Beyond skills and knowledge: the role of self-efficacy and peer networks in building capacity for species conservation planning

BRETT L. BRUYERE, JAMIESON COPSEY and SARAH E. WALKER

Abstract Biodiversity loss is one of the greatest global challenges and requires substantial investment in building the capacity of conservation professionals to design and implement robust conservation plans. In this study, we surveyed 155 past participants of training in facilitating species conservation planning processes given by the Conservation Planning Specialist Group of the IUCN Species Survival Commission. Based on a recently developed theory of change for the training, we examined how and to what extent the training contributed to the desired outcome of increasing trainees' capacity for leading the design and facilitation of species conservation planning processes. Our results indicate that recall of training content, self-efficacy (an individual's belief they can complete a specific task or behaviour successfully) and peer network participation had significant impacts on the outcome of applying training content in the workplace. Furthermore, our results suggest that self-efficacy played a highly influential role in trainees' participation in species conservation planning post-training. The implications of this research point to designing conservation training that considers not only the skills and knowledge to be gained by learners but also the strategies that enhance trainees' self-efficacy in applying new skills and knowledge and in establishing peer networks to support trainees in turning training objectives into realities.

Keywords Capacity building, conservation, peer networks, self-efficacy, theory of change, wildlife

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Introduction

Greater investment in capacity building for conservation is widely accepted as critical for limiting species loss globally (Rodriguez et al., 2006; Elliott et al., 2018). This points to a need for capacity-building programmes that link conservation efforts to positive changes in the status of species and systems. However, capacity-building providers often lack clarity and evidence regarding how their training will influence their participants and lead to desired outcomes and impacts (Sawrey et al., 2017). To date, much focus has been placed on measuring the outputs of training activities (e.g. numbers of people trained from different countries or organizations) and less attention has been given to how these outputs lay the groundwork for desired longer-term outcomes or impacts. A useful starting point for rethinking this journey is the development of a theory of change (Taplin et al., 2013) that provides a conceptual overview of the hypothesized causal steps involved in moving from the implementation of some form of capacity-building intervention (e.g. a training course) through to a desired end point (e.g. the recovery of a species).

A theory of change model is at best a coarse approximation of a much more complex truth. In other words, 'all models are wrong, but some are useful' (Box & Draper, 1987, p. 424). By enabling us to begin to give shape to the change that we envisage a training intervention will achieve, theories of change provide the framework by which we can monitor realities, evaluate outcomes and learn and adapt accordingly. A theory of change helps bridge the gap to previous capacity-building approaches, helping us understand how a particular activity leads to desired long-term impacts. Between the inputs and impacts are a sequence of events and outcomes that are imperative to the process but often undefined or undescribed (Taplin et al., 2013). A theory of change is typically developed by defining the desired impact and then working backwards to define the conditions that must exist for the desired impact to come to fruition (Taplin & Clark, 2012).

A number of fields, including international development and public health, have long been at the forefront of utilizing a theory of change approach (Vogel, 2012; Valters, 2014). More recently, conservation actors have adopted this approach; e.g. The Nature Conservancy's Conservation by Design framework and the Conservation Measures Partnership's Open Standards for the Practice of Conservation. In research, theory of change approaches have been documented in conservation, including in illegal wildlife trade (Biggs et al., 2016), conservation and development models (Salafsky, 2011) and conservation impacts on human well-being (Bottrill et al., 2014). Others have advocated for the importance of similar theory of change approaches in

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conservation, albeit sometimes using different names such as 'results chain' (Margoluis et al., 2013).

Typically, the desired long-term outcome of many conservation training programmes is that participants learn and then apply new knowledge and skills. Research into the effectiveness of training for gaining new knowledge and skills within conservation is both prevalent and favourable, such as training to build capacity for conservation decision-making (e.g. Johnson et al., 2015), planning and adaptive management (Redford et al., 2018) and interdisciplinary thinking (Welch-Devine et al., 2014).

A body of conservation research exists that specifically emphasizes the value of skills and knowledge in collaborative processes and stakeholder engagement, which points to the importance of training on these topics. For example, one study found that stakeholder engagement was a common element amongst successful marine protected area management initiatives, and its omission was a common factor in marine protected area failure (Giakoumi et al., 2018). Similarly, in a review of 136 community-based conservation projects, local stakeholder participation and capacity were two of only a few factors that strongly influenced the success (or failure) of community-based conservation projects (Brooks, 2016). Specifically, within the discipline of species conservation planning, stakeholder-inclusive approaches to planning can create pivot points for threatened species, facilitating more effective collaborative work (Lees et al., 2021). However, a focus on learning new skills and knowledge such as the 'how to' of stakeholder engagement is often not sufficient on its own for the transfer of training to real-world practice (Chauhan et al., 2017; Na-nan et al., 2017). Further study is needed to better understand the factors that enable individuals to apply new capacities in conservation.

One factor that is known to influence an individual's likelihood to apply new skills and knowledge is self-efficacy. Self-efficacy is an individual's belief that they can complete a specific task or behaviour successfully (Bandura, 2010), and is linked to a number of performance characteristics, including engagement (Carter et al., 2016), motivation (Cherian & Jacob, 2013), intention to apply new learning (Al-Eisa et al., 2009) and persistence with difficult tasks (Lunenburg, 2011). It is distinct from similar constructs such as self-confidence or self-esteem in that self-efficacy is specific to a behaviour and/or circumstance. Self-efficacy is built through performing a behaviour successfully, observing others perform the behaviour, social persuasion that one has the capabilities for success and a personal interpretation of the emotional states associated with the behaviour (Bandura, 2010). Within conservation, the number of studies of self-efficacy is limited compared to other sectors. A 2020 study of rural Minnesotan farmers noted that low self-efficacy contributed to a lack of adopting conservation practices (Perry & Davenport, 2020). Similarly, a 2017 study of zoo visitors found that self-efficacy was a stronger predictor of intention to adopt behaviours that support biodiversity conservation compared to knowledge gain regarding biodiversity conservation (Clayton et al., 2017).

Another factor that is thought to play a role in the effectiveness of training programmes is engagement in peer networks, which are also referred to as learning networks or peer-to-peer networks. Much of what we know about the benefits of peer networks also comes from sectors other than conservation, although there are examples of how such networks enhance conservation practice (Pietri et al., 2015). Such networks typically consist of individuals from a common sector, connect members using technology that spans geographical locations (e.g. groups on social media or instant messaging platforms) and facilitate learning, discussion and the exchange of information (Bravo-Torres et al., 2017).

Studies of peer networks have concluded that networks can result in benefits such as further learning (Pietri et al., 2015), exploring ideas (Hur & Brush, 2009), and increased job satisfaction (Veretennik & Kianto, 2019). However, they can also have unintended consequences, such as overestimating the frequency or intensity of a problem, but these consequences can be overcome with effective facilitation (Naegels et al., 2020). Within conservation, studies of peer networks have noted the need for coordination and decentralized structures to promote exchange, as evidenced in a regional network in South-east Asia focused on coral reef conservation (Pietri et al., 2015).

Research question

Following our review of prior research and in the context of assessing the needs and questions of the Conservation Planning Specialist Group within IUCN, we evaluated numerous variables in the Conservation Planning Specialist Group's theory of change, including self-efficacy, peer networks and others. Overall, the purpose of this study was to determine the theory of change factors that contribute to the likelihood of training participants implementing species conservation planning activities.

Case study

Since 1979 the Conservation Planning Specialist Group (formerly the Captive Breeding Specialist Group) has worked to design and facilitate multi-stakeholder species conservation planning processes for governments, NGOs, zoos and other conservation groups worldwide. The organization is focused on ensuring that every species that needs a plan is addressed by an effective and implemented plan (Conservation Planning Specialist Group, 2020).

The Conservation Planning Specialist Group runs training courses (both in person and online) as one strategy to build capacity for species conservation planning. Doing

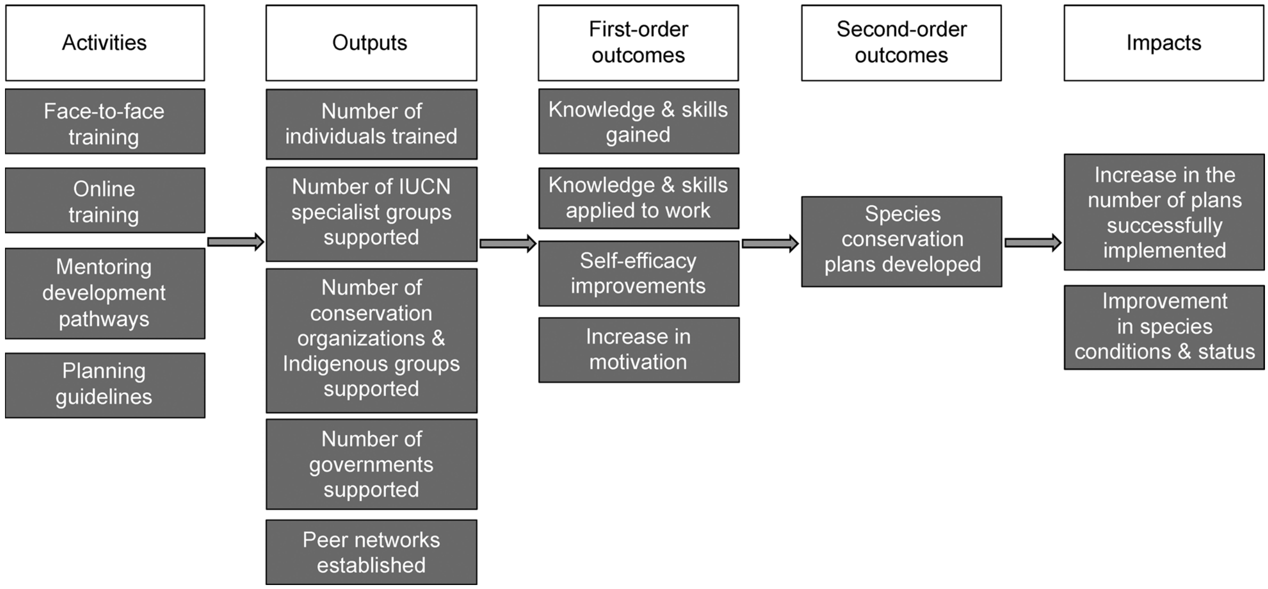

FIG. 1 Theory of change for the Conservation Planning Specialist Group's capacity building to support trainees to lead the design and facilitation of species conservation planning processes.

this requires an understanding of the skills and knowledge that trainees need to develop, as well as the factors that increase the likelihood these individuals will go on to implement more effective planning. In 2019–2020, the Group revisited its capacity-building approach using guidance and analysis prompted by reframing its training around a theory of change. An initial theory of change was developed based largely on known previous inputs and outputs as well as desirable outcomes and impacts. This theory of change was then discussed with internal and external Conservation Planning Specialist Group stakeholders via a series of individual interviews. Following the discussions and a literature review, the theory of change was refined. The Group's theory of change includes four inputs, five outputs, four first-order outcomes, one second-order outcome and two impacts (Fig. 1).

Methods

The Conservation Planning Specialist Group is one of the thematic specialist groups of the IUCN Species Survival Commission. Its species conservation planning training has traditionally been delivered via a multi-day workshop-style format, with a combination of lectures, simulations and role-playing to facilitate stakeholder processes. In 2018, the Conservation Planning Specialist Group launched a 6-week online training course that includes a mix of pre-recorded lectures and individual activities/readings supplemented with real-time instruction and group discussion. Since 2018, > 700 conservation professionals have attended either the in-person or online versions of this training.

To evaluate the training we developed a 54-item online survey and measured four first-order outcomes from the theory of change (self-efficacy: six items; motivation: four items; knowledge of and skills in 12 training subjects, measured through self-reporting of their recall of the content; and application of the 12 subjects, measured as frequency of application). We also measured the one second-order outcome in the theory of change: the development of conservation plans. In addition, we asked about the establishment of a peer network following training, which is one of the theory of change's outputs, and about the perceived benefits of peer networks in general. We were also interested in participation in other conservation actions, and asked whether participants had engaged in any of 11 such activities. Finally, we asked respondents for basic demographic information such as gender, years working in conservation and years since their Conservation Planning Specialist Group training. See Table 1 and Supplementary Material 1 for survey items.

We measured many of the dependent variables using a scale approach in which we combined multiple survey items to measure a single construct. For example, we assessed self-efficacy using six items measured on a scale of 1 (strongly disagree) to 5 (strongly agree) that included statements such as 'I can successfully perform many different tasks related to species conservation planning' and 'I have the skills to support others in working toward the species conservation planning goals.' In addition, we reduced the training topics to three categories by combining four topics to create a communication index, three topics to create a stakeholder engagement index and two topics to create a technical planning skills index. We completed an internal

TABLE 1 Example survey items from the Conservation Planning Specialist Group survey of former training participants.

Survey category	Example question(s)
Recall of information from 12 Conservation Planning Specialist Group training topics	On a scale of 1 (none) to 5 (a lot), please rate each of the following Conservation Planning Specialist Group training topics in terms of how much you remember (followed by list of 12 topics)
Frequency of applying knowledge/skills from 12 Conservation Planning Specialist Group training topics	On a scale of 1 (never) to 5 (more than weekly), please rate each of the following Conservation Planning Specialist Group training topics in terms of how much you have applied it in your work (followed by list of 12 topics)
Self-efficacy to perform conservation planning (six items)	When facing difficult tasks with species conservation planning, I am certain I can accomplish them (1, strongly disagree, to 5, strongly agree)
Motivation (four items)	On most days, I am determined to give my best effort at work (1, strongly disagree, to 5, strongly agree)
Development of wildlife conservation plans (one item)	Since completing the training, have you participated in the development of one or more species conservation plans?
Current participation in a peer network	Did the participants from your training create a network for communicating with each other, such as a WhatsApp group, Facebook group or similar strategy for convening? (yes/no)
Perceived benefits of peer networks	My Conservation Planning Specialist Group network contributes to my continued learning about conservation (1, strongly disagree, to 5, strongly agree)
Participation in 11 specific conservation actions since the Conservation Planning Specialist Group training (yes/no)	Leading a species conservation planning process, site/habitat restoration or outreach/education

consistency reliability analysis in these instances to assess the statistical rigour of these scales.

We compiled the sample using records from previous Conservation Planning Specialist Group courses conducted during 2015–2019. Record keeping was more robust for more recent years, skewing the sample towards participants from 2018 and thereafter. The total sample included 534 names and e-mail addresses of participants who had completed either the online or in-person training. Data collection occurred during a 30-day period in March and April 2020. The entire sample was e-mailed a notification from the Conservation Planning Specialist Group regarding the forthcoming survey, to encourage participation. An e-mail with the survey link was sent 1 week later. After 1 week a reminder was sent to non-respondents that included the survey link, followed by a final reminder 2 weeks later.

We used *SPSS 26.0* (SPSS, Armonk, USA) for all analyses. Analyses included descriptive statistics, reliability of the three scales, (see above), linear regressions to analyse the predictive measures of the application of training skills (communication, stakeholder engagement and technical planning skills) and self-efficacy, and logistic regression to analyse the predictive measures of participation in species conservation planning.

Results

Thirty-two e-mail addresses were invalid and a small number of surveys were started but not sufficiently completed and were therefore excluded. Overall, 155 usable surveys were retained for analysis, giving a response rate from valid e-mail addresses of 30.9%. The responses included 58% females and 42% males, with varying years of conservation experience. Nearly 56% (55.8%) of respondents reported participation in species conservation planning at some point following their training. More than three quarters of respondents reported participation in a peer network (Table 2).

We created nine indices from the survey. The indices represent recall of three specific content areas of the training (communication, stakeholder engagement and technical conservation planning skills), frequency of applying each of the three specific content areas, and motivation, self-efficacy

TABLE 2 Characteristics of the sample from a survey of Conservation Planning Specialist Group former training participants.

Characteristic	%
Gender	
Female	57.6
Male	42.4
Years of experience	
$<$ 5 years	30.5
6–10 years	24.1
11–15 years	14.2
$>$ 15 years	31.2
Led or designed a species conservation planning process	
Yes	55.8
No	44.2
Participation in a peer network	
Yes	78.9
No	21.1

TABLE 3 Reliability analysis of the nine indices created from the survey, and the mean ± SD of the variables in the species conservation planning theory of change (Fig. 1).

Indices	Number of variables	Example variables	Cronbach's α[1]	Mean ± SD
Recall of training content				
Communication[2]	4	Interpersonal skills	0.83	4.21 ± 0.67
Stakeholder engagement[2]	3	Conducting a stakeholder analysis	0.70	3.70 ± 0.75
Technical planning[2]	2	Conducting a species threat analysis	0.76	3.63 ± 0.83
Application of content				
Communication[3]	4	Interpersonal skills	0.83	3.00 ± 0.96
Stakeholder engagement skills?[3]	3	Conducting a stakeholder analysis	0.73	2.25 ± 0.89
Technical planning[3]	2	Conducting a species threat analysis	0.80	2.01 ± 0.96
Other indices				
Self-efficacy[4]	4	I am willing to take on challenging tasks	0.75	4.08 ± 0.48
Motivation[5]	3	I am determined to give my best effort at work	0.63	4.51 ± 0.50
Perceptions of peer network benefits[6]	4	A peer network contributes to my ongoing learning	0.89	3.91 ± 0.79

[1]Internal consistency measure of how strongly individual items are related to one another, to determine whether they can be combined into a single measure; Cronbach's $\alpha > 0.60$ was considered acceptable.
[2]Measured on a scale of 1 (recall nothing) to 5 (recall a lot).
[3]Measured on a scale of 1 (never) to 5 (applied more than weekly).
[4]Measured on a scale of 1 (low self-efficacy) to 5 (high self-efficacy).
[5]Measured on a scale of 1 (low motivation) to 5 (high motivation).
[6]Measured on a scale of 1 (perception of no benefits) to 5 (perception of numerous benefits).

and perception of the benefits of peer networks. Each index comprised 2–4 items; we measured how closely they are related using Cronbach's α internal consistency statistic, of which all were acceptable, with a value of at least 0.63 (Table 3).

Mean ratings of recall of the three training content areas varied between 3.63 for technical planning skills and 4.21 for communication skills (Table 3). On the application of training content in the workplace, mean ratings varied between 2.01 for technical species conservation planning skills and 3.00 for communication skills. The mean scores for self-efficacy, motivation, and perceptions of peer network benefits were 4.08, 4.51 and 3.91, respectively.

We conducted three linear regressions, with application of each of the three knowledge/skill content areas as the dependent variable. In each regression we included recall of corresponding training content, self-efficacy, motivation and participation in a peer network as independent variables. For the application of stakeholder skills, the variables self-efficacy, recall of stakeholder engagement content and peer network participation were retained ($P \leq 0.04$) and motivation was excluded ($P = 0.98$). The model explained 22% of the variance (adjusted R^2; Table 4). For the application of communication skills, the variables recall of communication content and peer network participation were retained ($P < 0.01$) and motivation and self-efficacy were excluded ($P \geq 0.09$). The model explained 17% of the variance (adjusted R^2; Table 4). For the application of technical planning skills, the variables recall of technical planning content, self-efficacy and peer network participation were retained ($P < 0.04$) and motivation was excluded ($P = 0.58$). The model explained 23% of the variance (adjusted R^2; Table 4).

We also conducted a logistic regression to determine the extent to which six independent variables influenced the leading and designing of species conservation plans. The independent variables included recall of each of the three training topics, motivation, self-efficacy and participation in a peer network. Only self-efficacy was retained ($P < 0.01$); all other variables were excluded. The regression explained 9% of the variance (Table 4).

Given that self-efficacy was significant as a predictor in several of the regressions, we conducted an additional linear regression to determine the extent to which any of our variables influenced self-efficacy. In a regression model with nine variables, three variables were retained ($P < 0.05$): motivation, recall of stakeholder engagement content and perception of peer network benefits (Table 4).

Discussion

The Conservation Planning Specialist Group's ultimate goal, as illustrated in its theory of change, is the improvement of the status of species, which it aims to achieve via training individuals in the development of species conservation plans. The theory of change suggests that knowledge/skills, motivation, self-efficacy, peer networks and other factors contribute to the pathways that lead to species conservation plans. This research assesses various elements of the theory of change.

A clear finding was the positive influence of content recall and peer network participation on our theory of

Table 4 Regression analyses used to examine the variables that influence conservation capacity building in the Conservation Planning Specialist Group Theory of Change.

Dependent variable	Standardized regression coefficient (β)	*t*	P	F	Adjusted R^2
Application of stakeholder engagement skills (linear regression)					
Model			< 0.01	14.44	0.22
Recall (stakeholder engagement content)	0.33	3.99	< 0.01		
Self-efficacy	0.15	2.04	0.04		
Peer network participation	0.20	2.62	0.01		
Variables excluded: motivation (P = 0.98)					
Application of communication skills (linear regression)					
Model			< 0.01	14.21	0.17
Peer network participation	0.27	3.37	< 0.01		
Recall (communication content)	0.32	3.90	< 0.01		
Variables excluded: motivation (P = 0.09) & self-efficacy (P = 0.66)					
Application of technical species conservation planning skills (linear regression)					
Model			< 0.01	14.05	0.23
Self-efficacy	0.17	2.03	0.04		
Peer network participation	0.19	2.49	0.01		
Recall (technical planning content)	0.34	4.16	< 0.01		
Variables excluded: motivation (P = 0.58)					
Self-efficacy (linear regression)					
Model			< 0.01	8.72	0.41
Motivation	0.41	5.43	< 0.01		
Recall (stakeholder engagement skills)	0.17	3.35	< 0.01		
Perceptions of peer network benefits	0.14	2.92	< 0.01		
Variables excluded: recall (P = 0.95) & application (P = 0.28) of technical species conservation planning skills, recall (P = 0.14) & application (P = 0.68) of communication skills, application of stakeholder engagement skills (P = 0.42), participation in peer network (P = 0.73) & years of experience (P = 0.65)					
Participation in species conservation planning (logistic regression)					
Model			0.02		0.11
Constant	0.01		< 0.01		
Self-efficacy	3.20		< 0.01		
Variables excluded: participation in peer network (P = 0.19), motivation (P = 0.73), recall of communication skills (P = 0.78), recall of stakeholder engagement skills (P = 0.27), recall of technical species conservation planning skills (P = 0.25) & years since training (P = 0.78)					

change's short-term or first-order outcome of how often an individual applied the training content. However, as we moved through the theory of change to the second-order outcome of developing species conservation planning processes, self-efficacy emerged as an important variable. This is consistent with previous studies indicating that gaining new skills and knowledge is not enough; other factors influence and enable the application of new skills and knowledge (Chauhan et al., 2017; Na-nan et al., 2017).

Our results also support the general premise that gaining new knowledge and skills via training has a positive effect on the application of new knowledge and skills after training. In our study, recall of content related to stakeholder engagement, communication and technical aspects of species conservation planning predicted how often a trainee applied the content related to these items.

However, recalling new skills and knowledge is only one influential variable. In three analyses to determine the factors that influence the application of the skills and knowledge from the three content areas, recall never acted alone; participation in peer networks and self-efficacy also contributed. This should prompt trainers to build their sessions and workshops to define training outcomes that go beyond the acquisition of knowledge and skills to include support systems (e.g. peer networks) and confidence in the application of new content (e.g. self-efficacy).

Establishment of peer networks, which was one of our theory of change outputs, was statistically significant in all three analyses that assessed the effect of participation in a peer network on the application of training content. What does an effective peer network look like and how does it contribute to the transfer of knowledge to the workplace? Literature from a variety of disciplines points to a number of best practices such as creating environments that build trust between network participants (Backer & Smith, 2011; Worton, 2019), promoting opportunities for participants to collaborate (Rhodes & Beneicke, 2006; Backer & Smith, 2011; Worton, 2019), creating subgroups within networks based on narrow topics (Backer & Smith, 2011; Miller et al., 2016) and providing support to facilitate the translation of abstract thinking into action (Backer & Smith, 2011; Scallan et al., 2017; Worton, 2019).

Our analyses also indicated that self-efficacy often affected the frequency of the theory of change's first-order outcome of applying training content. However, our theory of change was developed with longer-term outcomes in mind; we want training to contribute to species conservation planning, which we anticipate will lead to improvements in conditions for species. With that outcome as the focus in our analysis, the importance of self-efficacy increased considerably. In analyses assessing the factors that influence participation in species conservation planning, self-efficacy was the only variable retained.

Designing and implementing species conservation plans is an inherently complex task. It requires simultaneously applying the three training content areas (amongst others) that were the focus of our study as well as a multitude of internal and external factors beyond the capacities and assets of an individual. Of the three topics, stakeholder engagement content appears to be particularly important for affecting self-efficacy positively. Given that species conservation often occurs in settings with high potential for conflict and where a lot is at stake for both wildlife and people, this finding is to be expected. Leaders of species conservation planning processes need confidence that they can successfully work with those individuals who are most directly affected, positively and negatively, by species and species conservation. These skills not only contribute substantially to self-efficacy but often determine conservation success (Giakoumi et al., 2018). When designing training that enhances self-efficacy, the literature indicates that training opportunities should focus on providing participants with opportunities to observe someone modelling a targeted behaviour and allow participants to practice the behaviour themselves and receive feedback on their performance (Mintzes et al., 2013; Malinauskas, 2017).

When we examined variables regarding their relation to self-efficacy, recall of stakeholder engagement training content emerged as having a positive influence on how an individual perceived their ability to conduct species conservation planning effectively. This aligns with previous research that points to the need for local engagement in conservation efforts for projects to be successful (Brooks, 2016; Sterling et al., 2017; Giakoumi et al., 2018). When considered concurrently with this research on stakeholder involvement, our finding makes a strong case for ongoing commitment in the conservation sector to building capacity for stakeholder-related skills and knowledge, including building confidence amongst conservation practitioners for conducting such outreach.

With respect to limitations, our study was dependent on self-reported data. We used individual estimates of how often participants applied specific types of training content rather than more objective measures of actual observations of the respondents' behaviour. Furthermore, unreported analyses in our study showed there was generally no difference in outcomes between online and in-person training participants, but there are opportunities to research how these two learning modalities differ in terms of their effectiveness for capacity building, especially in the area of online training, which is more accessible and cost-effective than in-person training. In addition, our study was based on a sample of participants primarily from 2018 and thereafter. We had few respondents from prior years because of the low response rate from such individuals, e-mail addresses that were no longer valid as individuals moved on from where they had worked at the time of their training, and improved internal recordkeeping of training participants at the Conservation Planning Specialist Group after 2017.

Finally, an area for further research is determining how the contextual characteristics of an individual's specific circumstances affect performance, and assessing the factors in their work and broader environments that enable them to implement species conservation planning. This research points to stakeholder skills, self-efficacy and peer networks as factors that could improve species conservation planning, but there are other variables (both internal and external to an individual) that influence performance. In addition, comparisons based on context as well as individual social and demographic information would help to define further how best to support individuals and organizations to implement species conservation planning.

Conclusion

A theory of change first identifies its ultimate desired impact and works backwards to determine the activities and inputs needed to achieve that impact and the intermediate outputs and outcomes that link activities to the desired long-term impact. This study revealed the importance of peer networks, stakeholder knowledge and skills, and self-efficacy to the Conservation Planning Specialist Group's theory of change, with a particular emphasis on self-efficacy. Conserving biodiversity and reversing trends of species loss require myriad actions, including robust and comprehensive species conservation plans that ensure sufficient stakeholder buy-in so that they are implemented effectively. As our study indicates, training of individuals should go beyond conveying the technical aspects of how to conduct important conservation planning to address additional factors such as self-efficacy, which empowers individuals to apply their technical training in their work. Individuals must feel capable and confident at turning principles into practice and bring with them a network upon which they can lean for support and guidance.

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Author contributions Conceptualization: BLB, JC; project management: BLB; data collection and analysis: BLB; data interpretation: BLB, JC, SEW; writing: all authors.

Conflicts of interest BLB was the primary researcher for the project, acted in an external consultant role to the Conservation Planning Specialist Group, and did not receive any financial or similar support from the Conservation Planning Specialist Group to conduct the research. Data were collected and analysed by BLB alone. JC works for the Conservation Planning Specialist Group in a role of capacity building for conservation practitioners, did not participate directly in data collection or analysis, and decisions regarding the results to include in this manuscript were made in collaboration with BLB. SEW has no affiliation with the Conservation Planning Specialist Group.

Ethical standards This research abided by the *Oryx* guidelines on ethical standards. It followed guidelines and protocols that assured and protected the voluntary participation, confidentiality and well-being of survey respondents. The research was approved by Colorado State University's Institutional Review Board (protocol #2291).

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