Does the use of the Conservation Standards result in proposal funding success?

Assessing the business case for the Conservation Standards by exploring the relationship between best practices and funding outcomes

15 December 2020

Conservation Measures Partnership

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Conservation Measures Partnership

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Acronyms

CS	Conservation Standards. Shorthand reference for the Open Standards for the Practice of Conservation
CMP	Conservation Measures Partnership
M&E	Monitoring and Evaluation
RFP	Request for Proposals
SMT	Specific, Measurable, and Time-bound

Executive Summary

The Conservation Measures Partnership (CMP) is a partnership of NGOs, government agencies, and funders working together to develop best practices for the conservation of biodiversity by promoting adaptive management, evidence-based conservation, and impact achievement. CMP has worked over the past two decades to bring their ideas together into a formal set of principles known as the Open Standards for the Practice of Conservation (herein referred to as the Conservation Standards or CS). The CS consists of five steps - Assess, Plan, Implement, Analyze and Adapt, and Share (Figure 1).

CMP is often asked by leaders and funders of conservation organizations for evidence that application of the standards results in more effective and efficient conservation projects. Here, we address the more specific question: "Does the use of the Conservation Standards result in proposal funding success?" While funding success is not a guarantee of environmental or social impact or management effectiveness, obtaining adequate resources to implement activities and pay staff is an important, fundamental step in achieving conservation outcomes.

To do this, we explored a proposal dataset from a conservation donor that supported roughly $14.5M USD in international species conservation from 2017-2018. We developed a scoring system for assessing the use of best practices consistent with the CS within proposals, including criteria relating to threats, conceptual model, goals & objectives, theory of change, indicators & baseline data, adaptation, stakeholder engagement and human wellbeing. The total possible score a proposal could receive was 20 points. We scored 133 proposals using the full 13 criteria; due to time constraints we scored an additional 65 proposals using a simplified set of 7 criteria. So, in total, our sample included 198 proposals. The overall success rate for proposals in the dataset was 53% (i.e., 105 funded proposals out of 198 submissions).

In addition to scoring proposals against the CS, we characterized several factors that we hypothesized could influence funding outcomes. These included Year, Committee Review Group, Continent of Applicant, Type of Applicant, Organization Income, CMP Membership, Funding Request, Writing Quality, and Previous Funding. We performed a series of statistical analyses (t-tests, Chi-Square tests, and multiple binary logistic regression) to evaluate the relationship between the CS criteria and other relevant factors on funding outcomes. All analyses were carried out using SPSS (Version 26) and the significance threshold was set at 0.05.

CS scores ranged from 2 to 16 points. Funded and non-funded proposals alike had wide variability in scores. CS Practices that applicants incorporated most frequently included the identification and explanation of at least one direct threat, inclusion of direct threat indicators, and evidence of stakeholder engagement in the proposal. CS Practices that applicants incorporated less frequently included indicators to measure for overall project impact on the biodiversity targets, acknowledgement that activities may be modified based on monitoring, and inclusion of explicit human wellbeing targets.

Based on our scoring, funded proposals included more of the practices consistent with the CS than non-funded proposals, scoring an average of 0.59 points higher. This difference, though small in magnitude, was statistically significant ($p=0.036$). Three criteria: Biodiversity goal/s, Outcome-based Objectives and Stakeholder Engagement were significantly associated with funding success. Also, proposals submitted by CMP member organizations scored significantly higher than non-CMP members ($p=0.015$).

Results of our multiple logistic regression indicated that proposals from previously funded projects were 3.69 times more likely to be funded than proposals from projects that were not

previously funded. Also, proposals requesting amounts less than $200,000 were slightly more likely to be funded. Despite positive relationships in univariate analysis, factors that were not significant predictors in logistic regression of funding success included applicant type, CMP membership, and CS subset score.

In summary, when we controlled for variables such as previous funding success and budget requested, CS scores and CMP membership were not strong predictors of proposal funding success. Thus, we did not find strong evidence that the use of CS practices or CMP membership resulted in improved funding outcomes. Further research is needed for building understanding of the wider set of factors (including CS practices) that are most salient in proposal review and grant-making decisions. We also observed notable variability in CS scores in proposals, indicating that the use of CS practices remains “patchy” across organizations, including CMP members.

We highlight implications of this study for funders, for applicants of conservation funding, and for CMP. For funders, we note that studies like these can encourage a culture of evidence use and accountability that could help both funders and recipients align with stated priorities of funding opportunities. As equity and inclusivity are increasingly prioritized, it is also important to consider whether by promoting the use of the CS, funders can increase (or decrease) barriers to entry for some individuals or groups. For applicants of conservation funding, our results provided modest evidence for the importance of clearly articulating ultimate impacts on biodiversity targets, results-based objectives linking to those targets, and involving stakeholders in decision-making and project design. However, we recommend against assuming that use of the CS (or any framework) will mask or overcome weaknesses in implementation capacity, potential for impact, or other aspects of a project. For CMP, we recommend the partnership should first invest more effort in understanding the wider set of factors (including but not limited to CS practices) that are salient for funders and the people involved in proposal review and grant-making decisions. Similarly, if CMP wants a better answer to the question on whether the application of the CS leads to more effective and efficient conservation, the partnership should seek a better, more substantial understanding how of the CS fits into the wider set of factors that are most important in determining conservation outcomes.

This study represents the first comprehensive attempt to systematically and rigorously assess the effects of the CS on funding success. Nonetheless, we faced numerous challenges and limitations, which provide useful guidance on what a future “ideal” evaluation of the CS could look like. We challenge future funders, practitioners and researchers to invest in the kind of long-term research needed to answer the broader question of whether the CS leads to more efficient, more effective conservation projects. An ideal study would involve randomized assignment of projects to apply the CS (“treatment”), and long-term measurement of conservation outcomes, although the costs and time required for such a study are substantial. But we think it would be worth the effort to rigorously test the CS, once and for all.

Introduction & Objectives

The Conservation Measures Partnership (CMP) is a partnership of NGOs, government agencies, and funders working together to develop best practices for the conservation of biodiversity by promoting adaptive management, evidence-based conservation and impact achievement as some of their central tenets. CMP focuses on improving design, management, and ways to measure the impacts of conservation efforts and to share lessons learned. To achieve impact, the development of solid monitoring and evaluation practices are critical and complement project design, management, and assessment.

CMP has worked over the past two decades to bring their ideas together into a formal set of principles known as the Open Standards for the Practice of Conservation (herein referred to as the Conservation Standards or CS). Since conception, CMP has been developing, testing and promoting these standards to improve the efficacy of conservation actions. The CS are structured with the intention of making planning, implementation, and monitoring more efficient and effective. Adaptive Management is central to its process.

The CS consist of five steps (Figure 1) - Assess, Plan, Implement, Analyze and Adapt, and Share. Within each step are a set of practices that teams can follow to assess and improve effectiveness of their conservation actions, and ultimately contribute to increased conservation impact with high accountability. The standards have been applied to planning, managing, and monitoring hundreds of conservation projects around the world [1]. Globally, thousands of conservation practitioners, researchers and students have been trained in the CS [2]. Currently, 26 organizations are members of CMP [3].

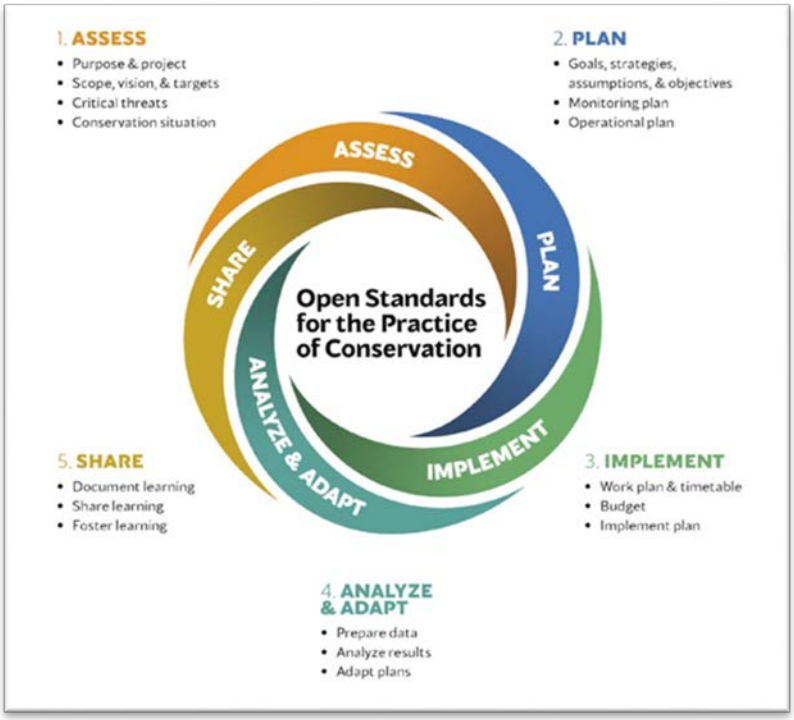


Figure 1. Diagram explaining the different steps that compose the Open Standards for the Practice of Conservation cycle. From <https://www.conservationmeasures.org/about-cmp/>

CMP is often asked by leaders and funders of conservation organizations for evidence that application of the standards results in more effective and efficient conservation projects. To date, a rigorous analysis has not been conducted to answer this question. Here, we address a narrower question: "Does the use of the best practices promoted by the Conservation Standards result in proposal funding success?" – potentially building a foundation for answering the bigger question. While funding success is not a guarantee of impact or effectiveness, adequacy of resources has been linked to conservation outcomes [4, 5]. Additionally, funding is often critical for implementation of conservation projects throughout their lifetime, across all phases of the adaptive management cycle. This project therefore is an attempt to break off a manageable piece from the big question -- to what extent can you draw a link between applications of best practice, as summarized in the Conservation Standards, to conservation outcomes? – and help identify priorities for future research and CMP investment.

Specifically, we investigated whether grant proposals that include practices promoted by the Conservation Standards have higher funding success.

Questions included:

- Are proposals incorporating the Conservation Standards (CS) practices more likely to be funded?
- What is the importance of the CS relative to other factors thought to influence funding success, such as the budget of the organization, the type of the organization, past funding success, funding request amount, writing quality, and other relevant factors?
- Are CMP members more likely to incorporate CS than non-members? What else may influence CS inclusion in grant writing?

To do this, we explored a proposal dataset from 2017 and 2018, supplied by a donor which supported roughly $14.5M USD in species conservation over that two-year time period. For the purposes of this report, the donor's identity will remain anonymous. This was a unique opportunity to begin exploring the pathway towards making a business case for the Conservation Standards based on data availability from a major funder of global conservation.

Methods

Grant proposal selection process

The conservation donor that supplied proposals maintains several competitive, international granting programs. Programs center on groups of species, regions, or threats**.** Grants can be awarded to commercial organizations, foreign entities, Indian tribal governments, individuals, institutions of higher education, non-profit organizations, and state and local governments. Awards typically range from $100,000 to $200,000. Requests for proposals (RFPs) are posted publicly online and include detailed descriptions of the elements to include in the grant proposal. Although the donor is a CMP member for more than 5 years, the application process does not require or mandate use of the CS. We investigated the full set of grant proposals within two species programs from the years 2017 and 2018. Within one species program that supports conservation in both Asia and Africa, the donor assesses proposals by continent. The other program supports conservation of a species group restricted to Africa. Thus, in total, we considered 198 proposals that had been evaluated by three separate donor review committees: Africa species group-1, Asia species group-1, and Africa species group-2.

Coding the CS

We did not know which of the applicants submitting proposals in our dataset had developed their projects through a formal CS process, or were trained in principles of the CS. Rather, we assessed proposals in terms of their level of consistency with a set of best practices associated with the CS. We developed a scoring system for evaluating the use of these best practices based on several components of the CS, including assessing criteria relating to threats, conceptual model, goals & objectives, theory of change, indicators & baseline data, adaptation, stakeholder engagement and human wellbeing (Table 1). We formulated our scoring system based on the steps and sub-steps of the CS, including adapting pieces of the CS Audit Tool[6]. (Table 2). We balanced what was possible and appropriate to score both in regard to what might be reasonable to expect for funding requests, in particular considering projects that might just be getting started, and in relation to the format and nature of items requested of applicants in the RFPs. Proposals received scores from 0-1 or 0-2 for each of the parameters, depending on whether the criteria for each parameter could be scaled across 2 or 3 distinct levels (Table 2). Individual parameter scores reflected the applicant's degree of inclusivity and ability to encapsulate the best practices for that component of the CS in their projects, as conveyed through their grant writing. Thus, we were assessing an applicants' commitment to employing these practices rather than an evaluation of their performance. Two independent coders tested our criteria using a sample of three proposals. We compared results and revised our scoring criteria to improve efficiency, objectivity, consistency, and precision of scoring. We re-tested the criteria and repeated this process four times (each with a new set of three proposals) until the independent coders consistently scored the same proposals within an average of 1.5 points of each other. After testing, we further dropped some parameters where per-parameter scores yielded no variability in scores. Initially, our scoring system included 13 criteria. The total possible score an application could receive was 20 points. Criteria were all weighted equally.

Table 1. CS parameters scored.

CS Parameter	CS Step	Description†
Direct Threats	1	Direct threats or pressures that impact biodiversity. These are human activities that immediately degrade a biodiversity target or the natural phenomena threatening biodiversity that result from human activities (e.g. climate change, droughts etc.)
Conceptual Model	1	A conceptual or situation model is a tool that visually portrays the relationships among the different factors in a situation analysis. The situation analysis process provides a common understanding of project's context by describing the relationships among the social, economic, political, and institutional systems and associated stakeholders that affect the conservation targets
Biodiversity Goal/s	2	The Goal statement links to a project's conservation targets and represents the desired status of those targets over the long term. They are formal statements of the ultimate impacts one hopes to achieve
SMTness of Goal/s	2	Specific, measurable and time-limited (i.e., SMT) aspects of SMART Goals. The A ("Achievable") and R ("Relevant") aspects were considered too subjective to score consistently.
Outcome-Based Objectives	2	Formal statements of the outcomes (or intermediate results in a results chain) that are believed to be necessary to attain project goals. Objectives specify the changes in the factors (direct and indirect threats and opportunities) that a team assumes are necessary to achieve in the short and medium term
SMTness of Objectives	2	Specific, measurable and time-limited (i.e., SMT) aspects of SMART Objectives. The A ("Achievable") and R ("Relevant") aspects were considered too subjective to score consistently.
Theory of Change	2	The causal ("if-then") progression of expected short- and long-term intermediate results that lead to long-term conservation results. TOC includes the clarification of assumptions about how proposed strategies will achieve both intermediate results and longer-term conservation and human wellbeing goals
Biodiversity Indicators	2	Ways to monitor progress along a theory of change, in terms of ultimate impact on biodiversity - the evidence you are actually improving the status or situation of your conservation targets
Direct Threat Indicators	2	Ways to monitor progress along a theory of change, in terms of threat reduction - the evidence you are actually reducing threats or pressures
Baseline M&E Data	2	Essential for measuring change, the level or measure of an indictor at the start of the project
Adaptation	4	Adaptive Management is the incorporation of deliberate learning into professional practice to reduce uncertainty in decision-making. Specifically, it is the integration of design, management, and monitoring to enable practitioners to systematically and efficiently test key assumptions, evaluate the results, adjust management decisions, and generate learning. It involves reflection and getting regular feedback (formal or informal) such as evaluations or audits
Stakeholder Engagement	General best practice (not associated with a particular step)	A stakeholder is any individual, group, or institution that has a vested interest in or can influence the natural resources of the project area and/or that potentially will be affected by project activities and that has something to gain or lose by conditions changing (or staying the same). Stakeholders are all those who need to be considered in achieving project goals and whose participation and support are crucial to its success
Human Wellbeing	General best practice (not associated with a particular step)	Human wellbeing incorporates 5 dimensions including necessary material for good life, health, good social relations, security and freedom and choice. In the context of a conservation project, human well-being targets are those components of human well-being affected by the status of conservation targets. Human well-being targets represent human well-being needs dependent on the conservation targets.[7]

† Descriptions modified from content from the Conservation Standards Version 4.0

Table 2. The scoring rubric for CS parameters.

CS Parameter	Score=0	Score=1	Score=2
Direct Threats	No direct threat identified or identified without explanation	At least one direct threat identified and explained	n/a
Conceptual Model	Drivers of threats, opportunities and their interlinkages not explained (i.e. no basal factors discussed)	Drivers of threats, opportunities and their interlinkages explained, identifying influential actors and their relationships to threats or threat reduction in the text (Must include 2 IT, 2O and 2As)	Same requirements as Score=1 but with supporting graphic
Biodiversity Goal/s	Goal statement not included, or stated goal is not about biodiversity or does not describe desired future state of biodiversity	Goal statement included, with goals articulated about biodiversity that describe desired future state	n/a
SMTness of Goal/s	No goal has any SMT components included	At least one goal has 1-2 SMT components included, but no goal has all 3 components	At least one goal has all three components of SMT included
Outcome-Based Objectives	No objectives articulated that describe a result/outcome	Some objectives articulated that describe a result or outcome	All objectives articulated describe a result or outcome
SMTness of Objectives	No objective has any SMT components included	At least one objective has 1-2 SMT components included, but no objective has all 3 components	At least one objective has all three components of SMT included
Theory of Change	No explicit reference to/or inclusion of TOC concepts/causal linkages in relation to proposed activities	In the text, at least two references to TOC/causal linkages or inclusion of related terms/phrases in relation to proposed activities (i.e. stating how activities create change).	In text or with graphic, comprehensive representation of TOC (such as theory of change, logic, results chain, Miradi, or log frame model presented) in relation to proposed activities
Biodiversity Indicators	Biodiversity indicators for overall project impact, and methods to measure them, not included in M&E section	Biodiversity indicators for overall project impact, and methods to measure them, included in M&E section	n/a
Direct Threat Indicators	Direct threat indicators and methods to measure them not included in M&E section	Direct threat indicators and methods to measure them included in M&E section	n/a
Baseline M&E Data	No stated indicators have baseline data presented	At least one stated indicator has baseline data presented	All stated indicators have baseline data presented
Adaptation	Applicant does not acknowledge that activities may be modified depending on evaluation of their monitoring results	Applicant acknowledges that activities may be modified depending on evaluation of their monitoring results	n/a
Stakeholder Engagement	No stakeholder engagement plan or not clear from text that stakeholders have a participatory role/voice in project	Evidence of stakeholder engagement plan or that stakeholders have a participatory role/voice in project	n/a
Human Wellbeing	No explicit human wellbeing targets addressed in proposal	Human wellbeing targets made explicit	Human wellbeing targets made explicit and their link to biodiversity targets through ecosystem services demonstrated

CS Subset as a proxy measure

The full rubric was implemented on 133 proposals; however, its application was extremely time consuming. To save time, the remaining 65 proposals in the dataset were scored using a simplified rubric that focused on the seven least time-consuming parameters to score (referred to as the CS Subset Score; Table 3) as a proxy for the overall CS Score. To ensure the suitability of using the CS Subset Score as a proxy for a proposal's more comprehensive inclusion of the CS, we examined the relationship between the results from the quicker-to-score and more time consuming-to-score parameters (Fig. 2), finding a significant positive correlation (Pearson's Correlation, N=133, r=0.494, p<0.001). The positive correlation supported our decision to use the simplified rubric as a proxy for scoring CS.

Table 3. Quicker- and more time consuming-to score CS parameters.

Quicker-to score (CS Subset Score)	More time consuming-to-score
Biodiversity Goal/s	Direct Threats
SMTness of Goal/s	Conceptual Model
Outcome-based Objectives	Theory of Change
SMTness of Objectives	Adaptation
Biodiversity Indicators	Stakeholder Engagement
Direct Threat Indicators	Human Wellbeing
Baseline M&E Data	

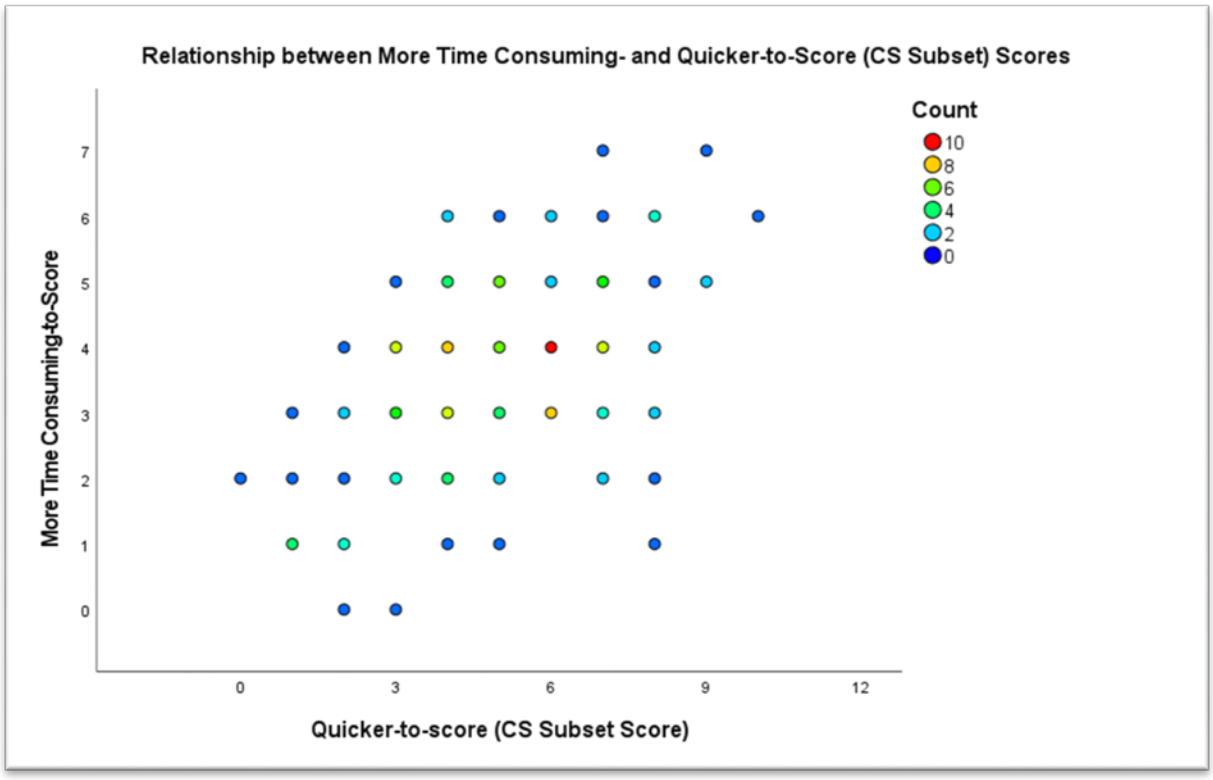


Figure 2. Relationship between quicker-to-score (CS Score$_S$) and more time consuming-to-score CS parameters (Pearson's Correlation, N=133, r=0.494, p<0.001).

Other proposal elements coded

In addition to CS, we characterized several factors that we suspected might additionally influence funding outcomes including Year, Committee Review Group, Continent of Applicant, Type of Applicant, Organization Income, CMP Membership, Funding Request, Writing Quality, and Previous Funding (Table 4). These factors may in some cases be considered confounding variables, because they might influence both the likelihood of an applicant to apply best practices (i.e. CS scores) and also funding success. For example, we can hypothesize that bigger, better-funded organizations may have greater capacity and training opportunities for staff. This may influence both their exposure to and application of the CS and their ability to write high-quality proposals, and therefore achieve funding success. We wished to control for these potentially confounding variables by including them in our analysis.

Table 4. Factors investigated that may impact funding success.

Variable	Method
Year	The year the application was awarded
Committee Review Group	Coded for three review groups: Africa Sp-1, Asia Sp-1, Africa Sp-2
Applicant	We used the name listed on the Application for Federal Assistance (form SF-424) for the applicant's Legal Name
Continent of Applicant	We determined the continent based on the country listed on the Application for Federal Assistance (form SF-424) for the applicant's address
Type of Applicant	We considered what type of conservation organization the applicant represented, placing the applicant in the best fitting category of NGO, University, Government Organization, Research Institute (when not part of a government or university), Individual Applicant or Other, after researching an applicant's profile on the Internet
Organization Income	Where possible, we tried to find the total income of the organization from online sources for the year the application was submitted. For example, if it was a US Non-profit organization, we used the IRS-Form 990, line 12 - Total Revenue
CMP Membership	If applicant was ever a CMP member leading up or during the year of submission, we considered it a member, even if the applicant was no longer a member at the time of submission. If applicant had never been a member by the time of submission, it was not considered a member (even if in a future year it did become a member).
Funding Request	The amount requested from donor for the specific proposal under review
Writing Quality	A subjective score given from 1-6 based on the overall quality of writing in the application
Previously funded	Whether or not the applicant self-identified in the text of the proposal as having received prior donor funding for the work or site
Number of references	Total number of references listed in the citation section of the proposal application

Analysis

- To determine if funded proposals were more likely to include CS practices than those that were not funded, we performed a t-test comparison of means for CS Proxy Scores for funded and non-funding applications.
- To explore whether associations existed between funding outcome and several other possible factors of interest, we conducted Chi-Square Tests for Independence of each factor to funded or not funded outcomes.
- To determine the Relative importance of CS in explaining the variance in proposal funding outcome to other factors we conducted a multiple binary logistic regression.
- To determine if CMP members were more likely to incorporate CS than non-members, we performed a t-test comparison of means for CS Proxy Scores for CMP and non-CMP members applications.

All analyses were carried out in IBM SPSS Statistics (Version 26). The significance threshold was set at 0.05 for all analyses.

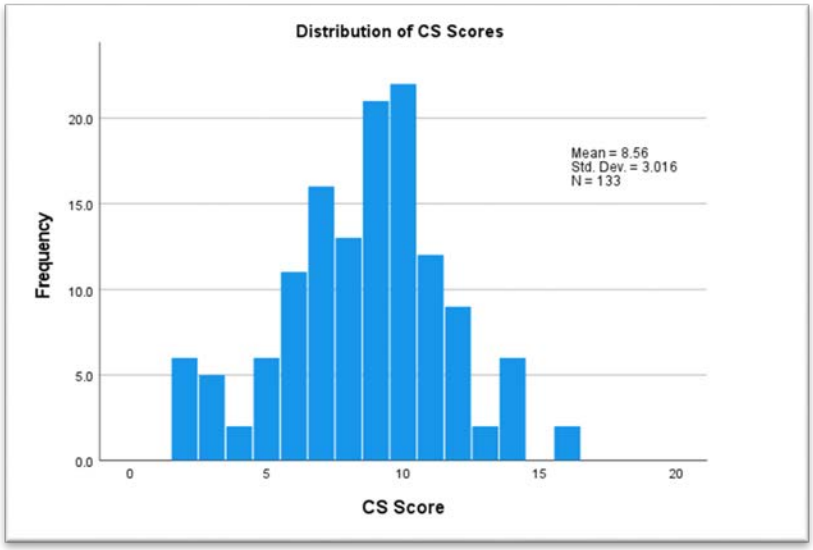
Results

Inclusion of the CS

Amount of CS in proposals

CS scores ranged from 2 to 16 points (X=8.56±3.016, N=133) and were normally distributed (Shapiro-Wilk test, W= .974, df=133, p=.011; Figure 3). CS Subset scores (from the quicker to score proposals) ranged from 0 to 10 points (X=4.98±1.977, N=198) and were also normally distributed (Shapiro-Wilk test, W= .973, df=198, p=.001; Figure 3).

a)



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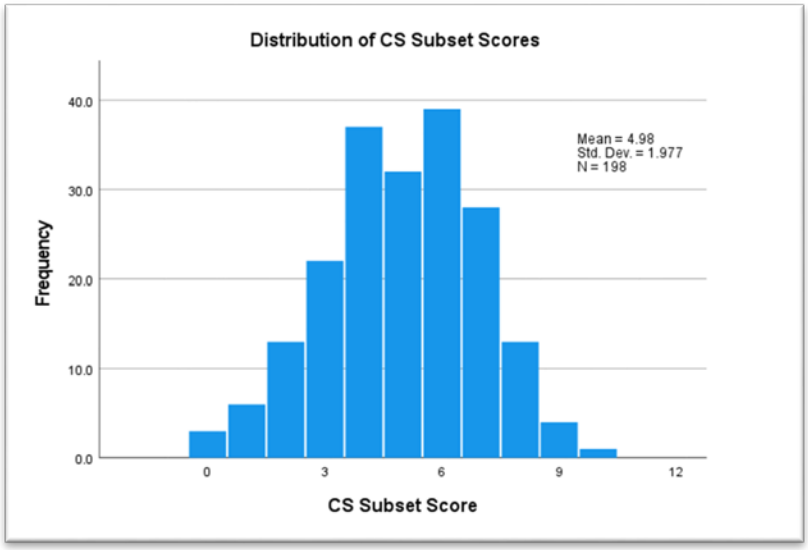


Figure 3. Distribution of a) CS Scores in partial dataset and b) CS Subset Scores in full dataset.

Distribution of Individual CS Parameters

The distributions of scores for the individual CS parameters investigated fell into three groups - practices that applicants were incorporating more frequently (Figure 4), practices in which applicants' use was mixed (Figure 5), and practices that applicants were applying less frequently (Figure 6). Sample sizes were 198 for Biodiversity Goal/s, SMTness of Goal/s, Outcome-based Objectives, SMTness of Objectives, Biodiversity Indicators and Direct Threat Indicators and 133 for Threat, Conceptual Model, Theory of Change, Stakeholder Engagement, Adaptation, and Human Wellbeing.

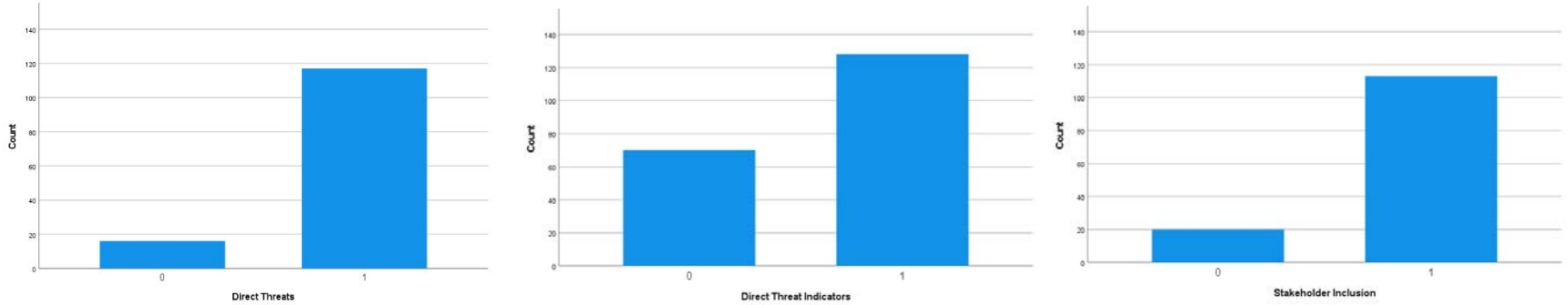


Figure 4. Histograms of the CS Practices that applicants incorporated most frequently: The identification and explanation of at least one direct threat, inclusion of direct threat indicators, and evidence of stakeholder engagement in the proposal. See Table 2 for scoring rubric.

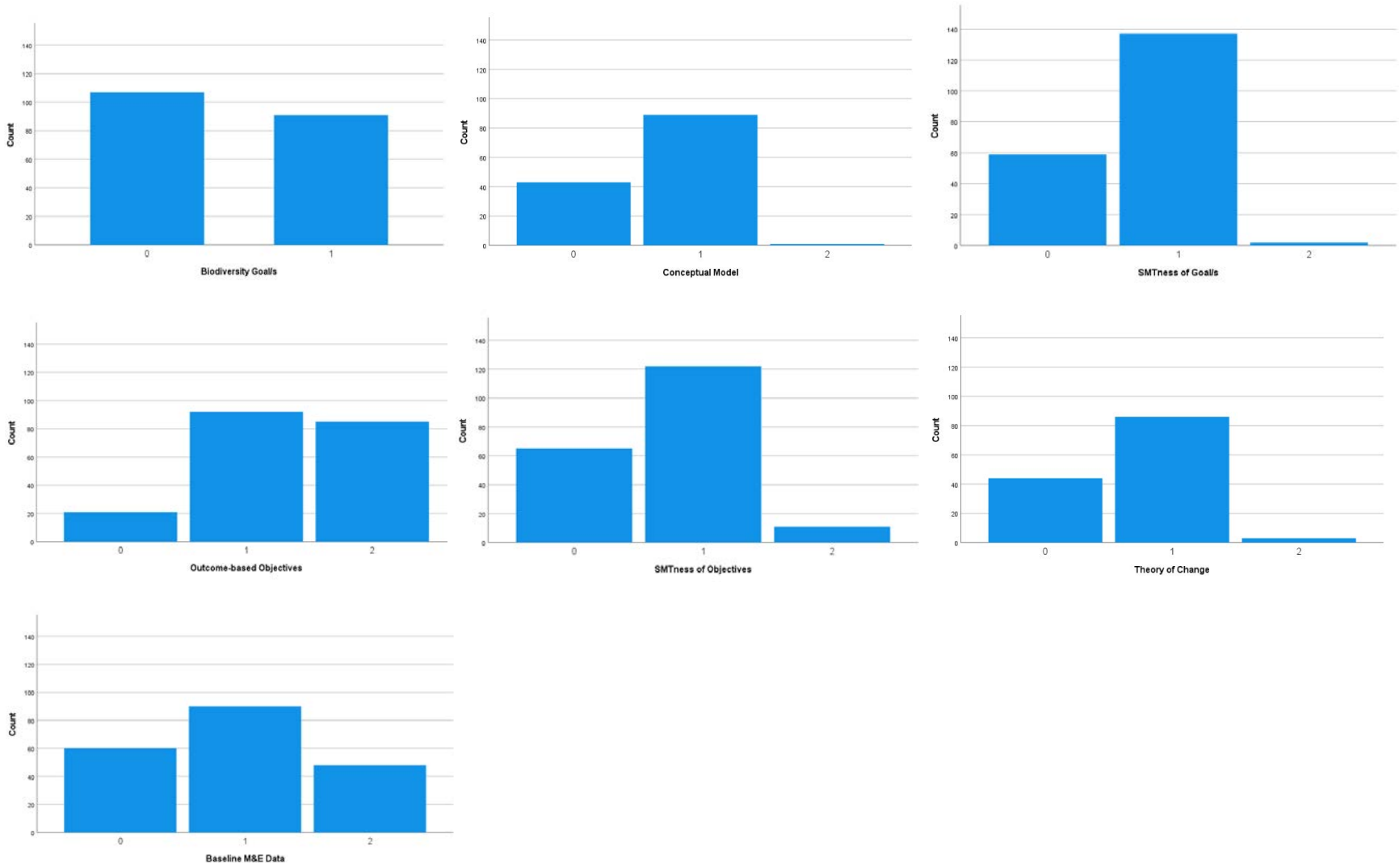


Figure 5. Histograms of CS Practices in which applicants' use was mixed: goals that articulated a desired future state of biodiversity; presence of goal and objectives statements that were specific, measurable, and time-bound; inclusion of conceptual model components; inclusion of outcome-based objectives; logic sequences supporting a theory of change; and inclusion of baseline M&E data. See Table 2 for scoring rubric.

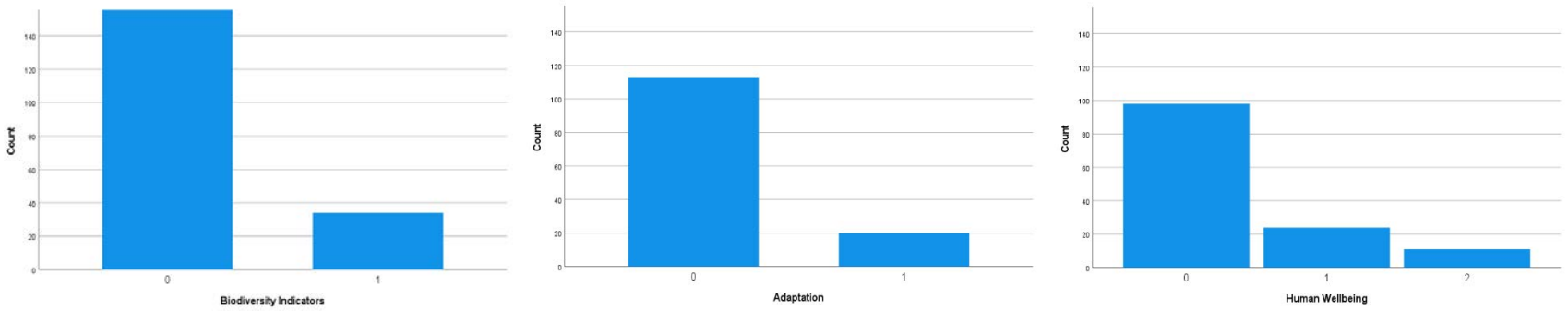


Figure 6. Histograms of CS Practices that applicants incorporated less frequently: indicators to measure for overall project impact on the biodiversity targets, acknowledgement that activities may be modified based on monitoring, and inclusion of explicit human wellbeing targets. See Table 2 for scoring rubric.

Funding Success

Funding Outcomes Summary

Just over half of the proposals in the dataset (53%) were funded (N=198; Figure 7; Table 5).

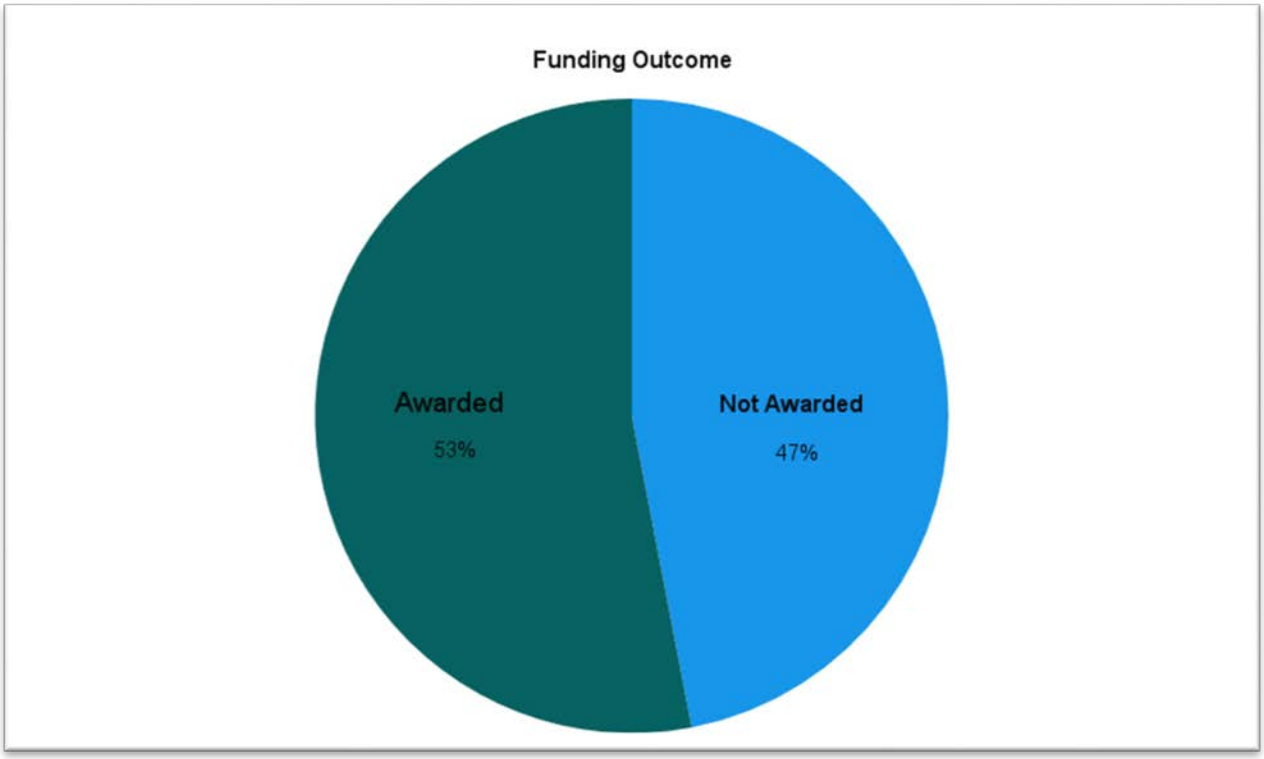


Figure 7. Funding outcome for the full dataset. N = 198.

Table 5. Funding outcomes of proposals reviewed.

Funded	Frequency	Percent
No	93	47.0
Yes	105	53.0
Total	198	100.0

Does CS Influence Funding?

Based on our scoring, funded proposals included more of the practices consistent with the CS than non-funded proposals, scoring an average of 0.59 points higher (Table 6). This difference, though small in magnitude, was statistically significant (Two Sample T-test, t=-2.116, df=196, p=0.036, d=0.301; Table 7). Median scores were similar, and applicants of funded and non-funded proposals alike had wide variability in scores (Figure 8).

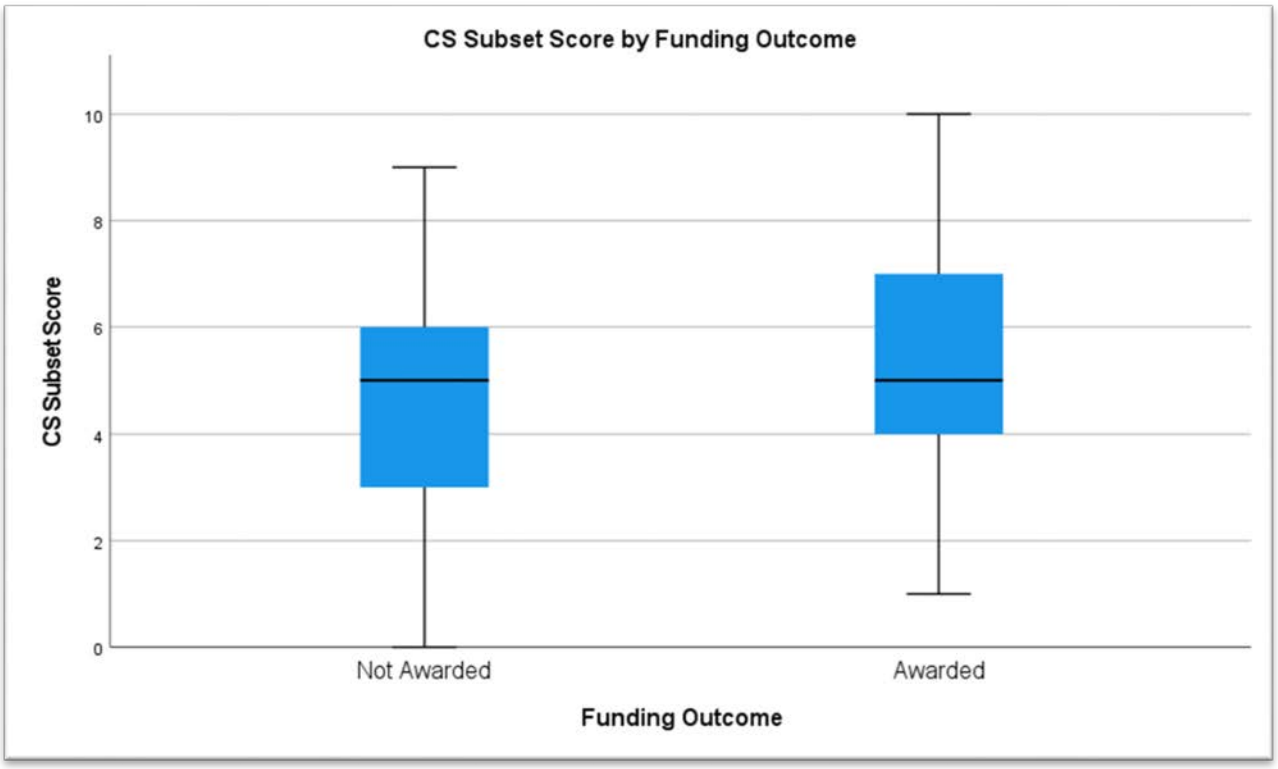


Figure 8. Box plots of the CS Subset Scores for proposals that were and were not funded, demonstrating slightly higher scores for those that were funded.

Table 6. Comparative statistics for funded and not-funded proposals.

Awarded	N	Mean	St. Dev	St Err of Mean
No	93	4.67	2.034	.211
Yes	105	5.26	1.891	.185

Table 7. Results of the T-test comparison on means for CS Subset Scores.

	t	df	Sig	Mean Diff	St. Error Diff	Lower 95% CI	Upper 95% CI
CS Subset Score	-2.116	196	0.036	-0.590	.279	-1.141	-.040

Parameters of CS associated with funding outcome

Biodiversity goal/s, Outcome-based Objectives and Stakeholder Engagement were significantly associated with funding success (Table 8). The magnitude of effect sizes (Cramer's V) were low for all parameters, including the three parameters with statistical significance, with the Cramer's V varying from 0.157 to 0.186 (Table 8).

Table 8. Chi-square tests of association between CS parameters and funding outcome.

Parameter	X^2 Stat	N	DF	P-Value		Cramer's V†	Degree of association
Threat	1.206	133	1	.272		.095	Little to none
Conceptual Model	2.987	133	1	.084		.150	Low
Biodiversity Goal/s	**4.894**	**198**	**1**	**.027**		**.157**	**Low**
SMTness of Goal/s	1.782	198	1	.182		.095	Little to none
Outcome-Based Objectives	**6.863**	**198**	**2**	**.032**		**.186**	**Low**
SMTness of Objectives	.026	198	1	.872		.011	Little to none
Theory of Change	.004	133	1	.951		.005	Little to none
Biodiversity Indicators	.000	198	1	.991		.001	Little to none
Direct Threat Indicators	1.507	198	1	.220		.087	Little to none
Baseline M&E Data	2.276	198	2	.321		.107	Low
Adaptation	3.626	133	1	.057		.165	Low
Stakeholder Engagement	**3.910**	**133**	**1**	**.048**		**.171**	**Low**
Human Wellbeing	1.074	133	1	.300		.090	Little to none

† A Cramer's V value of 0.3 is generally considered the threshold for a parameter to have a moderate degree of association with the dependent outcome.

In terms of the directionality of the three significant relationships, more proposals with Biodiversity Goal/s were funded than expected by chance and fewer without (adjusted residuals = 2.2; Figure 9). Additionally there were more proposals funded with Outcome-based Objectives (scoring a 2) than expected (adjusted residual = 2.3; Figure 10). There were also more proposals funded with stakeholder inclusion practices than expected and fewer without (adjusted residuals=2.0; Figure 11).

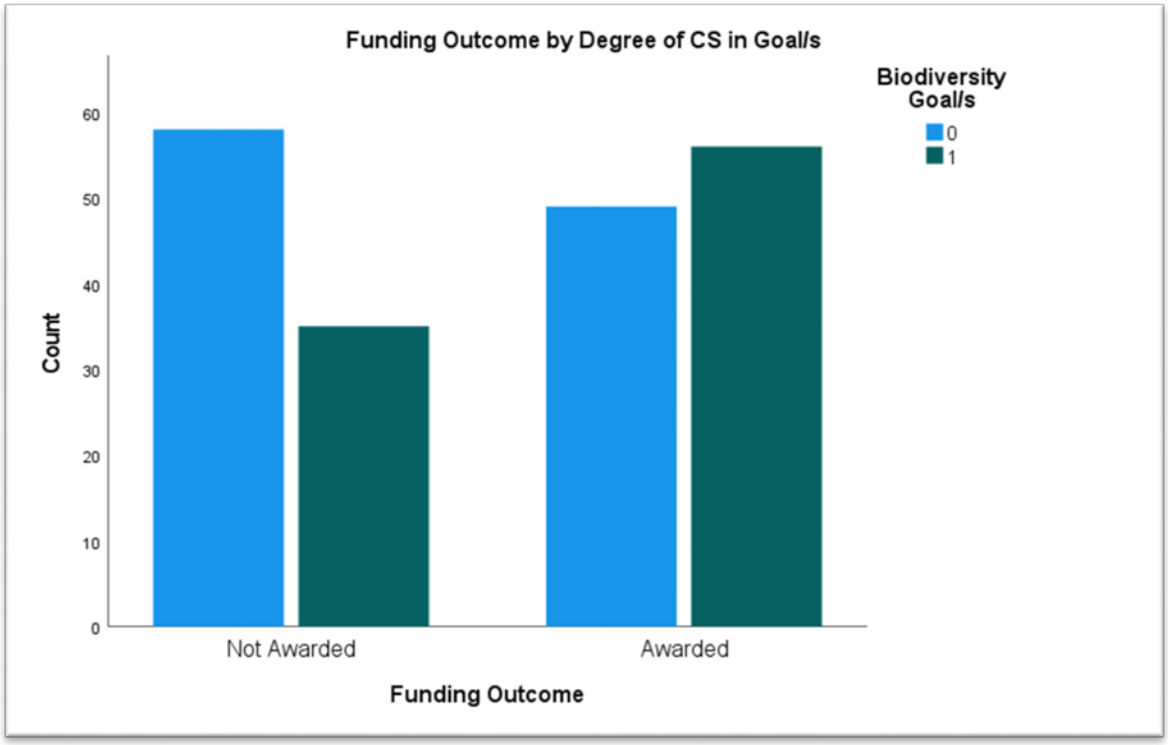


Figure 9. More proposals with biodiversity goals were funded than expected by chance and fewer without N=198.

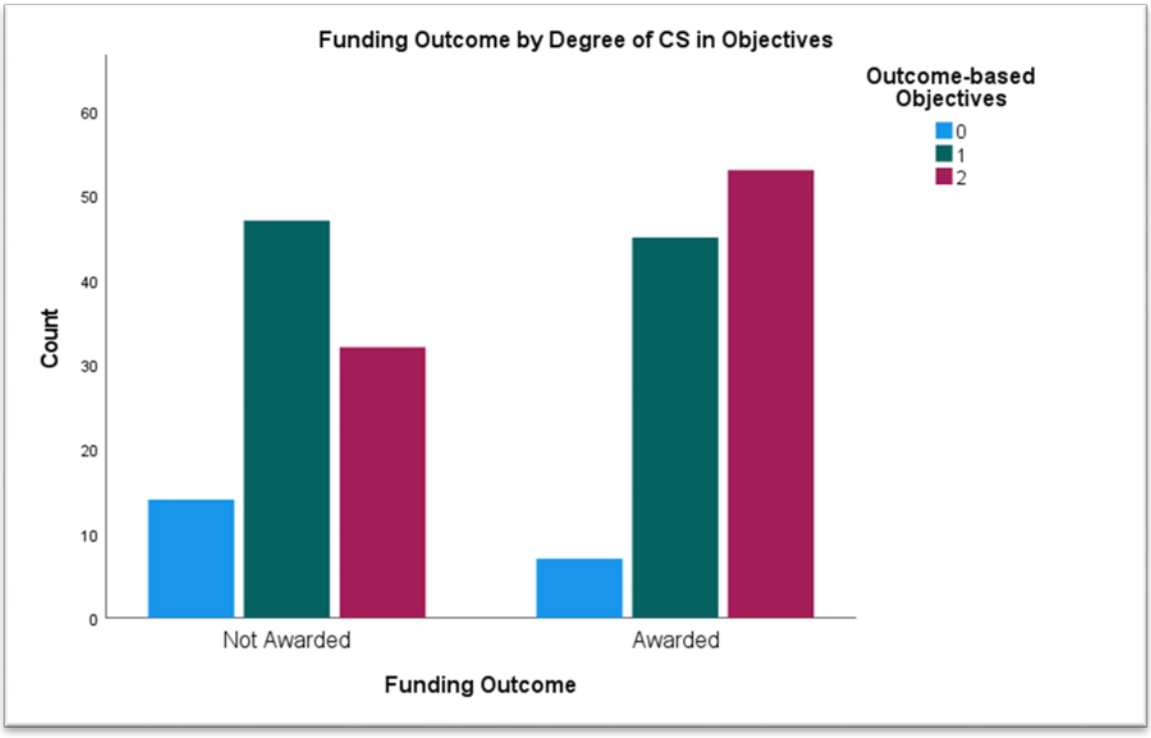


Figure 10. More proposals funded with outcome-based objectives (scoring a 2) were funded than expected by chance. N=198.

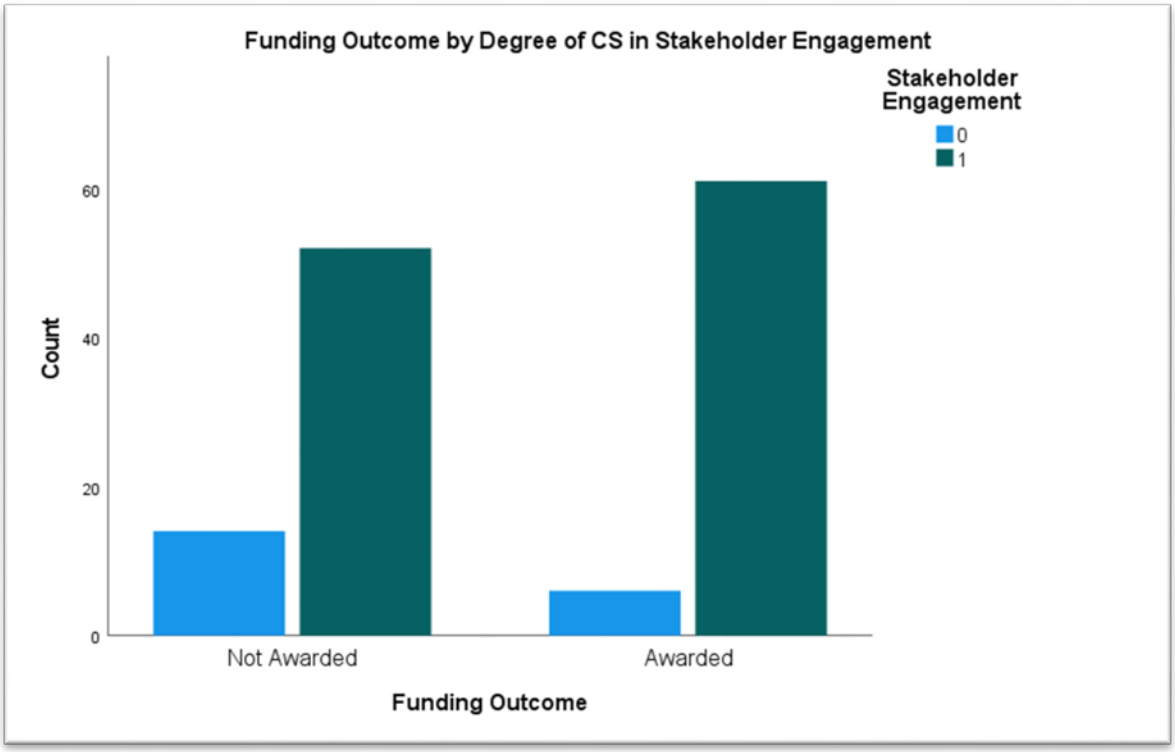


Figure 11. More proposals were funded with stakeholder inclusion practices than expected by chance and fewer without. N=133.

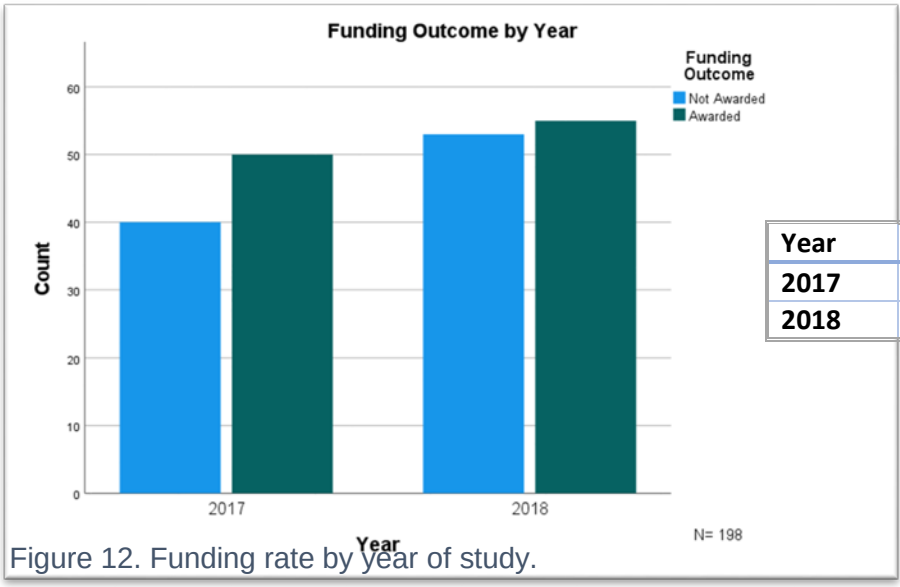
Relative Importance of Factors in Funding Success

Factors at a Glance

The following figures show the distribution for each of the specific factors investigated across proposals that might affect funding success (Year, Committee Review Group, Continent of Applicant, Type of Applicant, Organization Income, CMP Membership, Funding Request, Writing Quality, Previous Funding, and Frequency of Applying), broken down by funding outcome. The histograms help visualize the data that we considered incorporating into the logistic regression. For ease of interpretation, we have highlighted (in yellow) results that we think were noteworthy. These include results in which funding rates were lower than 40% or higher than 60% for sample sizes greater than 20 proposals (these thresholds were arbitrarily chosen; no statistical tests of significance were performed here.) These results included lower award rates from applicants based in the African continent and for proposal requests greater than $300,000. Higher award rates were seen in the Asia species review, applicants from the European continent, applicants with organizational incomes greater than $1 million, CMP Members, applicants with budget requests less than $200,000, and projects previously funded by the funder.

Year

No strong trends were observable between years in funding rates.

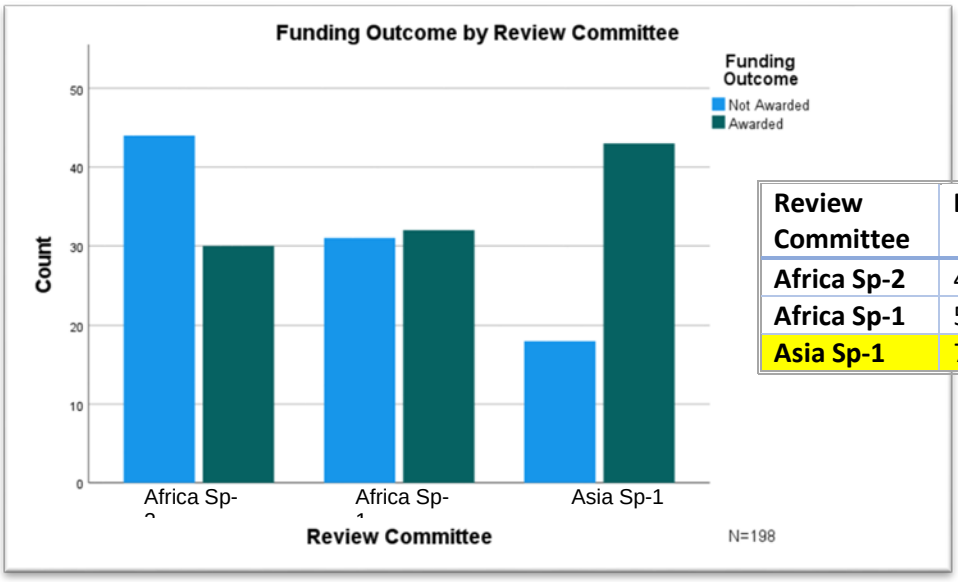


Year	Funding Rate
2017	55.6%
2018	50.9%

Figure 12. Funding rate by year of study.

Committee Review Group

An interaction was apparent between funding success and review committee. The Asia species review committee had the highest funding rate and was twice as likely to fund its applicants as the African species-2 review.

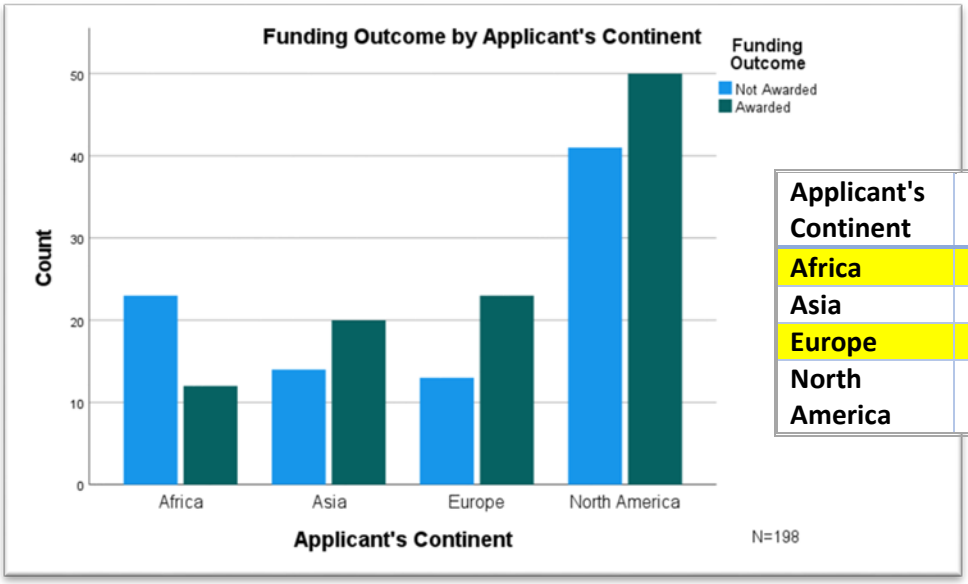


Review Committee	Funding Rate
Africa Sp-2	40.5%
Africa Sp-1	50.8%
Asia Sp-1	70.5%

Figure 13. An interaction was apparent between funding success and review committee.

Continent

Applicants coming from Europe had the highest funding rates – more than double that of applicants from Africa.

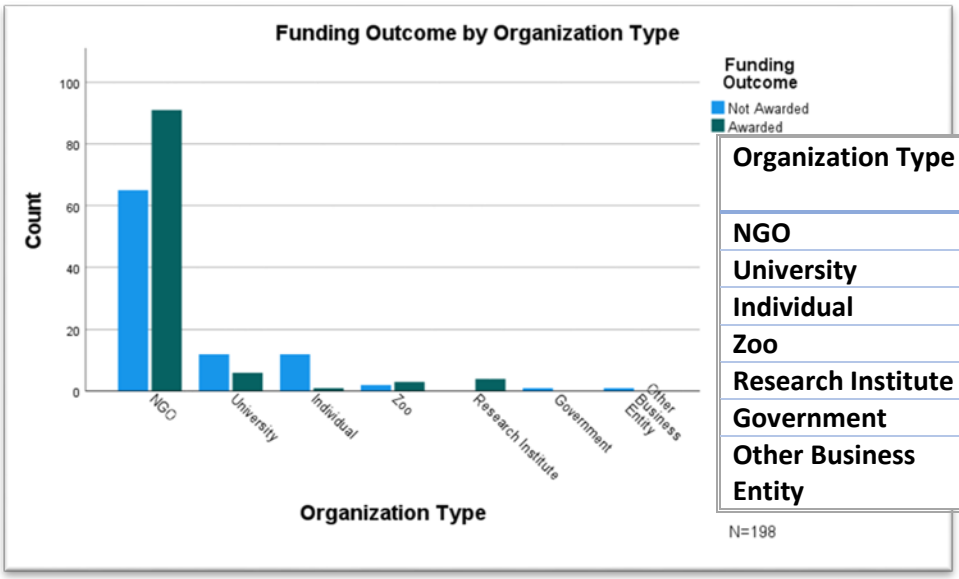


Applicant's Continent	Funding Rate
Africa	34.3%
Asia	58.8%
Europe	63.9%
North America	54.9%

Figure 14. An interaction was apparent between funding success by African-based continents relative to applicants from other continents.

Type of Applicant

Sample sizes were low for most types of organizations. For applicant types with at least 15 submissions (NGO, University, Individual), NGOs were more likely than either University or Individual applicants to receive funding.

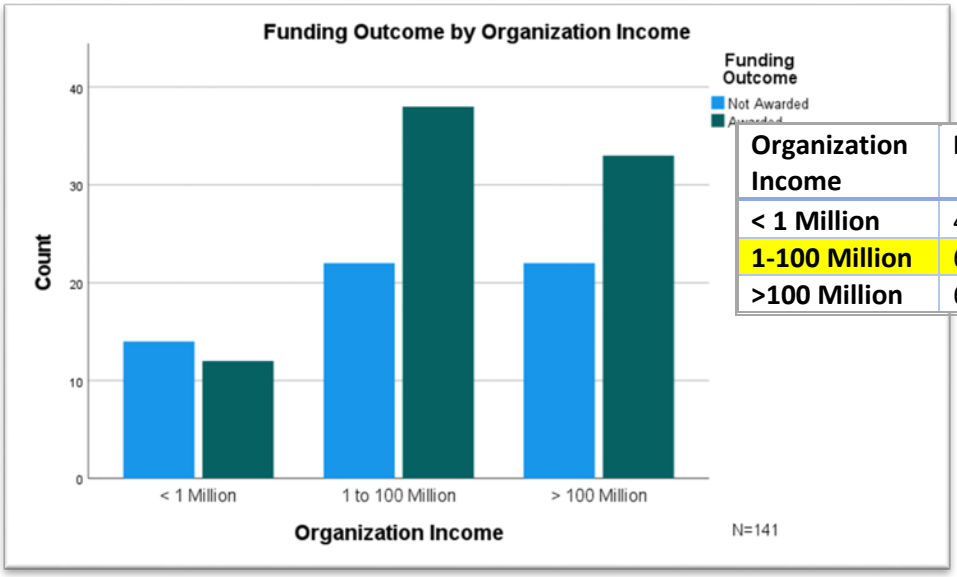


Organization Type	Funding Rate
NGO	58.3%
University	33.3%
Individual	7.7%
Zoo	60%
Research Institute	100%
Government	0
Other Business Entity	0

Figure 15. Funding rates by organization type.

Organization Income

Organizations with incomes greater than USD one million (i.e. the better-funded organizations) were far more likely to be funded than those with lower incomes.

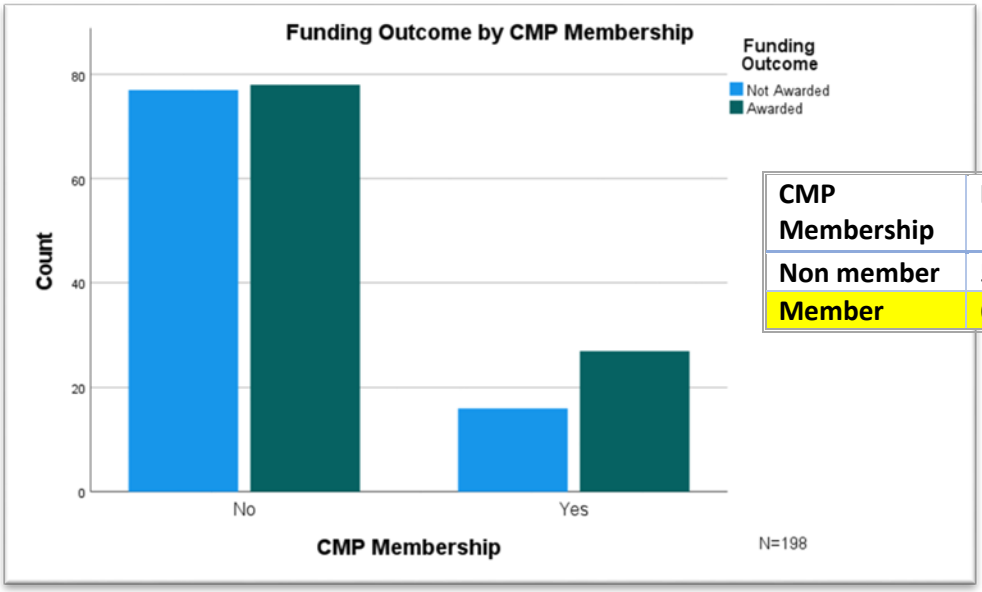


Organization Income	Funding Rate
< 1 Million	46.1%
1-100 Million	63.3%
>100 Million	60.0%

Figure 16. Organizations with greater incomes had higher funding rates.

CMP Membership

Proposals that came from CMP member organizations were slightly more likely to get funded.

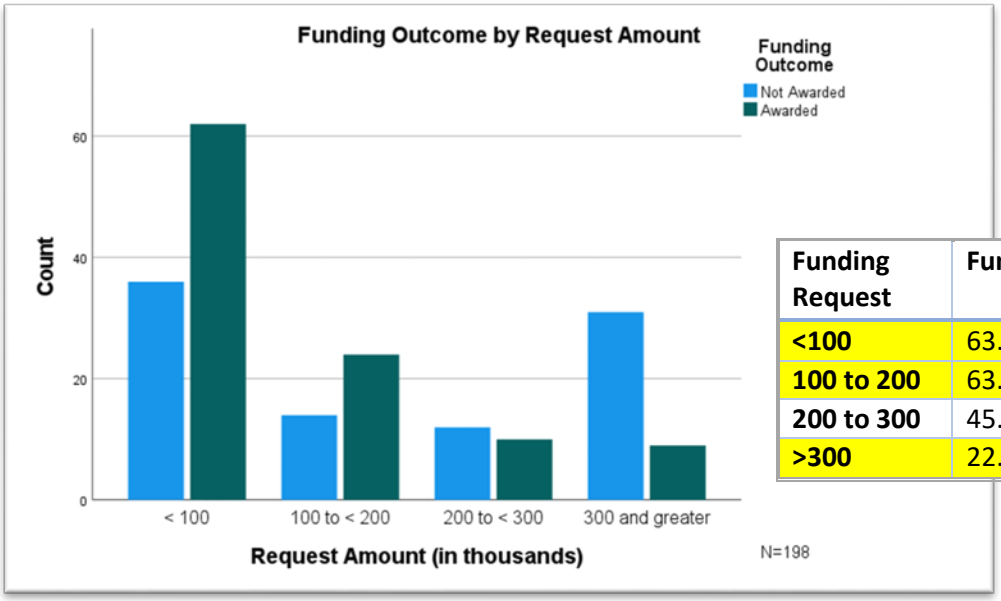


CMP Membership	Funding Rate
Non member	50.3%
Member	62.8%

Figure 17. Funding outcome of CMP and non-CMP members.

Funding Request

Requests lower than $200,000 had higher funding rates, nearly three times success of applicants requesting greater than $300,000.

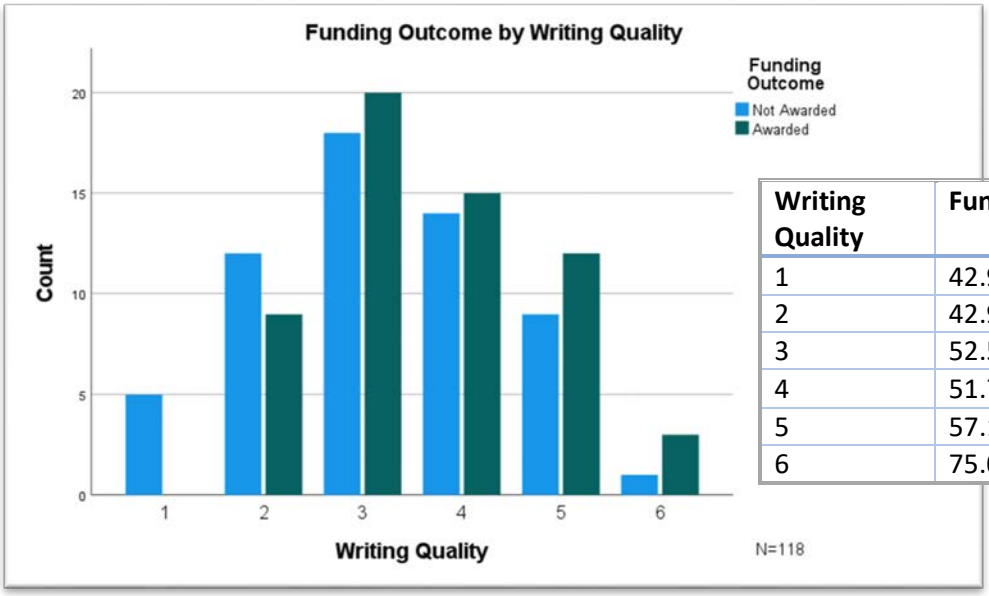


Funding Request	Funding Rate
<100	63.3%
100 to 200	63.2%
200 to 300	45.5%
>300	22.5%

Figure 18. Relationship between funding request and award rate.

Writing Quality

For a subset of proposals in which we assessed writing quality, writing quality was slightly higher for awarded applications, signifying a possible competitive edge for better quality writing.

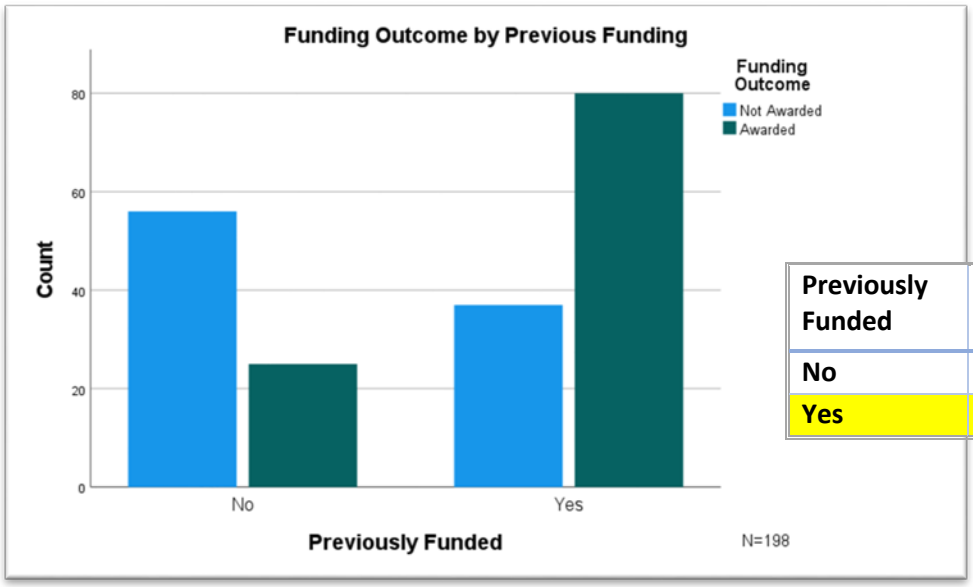


Writing Quality	Funding Rate
1	42.9%
2	42.9%
3	52.5%
4	51.7%
5	57.1%
6	75.0%

Figure 19. Interaction between funding rate and writing quality.

Previously Funded

Proposals related to projects that had been previously funded were more than twice as likely to be funded than those not previously funded.



Previously Funded	Funding Rate
No	30.9%
Yes	68.4%

Figure 20. Previously funded proposals are twice as likely to get funded than those not previously funded.

Putting It All Together: Multiple Logistic Regression Model

Logistic Regression Results

After initial variable exploration (Appendix 3), we included five terms in a multiple logistic regression model: CS Subset Score, Applicant Type, CMP Membership, Previous Funding and Request Amount (Table 9). The inclusion of model variables significantly improved model performance, validating the use of a more complex model, which explained 31.4% of variation in the funding outcome (Table 10) and had an overall accuracy of 70.2% (Table 11). The model's highest accuracy was in detecting true positives, at 77.1%, and performed slightly lower, at 62.4%, for detecting true negatives (Table 11). According to a Hosmer and Lemeshow test, our model had good fit (p=0.178; Table 10). Significant model variables in predicting funding success included Previous Funding and Request Amount (Table 9, 12). Interactions were explored by adding different combinations of terms to the model, but none showed significance and were not included in the final model presented here. Proposals from projects that had been previously funded were 3.69 times likely to be funded than proposals from projects that had not been previously funded. In addition, for every additional 10 thousand dollars requested, proposals were 0.94 times less likely to be funded. None of the other variables included appeared to have a significant relationship with funding success, when controlling for these other factors.

Table 9. Significant and non-significant variables in the multiple logistic regression model.

Significant Variables	Non-Significant Variables
Previous Funding	Applicant type
Request Amount	CMP Membership
	CS Subset Score

Table 10. Overall multiple logistic model performance.

Test	X^2	*df*	*p*
Overall model evaluation			
Likelihood ratio test	53.140	5	0.000
Goodness-of-fit test			
Hosmer & Lemeshow	11.432	8	0.178

Note: Nagelkerke R^2 = 0.314

Table 11. The observed and the predicted frequencies for funding outcome based on the logistic regression model (cutoff of 0.500), indicating accuracy of the model's predictions.

Observed	Predicted		% Correct
	No	Yes	
No	58	35	62.4[1]
Yes	24	81	77.1[2]
Overall % Correct			70.2

1. Specificity: Percentage of applicants who were not funded were correctly predicted to not have received funding (true negative rate)
2. Sensitivity: Percentage of applicants who were funded were correctly predicted by the model to be funded (true positive rate)

Table 12. Results of the multiple logistic regression analysis for the five factors included in the model. Significant terms bolded.

Predictor	*B*	SE	Wald	*df*	*P*	Exp(B)
CS Subset Score	0.074	0.089	0.692	1	0.405	1.077
Applicant Type	-0.586	0.473	1.796	1	0.180	0.557
CMP Membership	.675	0.442	2.322	1	0.127	1.964
Previously Funded	1.304	0.341	14.606	1	**0.000**	3.685
Request (in ten thousands)	-0.065	0.016	16.918	1	**0.000**	0.937
Constant	-0.014	0.542	0.001	1	0.979	0.986

Other Aspects of the CS (e.g. CMP Membership)

Are CMP Members More Likely to Incorporate CS?

CMP members scored significantly higher than non-CMP members by 0.83 CS Subset Score points, with a moderate effect size (Two sample T-test, t= -2.461, df=196, p=0.015, d=0.424; Tables 13 and 14). Scores were distributed over a wider range for non-CMP than CMP members (Figures 22 and 23).

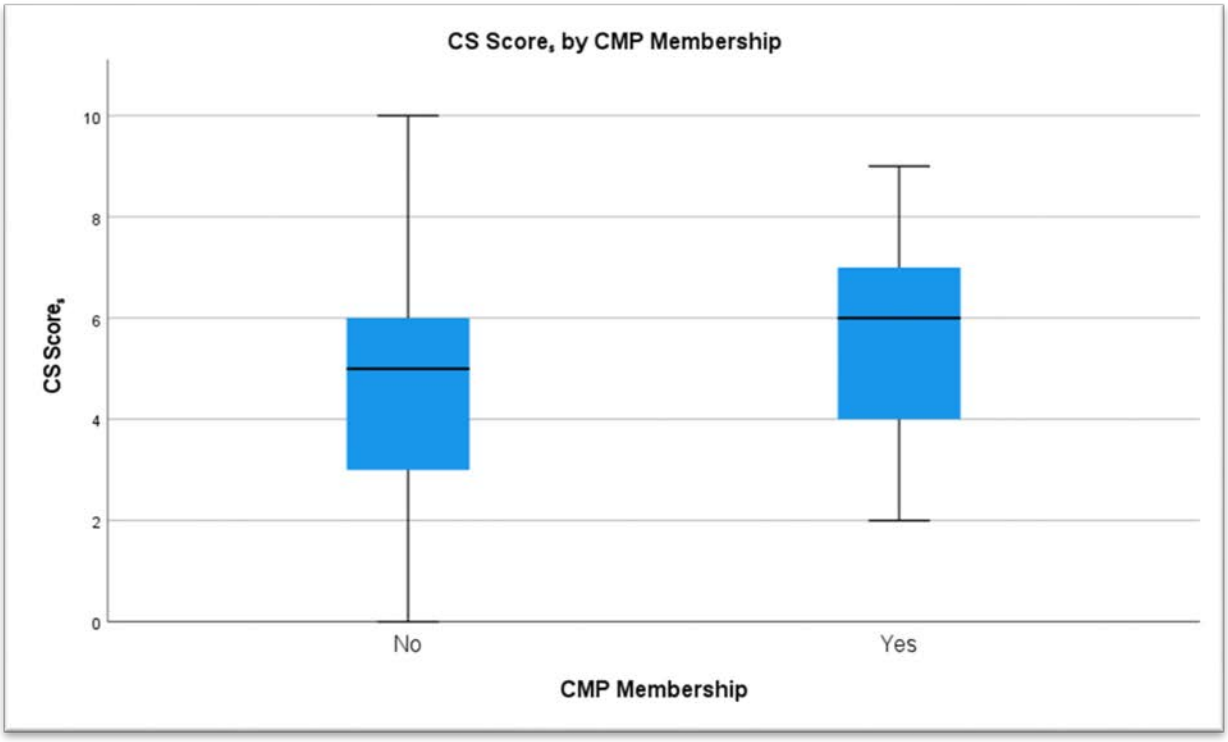


Figure 21. Box plots showing difference in CS Subset Scores between CMP members and non-members.

Table 13. Comparative statistics for CMP and non-CMP member proposals.

CMP Membership	N	Mean	St. Dev	St Err of Mean
No	155	4.80	2.017	.162
Yes	43	5.63	1.691	.258

Table 14. T-test comparison on means showing significant differences in CS Subset score for CMP membership.

	t	df	Sig	Mean Diff	St. Error Diff	Lower 95% CI	Upper 95% CI
CS Subset Score	-2.461	196	0.015	-0.828	.336	-1.491	-.164

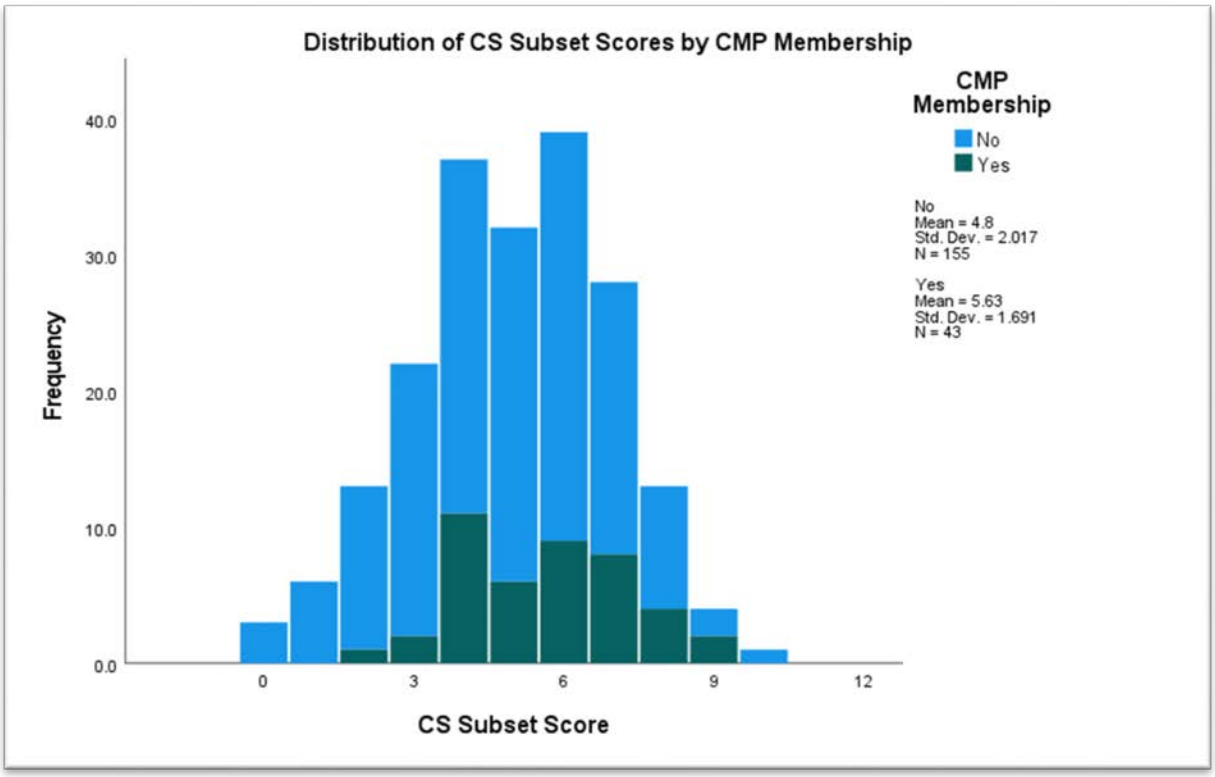


Figure 22. Distribution of CS Subset scores across entire dataset, partitioned by CMP members (green) and non-members (blue).

Variability within Organizations in Incorporation of CS

The number of practices consistent with the CS included in a proposal varied widely within organizations that frequently submitted applications (Figure 24). The magnitude of difference in the inter-organization variability was between 4 to 6.5 CS Subset score points.

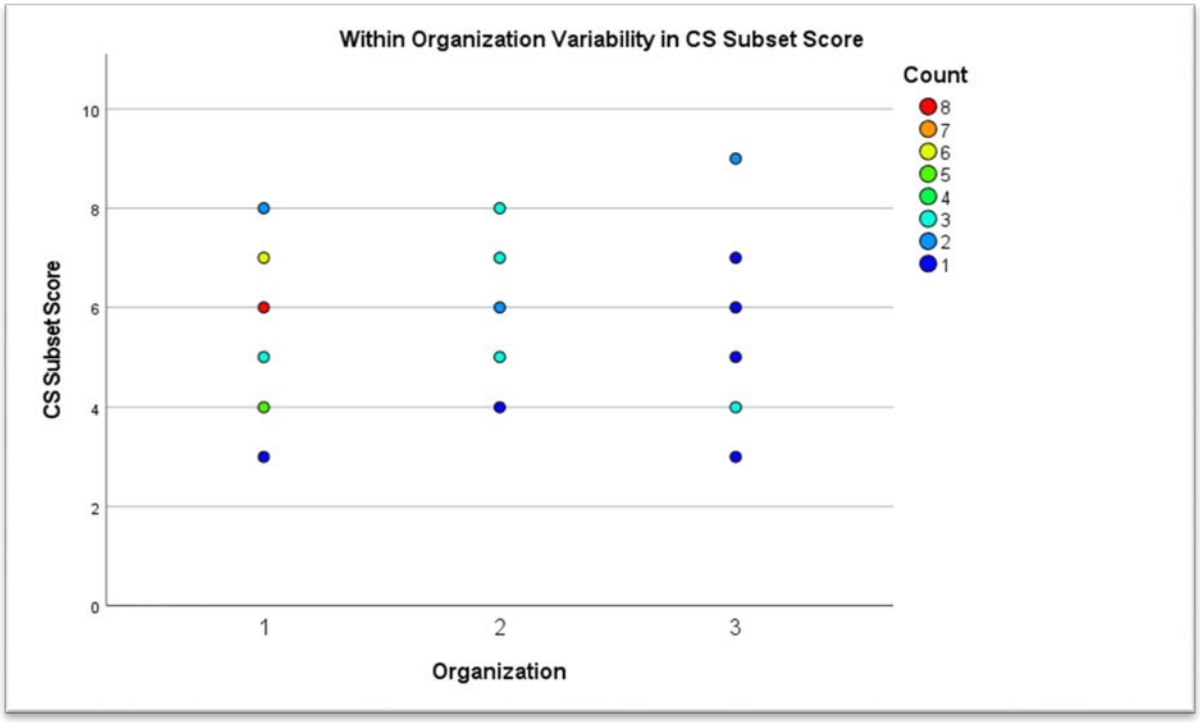


Figure 23. CS Subset Score variability within the three most frequent applicant organizations in our database showing a large amount of within-organization variability in inclusion of the CS. Warmer colors show multiple overlapping points.

Highly Technical Proposals

Highly technical proposals, as evidenced by a greater number of citations, were less likely to include CS Standards (Figure 24). We saw a negative correlation between CS Subset Score and number of references in a proposal (Pearson's Correlation, R=-0.2; N=198; p=0.02).

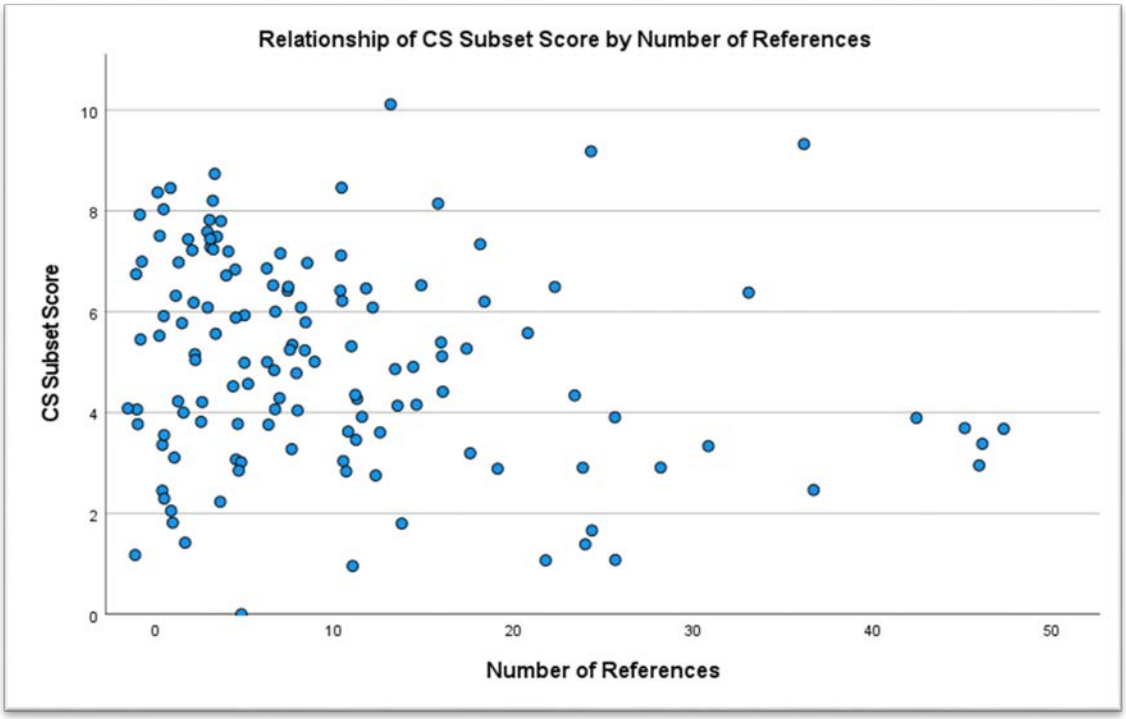


Figure 24. Relationship between the CS Subset Scores and number of citations in a proposal.

Discussion

Summary

CS scores were normally distributed and ranged from 2 to 16. This range indicated that all proposals included at least two CS practices, but no proposal contained more than 16 (out of a possible 20). Some practices were more likely to be included by applicants than others, including identification on Direct Threats, Direct Threat Indicators, and Stakeholder Engagement. Proposals were often missing Biodiversity Indicators, Adaptation, and references to Human Wellbeing associated with improvements to biodiversity targets. The rest of the practices that we looked at were variable in their inclusion: Conceptual Model, Goal and Objective statements, SMT (specific, measurable, time-bound) of Goals and Objectives, Theory of Change, and Baseline M&E Data.

There was a 53% overall funding rate. Funded proposals had on average just slightly more CS elements included (0.59 CS Subset Score points greater). An assessment of degree of association between individual CS components and Funding Success indicated three variables that were associated with positive outcomes in funding: Biodiversity Goal/s, Outcome-based Objectives and Stakeholder Engagement.

Controlling for other variables, however, suggested that funding success is influenced to a greater degree by other aspects of proposals than CS practices. In all, five variables were included in a multiple logistic regression model to determine the most significant explanatory factors in determining funding outcome, including CS Subset Score, Applicant Type, CMP Membership, Previous Funding and Request Amount. Previously Funded (i.e., whether a proposal was for a project that had previously received funds from the donor) was the most salient predictor increasing the likelihood of funding, being the most significant predictor and having the largest effect size. (In a separate analysis (results not presented here) we looked at the data for only the applicants not previously funded, considering only funding requests under 200,000, using Applicant Type, CMP Membership and CS Subset Score as independent variables. There were only 46 data points and no statistically significant relationships.)

Possible interpretations of the importance of previous funding on current funding outcomes include: the quality, feasibility, perceived impact, and justification of proposed work were considered similarly competitive in both past and current proposal reviews; a tendency for proposal reviewers to continue support for familiar, previously supported projects; and returning applicants' familiarity with the funder's application process, requirements and expectations. This analysis, however, could not distinguish between these and other possible interpretations, and thus highlights the methodological challenge of assessing the determinants of funding success. More factors could always be coded (e.g., wildlife population size, conservation value, or threat severity at proposed site; known effectiveness of proposed activities) and the decision-makers who are reviewing and rating proposals could be more directly surveyed on their perceived value of the CS and CS-related practices in relation to other factors. Ultimately, such additional efforts were beyond the scope of this analysis.

In addition to whether a project had been funded before, the amount of funding (i.e., Funding Request) was also significant but with a very small effect size. In all, proposals from applicants with history of past funding and, to a lesser degree, those requesting lower amounts, were important factors in predicting positive funding outcome. Factors that did not explain any of the variation in outcome in the multiple logistic regression were CS Subset Score, CMP Membership and Applicant type. The model only correctly predicted 72% of the outcomes and explained only 40% of the variability in funding outcome. There are components of proposals

were not easily measured or captured in the model that may be important determinants of funding success, such as the perceived likelihood of impact or the perceived capacity of the applicant to implement the proposed project, as assessed by proposal reviewers.

Despite not being a significant explanatory variable in predicting funding success, proposals from CMP member organizations did have significantly higher CS Subset Scores than non-CMP members, with proposals from CMP member organizations more likely to include one additional CS practice, on average, compared to non-CMP members. Inclusion of CS practices, however, were highly variable across proposals, regardless of CMP membership. This finding echoes a 2010 result from a survey of many of CMP member organizations where the practices of the Conservation Standards occur “patchily” within organizations [8]. That same survey identified donors (and donor requirements for funding) as having a key role in the adoption and implementation of CS practices.

In summary, this study did not find strong evidence that the use of CS practices or CMP membership resulted in improved funding outcomes, when controlling for other factors. Further research is needed for building understanding of the wider set of factors (including CS practices) that are most salient in proposal review and grant-making decisions. Also, additional work is needed to answer the broader question about whether the use of the CS results in more effective and efficient conservation projects.

Challenges and limitations

As an analytical exercise, attempting to isolate and understand the effect of CS practices on funding outcomes has several key challenges. We think these challenges and limitations can be grouped into the following categories: challenges with measuring the use of the CS within proposals, lack of alignment between CS scores and funding criteria defined by the funder, lack of precision in our scoring instrument (e.g. inability to distinguish between proposals in a way that is meaningful for funding success), and lack of data on outcomes other than funding success.

Challenges in measuring the use of the Conservation Standards

A key limitation of our study was that we do not actually know which proposals were developed using the Conservation Standards (or by people trained in the CS) and which were not. We inferred this based on assessing proposals against a set of criteria consistent with the CS, but it is possible that some proposals were developed using the CS but still scored low, or vice versa. Thus, our analysis focused on the relationship between CS scores and funding success, but was not necessarily an accurate measure of the actual use of the CS.

It would have been useful to capture greater variation in CS scores, but difficult to systematically and consistently do so with the time available. We originally considered utilizing a graded scale spread over a wider range for each parameter (for example, 0-5 points), but found it challenging to come up with unambiguous characterizations for even a 0-1 marking system. Despite rigorous testing, in the end, there was some unavoidable subjectivity involved in scoring.

Many portions of the CS were not included in our scoring. For example, the potential impact of activities for which funds were requested was not possible for us to assess, although this is an important component of the CS and an important part of the proposals as well. But with limited knowledge of the study systems and sociopolitical environments, it was not possible to evaluate if the proposed strategies were appropriate. “Learning and sharing” was another component of the CS that was not scored, since we had difficulty coming up with a consistent way to score this component.

Lack of precision in our scoring instrument

Though our CS scores were normally distributed, no proposals received the highest possible scores. Thus our inability to detect a relationship between CS score and funding success may be due to our scoring criteria being too strict (i.e. not distinguishing between proposals in a way that is meaningful for funding success.) There may have been ways to draw out a gradient further and capture inclusion of more standards (for example see below, on baseline data acquisition). However, relatively low overall CS scores also indicates that applicants might have been missing opportunities to include best practices in their proposals. This may be in part because applicants were not asked by the funder to include these specific components in their proposals. It is possible that applicants that scored lower for CS did actually use or plan to use CS principles in their project design and management but did not include these components in their grant writing.

Lack of alignment between CS scores and funding criteria defined by the funder

The funder's exposure to CS is also relevant. The donor who supplied proposals for this analysis is a CMP member and the RFPs contained both explicit and implicit requests for some components associated with the CS, which varied by year. We picked conservation grant programs and years with the most similar and explicit language in terms of CS practices in their respective RFPs. However, we often observed that applicants followed RFP requirements from years prior to our study sample (perhaps because they were re-using previous proposals) and thus were missing sections from newer RFPs that would affect how we scored them.

Several applicants presented the details of the early stages of a strategy development or were involved with collection of baseline data without trying to set them within a bigger picture of conservation impact. Additionally, some applicants had manageable interests focused on specific, isolated components of a results chain. In all cases, failure to demonstrate connections to larger overall impact despite the quality of research proposed resulted in lower CS scores which we had presumed might result in lower funding success if, on review, funders were left without a clear indication of the long-term impacts. This did not seem to be the case though in our present study, perhaps because proposal reviewers were able to assess bigger-picture impacts, or because the reviewers prioritized other criteria over the articulation of broader impacts.

Along these lines, highly technical proposals, as evidenced by a greater number of citations, were less likely to include CS Standards. As mentioned above, these proposal writers may have focused on the details and missed incorporating the bigger picture.

Other limitations

The analysis was challenging, and our results should be interpreted with caution. Though no variables were strongly multicollinear nor did we see any significant interactions between terms, we still had a large number of variables of interest given our sample size and additional variables that we were not able to include in our final model. A much larger sample size would be preferable but scoring proposals was time-consuming and assessing a larger sample was not possible given time constraints for this analysis. We dropped several factors from the logistic regression that might have been useful to include with a larger sample size. For example, Writing Quality, Organization Income and Applicant's Continent are all still of great interest.

We have a few considerations regarding the process of proposal writing itself. While the quality of writing appeared to be a significant factor affecting funding it was not included in the final logistic regression analysis due to two factors. The sample size of the proposals scored for writing quality was smaller than the total sample as only one scorer took on this task for consistency, and because of the potential for subjectivity in scoring writing quality despite

having only one scorer. Acquiring objective writing quality scores would be important and was originally considered for our present study to be carried out with online platforms like Grammarly etc. However, such sites require uploading text, and due to confidentiality issues, we could not proceed with this approach. It's also important to highlight the possibility that applicants' skills in grant writing vary, and that those conceiving and carrying out the work are not necessarily the same people as those writing the proposals.

There were also components of proposals that we could not measure and, if such components are important predictors of funding success, they could have been unobservable confounding variables. For example, without knowledge about the specific context of each proposal, it was not possible for us to assess the feasibility and potential impact of the proposed work, which may have influenced funding decisions by the funder. The RFPs also included suggestions for priority species, sites, and thematic areas, and these elements were not scored, although their inclusion might have influenced funding outcomes.

Lack of data on outcomes other than funding success

Finally, while our study provides some preliminary insights on the relationship (or the lack thereof) between the use of the CS and funding success, we were unable to assess other outcomes, such as conservation impacts on the species of concern. Over time, we hope this gap will be filled through systematic data collection on project impacts (ideally, using appropriate research designs which isolate causal impacts of a project – i.e. counterfactual-based approaches.) Only then can we draw broader conclusions about whether the use of the CS leads to more effective, more efficient conservation projects.

Implications

Implications for funders

Inviting a third-party assessment of funding decisions, such as this study, can clarify a funding strategy. It can help answer questions such as "Are you prioritizing what you say you are?" Such acts require courage on the part of funders to open up their funding decisions to researchers, but a culture of evidence use and accountability could help both funders and recipients align with the stated priorities of funding opportunities.

In addition, equitable and inclusive processes increasingly important in funding decisions. Future research is needed to understand whether using CS criteria to score applications could make the application process more transparent or equitable. Alternatively, it will be important to consider whether by promoting the use of the CS in conservation or in a proposal application process, funders could also increase the barriers to entry for some individuals or groups.

Implications for applicants of conservation funding

Our results provided modest evidence for the importance of clearly articulating ultimate impacts on biodiversity targets, results-based objectives linking to those targets, and involving stakeholders in decision-making and project design. As articulated by the Conservation Measures Partnership on their website, "To be successful, a project must be based on both sound project assumptions (theory) and good implementation." This analysis indicates that, perhaps obviously, funders assess the merits of funding requests by considering many factors beyond the CS when making grant-making decisions. It also points to something perhaps not so obvious, which is that funders might be more tolerant of weak program design and inaccurate assumptions than they are of poor implementation. In requests for funding, we recommend

against assuming that use of the CS will mask or overcome weaknesses in implementation capacity, potential for impact, or other aspects of a project.

Implications for CMP

CS application still remains "patchy" ten years after the 2010 survey of result-based management practices in the conservation community. That same survey identified donors (and donor requirements for funding) as having a key role in the adoption and implementation of CS-like practices. If donors are gong to be encouraged to enable or mandate use of the CS, CMP should first invest more effort in understanding the wider set of factors (including but not limited to CS practices) that are salient for funders and the people involved in proposal review and grant-making decisions. Similarly, if CMP wants a better answer to the question on whether the application of the CS leads to more effective and efficient conservation, the partnership should seek a better, more substantial understanding how of the CS fits into the wider set of factors that are most important in determining conservation outcomes. Understanding the context in which CS application is thought to improve effectiveness (or conversely, thought to be overwhelmed by factors such as poor implementation or insecure funding) could strengthen CMP's long-term position to make the business case for the CS in the future.

We believe the CS scoring rubric is an important contribution in and of itself. CMP frames the CS as a series of best practices or behaviors, and this study confirms that it can be difficult to isolate CS vs. non-CS practices. Evaluation of the use of the CS will therefore continue to be a challenge. The CS scoring rubric may be useful for future evaluations, particularly in the context of proposals. Further refinement and testing of the scoring rubric would be useful, as well as linking the scorecard to the CMP Self-Audit Tool.

Future work

This study represents the first comprehensive attempt to systematically and rigorously assess the effects of the CS on funding success. Nonetheless, we faced numerous challenges and limitations, which provide useful guidance on what a future "ideal" evaluation of the CS would look like. We challenge future funders, practitioners and researchers to invest in the kind of long-term research needed to answer the broader question of whether the CS leads to more efficient, more effective conservation projects. We envision a long-term study which randomly assigns one set of projects to apply a CS approach (the "treatment") and another set of projects to apply whatever existing conservation planning and implementation framework is already in use (the "control"). Such a study would also ideally involve monitoring costs and long-term impacts on biodiversity (ideally, over multiple years.) Such monitoring should be designed to isolate the causal impact of the project, using for example a counterfactual-based monitoring design, to answer the question "what would have happened in the absence of the project?" Given the many variables which can affect project success, such a study requires a relatively large sample size and an effort to match treatment and control projects with similar strategies, budgets, levels of staff capacity, and socio-political and ecological contexts. We recognize that such a study would require a significant and long-term investment. But we think it would be worth the effort to rigorously test the CS, once and for all.

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Appendices

Appendix 1. Countries of Work

Table 15. Location of proposed research.

Country	Frequency	Percent
Bangladesh	1	0.5
Botswana	5	2.5
Cambodia	6	3.0
Cameroon	9	4.5
Chad	2	1.0
DRC	21	10.6
Ethiopia	1	0.5
Gabon	8	4.0
Guinea	5	2.5
India	14	7.1
Indonesia	20	10.1
Ivory Coast	2	1.0
Kenya	8	4.0
Lao PDR	3	1.5
Liberia	3	1.5
Malaysia	2	1.0
Mali	1	0.5
Mozambique	1	0.5
Multiple	14	7.1
Myanmar	3	1.5
Nigeria	1	0.5
Non-range	10	5.1
Republic of Congo	3	1.5
Rwanda	5	2.5
Senegal	1	0.5
Sierra Leone	1	0.5
South Africa	4	2.0
South Sudan	3	1.5
Sumatra	1	0.5
Tanzania	10	5.1
Thailand	2	1.0
Uganda	10	5.1
Vietnam	5	2.5
Zambia	8	4.0
Zimbabwe	5	2.5
Total	198	100.0

Appendix 2. Exploration of Factors Alone for Multiple Logistic Regression Model

In preparation for running the multiple logistic regression we ran univariable logistic regressions for several potential predictors (Table 16). When assessed as univariable models, all variables looked promising except for Year, which exceeded the cut-off point for consideration (p>0.25) and thus dropped. Organization Income and Writing Quality were both dropped due to sample size restrictions, though Writing Quality did significantly predict variance in outcome in its univariable model, albeit with a lower pseudo R2 (i.e. having very little effect despite significance). Funding Request, Previous Funding and Type of Applicant appeared to be the strong predictors. Lower requests, having been previously funded, and coming from an NGO (as opposed to universities, zoos, and research institutes) were all predictors of getting funding. Other factors that initially looked promising to explain variation in funding outcome when assessed as univariate models included CS Subset Score, Committee Review Group (with proposals assessed by a review panel making grant-making decisions for an Asia species group more likely to be funded than proposals from other two groups), and Continent (applicants from Africa less likely). Unfortunately, both Review Committee and Continent were dropped before running the multiple logistic regression model due to limits in sample size. We found no evidence that CMP Membership was predictor of funding success outcomes. None of the variables showed multicollinearity with one-another an important requisite for running the multiple logistic regression in the next step.

Table 16. Variable exploration in preparation for multiple logistic regression to explain funding success.

Variable	N	Sig	Exp(B)	HL	Nagelkerke R Square	Use in multiple logistic regression model
Year	198	.516	.830	-	.003	Excluded because p> .25
Review Committee	198	**.003** **.230** **.001**	- 1.514 3.504	1.000	.082	Excluded because not enough DF to handle three contrasts
Continent	198	**.074** **.043** **.014** **.040**	- 2.738 3.391 2.337	1.000	.049	Excluded because not enough DF to handle four contrasts
Type of Applicant	198	**.005**	.357	-	.005	Used
Organization income (as continuous variable)	141	**.148**	1.00	.071	.022	Excluded because would reduce sample size too much
CMP Membership	198	**.149**	1.666	-	.014	Used
Funding Request (in ten thousands)	198	**.000**	.944	.041	.150	Used
Writing Quality	118	**.047**	1.377	.357	.046	Excluded because would reduce sample size too much and too subjective
Previously Funded	198	**.000**	4.843	-	.174	Used
CS Subset Score	198	**.037**	1.167	.937	.030	Used