Received: 6 December 2018 | Revised: 21 February 2019 | Accepted: 21 February 2019

DOI: 10.1111/conl.12640

WILEY Conservation Letters
A journal of the Society for Conservation Biology Open Access

LETTER

Local support for conservation is associated with perceptions of good governance, social impacts, and ecological effectiveness

Nathan J. Bennett[1,2,3] | Antonio Di Franco[3] | Antonio Calò[3] | Elizabeth Nethery[4] | Federico Niccolini[5] | Marco Milazzo[6,7] | Paolo Guidetti[3,7]

[1]Institute for the Oceans and Fisheries and Institute for Resources, Environment and Sustainability, University of British Columbia, Vancouver, Canada

[2]Center for Ocean Solutions, Stanford University, Monterrey, California

[3]CNRS, ECOSEAS Lab., Université Côte d'Azur, Nice, France

[4]School of Population and Public Health, University of British Columbia, Vancouver, Canada

[5]Department of Economics and Management, University of Pisa, Pisa, Italy

[6]Department of Earth and Marine Sciences, University of Palermo, Palermo, Italy

[7]CoNISMa (National Interuniversity Consortium of Marine Sciences), Rome, Italy

Correspondence
Nathan J. Bennett, Institute for the Oceans and Fisheries and Institute for Resources, Environment and Sustainability, University of British Columbia, AERL Building, 429-2202 Main Mall, Vancouver, BC V6T 1Z4, Canada.
Email: nathan.bennett@ubc.ca

Funding information
European Regional Development Fund; European Territorial Cooperation Programme MED

Abstract

Local support is important for the longevity of conservation initiatives. The literature suggests that perceptions of ecological effectiveness, social impacts, and good governance will influence levels of local support for conservation. This paper examines these relationships using data from a survey of small-scale fishermen in 11 marine protected areas from six countries in the Mediterranean Sea. The survey queried small-scale fishermen regarding perceptions and support for conservation. We constructed composite scores for three categories of perceptions—ecological effectiveness, social impacts, and good governance—and tested the relationship with levels of support using ordinal regression models. While all three factors were positively correlated with support for conservation, perceptions of good governance and social impacts were stronger predictors of increasing support. These findings suggest that employing good governance processes and managing social impacts may be more important than ecological effectiveness for maintaining local support for conservation.

KEYWORDS

conservation, good governance, management effectiveness, marine protected areas, perceptions, small-scale fisheries, social impacts

1 | INTRODUCTION

Conservation initiatives—such as marine and terrestrial protected areas—are often situated near resource-based communities whose livelihoods and well-being depend on the local environment. The ongoing support from these local communities and constituents can be crucial for the short-term effectiveness and long-term persistence of conservation programs and initiatives (Gelcich & Donlan 2015; Rohe, Aswani, Schlüter, & Ferse, 2017; Sorice & Donlan 2015; Voyer, Gladstone, & Goodall, 2015). The longevity of conservation initiatives may be particularly important for successfully achieving the aims of conservation, as ecological benefits are related to the time since establishment (Claudet et al., 2008; Edgar et al.,

2014). What factors then influence local support for conservation? Attitudes toward and support for conservation are influenced by social norms (Jones, Andriamarovololona, & Hockley, 2008), demographic factors and socioeconomic status (Arjunan, Holmes, Puyravaud, & Davidar, 2006; Heinen & Shrivastava 2009), dependence on resources (Cinner, Sutton, & Bond, 2007; Webb, Mailiao, & Siar, 2004), presence of livelihood alternatives (Gelcich & Donlan 2015; McClanahan, Cinner, Kamakuru, Abunge, & Ndagala, 2008), place attachment (Cundill, Bezerra, De Vos, & Ntingana, 2017; Morishige et al., 2018), institutions and governance (Bennett & Dearden 2014; Sommerville, Jones, Rahajaharison, & Milner-Gulland, 2010), and values (Chan et al., 2016). Local people's perceptions of different factors related to a conservation initiative can also influence attitudes, acceptability, and levels of support (Bennett, 2016; Sommerville et al., 2010).

Perceptions can be defined as "the way an individual observes, understands, interprets, and evaluates a referent object, action, experience, individual, policy, or outcome" (Bennett, 2016, p. 585). There are four categories of stakeholder perceptions that might influence local support for conservation—perceptions of ecological effectiveness, social impacts, good governance, and management (Bennett, 2016). While local people's perceptions of ecological conditions may or may not always be accurate depending on their level of expertise and local knowledge (Christie, 2005; Yasué, Kaufman, & Vincent, 2010), they will formulate opinions nonetheless of the extent to which conservation improves habitats, enhances ecosystem functioning, augments productivity, and increases the biomass and size of individual species (Cinner et al., 2014; Leleu et al., 2012; Rönnbäck, Crona, & Ingwall, 2007). Local people can also experience the social impacts of conservation initiatives, including on economic, social, cultural, health, physical, or political empowerment domains of human well-being (Biedenweg, Stiles, & Wellman, 2016; Breslow et al. 2016; Jones, McGinlay, & Dimitrakopoulos, 2017; Kaplan-Hallam & Bennett 2017; Leisher, Samberg, Van Buekering, & Sanjayan, 2013). Governance refers to the policies, institutions, and processes that shape who makes decisions and how decisions are made in conservation planning and management (Bennett & Satterfield 2018; Lockwood, 2010). Stakeholders can evaluate "good governance" based on normative principles such as recognition, transparency, accountability, communication, participation, consultation, conflict management, trust, rule of law, legitimacy, coordination, and collaboration (Bennett & Satterfield 2018; Borrini-Feyerabend & Hill 2015; Lockwood, 2010). Finally, local people can formulate judgments about the status, effectiveness, and appropriateness of management resources, plans, and actions based on their perceptions (Bennett, 2016; Ferse, Manez Costa, Manez, Adhuri, & Glaser, 2010; Hockings, Stolton, Leverington, Dudley, & Courrau, 2006).

Much of the previous literature examining perceptions of conservation uses qualitative methods and is based on individual case studies. The current study aimed to build on the solid foundation and insights provided by these previous research efforts by (1) developing quantitative measures for perceptions of ecological effectiveness, social impacts, and good governance of conservation and (2) examining the relationship between these measures and levels of support for conservation. Using data collected from a survey of small-scale fishermen in 11 marine protected areas (MPAs) across six countries in the Mediterranean Sea, this paper examines how perceptions of ecological effectiveness, social impacts, and good governance are associated with small-scale fishermen's levels of support for MPAs.

2 | METHODS

2.1 | Study area

The Mediterranean Sea, the largest inland sea in the world, is a highly diverse marine ecosystem and biodiversity hotspot (Coll et al., 2010). Mediterranean marine ecosystems are also among the most impacted by human development in the world (Halpern et al., 2008). This means that ecological and fisheries values are threatened by a variety of activities, including overfishing, shipping, tourism, and coastal development. There are an estimated 92,700 fishing vessels in the Mediterranean and Black Sea, employing ¼ million people, and contributing $3.09 billion in landed value (FAO, 2016). Small-scale fisheries account for 80% of the fleet, 60% of those employed, and produce 20% of landed value (FAO, 2016). As much as ~85% of fish stocks are harvested at biologically unsustainable levels (FAO, 2016). One common management tool increasingly used across jurisdictions is MPAs. In 2016, there were a total of 1,231 MPAs covering 7.14% of the Mediterranean Sea (MedPAN, 2016). Only 76 MPAs include one or more fully protected areas, with 50% of these areas being less than 1 km^2 (Di Franco et al., 2018). As a result, only 0.04% of the area is covered by fully protected MPAs (PISCO & UNS, 2016).

We investigated small-scale fishing communities operating inside or close to 11 MPAs in six countries (Figure 1). The MPAs were established between 1988 and 2003, ranged in size from 90 to 76,000 ha, and were between 2.7% and 100% no take (see Table 1). Key informants (e.g., MPA managers or community leaders) in each area estimated that there were between 5 and 40 small-scale fishers living in communities near or within the MPAs.

2.2 | Survey design and administration

We designed and administered a quantitative survey to small-scale fishermen in communities within or near the MPAs. The

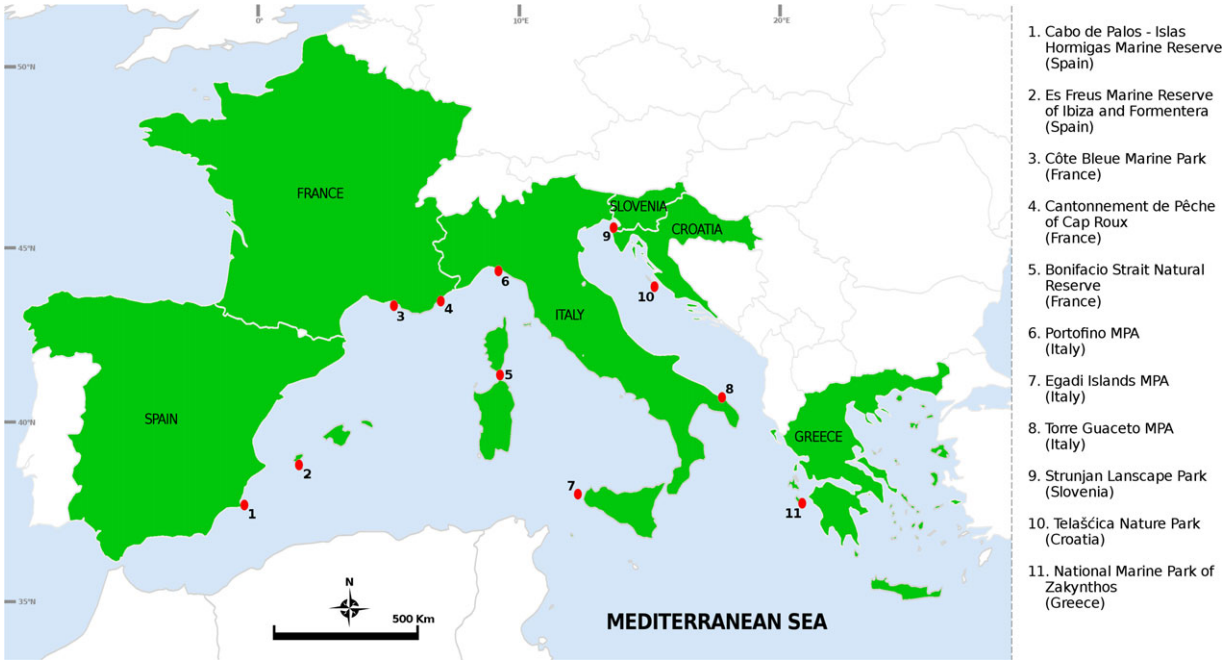

FIGURE 1 Map of marine protected area research sites in the Mediterranean Sea

TABLE 1 Information about the marine protected areas, small-scale fishers, and interview sample

MPA name	Designation	Established (year)	Age of MPA (years)	Total area (ha)	Total no. of take area (ha) (% of total)	Estimated no. of SSF in each site	No. of surveys (%) (total n = 149)
Cabo de Palos (Spain)	Marine Reserve	1995	22	1,931	270 (14.0)	19	17 (89.5)
Es Freus (Spain)	Marine Reserve	1999	18	15,000	407 (2.7)	18	12 (66.7)
Cap Roux (France)	Cantonnement de Pêche	2003	14	445	445 (100)	30	14 (46.7)
Cote Bleu (France)	Marine Park	1982	35	9,995	295 (3.0)	27	17 (63)
Bonifacio (France)	Natural Reserve	1999	18	76,000	4,000 (5.3)	38	13 (34.2)
Portofino (Italy)	MPA	1999	18	346	19 (5.5)	22	15 (68.2)
Egadi Islands (Italy)	MPA	1991	26	54,000	1,097 (2.0)	40	21 (52.5)
Torre Guaceto (Italy)	MPA	2001	16	2,100	322 (15.3)	5	5 (100)
Strunjan (Slovenia)	Landscape Park	1990	27	90	33 (36.7)	10	9 (90)
Telascica (Croatia)	Nature Park	1988	29	7,000	141 (2.0)	7	7 (100)
Zakynthos (Greece)	National Marine Park	1999	18	8,330	800 (9.6)	35	19 (54.3)

survey contained questions related to (a) basic demographic information and characteristics of individual small-scale fishermen (see Supporting Information Materials—Table S1); (b) perceptions of ecological effectiveness, social impacts, governance, and management; and (c) levels of support of small-scale fishermen for the MPA (see Supporting Information Materials—Table S2).

The survey was designed by the project team, shared with project partners for feedback, pretested, finalized, and translated. Small-scale fishermen were informed about the purpose of the survey and the intended use of data, as well as how survey data from the project would be kept both anonymous and confidential, prior to being asked for verbal consent and proceeding with the survey. On average, we surveyed 69.5% (min–max = 34.2–100%) of small–scale fishermen in 11 communities (Table 1). Surveys were conducted on paper, and then returned to the project team for data entry and analysis.

2.3 | Perceptions indicators and composite scores development

This paper focuses on survey questions related to small-scale fishermen's perceptions of ecological effectiveness, social impacts, and good governance as well as levels of support of small-scale fishermen for conservation (see Table 2 and Supporting Information Materials—Table S2). For each topic, we defined one or multiple items and developed indicators. Perceptions of ecological effectiveness were measured with two indicators of perceived impacts on fish abundance and habitat quality (Christie, 2005; Leleu et al., 2012). For social impacts, we developed a series of indicators that were of interest to project partners related to the categories of human well-being (Biedenweg et al., 2016; Kaplan-Hallam & Bennett 2017). In particular, we focused on perceived impacts of the MPA on individual income (economic), livelihoods (economic), food security (health), knowledge and education (social), community well-being (social), connections to nature (cultural), and fairness of distribution of impacts and benefits (economic). Finally, the survey contained indicators focused on the normative assessment of good governance (Bennett & Satterfield 2018; Borrini-Feyerabend & Hill 2015; Lockwood, 2010) including indicators related to recognition, transparency, accountability, communication, participation, consultation and consent, conflict management, trust, rule of law, and legitimacy. The indicator for recognition was constructed using four items related to the extent to which small-scale fishermen's rights, livelihoods, traditional knowledge, and culture were considered in management (Zafra-Calvo et al., 2017). Similarly, the legitimacy score was constructed using the combined means of two items related to satisfaction with decision-making processes and management actions. Support for conservation was examined with a single question regarding the level of support of small-scale fishermen for the MPA.

TABLE 2 Overview of perceptions categories and associated survey items (see Supporting Information Materials—Table S2 for details)

Category	Items
Perceptions of ecological effectiveness	• Fish abundance • Marine habitats
Perceptions of social impacts	• Income • Livelihoods • Food security • Knowledge and education • Community social well-being • Cultural connection to nature • Fairness of impacts
Perceptions of good governance	• Recognition • Communication of information • Transparency in decision-making • Participation and voice • Consultation and consent • Accountability • Conflict management and resolution • Trust • Rule of law • Legitimacy
Support for conservation	• Level of support for the marine protected area

We constructed three composite scores to represent perceptions of ecological effectiveness, social impacts, and good governance by combining items related to that topic (see Table 2). To account for different scales among the indicators, we first normalized each individual indicator to a scale of 0–2 to enable comparison. Prior to combining items, we assessed the internal coherence of the indicators in each composite score using Cronbach's alpha (>0.7 in all cases). Finally, indicators within each group were summed and then normalized on scale of 0–10 to obtain the final composite scores for ecological effectiveness, social impacts, and good governance. If any indicator was missing, no score could be calculated and that survey was omitted.

2.4 | Analysis

Descriptive tables were used to examine demographics and characteristics of small-scale fishermen, levels of support, perceptions indicators, and composite scores. Univariate associations with level of support were assessed using chi-squared

tests (categorical variables) and analysis of variance (continuous variables).

For further analysis, we limited our sample to only survey responses with complete demographics and composite scores ($n = 102$, ~69% of the total questionnaires). To explore relationships between individual perceptions indicators and level of support, we recoded the indicators and support (five levels) as continuous variables and used Spearman's correlations. Last, we used ordinal regression models to predict support for the MPA as an ordinal outcome with each composite score as a predictor after controlling for the effects of other confounders. Models were adjusted for individual socioeconomic characteristics (age, education, number of years in the village, number of people in the household, relative wealth) and measures of the individuals' dependence on fishing (number of fishing gears, proportion of income from fishing, days of the week fish is eaten in the household). All analyses were conducted in SAS 9.4 and R-3.5.1 (R Core Team 2018; SAS 2018).

3 | RESULTS

3.1 | Survey sample

All 149 survey respondents were male small-scale fishermen (Supporting Information Materials—Table S3). Almost half (49.8%) were 50 years or older. The majority of those surveyed had completed only middle (43.2%) or elementary (29.1%) school. Households often had two (30.6%), three (18.4%), or four (33.3%) people living in them. Most small-scale fishermen came from the local village (>80%) and the mean time living in the village was 43.3 years. Among those surveyed, over half (68.6%) reported difficulty with making enough to have a good quality of life in their village (i.e., relative wealth). Specifically, 24.5% felt that "it can be challenging" and 44.1% said they are "just barely able" to make enough to live a good quality of life. They participated in an average of 2.8 different fisheries (median = 3; min—max = 1—6) and often had supplementary livelihoods (46.7%).

3.2 | Level of support for marine protected areas

Overall, the small-scale fishers were relatively supportive of the MPAs (Figure 2) with 5.4% expressing strong opposition to the MPA ($n = 8$), 12.2% somewhat in opposition to the MPA ($n = 18$), 22.2% neutral toward the MPA ($n = 33$), 31% somewhat in support of the MPA ($n = 46$), and 29% voicing strong support for the MPA ($n = 43$). There were statistically significant differences in levels of support by MPAs (Figure 2 and Supporting Information Materials—Table S5). Levels of support was also associated with country ($P < 0.001$), number of people living in the household ($P < 0.01$), as well as for "relative wealth," "number of livelihoods," "total number of different fisheries and gears," and "number of days the week that household eats fish or seafood" ($P < 0.05$).

3.3 | Perceptions of ecological effectiveness, social impacts, and good governance

Overall, the perceptions of small-scale fishers of individual indicators related to ecological effectiveness, social impacts, and good governance were relatively positive (Supporting Information Materials—Table S4). For ecological effectiveness, the vast majority felt that the impact was either neutral or positive for both fish abundance (neutral = 38.4%; increase = 43.8%) and habitat quality (neutral = 31.7; improve = 58.6). Most of the social impact indicators—income, livelihoods, food security, knowledge and education, community social well-being, and connections to nature—were skewed toward the positive. The one exception was "fairness of impacts," which was slightly skewed toward the negative. Responses to questions related to indicators for perceptions of good governance varied the most with a significant spread from negative to positive responses.

Individual perceptions, overall, were positively correlated with levels of support (Spearman's correlations rho > 0 in all cases, $n = 102$) (Figure 3). Applying Cohen's standard (Cohen, 1988), correlation coefficients between 0.30 and 0.49 represent a medium association. Indicators related to governance—that is, transparency (0.47, $P < 0.0001$), conflict management and resolution (0.46, $P < 0.0001$), recognition (0.46, $P < 0.0001$), and trust (0.40, $P < 0.0001$)—as well as social impacts on knowledge and education (0.48, $P < 0.0001$) were most strongly correlated with levels of support. Income and livelihoods were the least correlated.

3.4 | Composite metrics for ecological effectiveness, social impacts, and good governance

The composite scores ($n = 102$ respondents) for each of the three categories were as follows (scale 0—10): (a) the perceptions of ecological effectiveness composite had a mean score of 7.6 (median = 8.0), (b) the perceptions of social impacts composite had a mean score of 6.0 (median = 5.9), and (c) the good governance composite had a mean score of 5.8 (median = 5.6) (Table 3). The composite scores for ecological effectiveness, social impacts, and good governance differed significantly by MPAs (Supporting Information Materials—Figure S1).

The distribution of scores for all three composites aligned with an increase in levels of support for the MPA (Figure 4). Using ordinal regression (Table 4), there is a statistically significant ($P < 0.001$) effect of increasing support for the MPA

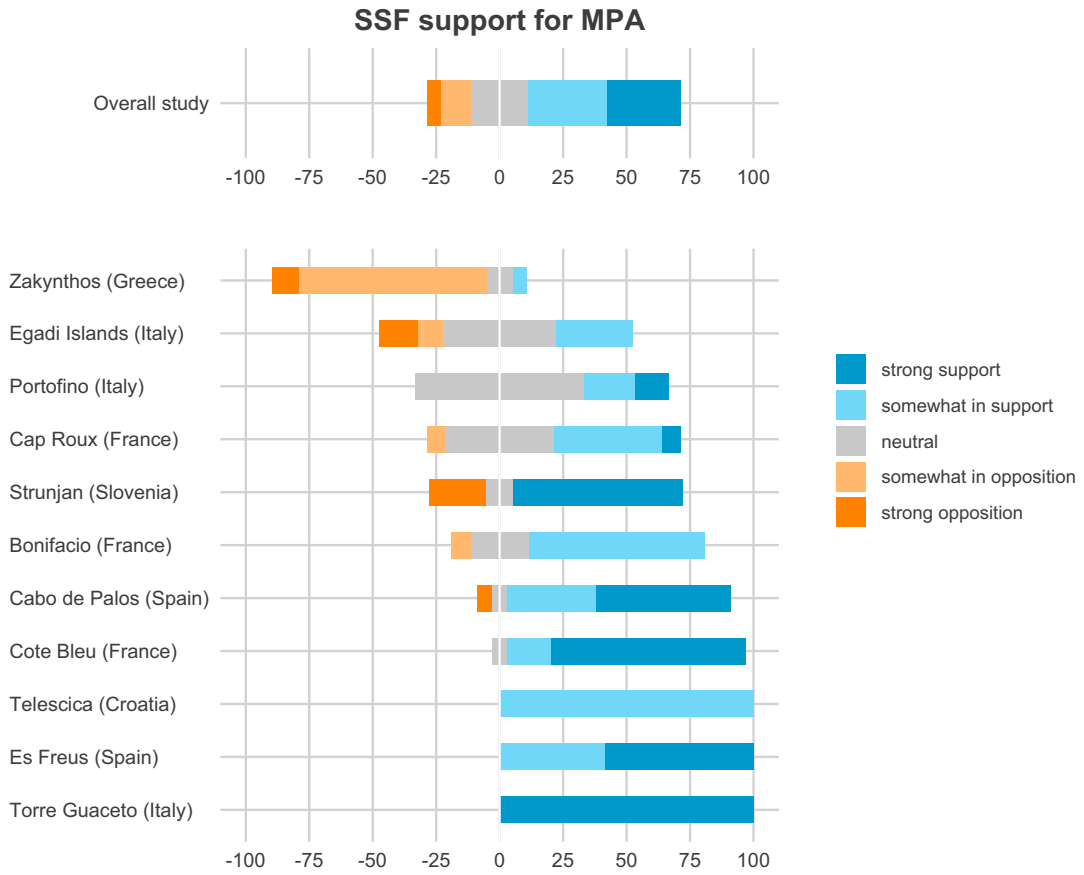

FIGURE 2 Levels of support (% of each group represented by bar chart) for marine protected areas among all small-scale fishermen in survey ($N = 149$)

TABLE 3 Mean composite scores by level of support for MPA

Perceptions by level of support for the MPA (number (%))		Strong opposition to the MPA $N = 8$	Somewhat in opposition to the MPA $N = 17$	Neutral toward the MPA $N = 20$	Somewhat in support of the MPA $N = 30$	Strong support for the MPA $N = 27$	Total $N = 102$	Model *P*-value (ANOVA)
Ecological impacts combined score (0–10)								0.004
	Mean (Median)	6.0 (6.0)	7.1 (6.0)	6.4 (6.0)	8.3 (10.0)	8.4 (8.0)	7.6 (8.0)	
	Min–Max	2.0–10.0	2.0–10.0	2.0–10.0	4.0–10.0	4.0–10.0	2.0–10.0	
Social impacts combined score (0–10)								<0.0001
	Mean (Median)	3.9 (4.0)	5.9 (6.1)	5.1 (4.9)	6.4 (6.6)	7.1 (7.0)	6.0 (5.9)	
	Min–Max	2.0–5.8	2.2–8.3	1.3–8.3	2.9–9.3	4.6–9.3	1.3–9.3	
Good governance combined score (0–10)								<0.0001
	Mean (Median)	3.6 (3.3)	4.3 (4.3)	5.3 (4.8)	6.3 (6.2)	7.3 (8.0)	5.8 (5.6)	
	Min–Max	1.8–7.2	1.7–6.5	1.7–8.3	3.0–9.5	3.8–10.0	1.7–10.0	

ANOVA, analysis of variance.

based on increasing ecological effectiveness score (OR = 1.26), social impacts score (OR = 1.75), or governance score (OR = 1.80) (ORs reported for a 1 unit change in score) (all $P < 0.001$) in unadjusted models. These represent roughly a 25% increased probability of fishers' increasing support for the MPA with each unit increase in the ecological impacts score, a 75% increased probability for the social impacts score, and a 80% increased probability for the governance

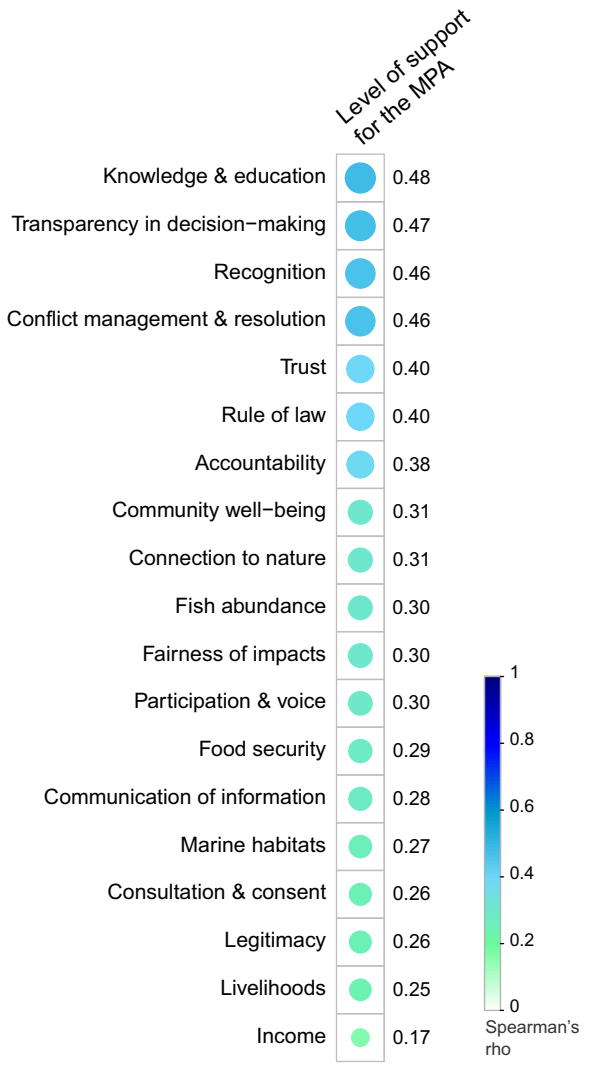

FIGURE 3 Individual perceptions indicators correlated with levels of support for the marine protected area. Size of dot and color scale both represent correlation coefficient. Survey data from 102 small-scale fishermen with complete responses in survey

score. After adjusting for other covariates, all three scores remained significant predictors for support of the MPA with governance and social impacts scores having the strongest effect on increasing support.

4 | DISCUSSION

This research provides a multi-sited study of how people's perceptions can be monitored using a quantitative survey to understand the social impacts of conservation (Jones et al., 2017; Kaplan-Hallam & Bennett 2017; McNeill, Clifton, & Harvey, 2018; Svensson, Rodwell, & Attrill, 2010), ecological effectiveness (Leleu et al., 2012; Webb et al., 2004; Yasué et al., 2010), and conservation governance (Bennett & Satterfield 2018; Borrini-Feyerabend & Hill 2015; Lockwood, 2010). This study extends previous research through employing quantitative methods and analysis to examine how perceptions are associated with support for conservation. Overall, results show that small-scale fishermen are mostly supportive of MPAs in the northern Mediterranean and held generally positive perceptions of the ecological effectiveness and social impacts of MPAs but more varied perceptions of governance. We found agreement with the general hypothesis that positive perceptions are associated with increased support for MPAs (Bennett, 2016). While all three factors were positively correlated with levels of support for conservation, perceptions of good governance and social impacts were stronger predictors of increasing support. These findings suggest that employing good governance processes and managing social impacts may be more important than ecological effectiveness for maintaining local support for conservation.

The results presented here have a number of important implications for conservation policy makers and practitioners. First, these results confirm the worth of understanding people's perceptions (Bennett, 2016). Monitoring people's perceptions can help identify management actions—for example, relationship building, conducting outreach activities, communicating science, and increasing transparency—that will improve perceptions and increase support. Second, the analysis of individual indicators against levels of support points to specific factors related to conservation that may be more important determinants of support—these include transparency, conflict management, recognition, trust, and knowledge and education. Third, these results suggest that conservation practitioners and managers need to be attentive to the quality of governance (Bennett & Satterfield, 2018; Borrini-Feyerabend & Hill 2015; Lockwood, 2010) and the social impacts of conservation (Jones et al., 2017; Kaplan-Hallam & Bennett 2017; McNeill et al., 2018; Svensson et al., 2010)—just as they need to attend to the ecological effectiveness of conservation. Fostering support through greater attention to good governance and social impacts may also have knock-on benefits through increasing compliance, decreasing enforcement costs, and improving ecological outcomes (Bergseth, Gurney, Barnes, Arias, & Cinner, 2018; Rohe et al., 2017).

We recognize some limitations of this work. First, we caution here that this study may have limited generalizability to other settings as it focuses on one context, stakeholder group, and timeframe. Second, the overall sample was relatively small ($n = 149$) and was further restricted for regression models. Third, items in the composite scores were summed but not weighted.

Thus, we encourage improving upon the approach taken here in future research. In particular, we recommend refining the indicators and composite scores, weighting items within composite scores, sampling a broader group of stakeholders

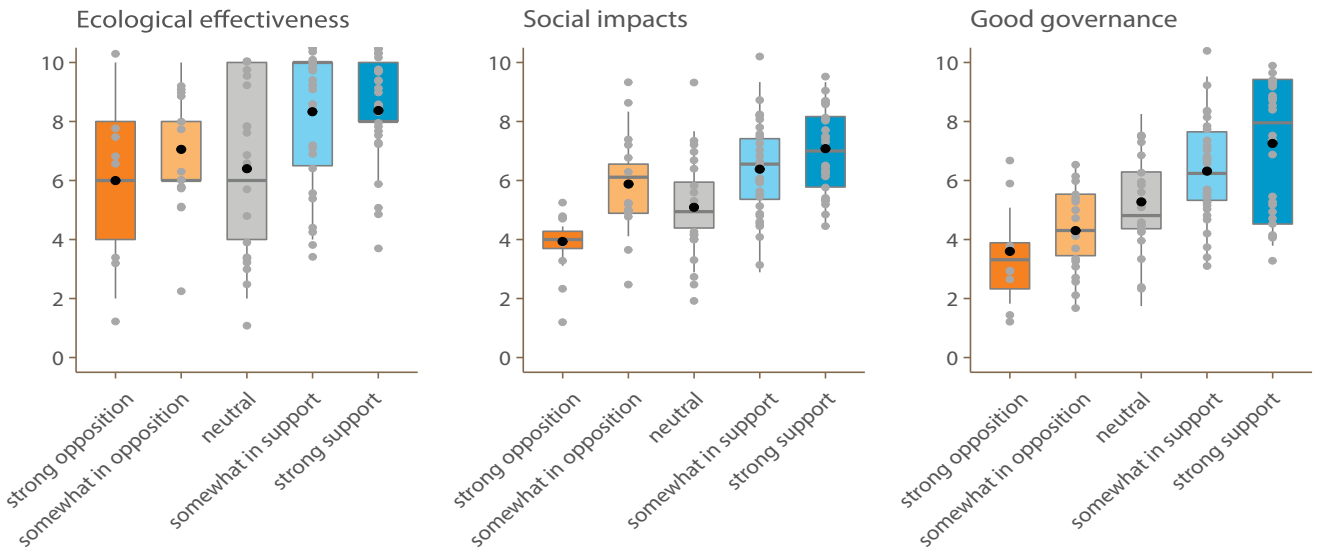

FIGURE 4 Boxplots for ecological, social, and governance composite scores by levels of support for the MPA. Survey data from 102 small-scale fishermen with complete responses in the survey (Note: Median score in group indicated by horizontal bar in box, limits of the box are 25th and 75th percentiles, mean is black dot)

TABLE 4 Univariate and multiple ordinal regression models for levels of support for the MPA (dependent) as predicted by each (3) composite scores

	Dependent variable: Level of support for MPA	
	Crude odds ratio[1] (95% CI)	Adjusted[2] odds ratio (95% CI)
Ecological impacts score	1.26 (1.11, 1.40)	1.28 (1.08, 1.52)
Social impacts score	1.75 (1.50, 2.23)	1.82 (1.41, 2.39)
Governance impacts score	1.80 (1.49, 2.21)	1.95 (1.55, 2.49)

Survey data from 102 small-scale fishermen with complete responses in the survey.

[1]OR = odds ratio, odds of increasing support from one category to the next, for 1 unit increase in associated score.

[2]All models adjusted for respondents' age (categorical), education level (categorical), household size (continuous), number of years living in the village (continuous), number of days/week household eats fish (continuous), relative wealth (categorical), number of fishing gears owned (continuous), and the proportion of income from fishing (categorical). There was no evidence of lack of model fit using both Hosmer–Lemeshow and Lipsitz tests for the adjusted models. Pseudo-R^2 (McFadden's) were 0.13 (ecological), 0.18 (social), and 0.22 (governance).

to enable comparative analysis, and engaging with both subjective and objective measures. Finally, similar approaches to hypothesis testing would be beneficial for research on other topics, such as satisfaction, social license, attitudes, commitment, and compliance.

5 | CONCLUSION

The support of local people is important for the longevity and success of conservation. This study demonstrates that small-scale fishermen's perceptions of ecological effectiveness, social impacts, and good governance were all positively correlated with levels of support of small-scale fishermen for MPAs. However, perceptions of good governance and social impacts were stronger predictors of increasing support. These results suggest that conservation practitioners need to be attentive to all three factors—ecological effectiveness, social impacts, and good governance—during the implementation and ongoing management of conservation initiatives. Greater attention to the means of conservation could increase the likelihood that conservation initiatives will be successful in the end.

ACKNOWLEDGMENTS

This research was carried out in the framework of FishMPABlue 2 project (https://fishmpablue-2.interreg-med.eu/) funded by European Territorial Cooperation Programme MED and co-financed by European Regional Development Fund (ERDF). Authors are grateful to Federic Bachet, Eric Charbonnel, Francesco de Franco, Victor Decugis, Charalampos Dimitriadis, Ilenia Domina, Ivoni Fournari–Konstantinidou, Luka Kastelic, Daniela Marzo, Lorenzo Merotto, Milena Ramov, Marie-Catherine Santoni, Leila Seddiki, Francisco Sobrado-Llompart, and María

Trujillo-Alarcón for their invaluable help in administering the questionnaires.

ORCID

Nathan J. Bennett https://orcid.org/0000-0003-4852-3401
Antonio Di Franco https://orcid.org/0000-0003-3411-7015

REFERENCES

Arjunan, M., Holmes, C., Puyravaud, J.-P., & Davidar, P. (2006). Do developmental initiatives influence local attitudes toward conservation? A case study from the Kalakad-Mundanthurai Tiger Reserve, India. *Journal of Environmental Management*, *79*, 188–197.

Bennett, N. J. (2016). Using perceptions as evidence to improve conservation and environmental management. *Conservation Biology*, *30*, 582–592.

Bennett, N. J., & Dearden, P. (2014). Why local people do not support conservation: Community perceptions of marine protected area livelihood impacts, governance and management in Thailand. *Marine Policy*, *44*, 107–116.

Bennett, N. J., & Satterfield, T. (2018). Environmental governance: A practical framework to guide design, evaluation and analysis. *Conservation Letters*, 11. https://doi.org/10.1111/conl.12600.

Bergseth, B. J., Gurney, G. G., Barnes, M. L., Arias, A., & Cinner, J. E. (2018). Addressing poaching in marine protected areas through voluntary surveillance and enforcement. *Nature Sustainability*, *1*, 421–426.

Biedenweg, K., Stiles, K., & Wellman, K. (2016). A holistic framework for identifying human wellbeing indicators for marine policy. *Marine Policy*, *64*, 31–37.

Borrini-Feyerabend, G., & Hill, R. (2015). Governance for the conservation of nature. In G. L. Worboys, M. Lockwood, A. Kothari, S. Feary, & I. Pulsford (Eds.), *Protected area governance and management* (pp. 169–206). Canberra, Australia: ANU Press.

Breslow, S. J., Sojka, B., Barnea, R., Basurto, X., Carothers, C., Charnley, S., … Levin, P. S. (2016). Conceptualizing and operationalizing human wellbeing for ecosystem assessment and management. *Environmental Science & Policy*, *66*, 250–259.

Chan, K. M. A., Balvanera, P., Benessaiah, K., Chapman, M., Díaz, S., Gómez-Baggethun, E., … Turner, N. (2016). Opinion: Why protect nature? Rethinking values and the environment. *Proceedings of the National Academy of Sciences*, *113*, 1462–1465.

Christie, P. (2005). Observed and perceived environmental impacts of marine protected areas in two Southeast Asia sites. *Ocean & Coastal Management*, *48*, 252–270.

Cinner, J. E., Daw, T., Huchery, C., Thoya, P., Wamukota, A., Cedras, M., & Abunge, C. (2014). Winners and losers in marine conservation: Fishers' displacement and livelihood benefits from marine reserves. *Society & Natural Resources*, *27*, 994–1005.

Cinner, J. E., Sutton, S. G., & Bond, T. G. (2007). Socioeconomic thresholds that affect use of customary fisheries management tools. *Conservation Biology*, *21*, 1603–1611.

Claudet, J., Osenberg, C. W., Benedetti-Cecchi, L., Domenici, P., García-Charton, J.-A., Pérez-Ruzafa, Á., … Planes, S. (2008). Marine reserves: Size and age do matter. *Ecology Letters*, *11*, 481–489.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. New York: Routledge.

Coll, M., Piroddi, C., Steenbeek, J., Kaschner, K., Lasram, F. B. R., Aguzzi, J., … Voultsiadou, E. (2010). The biodiversity of the Mediterranean Sea: Estimates, patterns, and threats. *PLoS One*, *5*, e11842.

Cundill, G., Bezerra, J. C., De Vos, A., & Ntingana, N. (2017). Beyond benefit sharing: Place attachment and the importance of access to protected areas for surrounding communities. *Ecosystem Services*, *28*, 140–148.

Di Franco, A., Plass-Johnson, J. G., Di Lorenzo, M., Meola, B., Claudet, J., Gaines, S. D., … Guidetti, P. (2018). Linking home ranges to protected area size: The case study of the Mediterranean Sea. *Biological Conservation*, *221*, 175–181.

Edgar, G. J., Stuart-Smith, R. D., Willis, T. J., Kininmonth, S., Baker, S. C., Banks, S., … Thomson, R. J. (2014). Global conservation outcomes depend on marine protected areas with five key features. *Nature*, *506*, 216–220.

FAO. (2016). *The state of Mediterranean and Black Sea Fisheries 2016 (SoMFi)*. Rome, Italy: Author.

Ferse, S., Manez Costa, M., Manez, K. S., Adhuri, D. S., & Glaser, M. (2010). Allies, not aliens: Increasing the role of local communities in marine protected area implementation. *Environmental Conservation*, *37*, 23–34.

Gelcich, S., & Donlan, C. J. (2015). Incentivizing biodiversity conservation in artisanal fishing communities through territorial user rights and business model innovation. *Conservation Biology*, *29*, 1076–1085.

Halpern, B. S., Walbridge, S., Selkoe, K. A., Kappel, C. V., Micheli, F., D'Agrosa, C., … Watson, R. (2008). A global map of human impact on marine ecosystems. *Science*, *319*, 948–952.

Heinen, J., & Shrivastava, R. (2009). An analysis of conservation attitudes and awareness around Kaziranga National Park, Assam, India: Implications for conservation and development. *Population and Environment*, *30*, 261–274.

Hockings, M., Stolton, S., Leverington, F., Dudley, N., & Courrau, J. (2006). *Evaluating effectiveness: A framework for assessing the management effectiveness of protected areas* (2nd ed.). Gland, Switzerland: IUCN.

Jones, J. P. G., Andriamarovololona, M. M., & Hockley, N. (2008). The importance of taboos and social norms to conservation in Madagascar. *Conservation Biology*, *22*, 976–986.

Jones, N., McGinlay, J., & Dimitrakopoulos, P. G. (2017). Improving social impact assessment of protected areas: A review of the literature and directions for future research. *Environmental Impact Assessment Review*, *64*, 1–7.

Kaplan-Hallam, M., & Bennett, N. J. (2017). Adaptive social impact management for conservation and environmental management. *Conservation Biology*, *32*, 304–314.

Leisher, C., Samberg, L. H., Van Buekering, P., & Sanjayan, M. (2013). Focal areas for measuring the human well-being impacts of a conservation initiative. *Sustainability*, *5*, 997–1010.

Leleu, K., Alban, F., Pelletier, D., Charbonnel, E., Letourneur, Y., & Boudouresque, C. F. (2012). Fishers' perceptions as indicators of the

performance of marine protected areas (MPAs). *Marine Policy*, *36*, 414–422.

Lockwood, M. (2010). Good governance for terrestrial protected areas: A framework, principles and performance outcomes. *Journal of Environmental Management*, *91*, 754–766.

McClanahan, T. R., Cinner, J., Kamakuru, A. T., Abunge, C., & Ndagala, J. (2008). Management preferences, perceived benefits and conflicts among resource users and managers in the Mafia Island Marine Park, Tanzania. *Environmental Conservation*, *35*, 340–350.

McNeill, A., Clifton, J., & Harvey, E. S. (2018). Attitudes to a marine protected area are associated with perceived social impacts. *Marine Policy*, *94*, 106–118.

MedPAN. (2016). *The 2016 status of marine protected areas in the Mediterranean—Main findings*. MedPAN, UN Environment/MAP-SPA/RAC.

Morishige, Kanoe'ulalani, Andrade, P., Pascua, Pua'ala, Steward, K., Cadiz, E., Kapono, L., & Chong, U. (2018). Nā Kilo 'Āina: Visions of Biocultural Restoration through Indigenous Relationships between People and Place. *Sustainability*, *10*, 3368.

PISCO & UNS. (2016). The science of marine protected areas. Partnership for interdisciplinary Studies of Coastal Oceans and University of Nice Sophia Antipolis, Nice, France.

R Core Team. (2018). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria.

Rohe, J. R., Aswani, S., Schlüter, A., & Ferse, S. C. A. (2017). Multiple drivers of local (non-) compliance in community-based marine resource management: Case studies from the south pacific. *Frontiers in Marine Science*, *4*. https://doi.org/10.3389/fmars.2017.00172.

Rönnbäck, P., Crona, B., & Ingwall, L. (2007). The return of ecosystem goods and services in replanted mangrove forests: Perspectives from local communities in Kenya. *Environmental Conservation*, *34*, 313–324.

SAS. (2018). SAS software. Cary, NC: SAS Institute.

Sommerville, M., Jones, J. P. G., Rahajaharison, M., & Milner-Gulland, E. J. (2010). The role of fairness and benefit distribution in community-based Payment for Environmental Services interventions: A case study from Menabe, Madagascar. *Ecological Economics*, *69*, 1262–1271.

Sorice, M. G., & Donlan, C. J. (2015). A human-centered framework for innovation in conservation incentive programs. *Ambio*, *44*, 788–792.

Svensson, P., Rodwell, L. D., & Attrill, M. J. (2010). The perceptions of local fishermen towards a hotel managed marine reserve in Vietnam. *Ocean & Coastal Management*, *53*, 114–122.

Voyer, M., Gladstone, W., & Goodall, H. (2015). Obtaining a social licence for MPAs—Influences on social acceptability. *Marine Policy*, *51*, 260–266.

Webb, E. L., Mailiao, R., & Siar, S. V. (2004). Using local user perceptions to evaluate outcomes of protected area management in the Sagay Marine Reserve, Philippines. *Environmental Conservation*, *31*, 138–148.

Yasué, M., Kaufman, L., & Vincent, A. C. J. (2010). Assessing ecological changes in and around marine reserves using community perceptions and biological surveys. *Aquatic Conservation: Marine and Freshwater Ecosystems*, *20*, 407–418.

Zafra-Calvo, N., Pascual, U., Brockington, D., Coolsaet, B., Cortes-Vazquez, J. A., Gross-Camp, N., … Burgess, N. D. (2017). Towards an indicator system to assess equitable management in protected areas. *Biological Conservation*, *211*(Part A), 134–141.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

How to cite this article: Bennett NJ, Di Franco A, Calò A, et al. Local support for conservation is associated with perceptions of good governance, social impacts, and ecological effectiveness. *Conservation Letters*. 2019;e12640. https://doi.org/10.1111/conl.12640