Hind et al. 2015). While caution and wariness is sometimes understandable, this wariness needs to be moderated to provide opportunity for trust to

224 develop. To realise the benefits of collaboration in the context of conservation research,

225 visiting scientists should consider the actions and approaches outlined in Table 2.

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227 **Table 2: Advice for visiting scientists and host nations about effective collaboration and reciprocity**

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Suggested practices and approaches for visiting scientists	Why this is important
Be genuinely open to collaboration and working with local partners for mutual benefit. Be receptive to, and appreciative of assistance and advice. Be willing to listen to and seriously consider local needs, and integrate these into the project. Include local collaborators as co-investigators and/or co-authors on project proposals and papers wherever this is appropriate.	Having a genuine interest in local needs can help build trust and good will with local collaborators. These efforts may sometimes involve non-research related activities such as assisting in local schools or youth programs. However, willingness to engage in these activities can be crucial to building trust, and may even be viewed a 'litmus test' of a research team's true motivations and values that may determine future community engagement, information sharing, and even site access. Listening to local advice and input demonstrates respect and a willingness to learn from local knowledge holders. Including local collaborators as co-investigators and co-authors acknowledges the efforts they invested. Collectively, these practices will build trust, strengthen collaborations, and enhance knowledge exchange that help to ensure that projects deliver meaningful research outcomes, and provide foundations for long-term research and conservation partnerships.

Ensure that research aims and project processes are clearly explained and presented in appropriate formats for local stakeholders. While this usually includes meetings or workshops, project information can also be conveyed through plain language fact sheets (Supplementary Material 1), storytelling, audio-visual presentations, and other culturally appropriate formats such as songs, art, and dance.	Local stakeholders need to understand the purpose of the research and how the project will be delivered in order to make informed decisions about their participation. Local understanding is a key principle in 'prior informed consent' which is an ethical requirement of many academic institutions. Local actors may also have limited literacy and numeracy skills which means that this information must be delivered in appropriate formats. Using culturally appropriate communications avenues also helps to avoid giving offence, and shows respect to local customs and cultural norms.
Create opportunities for power sharing and shared decision making processes into the project. This may include involving local collaborators as co-investigators, or establishing governance structures comprised of local representatives.	Joint decision and power sharing engages local collaborators in more meaningful ways, and are characteristics of partnership approaches that deliver better project outcomes (Bennett et al. 2017; Costello and Zumla 2000). Sharing power and decision making gives local collaborators mechanisms to provide local knowledge and to influence decisions that may be vital to project success. Indeed, shared decision making processes provide mechanisms for collective choice which can be essential to project legitimacy (Costello and Zumla 2000; Ostrom 2008).
Clearly identify project personnel and their roles (see Supplementary Material 1).	Effective research collaborations may hinge on the quality of personal relationships between participants (Hind et al. 2015). Clearly identifying who is involved in the project and what their respective roles provides clarity to local stakeholders about project personal and responsibilities.

	It can also demonstrate how local collaborators are involved (see example Project Fact Sheet in Supplementary Material 1).
Build relationships and trust, and establish agreements *before* beginning data collection.	Establishing trust and agreements with local participants and/or resource holders must be completed before data collection begins. Collecting data before an agreement is established breaches the requirement for 'prior informed consent', and shows disrespect for local communities. Visiting scientists may also risk missing crucial information (asking the wrong questions, sampling inappropriate locations), or may be refused access. Importantly, such behaviour can create negative perceptions that can affect future research efforts.
Provide meaningful reciprocity such as including capacity building components in projects that help address developmental needs (Hind et al. 2015; Parsons et al. 2017). The project should provide opportunities for resident scientists to be involved in more meaningful roles that extend beyond acting as administrative or cultural brokers, primary data collectors, or technicians. This could also include mentorship and meaningful inclusion of early career researchers and students.	Capacity building is often essential to realising long-term research benefits for local communities and host nations (Hind et al. 2015; Rodríguez et al. 2007), and is increasingly viewed as essential elements of successful conservation research projects (Bennett et al. 2017; Hind et al. 2015). Demonstrating commitment to building local capacity can build trust and social capital. Strengthening local capacity can also lead to improved data collection, and build the capability to support future research and support the long-term partnerships needed to address conservation challenges (Hind et al. 2015; Rodríguez et al. 2007).

Avoid ‘parachuting in’ and instead, maximise the time spent in host nations to establish and maintain meaningful relationships, and gain adequate understanding and perspective about the local context.	‘Parachute research’ can result in ‘opportunity costs’, and may also be poorly viewed by local collaborators and the wider scientific community (Costello and Zumla 2000; Heymann et al. 2016). For example, short infrequent visits to a field site can make it difficult to maintain meaningful community engagement in a project and can be perceived as a lack of commitment on the part of visiting scientists. Without sufficient on-site experience and understanding of the community and local contexts, visiting scientists might select inappropriate methods and misinterpret data. Parachute research also doesn’t provide for in-depth training and meaningful engagement of local collaborators, and thus denies the host nation an opportunity to develop domestic research capacity.
Together with local collaborators, jointly develop simple and clear mechanisms to monitor project progress and resolve conflict.	Monitoring project progress is vital to identifying and resolving problems early on and before they can develop into serious issues. Conflict resolution processes provide a way to resolve problems fairly and transparently. These mechanisms could also include jointly developed and agreed upon sanctions (Ostrom, 2008) to help ensure that all parties act in good faith.
Ensure that research findings are reported back to participants and local institutions and decision makers in an appropriate format. This may require return visits to	Presenting research findings back to local collaborators and communities is important to project transparency and benefit sharing. This process also enables community learning, and community feedback can also provide valuable learning for visiting scientists. Feedback and learning by both parties can help to build social capital and trust that enable subsequent research projects.

communities that should be included in project planning and costing.	Furthermore, communicating research results back to communities and decision makers may be essential to uptake of research findings, such as bringing about meaningful changes in management and conservation policy and/or practice. Communication should be tailored to local needs and customs, but will likely require return visits to the community to ensure effective communication. Repeat visits also give communities and local actors opportunities to provide their feedback about project implementation and outcomes.
Practice fair and equitable benefit sharing	Fair and equitable benefit sharing is essential to building and maintaining trust, and ensuring that communities see the benefits from their involvement. Ensuring that benefit sharing meets pre-agreed arrangements and expectations will also reduce potential dissatisfaction and conflict, and helps build social capital. Providing for community benefits should be considered as an ethical and moral obligation by visiting researchers (Bennett et al. 2017; Hind et al. 2015) and are traits of effective partnerships (Ostrom 2008). They are also requirements of university ethics permits and international agreements such as the Nagoya protocol. Additionally, some scientific journals (e.g. PLoS One) may require evidence of benefit sharing or compliance with ethics permits as a condition of publication.
Suggested practices and approaches for local collaborators and host nations	**Why this is important**

Host nations and resident scientists also need to be open and receptive to collaboration, and committed to participating in collaborative efforts. The means engaging with visiting scientists, and providing the advice, engagement, and support that was agreed during the planning and preparation stage.	Overly protective, obstructionist, or adversarial behaviours by hosts may deter visiting scientists from approaching resident scientists, or prompt less discerning researchers to ignore resident scientists and work independently, even to the extent of hiding their activities. The former situation can lead to lack of engagement and project failure, while the latter denies the host nation and local collaborators opportunities to benefit from the research outputs. Both situations also deny the host nation opportunities to engage with visiting scientists to develop local capacity.

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Conduct and protocol

Visiting scientists need to conduct themselves in a manner that builds trust and acceptance with local stakeholders. While researchers should be aware of general courtesy and protocols (see Planning and preparation), they may still need assistance in cultural brokering and translation. For example, in Fiji, obtaining support and participation of local communities may require formal introductions following specific cultural protocols. This process can be facilitated by local collaborators who are already trusted by the community. Visiting scientists should also acknowledge that their actions can have lasting effects, and that trust can easily be broken. Breaches of protocol may affect other researchers on completely unrelated projects, and make it more difficult for future visiting scientists to work in that location. Specific guidance and advice for conduct and protocol is provided in Table 3.

252 **Table 3. Advice for visiting scientists and host nations about conduct and protocol while implementing projects**

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Suggested practices and approaches for visiting scientists	Why this is important
Know and respect local practices, customs and protocols. Notable examples include using appropriate introductions and communication protocols, wearing appropriate dress and attire, respecting cultural and religious practices such as prayers times, and considering important holidays or cultural events such as religious festivals and holy days.	Local practices, customs, and protocols are the social norms by which communities operate. Respecting these protocols will help visiting scientists avoid causing offence or creating problems related to cultural or political sensitivities. Demonstrating knowledge of and appreciation for these customs and protocols may also help build trust by showing that visiting scientists have made the effort to understand local values. Accounting for significant cultural events such as holy days also ensures that project activities do not clash with these significant events.
Acknowledge work done by predecessors. Acknowledge existing work, data sources, and the input of local partners when this information is used in research outputs such as papers and presentations.	Actively acknowledging the work done by predecessors shows that visiting researchers are willing to listen and learn, have humility, and demonstrate openness to and respect for others. This acknowledgement also demonstrates that visiting scientists have done due diligence by finding out what work has gone before, and are not repeating previous projects. Acknowledging local input and the previous efforts of others in papers or conference presentations shares credit appropriately, and indeed may be required under benefit sharing agreements (see *collaboration and reciprocity*).

Attempt to learn the local language.	Aside from the obvious benefits of being able to communicate more clearly, visiting scientists that try to learn the local language demonstrate willingness to engage with local people on a more personal level. Learning the local language can also build a foundation for longer term projects in the region.
Be accepting of different world views and perspectives, and follow local advice. It should be noted that when building research collaborations, egoism is negatively correlated with trust (Bstieler 2006).	Accepting different world views and perspectives shows respect for local values and that visiting scientists are willing to work with local actors within their context. This can build trust. Alternatively, disagreeing with local protocols and traditions can make visiting scientists appear arrogant and disrespectful which in turn, can cause conflict and distrust.
Be genuine about intentions and about reciprocity for local stakeholders. Resist making promises or commitments that cannot be met.	Being genuine about intentions and reciprocity builds trust, and some communities can be very perceptive and can identify disingenuous interactions. Delivering on promises made builds trust, while failing to deliver on promises may lead to resentment and distrust from unmet expectations. Importantly, these experiences can also affect how the community responds to future projects.
Suggested practices and approaches for visiting scientists	**Why this is important**
Host nations and local collaborators need to deliver on the commitments made to visiting scientists, and act with honesty and integrity alongside the visiting research team.	Visiting scientists may be very dependent on local actors and thus, local actors need to deliver on their agreed contributions and failure to do so may jeopardise the project. This also means communicating clearly and honestly with visiting scientists about project

	progress and activities to ensure that everyone on the project team has accurate information and expectations. Inaccurate assumptions can lead to conflict, erodes trust, and can even result in serious misunderstandings that cause a project to fail. Importantly, these experiences can then affect visiting scientists' attitudes and willingness to work in that location.

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Conclusion

This paper presents practical advice from local researchers and managers about how visiting scientists and their hosts can put into practice the calls for better collaboration in conservation research (e.g. Bennett et al. 2017; Hind et al. 2015). While some of these concepts are broadly covered in university research ethics processes, the intent here is to give collaborating scientists specific guidance and tangible steps they can implement to improve research effectiveness and conservation outcomes. Careful and considered *planning and preparation* will help ensure that projects address the most pressing research questions and conservation issues, involve the necessary people and agencies, use appropriate and realistic methods and approaches, and provide opportunities for genuine local engagement during project development. This last consideration may be especially important in focusing the project on priority issues, and in building trust and collaboration. Effective *collaboration and reciprocity* between visiting scientists and their hosts means sharing local resources (e.g. local knowledge, site access, biological materials) and project benefits in a fair and equitable way. Similar to systems for the fair distribution of property rights (Ostrom 2008), effective collaboration requires partnership based on openness, trust, commitment, and a shared understanding of purpose, boundaries, and governance. It(Hind et al. 2015) is possible that it could take years to develop these relationships. It is also likely that mistakes and misunderstandings will occur. Nevertheless, it is clear that successful collaborations can significantly increase the success and quality of conservation research by helping to ensure that local actors engage and invest in the effort. Genuine collaboration and reciprocity can also ensure that all parties receive real benefits such as capacity building for local actors in conservation research, leadership, and practice. In particular, capacity building can bring about significant and long-lasting conservation benefits by empowering local actors to pursue conservation efforts (Hind et al. 2015). Genuine collaboration and reciprocity may also help

communities become more open to adopting project recommendations and conservation actions. Once the project begins, following appropriate *conduct and protocol* will help ensure that local actors and communities remain engaged. Respecting local customs will also help build and maintain trust and legitimacy, which may help communities become more accepting of project outcomes and recommendations. Overall, well-planned and implemented collaborative projects can set the foundations for long-term partnerships that lead to further research projects, generating new ideas and knowledge while at the same time, strengthening local capacity, capability, and conservation outcomes.

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