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In-kind contributions to Orange County marine protected area management

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ABSTRACT

California's network of 124 marine protected areas (MPAs) is managed by state agencies with support from non-state partners. Partners include MPA Collaboratives, which were established through the California Collaborative Approach to provide a localized, comprehensive approach to ocean resource management by bringing together local experts and authorities in the areas of outreach and education, enforcement and compliance, and research and monitoring. Given their role in MPA management in California, there is a need to understand the contributions that MPA Collaboratives are making to MPA management activities. In this case study, Blue Earth Consultants, a Division of ERG, conducted a valuation of in-kind contributions made by non-state members of one Collaborative, the Orange County Marine Protected Area Council (OCMPAC), to MPA management activities in Orange County. We performed research and worked collaboratively with OCMPAC to develop a definition of in-kind contributions and a contribution reporting framework that asked respondents to report contributions by type (*Labor Services; Goods, Equipment, and Supplies; Travel; Facilities; and Other*) as well as by category (*Outreach, Education, and Compliance Building; Research and Monitoring; Partnership Coordination and Fundraising Support; and Other*). We distributed the reporting framework to each member organization of OCMPAC and performed data analysis to quantify the total values of the contributions they reported. We found that non-state members of OCMPAC contributed support worth over US \$4 million to Orange County MPA management during a two-year time frame between 2013 and 2015. In both years, the contribution type with the greatest value was *Labor Services*, and the category with the greatest value was *Outreach, Education, and Compliance Building*. Member organizations also noted that their future contributions to OCMPAC, particularly volunteer hours and pro bono work, may be vulnerable to changes in funding, staff time, and organizational priorities. To help ensuring ongoing support for MPA management, OCMPAC and member organizations would benefit from dedicated staff time for MPA-related work, coordinating OCMPAC activities, and education and science programs, among other needs. The approach developed for this case study provides a replicable methodology for quantifying the value of in-kind contributions made through local partnerships to the management of natural resources in California and beyond.

1. Introduction

1.1. Background

Following the passage of California's Marine [Life Protection Act \(MLPA\) in 1999](#), the state and its partners designed and established a network of 124 marine protected areas (MPAs) within California state waters, seven of which are off the coast of Orange County (Orange County Marine Protected Area Council [[OCMPAC](#)] 2012). The MLPA

and the Marine Managed Areas Improvement Act, passed in 2000, mandate that California state agencies manage the state's MPAs (MLPA 1999). Agencies work in partnership with other state entities and non-state partners who provide contributions to the effective functioning of MPAs. To organize these efforts, the MPA Statewide Leadership Team,¹ under the leadership of the Ocean Protection Council (OPC), developed a partnership-based model, the "California Collaborative Approach: Marine Protected Areas Partnership Plan," (Partnership Plan) to provide support for management of the state's MPAs (OPC, 2014). The

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¹ The MPA Statewide Leadership Team is currently lead by the OPC and includes the California Department of Fish and Wildlife (CDFW), CDFW Law Enforcement Division, California Fish and Game Commission, California Coastal Commission, California State Lands Commission, the California Department of Parks and Recreation, the State Water Resources Control Board, California Ocean Science Trust, the MPA Collaborative Network, and the West Coast Regional Office of National Marine Sanctuaries. The process for establishing representation on the MPA Statewide Leadership Team is ongoing and may include greater tribal and MPA Collaborative participation in the future.

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Partnership Plan defines MPA management as “the oversight and process for implementing the legal mandate, management and planning, on-the-ground operations (including surveillance and enforcement, monitoring and evaluation, and outreach and education), social capital building, and long-term sustainable financing of a single MPA or network ...” (OPC 2014).

As part of the California Collaborative Approach, MPA Statewide Leadership Team partners established a network of local platforms, called MPA Collaboratives, to provide a localized, comprehensive approach to ocean resource management by bringing together local experts and authorities in the areas of outreach and education, enforcement and compliance, and research and monitoring (MPA Collaborative Network, 2017). Participants in MPA Collaboratives include, but are not limited to, agencies with jurisdiction in or around MPAs (federal, state, and local level), non-governmental organizations (NGOs), aquaria, California tribes and tribal governments, academia/scientists, and the private sector (OPC 2014). In 2017, the MPA Statewide Leadership Team and the MPA Collaborative Network embarked on a process to develop a memorandum of understanding to formalize the partnership between the MPA Collaborative Network and the Statewide Leadership Team and define MPA management roles.

Orange County is home to the Orange County Marine Protected Area Council (OCMPAC), a Collaborative that is one of the leaders paving the way for MPA Collaboratives throughout the state and serves as the case study for this research. OCMPAC supports the management of seven MPAs off the coast of Orange County, and 12 non-state member organizations and one state entity have committed to OCMPAC through a memorandum of agreement (MOA).²

Each of the member organizations makes in-kind contributions to MPA management based on their strengths and resources. For the purposes of this study, in-kind contributions are donations of goods, services, or dollars made by non-state OCMPAC members to support management activities of MPAs within state waters off the coast of Orange County, California. The scope of this study includes only in-kind contributions from non-state organizations that are signatories of the OCMPAC MOA. OCMPAC has many advisory partners who provide additional time and resources to the Collaborative and thus to MPA management, but are not MOA signatories and are therefore not included in this assessment.

Similarly, goods and services provided by the California Department of Fish and Wildlife (CDFW), the Department of Parks and Recreation, and OPC are not considered in-kind contributions to MPA management because those agencies/organizations are legally mandated by the state to carry out MPA management activities. Their activities include regulation and decision-making; scientific permitting; enforcement; access; monitoring, research, and evaluation; and partnership coordination (OPC 2014).

OCMPAC member organizations bear the cost of their contributions, even though they are not legislatively mandated by the state to assist with MPA management. The funding that these organizations use to ultimately support Orange County MPA management activities comes from sources including non-government grants; city taxes (property, sales, transient occupancy); user fees and service charges; rent, concessions, and interest; city, state, and federal funds (e.g., General Fund and revenue generated from public trust lands); and income from philanthropic fundraising.

The funds from these sources support many activities in addition to

MPA management, and may include allocations determined year to year that are not secured for MPA purposes. The purpose of this study is to develop a framework for quantifying in-kind contributions from partner organizations to resource management, and apply it to OCMPAC as a case study. The approach described in this paper can be applied to other geographies and resource management contexts to assess the value of public-private partnerships and contributions made by non-state partners.

1.2. Literature research

The authors performed a thorough literature review across different disciplines to inform our methodology for this study and determine whether a methodology exists for valuing in-kind contributions like those made by members of OCMPAC to MPA management. In this study, we define in-kind contributions are those that would otherwise require purchase or payment (University of Kansas, 2015) by MPA managing entities. Sources such as the Independent Sector's research on giving and volunteering in the United States and surveys of giving and volunteering conducted by Statistics Canada measure the amount of charitable giving and volunteering contributed by individuals or households at a national scale across the population (Toppe et al., 2001; Turcotte, 2015). Similarly, researchers have measured giving and volunteering at the state or city level, using methods including diary studies (e.g., monthly reporting) to evaluate all types of charitable giving by individuals (Havens and Schervish, 1997; Institute for Nonprofit Organization Management, 2000). However, these national and localized studies assess all giving without focusing on a specific regional cause or entity or categorizing the types of contributions made. Some social scientists suggest that asking more specific questions about types of contributions may be an effective strategy for achieving more complete reporting of all in-kind contributions (Havens and Schervish, 2001). A study evaluating contributions made by community groups to New Zealand's Department of Conservation provides a relevant example to the approach we present here (Hardie-Boys, 2010). However, the New Zealand study focused on contributions made by non-profit organizations specifically, and used a structure relevant to the department's specific programs for categorizing contributions. A study in King County, Washington estimated the value of volunteer participation in park restoration, including vehicle and equipment costs and volunteer time. This study focused on contributions to specific stewardship events rather than ongoing management activities (Daniels et al., 2014). The authors also noted a lack of published studies in the literature quantifying in-kind contributions to conservation (ibid.).

Additional sources emphasize that public-private partnerships can be an important mechanism for expanding external funding for MPAs (Living Oceans 2014; MPA Federal Advisory Committee, 2017). For example, the public-private partnership that supported the planning and implementation process for California's MPA Network began with an investment of \$19.5 million from private funders that helped leverage an estimated total of \$78 million in total state and federal contributions (including \$18.5 million in state funding) to fund critical MPA-related work over the past decade (MPA Federal Advisory Committee, 2017). Through public-private partnerships, entities including non-profits, private companies, friends groups, foundations, and fiscal sponsors can help cover the ongoing costs of MPA management through in-kind contributions or dollars (MPA Federal Advisory Committee, 2017). However, entities like MPA Collaboratives that rely on volunteers and involve diverse stakeholders may lack the resources to track and quantify different types of in-kind contributions from many partners, and thus those contributions may go unrecognized.

Volunteer and in-kind contributions have also been linked to the effectiveness of MPA management. For example, a study of volunteer participation in environmental monitoring documented increased social capital and influence on natural resource management practices as a primary community-level outcome (Stepenuck and Green, 2015).

² Non-state MOA signatories include California State University, Fullerton; City of Dana Point; City of Laguna Beach; City of Newport Beach; County of Orange – Orange County Parks; Crystal Cove Alliance; Laguna Ocean Foundation; MBC Applied Environmental Sciences; Ocean Institute; OneOC (fiscal sponsor); Orange County Coastkeeper; and University of California, Irvine. State MOA signatories include the California Department of Parks and Recreation.

Research specific to MPAs have also found a link between social capital and successful MPAs, where strong social capital was found to be a key enabling condition for effective MPA governance and management (Bennet and Dearden, 2014; Blue Earth Consultants, 2012). Strong social capital also affects people's perception of the benefits of MPAs (Diedrich et al., 2016). Furthermore, MPAs with adequate management capacity (e.g., staff and funding) have greater ecological effects than those with insufficient funding or staff capacity (Gill et al., 2017). The linkages between volunteer participation, social capital, and MPA management effectiveness provide an important grounding for understanding the potential impacts of in-kind contributions to MPA management.

The framework presented in this study and applied to contributions made to OCMPCAC provides a new approach to evaluating in-kind contributions to MPA management in California. We drew from existing resources to define the types and categories of contributions and the approach for collecting and analyzing information. Resources included those related to defining in-kind contributions (University of Kansas, 2015), surveying to gather information about volunteering (Toppe et al., 2001; Turcotte, 2015; Havens and Shervish, 1997), approaches for categorizing and quantifying contributions from volunteers (Hardie-Boys, 2010; Daniels et al., 2014), and MPA management roles for non-governmental partners (OPC 2014). This framework can be applied to MPAs, other types of protected areas, and potentially other types of resource management efforts around the world to better understand the value of partners' in-kind contributions.

2. Methods

2.1. Categorizing in-kind contributions

This study evaluates the in-kind contributions that support the state's mandated Orange County MPA management activities. We organized in-kind contributions to MPA management by the following types of goods and services (Hardie-Boys, 2010; Daniels et al., 2014; University of Kansas, 2015):

Labor Services: Includes skilled/pro bono work and other volunteer labor. Skilled/pro bono work includes services that require advanced training or degrees to carry out, such as legal advice or performing trainings in advanced data collection methods. General volunteer labor represents services that do not require advanced training or degrees, such as simple field data collection or staffing a booth at a conference.

Goods, Equipment, and Supplies: Includes physical objects that are loaned or donated for use in MPA management. Loaned items are used for a limited duration for the purposes of MPA management, whereas donated items are given for indefinite use for MPA management. This type includes vehicles that are used for purposes such as enforcement, patrols, outreach and education, and data collection; however, vehicles that are used for transportation are not included in this type. This type does not include items that are donated solely for resale value.

Travel: Includes items that are loaned or donated for the purpose of transportation associated with MPA management. This includes mileage cost of the use of cars or other vehicles (including any mileage cost of vehicles reported in *Goods, Equipment, and Supplies*). This contribution type also includes the cost of any air, train, or other mode of transportation for which tickets were purchased.

Facilities: Includes space, buildings/rooms, or utilities loaned or donated for use in MPA management. This includes meeting rooms, laboratories, internet access, janitorial services, etc.

Other: Any good that is not captured within the preceding categories, including monetary contributions.

Within these types, in-kind contributions generally fit into the following categories based on their purpose (OPC 2014). Note that building compliance is included with outreach and education because non-state

member organizations do not directly conduct enforcement or compliance activities, but can build compliance through outreach and education:

- Outreach, Education, and Building Compliance
- Research and Monitoring
- Partnership Coordination
- Fundraising Support

2.2. Data framework and data collection

To compile and organize data from each non-state OCMPCAC member, we developed a data collection framework in Microsoft Excel and met with OCMPCAC members to review and vet the framework (see Appendix A). The framework is organized by type of in-kind contribution (*Labor Services; Goods, Equipment, and Supplies; Travel; Facilities; and Other*). Within each of these contribution types, we asked for specific information pertaining to each individual contribution, including the nature of the contribution and monetary values associated with it. For example, specific information sought included a description of the item, type of service provided and number of hours of labor, number of similar items provided, the value at the time of donation for donated items, and the purchase price and amount of time loaned for loaned items. We also asked informants to provide their insights on the level of vulnerability of contributions continuing into the future (e.g., based on volunteer status, priorities of part-time employees, funding availability, etc.). See the data collection framework in Appendix A for the full list of types of information sought. Within each type, informants organized contributions by category: *Outreach, Education, and Compliance Building; Research and Monitoring; Partnership Coordination; Fundraising Support; and Other*.

To collect data, we distributed the framework to a representative of each of the non-state OCMPCAC members to complete using their organization's contribution data. Informants provided information in two identical frameworks describing two 12-month periods: 1) July 1st, 2013 to June 30th, 2014, and 2) July 1st, 2014 to June 30th, 2015. This date range represents the fiscal year observed by the largest number of non-state OCMPCAC members. We compiled all data responses into one Excel framework for each 12-month period for data analysis. The data collected from OCMPCAC members and used in the analysis can be found in Appendices B (2013–2014) and C (2014–2015). These data have been scrubbed to remove the names and identifying information about the member organizations.

2.3. Calculating values

For some contributions, the data supplied did not directly describe the monetary value of the contribution. Therefore, we developed a methodology for calculating the values of reported in-kind contributions where necessary, drawing upon literature and government methodologies where applicable. Below is a description of each primary type of calculation performed to estimate the values of in-kind contributions. Note that in some cases, informants provided data in different units or calculated values using their own methods, and we made significant efforts to identify and treat those cases separately.

2.3.1. Labor services

To calculate the value of services provided for MPA management, we followed the general guidelines of the *Global Environment Facility (GEF n.d.)*. This methodology generally advises using an estimated rate per time and multiplying by the number of hours spent providing the service.

General Volunteer Time: Informants supplied the number of volunteers and number of hours per volunteer. We multiplied those numbers by the value of volunteer time for California in 2014, \$26.87 per hour (Independent Sector, 2016), to estimate the value of general

Table 1
2013–2014 contributions summary.

| | Labor Services | Goods, Equipment, & Supplies | Travel | Facilities | Other | Total |
|---|--------------------|------------------------------|----------------|------------------|-----------------|--------------------|
| Outreach, Education, and Compliance Building | \$680,510 | \$200,323 | \$765 | \$7,704 | \$37,269 | \$926,571 |
| Research and Monitoring | \$474,752 | \$21,604 | \$1,395 | 0 | \$478 | \$498,229 |
| Partnership Coordination | \$18,310 | 0 | \$746 | \$870 | 0 | \$19,926 |
| Fundraising Support | \$20,941 | 0 | 0 | 0 | 0 | \$20,941 |
| Other | \$267,291 | \$5,461 | \$1,292 | \$525,000 | 0 | \$799,044 |
| Total | \$1,461,804 | \$227,388 | \$4,197 | \$533,574 | \$37,747 | \$2,264,711 |

volunteer time.

Skilled/Pro Bono Work: Informants reported the number of hours per person providing the service and an hourly rate, if possible. Informants reported hourly rates according to the person's hourly billable rate, if applicable. Otherwise, they calculated an hourly rate by dividing the person's annual salary plus overhead by 2,080 (the standard full-time hours worked per year). Overhead is composed of benefits, taxes, etc.

2.3.2. Goods, equipment, and supplies

For contributions of physical goods, equipment, and supplies, informants reported contributed items as either loaned or donated. For donated items, we asked informants to report the fair market value of the item at the time of donation according to United States Internal Revenue Service (IRS) guidelines (IRS, 2007). For loaned items, we used the purchase price of the item, the estimated lifespan of the item, and the total time loaned for MPA management to calculate the value of the use of the item based on general GEF guidelines (GEF n.d.). If an item was a loaned vehicle, we collected information on the cost of fuel for the time used for MPA management and added that cost to the calculated value of usage time as described above.

2.3.3. Travel

For donated vehicles, we asked informants to report the fair market value at the time of donation (IRS, 2007). For loaned vehicles, which were all cars, trucks, or other land-based vehicles, informants reported the total miles traveled. We calculated the value of that usage by multiplying by the miles by the standard mileage reimbursement rate of \$0.56 per mile in 2014 (IRS, 2013).

2.3.4. Facilities

For donated facilities, we asked informants to report the fair market value at the time of donation (IRS, 2007). For loaned facilities, we asked informants to provide the total time loaned and the rental rate for the facility; however, most informants responded with total values for facility usage based on their internal calculations.

2.3.5. Other

For any contributions that did not fit within the above contribution types, informants reported the fair market value at the time of donation for donated items (IRS, 2007). Contributions in the *Other* category included monetary donations to support research and education programs. There were no loaned items reported in this contribution type.

Table 2
2014–2015 contributions summary.

| | Labor Services | Goods, Equipment, & Supplies | Travel | Facilities | Other | Total |
|---|--------------------|------------------------------|----------------|------------------|-----------------|--------------------|
| Outreach, Education, and Compliance Building | \$779,362 | \$26,090 | \$1,051 | \$7,704 | \$40,710 | \$854,916 |
| Research and Monitoring | \$510,507 | \$20,500 | \$2,604 | 0 | 0 | \$533,611 |
| Partnership Coordination | \$21,976 | 0 | \$448 | \$600 | 0 | \$23,024 |
| Fundraising Support | \$18,920 | 0 | 0 | 0 | 0 | \$18,920 |
| Other | \$147,374 | \$5,312 | \$1,628 | \$525,000 | 0 | \$679,314 |
| Total | \$1,478,139 | \$51,902 | \$5,731 | \$533,304 | \$40,710 | \$2,109,786 |

2.3.6. Nature of contributions

To synthesize qualitative information about the types of contributions reported, we reviewed information from informants describing the types of services, roles, and affiliations of those people providing *Labor Services*. For all other types, we asked for a description of the items contributed. We counted the number of contributions that fell into various groupings to report on the most common types and purposes of goods and services.

2.3.7. Calculation of totals

Based on the reported contributions and calculations, we summed the values of contributions to find various totals, including by type, category, totals across years, skilled/pro bono versus general volunteer and loaned versus donated, and by sector. We summarized data using Microsoft Excel to create tables and figures.

3. Results

3.1. Total values by type and category

In-kind contributions reported by non-state OCOMPAC members totaled \$4,374,497, with \$2,264,711 in 2013–2014 and slightly less, \$2,109,786, in 2014–2015. **Tables 1 and 2** describe the reported annual contributions by type and category, including totals. In both years, *Labor Services* was the largest contribution type, with more than twice the value of the next largest type, *Facilities*. *Goods, Equipment, and Supplies* included a lower level of contributions, and *Travel* was the lowest. In the *Other* type, monetary contributions added to a level that was slightly more than *Travel*. Between years, the largest change was in *Goods, Equipment, and Supplies*, which was 77% less in 2014–2015 than in the previous year (a difference of \$175,486). This difference was due largely to the contribution of one educational program that was supported in 2013–2014, but not in 2014–2015. Contributions to *Travel* were 37% higher in 2014–2015 than the previous year (a difference of \$1,533) due to increased mileage and vehicle donation values. Changes in all other types were less than 10%.

Regarding contribution categories, the category with the greatest value in both years was *Outreach, Education, and Compliance Building*, followed by *Other* and then *Research and Monitoring*. The *Other* category included goods and services such as maintenance and aquarium supplies, Board member attendance at internal member organization meetings, and use of facilities for purposes that did not fit into the other contribution categories. *Partnership Coordination* and *Fundraising Support* valued an order of magnitude less than the other categories in

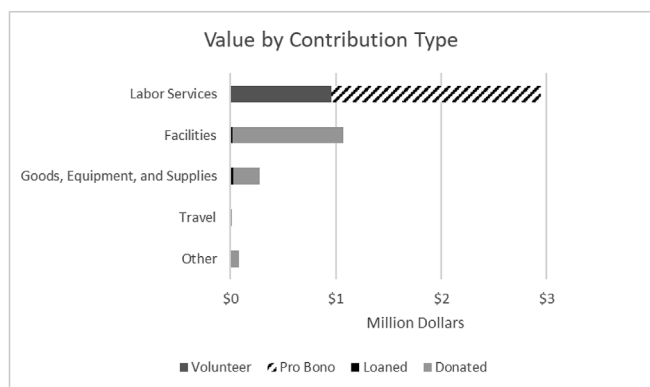


Fig. 1. Value of contributions by type of contribution.

both years. Between years, no category changed in value by more than 16%, with most decreasing slightly in 2014–2015.

Fig. 1 illustrates the totals across both years by contribution type. Within types, contributions were distributed between general volunteer hours and skilled/pro bono (for *Labor Services*) or loaned and donated items (for all other contribution types). For *Labor Services* across both years, the value of skilled/pro bono work was more than double the value of general volunteer hours. For all other categories, the value of donated items far outweighed that of loaned items.

Fig. 2 displays the totals across both years by contribution category, which closely mirror the pattern of findings in both 2013–2014 and 2014–2015 separately.

3.2. Total values by sector

OCMPAC members representing different sectors contributed at different levels to MPA management over the two study years, as displayed in Table 3. We compiled the contributions from some sectors in order to protect the anonymity of responses from individual partner organizations. In both years, NGOs contributed the greatest value, with city and regional government ranking second. Together, academic and private organizations contributed less than other sectors in both years. Variation in contribution levels between sectors may be partially a result of the different numbers of each type of organization representing each sector.

3.3. Nature of contributions

OCMPAC members contributed a wide variety of goods and services that fed into the total values reported in the sections above. Here we describe the most common goods and services provided, by contribution type. Importantly, since some contributions were grouped in the data framework as single contributions, such as multiple volunteers who provided similar services, this may influence the perceived

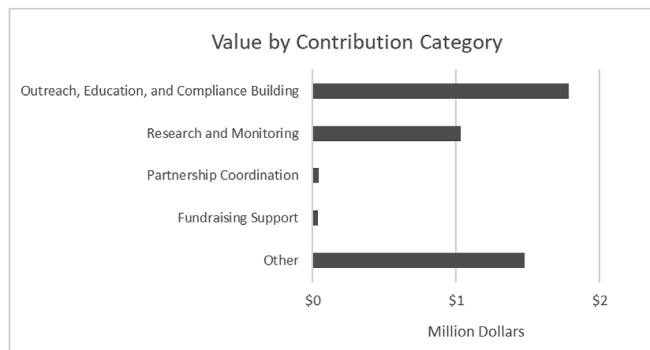


Fig. 2. Value of contributions by contribution category.

Table 3
Contributions by sector.

| | Total Contributions | | |
|---------------------------------------|---------------------|-------------|-------------|
| | Year 1 | Year 2 | Total |
| Academic and Private | \$28,799 | \$34,299 | \$63,099 |
| Non-Governmental Organizations | \$1,487,751 | \$1,255,995 | \$2,743,746 |
| Government | \$748,160 | \$819,492 | \$1,567,652 |

distribution of different types of goods and services. Nevertheless, while not quantitatively precise, the descriptions below shed light on the common types of goods and services contributed by non-state OCMPAC members. The descriptions below refer to both years of the data collection period.

3.3.1. Labor services

Contributed labor was most commonly for the general purposes of outreach, education, and interpretation; project management, design, and oversight; science, field/lab research, and restoration; and attendance at meetings. For example, naturalists led tidepool field trips for school groups, staff managed intern programs and field research projects, part-time employees performed species-specific field monitoring and participated in beach clean-ups, and OCMPAC members attended OCMPAC meetings and meetings with other MPA-related entities around the state. Other types of labor services provided include those relating to enforcement, such as patrols, and administrative support, such as grant writing.

The roles of people carrying out the labor services varied from volunteers and interns to leadership of OCMPAC and its member organizations. Common roles included scientists, professors, and graduate students; education and naturalist staff; and organizational leadership. Other roles included enforcement staff; volunteers, docents, and interns; grants, administrative, and coordination staff; and captains and crew.

3.3.2. Goods, equipment, and supplies

The most common types of items contributed in this category were scientific equipment and education and outreach materials. This included items such as temperature and other monitoring equipment, specimen collecting jars, interpretive signs, and brochures. Other types of items included boats used for research and outreach activities, other vehicles, and office materials.

3.3.3. Travel

Cars, trucks, and SUVs comprised all items contributed in the *Travel* type for both years, some of which were the personal vehicles of staff members. Vehicles were used for transportation to meetings, outreach and public events, and research and restoration sites, as well as for boat tows. No tickets for air travel were reported during the two-year time period.

3.3.4. Facilities

OCMPAC members contributed the use of several facilities, including science centers and a conference center, for purposes such as docent orientation and enrichment activities, OCMPAC receptions and meetings, Board meetings, and other education events. One informant reported on janitorial and electricity services related to the contribution of facility use.

3.3.5. Other

Contributions that did not fall within any of the other types included monetary donations, such as those that supported field education and research activities for students.

3.4. Assumptions and limitations

There are several assumptions and limitations to take into account when considering the findings reported in this study. For example, the values reported here reflect information reported by informants and were not verified by the authors. In addition, while we made every effort to standardize responses and values as much as possible, informants may have reported values of some contributions in different manners (e.g., real estate value versus rental value to determine the fair market price of a facility, general volunteer versus skilled/pro bono time, or loaned items versus donated). Finally, as previously noted, the in-kind contributions documented in this report do not capture the full range of in-kind contributions to MPA management in Orange County, as numerous other organizations in addition to OCMPCAC members participate in MPA-related efforts. Despite these and other possible inconsistencies, this study provides a high-level snapshot of the estimated order of magnitude of contributions by non-state OCMPCAC members.

4. Discussion

This study not only provides an estimate of the value of contributions of non-state members of one MPA Collaborative to local MPA management, but also provides a blueprint for conducting similar studies throughout California's MPA Network and beyond. The approach outlined here can also be applied to other resource management contexts where many private or non-state partners are providing in-kind contributions to achieve common objectives, such as terrestrial protected areas.

Across all contribution types, non-state OCMPCAC members reported more than \$4 million to Orange County MPA management in the two years analyzed. To put this figure in perspective, appropriations from California's 2006 Budget Act allocated a total of \$10 million for the OPC and CDFW to implement the MLPA and the Marine Life Management Act throughout the entire state (OPC 2016). The value of contributions of OCMPCAC members, and likely of members of other MPA Collaboratives, is therefore significant. It is possible that some MPA management support activities might not take place without these contributions. Informants in this study indicated that many of these contributions, particularly *Labor Services*, may be vulnerable in the future. *Labor Services* accounts for the majority of contributions and is highly dependent on the ongoing interest and capacity of individuals participating in MPA management activities. To ensure contributions into the future, OCMPCAC and its member organizations would need funding to compensate for these contributions and enable OCMPCAC members to coordinate effectively, such as by hiring dedicated coordination staff.

4.1. Vulnerability and ongoing needs

Importantly, individual OCMPCAC member organizations bear the cost of the in-kind contributions described above, and as stated by OCMPCAC members who filled out the contribution framework, these contributions are not necessarily guaranteed year to year. Participants in the study shared that the majority of funding that ultimately supports their organization's MPA work comes from public funds such as city taxes and city, state, and federal funds, as well as private funds such as philanthropic and other non-government grants. The government may allocate funds on an annual basis, meaning that they are not guaranteed year to year, and philanthropic funding requires significant investment of time on the part of OCMPCAC members to develop grant proposals and cultivate relationships. Because of this vulnerability of funding, it will be important to prioritize how these funds are used and develop additional funding sources. This support could be applied to several areas, which informants identified as their organizations' primary needs in order to function effectively as members of OCMPCAC. Non-state

partners providing in-kind contributions in other contexts, such as for other MPAs or protected areas, may share the needs listed below.

Dedicated Staff Time for MPA Work: The most commonly identified needs revolved around staff time, specifically dedicated time for staff of member organizations to participate in OCMPCAC activities. Informants noted that OCMPCAC is reliant on employees of member organizations, whose job descriptions allocate limited or no time to OCMPCAC; therefore, their time for MPA-related activities may shift in the future based on changes in their job duties or their availability to contribute in a volunteer capacity. These concerns may be related to the number of people contributing services to MPA management who are doing so by going above and beyond their job descriptions; across both years, around 20% of Labor Service contributions were associated with people who were spending more time on MPA-related activities than their job descriptions stated. Changes in organizational priorities, staffing, or individuals' willingness to work overtime on MPA efforts could significantly reduce these contributions. Informants also expressed concerns about labor for OCMPCAC-related work depending on the ongoing interest and involvement from students, principle investigators, and volunteers. Only a very small number of labor contributions were marked as not vulnerable.

Dedicated Coordination Staff: Another commonly recognized need was for dedicated staff whose role is specifically to coordinate the activities of OCMPCAC as well as OCMPCAC-related activities of specific member organizations. This person/these people could oversee and perform day-to-day activities including grant writing and administration, meeting coordination, follow-up with member organizations and partners on timelines and projects, networking with partner or aligned organizations, and managing the development of outreach materials. This type of staff role would have the potential to greatly enhance OCMPCAC's effectiveness and alleviate burden on OCMPCAC member organizations, thus allowing them to spend more time on substantive, rather than administrative, MPA issues. Currently, OCMPCAC does not have a dedicated staff member to assist with such duties, although they are discussing options for how to possibly support this role.

Educational and Science Staff: There is a specific staffing need for education personnel and scientific staff with time dedicated to these activities. Education staff would lead and implement education programs, and science staff would carry out MPA monitoring and research. Some OCMPCAC member organizations employ educational and scientific staff members, although these duties might represent only a portion of their job descriptions. Their priorities are to further the missions of their organizations, which might not fully align with the mission of OCMPCAC.

Outreach Materials and Support: OCMPCAC members need more outreach materials to support education and awareness-building efforts, such as maps, brochures, and signs. This also includes the need for funds to cover expenses such as speaker honorariums and facility rentals for education or outreach events. OCMPCAC currently has limited funding for developing outreach materials and events.

Benefits and Incentives: To maintain or increase the value of in-kind contributions, there would be a need to create benefits for member organizations to further incentivize active OCMPCAC membership, and for state and local agencies to recognize and use OCMPCAC's work. Benefits and recognition for contributions to OCMPCAC could provide necessary motivation for members to continue contributing into the future.

4.2. Conclusions

This case study of OCMPCAC illuminates the estimated contributions that entities are providing, without the requirement of a legal mandate, to further Orange County MPA management. This in-kind support contributes to many aspects of effective MPA management, including scientific monitoring and research; outreach, education, and building compliance with MPA regulations; fundraising; and more. In the

absence of reallocated or increased funding to state MPA managers, in-kind contributions from OCMPC members form a valuable source of support for state management. OCMPC members will require ongoing support to sustain their contributions into the future, and would benefit from additional support to help enhance their efforts. Members of MPA Collaboratives throughout California's coastal communities are contributing unknown amounts of in-kind goods and services to MPA management in their local areas, and this study provides a methodology and framework for collecting information to learn about the value and nature of those contributions. Furthermore, this study provides a model that managers of MPAs or other types of protected areas in the United States and beyond could draw from to estimate the value of in-kind contributions made by partners and members.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.ocecoaman.2019.05.002>.

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