Bridging Organizations to Improve Conservation Fit in the Coral Triangle

by

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AUTHOR'S DECLARATION

This thesis consists of material all of which I authored or co-authored: see Statement of Contributions included in the thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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STATEMENT OF CONTRIBUTIONS

I am the sole author of Chapter 1, Chapter 2 and Chapter 6 of this dissertation. Chapters 3 – 5 are based on manuscripts that have been co-authored. Chapter 3 and Chapter 4 were co-authored with Dr. Derek Armitage. Chapter 5 was co-authored with Dr. Jennifer Silver and Dr. Derek Armitage. I am the lead author for all three co-authored manuscripts. Citations for the co-authored chapters have been included below.

Chapter 3 – Bridging organizations drive effective governance outcomes for conservation of Indonesia' marine systems

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Chapter 4 – Bridging for better conservation fit in Indonesia's coastal-marine systems

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Chapter 5 – A political ecology perspective on bridging organizations influencing marine conservation in Indonesia

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ABSTRACT

This dissertation investigates how *bridging organizations* influence the processes and outcomes of coastal-marine governance and conservation. Novel ways of governing are crucial in conservation to navigate the 'messiness' inherent in dynamic and socially complex coastal-marine settings. This means not only engaging with the diversity of social actors and their variable interests, but also with the breadth and depth of other social dimensions such as cultural context, knowledge diversity, power dynamics and narratives. Here, I examine the roles and functions of multiple bridging organizations to better understand their contributions to governance outcomes for conservation and politics, and in ways that nurture better fit between conservation initiatives and social dimensions. Bridging organizations are defined here as independent entities designed to connect diverse actors or groups through some form of bridging process.

My research is situated in the southeast Asia Coral Triangle (CT), and based on three case studies from across southern Indonesia: the Bali Marine Protected Area Network, the Nusa Penida Marine Protected Area and the East Buleleng Conservation Zone. A mixed-methods, multiple case study approach was applied, and integrated quantitative and qualitative methods and data. Data were collected via sociometric network survey, semi-structured interviews, participant observations, and document collection and review. Diverse actors and organizations were included at multiple scales (from community to international) and across multiple sectors (e.g., tourism, fisheries, biodiversity conservation).

The dissertation consists of three core manuscripts. **Manuscript I** studies how bridging organizations can cultivate social networks to support interactive processes between actors for more collaborative and adaptive coastal-marine governance. Here, networks are made up of a wealth of actor groups, such as governments, local resource users, community-based entities, universities, NGOs, etc. **Manuscript II** synthesizes insights from cases to assess the efficacy of bridging organizations in enhancing conservation fit, and points to their importance for better aligning conservation initiatives with their social context (e.g., institutions, culture, practices), fostering appropriate governance processes and instruments, and for connecting people and conservation initiatives across scales and levels. **Manuscript III** draws on insights from the political ecology literature to examine how bridging organizations define and give meaning to conservation issues in ways that embody and exercise value judgments and power, and which produce specific consequences for people and conservation actions.

Evidence is introduced and reinforced that bridging organizations strengthen coastal-marine governance with significant implications for conservation processes and

outcomes. Improved understanding of bridging organizations benefits policy makers, managers and practitioners by contributing empirical insight of their varied roles and functions, determining enabling conditions and constraints associated with bridging activities, and by identifying new opportunities, lessons learned and best practices to engage and support bridging organizations and bridging processes. While findings here are based on research carried out across Bali, they also have broader relevance to other areas of the CT and beyond that face similar challenges to achieving positive conservation momentum. Biodiversity and ecosystems of global importance are at stake in this region, as well as the wellbeing of millions of people who depend on coastal-marine resources as a source of income, livelihoods, food security and culture.

Noteworthy theoretical and practical contributions are offered to an emerging literature on bridging organizations. This research illustrates the benefit of crossing theoretical lines for empirical investigations of bridging organizations, and the methodological utility of social network analysis therein. Research here expands thinking of social dimensions in conservation policy and practice, and contributes insight on the importance of thinking critically about bridging organizations using a political ecology approach. In addition, research findings contribute empirically based understanding of the significance of bridging organizations in navigating social complexity and uncertainty in coastal-marine environments, and provide nuanced understanding of the inputs and strategies used to transition toward more inclusive, adaptive and cross-scale conservation initiatives.

Collectively, these contributions represent important advances in bridging organization research with regard to identifying analytical frameworks that both transcend theoretical and conceptual boundaries, and which aid policy makers, managers and practitioners in the design and implementation of more robust conservation initiatives.

Keywords: bridging organization, collaboration, conservation, Coral Triangle, fit, marine governance, narrative, power

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DEDICATION

I dedicate this dissertation to all those working for the betterment of our collective social and ecological future. May we find inspiration and innovation in each other.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF BOXES

LIST OF ABBREVIATIONS

CBO	Community-Based Organization
CI	Conservation International
CI-I	Conservation International Indonesia
CT	Coral Triangle (geographic region)
CTC	Coral Triangle Center
CTI-CFF	Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security
DKP-B	Ministry of Marine Affairs and Fisheries, Buleleng Regency
DKP-K	Ministry of Marine Affairs and Fisheries, Klungkung Regency
LINI	The Indonesian Nature Foundation
LMMA	Local Marine Management Area
MPA	Marine Protected Area
NGO	Non-Governmental Organization
PA	Protected Area
SNA	Social Network Analysis
RC-I	Reef Check Indonesia

CHAPTER 1
Introduction

1.1. Coastal-Marine Decline and the Rise of Bridging Organizations

The conservation of coastal-marine resources is a pressing issue worldwide with enormous consequences for future human welfare. Millions of people rely on resources such as coral habitats and associated fisheries to support their livelihoods. However, in our pursuit to fulfill needs and aspirations for food, shelter and transportation, humans have become the largest driver of change shaping the biosphere (Rockström et al. 2009). Recent research suggests that no area of the world's ocean is unaffected by human influence and that a large fraction (41%) is strongly affected by multiple anthropogenic drivers, such as overfishing, pollution, shipping, nutrients and sedimentation, and climate changes (Halpern et al. 2008).

In response to these and other problems, conservation initiatives such as marine protected areas (MPAs) have been increasingly promoted in coastal-marine contexts (Lubchenco et al. 2003). In this dissertation, I use the term 'conservation' in a general sense to refer to actions or initiatives designed with the intent to protect or manage biodiversity and/or ecosystems for a variety of ends (intrinsic or instrumental). Contention around the concept of conservation, and how it is practiced, has been commonplace (see Campbell et al. 2009, Gray 2010, Shackeroff et al. 2011). Indeed, many scholars have questioned how effective conservation initiatives have been at achieving their social or ecological objectives to date (e.g., Christie 2004, Lowry et al. 2009, De Santo 2013, White et al. 2014).

At the same time, a small but growing number of scholars cite the lack of consideration concerning the social dimensions of conservation, including governance (Christie et al. 2003, Shackeroff et al. 2009, Christie 2004, 2011, Kittinger et al. 2012, Ban et al. 2013, De Santo 2013, Guerrero and Wilson 2016). The term 'social dimensions' is used with reference to the social, economic, cultural, and governance factors of a given social-ecological system (Box 1.1). While there is growing

understanding and documentation of the social dimension of coastal-marine systems, much of it has not yet been captured (or acknowledged fully) in conservation practice (Hirsch et al. 2011, Christie 2011). Adequately accounting for these dimensions has been cited as critical to the long-term success or failure of marine conservation initiatives (Christie et al. 2003, Charles and Wilson 2009, Bennett and Dearden 2014). Furthermore, explicitly integrating social dimensions in conservation creates opportunity for initiatives to become more inclusive and equitable, and to clarify hard choices and complex trade-offs between objectives (e.g., biodiversity conservation, food security; Hirsch et al. 2011, McShane et al. 2011).

Box 1.1. The social dimensions of coastal-marine environments

The term '*social dimensions*' throws a wide net to include the social, economic, cultural and political factors and processes of a coastal-marine social-ecological system. These dimensions cross geographical and temporal scales, and extend across sectors and interests. This characterization, moreover, acknowledges that governance systems affect, are affected by, and are also a part of the broader suite of social dimensions that make up a coastal-marine social-ecological system.

In the context of conservation initiatives, consideration of social dimensions refers specifically to those factors and processes that can influence whether and how conservation is practiced. Examples include actor diversity, socioeconomic needs, concerns of stakeholders, cultural context, knowledge diversity, institutional conditions, participatory mechanisms, power relations, etc.

My research is situated in the Coral Triangle (CT), a region located at the confluence of the Indian and Pacific Oceans. Here, only a fraction of coral reefs remain unthreatened by overfishing and destructive fishing practices, land-based and marine pollution, and coastal exploitation (Burke et al. 2011, 2012). Together with climate change, these pressures alter food webs, perpetuate further loss of biodiversity, and result in substantial social and economic impacts (Hoegh-Guldberg et al. 2009, Burke et al. 2012).

While scholars and practitioners are still learning the best strategies to tackle these challenges, it is clear that new ways of governing are urgently needed to maintain the social and ecological identity of the CT region. This is particularly important for

coastal communities who already face poverty and livelihood insecurity, and who are among the most vulnerable to current and future environmental changes (Hoegh-Guldberg et al. 2009). But it is also critical at the macro-level, given that productive coastal-marine systems generate important revenue (e.g., income, taxes, trade) and employment opportunities (Hoegh-Guldberg et al. 2009, Foale et al. 2013). Healthy coastal-marine resources contribute to a growing nature-based tourism industry that generates tens of millions of dollars annually and thousands of jobs across the CT (CTI Secretariat 2009).

A major challenge to effective conservation lies in the 'messiness' of coastal-marine governance. In the CT, social actors bring differing values, interests, perspectives, knowledge and power to conservation situations that span geographical and jurisdictional scales and levels (e.g., Clifton and Majors 2012, Fidelman et al. 2012, 2014, von Heland and Clifton 2015). This is further complicated in many cases by the limited influence of central governments over marine resource management, and social, economic, and political complexities such as high dependency on coastal and marine resources and unresolved boundaries of customary tenure (see Mills et al. 2010). Conservation efforts are commonly subject to severe budget constraints, limited technical capacity and incomplete scientific information (Clifton 2009). Many working in this region have criticized the limited consideration of social dimensions in conservation (as above; e.g., Christie 2004, Majors 2008, Clifton 2009, Foale et al. 2013, Fidelman et al. 2014, von Heland et al. 2014).

In this context, the task at hand is to find ways of governing that are collaborative and adaptive, and where multiple types of actors are meaningfully engaged (cf. Dietz et al. 2003, Armitage et al. 2009). Simultaneously, governance arrangements are needed that deliberately fit conservation initiatives to underlying social dimensions that influence the practice and outcomes of conservation. This means not only engaging with a plenitude of social actors and organizations, but also with the breadth and depth of other social dimensions in these settings, such as socioeconomic or cultural context, stakeholder relations, knowledge diversity, and the multiplicity of sectors present (Box 1.1; see CT: Fidelman et al. 2014, von Heland et al. 2014). Further to this, attention to power dynamics and narrative is key to understanding how specific conservation

issues are defined and given meaning in ways that reflect value judgments, and which can lead to radically different consequences for social-ecological systems (cf. von Heland and Clifton 2015). For example, previous work in the CT (Berdej et al. 2015) has shown that different narratives have material effects on structuring conservation initiatives and programming, and on the roles of different actors therein.

Taking the above discussion as my point of departure, this dissertation investigates *bridging organizations* as a governance mechanism for cross-boundary navigation of complex social-ecological systems in the context of developing and ongoing conservation efforts across the CT. A bridging organization is an entity that is designed specifically to link multiple and diverse actors or groups through some form of bridging process, such as knowledge sharing (Crona and Parker 2012). These organizations have been widely cited as a means for enhancing collaborative output (Hahn et al. 2006, Olsson et al. 2007, Berkes 2009). I compare and contrast bridging organizations at the local to international level to examine how they shape governance processes, contribute to specific conservation outcomes, and influence conservation narratives in the CT generally, and Bali Province specifically. In doing so, I acknowledge that bridging organizations affect, are affected by, and are often also part of a broader suite of social dimensions that make up social-ecological systems. The research provides conservation policy-makers, managers and researchers with theoretical and empirical insight on the value and constraints of bridging organizations in CT nations and other coastal-marine contexts.

1.2. Research Objectives

Bridging organizations warrant closer attention given their expanding role in helping to govern terrestrial and, increasingly, coastal-marine systems. By shaping the institutional seascape – through, for example, new partnerships, collaborations and institutions, shifting power – bridging organizations can have profound implications for both people and conservation actions. Yet, much remains unknown as to their specific role(s), functions and impacts. Therefore, the four main objectives of this doctoral research are:

(1) To describe bridging organizations relevant to the Indonesian context and Bali in particular (with respect to organizational and relational characteristics, and bridging function);
(2) To assess how bridging organizations support or constrain governance outcomes for coastal-marine conservation;
(3) To examine how bridging organizations enhance or inhibit conservation fit, and by exercising what processes/strategies specifically; and
(4) To critically examine the political dynamics and processes of bridging organizations using a political ecology perspective for assessment

1.3. Theoretical Approach to the Study of Bridging Organizations

A bridging organization is an example of an entity that is designed to link multiple social actors, and has been widely cited as a means for coordinated action (e.g., Hahn et al. 2006, Olsson et al. 2007, Berkes 2009, Crona and Parker 2012). These organizations are seen as "a conduit for ideas and innovations, a source of information, a broker of resources, a negotiator of deals, a conceptualizer of strategies, [and] a mediator of conflicts" (Brown 1991: 812). In short, bridging organizations connect actors across sectors and scales to solve problems neither would be able to on their own. Recent empirical studies have shown that these organizations provide platforms for communication, relationship building, stakeholder engagement, learning and coordination (e.g., Hahn et al. 2006, Jamal et al. 2007, Schultz 2009, Jacobson and Robertson 2012, Rathwell and Peterson 2012, Kowalski and Jenkins 2015).

What distinguishes bridging organizations from other forms of inter-party collaboration (e.g., partnerships, roundtables, task forces) is that they are organizations in their own right and are relatively distinct in terms of resources and personnel from those they serve to bridge. Although bridging organizations are sometimes synonymous with boundary organizations, Crona and Parker (2012) make the distinction that boundary organizations have a more narrow focus on the science-

policy interface, and tend to have more clearly defined structures for accountability. So, while bridging organizations do share some of the same characteristics as boundary organizations – such as involving actors from across boundaries – they serve a much broader role within governance networks.

Bridging organizations vary in size, scope and level of formalization (Brown 1991). Non-governmental organizations commonly act as bridging organizations within the natural resource governance arena (Kowalski and Jenkins 2015). Other types of bridging organizations include, for example, governmental, research and education, or social movement organizations (e.g., Brown 1991, Jacobson and Robertson 2012, Rathwell and Peterson 2012). However, as mentioned below, categorization of the different types of bridging organizations is in need of clarification.

While offering important insights, the existing body of literature regarding bridging organizations is limited in a number of respects. First, the categorization of bridging organizations in terms of scope, formalization and diversity of stakeholders is rough (Crona and Parker 2012). More work is needed to fully conceptualize the spectrum of functions and roles played by bridging organizations, and to uncover the specific processes and strategies through which they 'bridge' social actors. Second, there has been little empirical assessment carried out in the context of conservation governance generally, and in the Coral Triangle region more specifically (Cohen et al. 2012, Horigue et al. 2012). Understanding how the processes and outcomes of conservation are influenced by emerging bridging organizations is of particular importance. Third, the study of bridging organizations to date has treated them relatively apolitically, rather than as entities that are both entrenched in and exercise power to shape political debate. I acknowledge these limitations and attempt to address them herein.

The research is grounded in three complementary bodies of literature: 1) adaptive governance, 2) institutional fit, and 3) political ecology. These bodies were chosen to investigate bridging organizations as that were situated within the wider realm of environmental governance – that is, the social networks and multi-level interactions of actors in formulating and implementing conservation initiatives. I acknowledge that other bodies of literature – such as those pertaining to institutional or organizational

analysis (e.g., Ostrom 1990, 2007, Scott 2001) – could also provide valuable additions for investigations of bridging organizations. However, given the time and scope limitations of this dissertation, bodies of scholarship were chosen which best supported a governance-based line of inquiry. In the future, alternative literatures should be considered for additional insights on bridging organizations and bridging behaviours

Taken together, the three aforementioned bodies of literature formed the analytical framework to guide dissertation research. Table 1.1 outlines and links the core principles/themes of each, and outlines how these were applied across the different manuscripts. Since these literatures tend to overlap theoretically and conceptually, each manuscript has drawn on one or more of these areas of scholarship. An overview of these literature areas is included below. Additional syntheses of literature are also found in Chapters three, four and five.

Table 1.1. Analytical framework for dissertation research

Body of literature	Core principles	Attributes used in different manuscripts (a)
Adaptive Governance	Multi-level interaction between government & nongovernment actors and organizations is crucial for more collaborative and adaptive governance responses Continuous social learning involving scientists, governments, resource users and civil society can enable shared understanding, better information transmission and integration of knowledge Developing and sustaining social networks helps to share responsibility, build trust and flexibility, and enhance collaboration and information flow	Chapter 3: social networks, collaborative relations, knowledge exchange and social learning, & resource sharing Chapter 4: collaboration, knowledge integration, cross-scale relations
Problem of fit	Conservation initiatives can be more effective where the governance system is aligned with, and responsive to, the complexity and dynamism of the social system. Specifically, this means: (a) Aligning conservation initiatives with characteristics of the social context (e.g., institutions, culture, values); (b) Fostering appropriate processes and instruments to pursue coordinated and adaptive conservation;	Chapter 3: conservation outcomes – flexibility, balancing actors and interests, local context/relevance Chapter 4: integrating actors & interests, flexibility, knowledge diversity, hybrid governance, capacity building, connectivity, scaling

	(c) Connecting people and conservation actions across scales and levels	Chapter 5: participation & inclusiveness, leadership
Political Ecology	Conservation approaches and objectives are shaped by social constructions of nature – conservation is framed by dominant ideas, knowledge and rationales that may not be shared by all The act of conservation is an exercise of power and control over resources, often led by powerful actors Conservation activities have the potential to catalyze social and political consequences that need to be recognized and addressed	Chapter 4: social legitimacy, power Chapter 5: conservation narratives, power and influence, social consequences /impacts

1.3.1. Adaptive Governance

More collaborative and adaptive forms of governance are hypothesized to respond with greater effectiveness to current and future uncertainty and complexity that is inherent in social-ecological systems (Folke et al. 2005). While there are many definitions of the term 'governance' (Box 1.2), here I use it to describe the principles, rules, norms and institutions that guide public and private interactions to address challenges and create opportunities within society. I also distinguish between the terms 'institution' and 'organization' as they are applied in this dissertation. The former refers to the set of working rules or prescriptions that are used by humans to organize all forms of repetitive and structured interactions at all scales (Ostrom 2005). The latter denotes a group of people bound by some common purpose to achieve a particular set of objectives (North 1990).

Box 1.2. Select definitions of governance

- Governance refers to the development of governing styles in which boundaries between and within public and private sectors have become blurred. (Stoker 1998)
- Governance is the public and private interactions undertaken to address challenges and create opportunities within society. (Armitage et al. 2009)
- Governance is defined as the system of formal and informal rules, rule-making systems, and actor-networks at all levels of human society (from local to global) that are set up to steer societies toward preventing, mitigating and adapting to environmental change. (Biermann et al. 2010)

As elsewhere, conservation challenges in coastal-marine systems are inherently complex (e.g., diversity of stakeholders, scales). As such, ways of governing are needed that meaningfully engage and bring together government and nongovernment actors to enhance coordination, improve information flow, and mobilize different sources of knowledge and expertise (Weeks et al. 2010, Cohen et al. 2012, Wyborn et al. 2016). 'Adaptive governance' has emerged on the heels of recognition of the limitations of command-and-control resource management (Holling and Meffe 1996). This type of governance refers to society's capacity to understand and respond to environmental feedback (social and ecological) in ways that enhance resilience (as per Berkes and Folke 1998).

While there is no exact formula to define adaptive governance, several authors have outlined its attributes to include: (1) interaction between diverse organizations and institutions that are linked and supported at and across scales/levels, (2) continuous social learning where deliberative platforms enable shared understanding, information transmission and integration of knowledge, and (3) social networks to share responsibility, build trust and flexibility, and enhance collaboration and information flow (vis-à-vis attributes one and two) (Dietz et al. 2003, Folke et al. 2005, Armitage et al. 2009, Chaffin et al. 2014). However, managers and practitioners have been challenged to find ways of introducing and sustaining forms of adaptive governance in practice (see Folke et al. 2005, Lebel et al. 2006, Huitema et al. 2009).

Operationalizing the concept of adaptive governance, as mentioned, is in part dependent on creating and sustaining formal and informal social networks that consist of diverse actors. Social networks are a crucial component of adaptive governance given their benefits for social capital and collaboration (Armitage et al. 2009, Berkes 2009), and have been described as playing a crucial role in improving natural resource management by facilitating coordinated action and opportunities for learning (see Bodin and Crona 2009, Newig et al. 2010, Alexander et al. 2016). Various scholars have pointed out that developing and sustaining social networks requires an active role of individuals or organizations – e.g., bridging organizations, boundary

organizations, intermediaries (Sternlieb et al. 2013) – as coordinators and facilitators for governance processes (e.g., Olsson et al. 2007, Berkes 2009, Crona and Parker 2012). This raises a number of questions about the roles of bridging organizations therein.

In what ways do bridging organizations connect social relations into different network configurations? How do bridging organizations affect (positively or negatively) key social processes for adaptive coastal-marine governance? What are the implications for conservation outcomes? These questions are addressed in Chapter three in the context of two conservation cases in Bali, Indonesia.

1.3.2. A Problem of Fit

A 'problem of fit' is inspired by multiple bodies of literature and builds on a growing recognition that the sustainability of social-ecological systems is in part dependent on how well governing systems match the problems they are meant to address and the contexts in which they operate (Folke et al. 1998/2007, Epstein et al. 2015). Much has been written about how governance systems 'fit' ecological dimensions (e.g., Ekstrom and Young 2009) and, to a lesser degree, the fit between governance systems and social dynamics (e.g., Meek et al. 2013). I join a growing list of scholars that call for engagement with both ecological and social dimensions to address collective dilemmas in the context of conservation (e.g., Bodin et al. 2014, Epstein et al. 2015), but focus here on the latter.

With regard to conservation initiatives (e.g., MPAs, no-take zones, MPA networks), issues of fit commonly reflect a lack of meaningful engagement with, and integration of, social dimensions (see CT examples: Clifton 2009, Foale et al. 2013, Fidelman et al. 2014, von Heland et al. 2014; Box 1.1). I depict this as a problem of 'conservation fit', referring to the alignment between the governance system for conservation and the social dimensions of a system that influence the outcomes and practice of conservation. For analytical purposes, I distinguished three general categories of conservation fit associated with: (1) aligning conservation initiatives with characteristics of the social context (e.g., institutions, culture, values, local practice), (2)

enabling appropriate governance processes and instruments to bring together and meaningfully engage actors, their interests, norms and knowledge to pursue coordinated and adaptive conservation, and (3) effectively linking conservation initiatives and social actors across multiple scales and levels. These categories were derived from a review of relevant works on fit theory, and by using applicable cases and lessons-learned from across the CT region (see Chapter 4 for additional details).

The concept of conservation fit is of particular relevance to coastal-marine systems (Berkes 2006, Crowder et al. 2006), which were until recently perceived by scientific tradition as largely "people-less seascapes" (Shackeroff et al. 2009, 2011). On the contrary, many of these spaces are overlaid with cultural, social and economic activities that include, for example, systems of customary tenure, socio-cultural traditions of resource stewardship, and ecosystem engineering efforts (Samonte et al. 2010, Kittinger et al. 2012). Together with a constellation of social actors and interests from across jurisdictional and geographical boundaries, conservation initiatives may be operating in settings of staggering social complexity. Adding to this, in nations such as Indonesia where government is partially decentralized, attention to fit is particularly important given the tendency for governance to be fragmented. Indeed, there has been poor coordination and communication between government agencies at different levels (see Patlis 2005, Siry 2011).

With this in mind, addressing issues of conservation fit (or *mis*fit) requires governing systems to consider and engage the corresponding social dimensions of coastal-marine systems in crafting conservation interventions. Although there is general agreement on the importance of this in conservation (e.g., Christie et al. 2003, Ban et al. 2013), practice-based strategies to grapple with issues of conservation fit have been slow to emerge (Folke et al. 2007, Hirsch et al. 2011, Christie 2011). Can bridging organizations enhance or inhibit key aspects of conservation fit? What are the specific processes or strategies they use to do so? Are there constraints or barriers associated with these? Chapter four addresses these questions in the context of three conservation cases in Bali, Indonesia.

1.3.3. Political Ecology

Political ecology is the study of relationships between political, economic and social factors and the environment. It represents an explicit alternative to apolitical studies by viewing environmental change and ecological conditions as the product of political processes and reflective of relations of power (Robbins 2004, Neumann 2005). Interrogating the political dimensions of nature is important to provide critiques of dominant accounts and assumptions of environmental issues and change, while at the same time exploring alternatives and adaptations in the face of mismanagement and exploitation. Research has tended to reveal, for instance, winners and losers, hidden costs, and the differential relations of power that produce particular social and environmental outcomes (Peet and Watts 1996, Bryant and Bailey 1997, Brechin et al. 2003, Robbins 2004, Chapin 2004).

Political ecologists start from a common set of assumptions in approaching any research problem (Bryant and Bailey 1997): first, the costs and benefits associated with environmental change are distributed unequally; second, this (inevitably) reinforces or reduces existing social and economic inequalities; and, third, unequal distribution has political implications in terms of altered relations of power. Robbins (2004: 20) asserts that the discipline has "…an understanding that there are better, less coercive, less exploitative, and more sustainable ways of doing things".

Questions of nature and conservation are central to political ecological research (Zimmerer and Bassett 2003, Brechin et al. 2003, Brosius et al. 2005). Political ecologists argue that 'nature' should be understood as a social construction that is the outcome of specific cultures, societies, economies and power (Peet and Watts 1996, Castree 2001a, 2001b). These constructions in turn shape how we seek to know and manage the world around us (Forsyth 2003). In the case of conservation, dominant views and approaches are indeed engrained with historically contingent and power-laden constructions of 'nature' (see Adams and Hutton 2007). Therefore, political ecology – and its interest in history, discourse, politics and power – is useful to critique dominant accounts of conservation.

A focus on conservation narratives – that is, the repetitive ways conservation problems and solutions are framed in policy (*sensu* Roe 1991) – has raised important questions about power, politics and social consequences. Narratives, after all, privilege certain ways of thinking (i.e. ideologies, knowledge, views) that define included and excluded, empowered and disempowered, and bring about a particular set of consequences (Cronon 1992). The analysis of narratives then is an exercise in deconstruction – that is, identifying the concepts, explanations and processes that shape our perceptions of reality. Scholars have explored the existence and implications of divergence in ideas about conservation policy vis-à-vis narratives (e.g., Campbell 2002, Hutton et al. 2005, Zinngrebe 2016). Understanding conservation in terms of narratives can help to better understand what has and has not worked in conservation practice, and how and why the way conservation is conceptualized changes over time.

Attention has also been directed at the legitimization and exercise of power and control in the pursuit of various conservation initiatives (e.g., Peluso 1993, Brechin et al. 2003), and at the social consequences of specific conservation interventions and policies (e.g., West et al. 2006, Adams and Hutton 2007, Holmes and Cavanagh 2016). Several studies have examined, and raised concern about, the expanding role of both the state (Peluso 1993, Peet and Watts 1996) and large NGOs (Chapin 2004, Rodríguez et al. 2007, Brockington 2008) in setting and legitimizing a global conservation agenda to the detriment of local people and their needs. Other studies have focused on investigations about the social costs and consequences of conservation initiatives (see West et al. 2006), and how these play out in the context of social justice (Brechin et al. 2003).

Taken together, these three insights – i.e. critical reflection of narrative, power dynamics, and social costs and consequences – provide useful strands of inquiry for the study of bridging organizations in the context of conservation. Until recently, these organizations have been treated relatively apolitically. How do bridging organizations interpret conservation needs and objectives differently? What value judgements are inherent here? How is power influenced and exercised through narratives? And what does this mean for social consequences and outcomes in

conservation settings? These questions are addressed in Chapter five in the context of two conservation cases in Bali, Indonesia.

1.4. The Field Context

1.4.1. Indonesia and the Coral Triangle

The Coral Triangle (CT) is an archipelagic region of 5.7 million sq. km (Fidelman et al. 2012), which is approximately half the size of Canada. The region is regarded by many in the international marine community as a major epicenter for marine biodiversity and abundance (Allen 2008, Burke et al. 2012), and contains 76 percent of all known coral species, 37 percent of all known coral reef fish species, 53 percent of the world's coral reefs, the greatest extent of mangrove forests in the world, and spawning and juvenile growth areas of the world's largest tuna fishery (CTI Secretariat 2009, Hoegh-Gulberg et al. 2009). The region encompasses all or parts of the seas of Indonesia, Malaysia, the Philippines, Timor Leste, Papua New Guinea and the Solomon Islands (Figure 1.1). Approximately 372 million people reside within the CT (Fidelman et al. 2012), of which some 120 million people depend directly on coastal and marine resources for their income, livelihoods and food security (CTI Secretariat 2009).

The Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF), established in 2009, has been put forward to protect biodiversity and pursue more sustainable use of marine resources for the benefit of the region's people (CTI Secretariat 2009). This intergovernmental agreement is between the six nations of the CT and is supported by international non-government organizations and donors (see Fidelman et al. 2014). The CTI-CFF is guided by a non-binding Regional Plan of Action document that outlines the core goals, targets and actions of the CTI-CFF over the next ten years starting in 2009. Three of the five goals primarily aspire to conservation outcomes, including the designation of priority seascapes, establishment of networks of MPAs, and the protection of threatened species. The other two seek to implement an ecosystem approach to fisheries management, and coordinate climate change adaptation measures. The motivation for this Initiative is expressed as:

> Underpinning the CTI collaboration is our firm conviction on the need to move beyond incremental actions, and to agree on and implement transformational actions that will be needed over the long-term to ensure the sustainable flow of benefits from marine and coastal resources for this and future generations. In concrete terms, this will require our six governments to address the key drivers – economic, social, and ecological – that influence the management and conservation of marine and coastal resources at all scales and institutional levels. (CTI Secretariat: pg. 9)

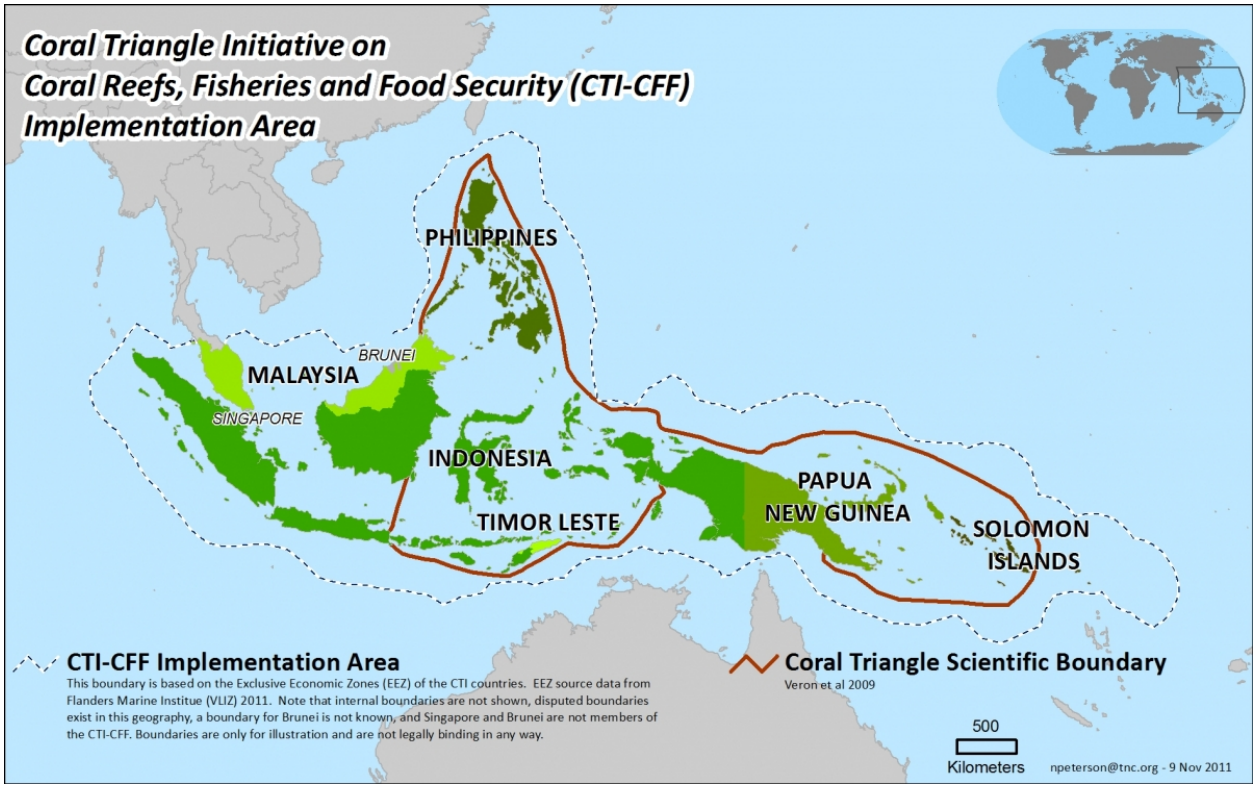

Figure 1.1. Map of the Coral Triangle region. Solid line shows scientific boundary of the Coral Triangle based on ecological and biophysical criteria. Dashed line shows Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) implementation area based on Exclusive Economic Zones. (Source: CTI-CFF Secretariat 2016).

Among the six CT nations, the Republic of Indonesia has the largest proportion of threatened reef. It dominates the other five countries in terms of area: almost 51,000 square kilometers of reef area and 2 million square kilometers of land area, 66,760 kilometers of coastline and some 17,000 islands (Hoegh-Guldberg et al. 2009). Indonesia has a population of 256 million (according to a mid-2015 CIA estimate), of

which 60 million live within 30 km of a coral reef – making this the largest reef-associated population of any country in the world (Burke et al. 2012). The people of Indonesia are also among the most vulnerable to current and future environmental changes given their high dependency on coastal-marine resources, and their limited capacity to adapt to ecosystem degradation or loss (Burke et al. 2011, Hughes et al. 2012). Major drivers of coastal-marine degradation include overexploitation of marine resources, aquaculture intensification, destructive fishing practices, land- and sea-based pollution, coastal development and climate changes (Burke et al. 2011, 2012).

Coastal and marine ecosystems in Indonesia are governed under a partially decentralized system. The fall of the Suharto regime in the late 1990s brought an era of political reform in which many government structures were decentralized under two new laws (Law. No. 22/1999 and 25/1999, later revised as Law No. 32/2004 and 33/2004, and again as Law 12/2008). These laws aimed to place the optimal benefits of well-managed coastal resources directly under regency and city governments (Siry 2011). Decentralization has also promoted a system of shared responsibility among a greater range of stakeholders, including opportunities for community-based and collaborative approaches. Prior to this, there were no significant roles for local governments or local people in managing coastal resources.

Through decentralization, regency and city governments across Indonesia were given authority to manage their coastal zone up to four nautical miles from shore, and the province up to 12 nautical miles (Patlis et al. 2001). However, decentralization has been met by a number of problems. The initial adoption of decentralization policies was not sufficiently clear and lead to what Patlis (2005) called 'regional autonomy euphoria' – a sense that regional governments had almost unfettered authority to manage their own affairs. Local governments passed local legislation that conflicted with or ignored pre-existing mandates, with many taking advantage of rent-seeking opportunities that did not account for ecological concerns (Siry 2011). The lack of capacity among local government administrations, a confusing ambiguity of various laws, and the diverse opinions and interpretations of decentralization processes remain major obstacles (Patlis et al. 2001, Siry 2006, 2011).

As part of its commitment to the CTI-CFF, Indonesia's Government has promised to establish 20 million hectares (or 6.5% of territorial waters) as conservation areas by 2020 (Box 1.3; Yudhoyono 2009). Over 15.7 million hectares have already been designated. However, in their current state a large portion of these (>85%) offer little to no protection (White et al. 2014). As elsewhere in the CT region, conservation initiatives are hampered by budgetary constraints, governance weakness, lack of marine management capacity, and political will (Burke et al. 2012, White et al. 2014). Simultaneously, design and implementation of conservation areas in Indonesia is challenged by social factors such as high dependence on marine resources, variable support for conservation from communities and governments, a legacy of corruption and mistrust, poor coordination, tensions between sectors and objectives, power inequalities, and the ongoing 'growing pains' of an era of decentralization (see Siry 2006, 2011). There is a great array of social and cultural differences across Indonesia's archipelago of more than 17,000 islands. Effectively designing and implementing conservation initiatives such a MPAs hence requires understanding and integrating this social, economic, cultural and political diversity in accordance with the context.

Box 1.3 Defining conservation areas in Indonesia

Conservation areas throughout Indonesia take on various legal forms – no-take nature reserves, national parks, wildlife sanctuaries, nature recreation parks, district conservation areas and others (see White et al. 2014). An increasingly popular form in Bali is called the *Kawasan Konservasi Perairan*, which can be literally translated to 'aquatic conservation area'. The Indonesian Government has described this form as a marine or freshwater area that is protected and managed using a zoning system for the sustainable management of fisheries and ecosystems. It is unique in that it includes terrestrial waters such as lakes and rivers, in addition to marine territories.

What is commonly known as an MPA is only one part of what the Indonesian Government defined as a *Kawasan Konservasi Perairan*. However, for simplicity sake and in keeping with common practice in domestic and international literatures, I use the term 'MPA' throughout this dissertation. The term 'MPA network' (Indonesian: *Jejaring Kawasan Konservasi Perairan*) is used in referring to a connected network of MPAs.

Other terms used in this dissertation to define conservation areas include: 'local marine management area' (LMMA) to describe locally-established and managed conservation areas; 'conservation zone' to describe a geographic/political sub-zone within an MPA; and the term 'conservation initiatives', which is used is an all-encompassing way in referring to multiple types of conservation areas (e.g., MPAs, LMMAs, MPA Networks).

1.4.2. The Province of Bali

The Indonesian province of Bali is located eight degrees south of the equator between Java to the west and Lombok to the east. It covers almost 564,000 hectares and is composed of the main island of Bali and a series of smaller satellite islands. Important coastal-marine habitats include coral reefs, mangrove forests, and seagrass beds. Balinese waters are home to exceptional marine biodiversity – 406 species of coral and 977 species of reef fish have been documented, as well as an array of mega fauna including multiple species of sea turtles, dolphins, whales, dugongs, manta rays, mola mola, and shark (Mustika et al. 2012).

However, a combination of overfishing and destructive fishing practices, sedimentation and eutrophication from coastal development, sewage and garbage disposal at sea, dredging and reef channel development and other damaging practices have led to deterioration of many of Bali's coastal-marine environments (Mustika et

al. 2012). In addition, intensive utilization of coastal areas by differing and sometimes competing interests (e.g., between marine conservation, tourism, aquaculture, industry, ports, local access) has meant that the reality of coastal-marine conservation is remarkably complex and the potential for conflict is high.

Bali supports over 4 million inhabitants spread across eight administrative regencies and one city (Figure 1.2). The majority of the population adheres to Balinese Hinduism. Much of the local population is intimately linked to the sea as a source of livelihoods, food security and culture. Major marine-based livelihoods include small-scale and commercial fisheries, ornamental fish collection, aquaculture (e.g., seaweed, grouper, pearl) and various types of marine tourism (e.g., diving, snorkeling, boating). As elsewhere in Indonesia, food security is a critical issue and over half of the local diet is made up of fish and other seafood (Burke et al. 2012, FAO 2013). Tourism in general has become the single largest industry in terms of income, followed by agriculture (mostly rice cultivation). Almost 3.77 million tourists visited Bali in 2014 (Bali Tourism Office 2016), although much of the industry is concentrated in the south.

A variety of government agencies and others manage Balinese waters using a range of approaches and tools. Most notable from a conservation perspective are Ministries of Marine Affairs and Fisheries, agencies at the regency and provincial levels responsible for the management of Bali's fisheries, including marine and freshwater fisheries, and aquaculture. Other stakeholder agencies include Ministries of Culture and Tourism, Ministries of Planning, universities, donor agencies, and a number of international and national NGOs. These are in addition to customary local management (*Adat*), which varies by strength across the province.

In Bali, decentralization has meant that its regencies and city can now exercise strong management authority over their coastal-marine territories. Yet, Wardana (2015) points out that in many cases new control structures have been hijacked by elites and their interests. Nevertheless, under decentralization the role of the customary local management (*Adat*) has gained increasing importance in local decision-making.

Customary rules (*awig-awig*) have also gained traction in advancing or constraining actions and activities within customary territory.

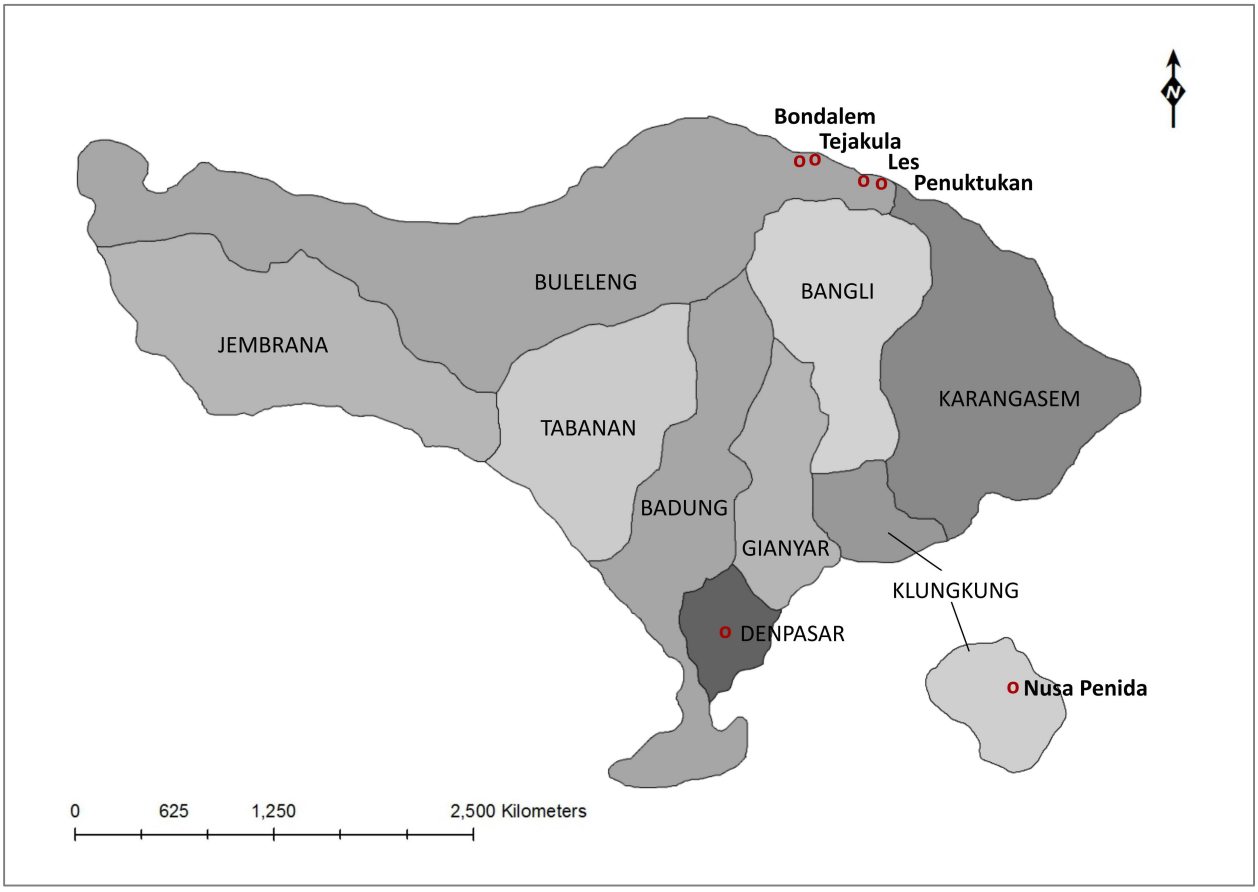

Figure 1.2. Administrative map of Bali Province, Indonesia showing study sites. The province is divided into eight regencies and one city, labeled in capital letters. Study sites are located in east Buleleng Regency (Bondalem, Tejakula, Les and Penuktukan villages), Klungkung Regency (Nusa Penida), and in the capital city of Denpasar (Bali MPA Network headquarters).

This dissertation focuses on three case studies from across Bali Province (Figure 1.2). The first is the Bali MPA Network, a province-wide initiative headquartered in the capital city of Denpasar. The second is the newly finalized Nusa Penida MPA, encompassing three satellite islands located off the southern coast of the Bali mainland. The third is the East Buleleng Conservation Zone, residing along Bali's northeast coast. Each of these is described in-depth in Chapter two.

1.5. Organization of the Dissertation

This dissertation follows a manuscript-style format. Chapter two outlines the methodology and methods used to guide and conduct this research. Chapters three, four and five are written as stand-alone manuscripts for publication in peer-reviewed journals. For this reason, there is some overlap and repetition between them related to research context and methods. As well, Chapter three and Chapter four have already been published in *PLOS One* (Berdej and Armitage 2016a) and *Frontiers in Marine Science* (Berdej and Armitage 2016b), respectively. Note, however, that the manuscripts included in this dissertation are not identical to those published. The pronoun 'we' is used because the chapters were co-authored with either Derek Armitage (Chapters 3 and 4) or with Jennifer Silver and Derek Armitage (Chapter 5).

Chapter three explores the influence of bridging organizations on governance outcomes for coastal-marine conservation. It presents a mix of social network analysis data and qualitative data collected across two case studies. The chapter addressed my first and second research objectives by characterizing relevant bridging organizations, and by assessing their contributions to governance outcomes for conservation. Results presented demonstrated that bridging organizations play a profound role in nurturing conservation networks and strengthen interactive processes for adaptive marine governance.

Chapter four focused on my first and third research objectives, further describing bridging organizations and looking to how they enhance or inhibit aspects of conservation fit across three case studies. Conservation fit refers to alignment of the governing system for conservation and the social dimensions of a system that influence the practice and outcomes of conservation. Findings pointed to the importance of bridging organizations for aligning conservation initiatives with their social context (e.g., institutions, culture, practices), fostering appropriate governance processes and instruments, and for enabling cross-scale conservation and scale-bridging social networks.

Chapter five illustrates the utility of political ecological insights to inform more comprehensive and critical investigations of bridging organizations, applying these to the examination of bridging organization in two cases studies. This addressed my first and fourth research objectives. Findings of this chapter illustrated the value context and power dynamics of each bridging organization, focusing specifically on how they steered conservation towards certain narratives in ways that produce radically different consequences for people and actions.

Lastly, Chapter six reviews the major findings of the dissertation in relation to the overall aim and objectives of the research as outlined above. Findings are discussed with regard to individual manuscripts and the dissertation as a whole. In this chapter, I synthesize the theoretical and practical contributions of this research, and offer recommendations for future practice and direction for research moving forward.

CHAPER 2
Methodology and Methods

Chapter two outlines the methodological orientation of the study and the specific research methods used for data collection. The research design is examined, cases introduced, and procedures for data collection and data analysis presented. Research limitations and challenges are discussed, and ethical considerations are outlined. Lastly, I reflect on my personal experiences in the field conducting research.

2.1 Methodology

A mixed-methods, multiple-case study approach was used in investigations of bridging organizations. Mixed methods research involves collecting, analyzing and integrating qualitative and quantitative research (and data) in a single study (Creswell 2009, Hay 2010). The benefit of this form of research is that the combination provides better understanding of a research problem or issue than either research approach alone. In addition, mixing methods offers a means of crosschecking and corroborating different data sources (i.e. triangulation) by examining a problem or issue from different vantage points using different methods and techniques (Yin 2009, Hay 2010).

The rational for using mixed methods research to study dynamics around bridging organizations was threefold. First, bridging organizations operate in complex and changing social, economic and ecological conditions, and no single methodology can adequately capture interactions among all these factors. Second, using diverse methods accessed different 'perspectives' on bridging organizations (Hay 2010) – structural and relational characteristics of social networks were identified from a quantitative 'general' perspective, and the meanings, attributes, cognition and perspectives of individuals were revealed from a qualitative 'individual' perspective. Third, bridging organizations can result in outcomes such as trust, collaboration and empowerment that can be difficult to observe and measure. So, triangulation is used to compare outcomes observed from different methods and to assess whether they are consistent.

A multiple-case study design was used in this research (George and Bennett 2005, Yin 2009). Case studies offer the benefit of studying real-life phenomenon in-depth, while also grounding these insights in contextual conditions (Yin 2009). As such, understanding how the case influences and is influenced by context is part of the overall research design, and can facilitate a more holistic perspective of research phenomena (Creswell 2009, Bryman 2012). The inclusion of multiple cases allowed for within-case analysis and cross-case comparisons to draw inferences from case studies. This provided the opportunity to examine common and differentiating inputs and outcomes of multiple bridging organizations across varied conservation initiatives. According to Bryman (2012), a multi-case design embodies the logic that we can better understand social phenomena when they are compared in relation to two or more meaningfully contrasting cases or situations.

Lastly, the research study was designed specifically to examine the dynamics of bridging organizations as they were situated in the context of select conservation initiatives. An embedded case design allowed for different levels or sources of data to be collected (Schlotz and Tietje 2002, Yin 2009). Embedded case studies were chosen over other approaches, such as institutional ethnography, in order to focus case study inquiry on bridging organizations without divorcing it from the broader context or processes within which it functions. According to Yin (2009), this design is particularly well suited for investigations where the boundaries between the phenomenon of interest and context are blurred. This permitted a more detailed level of inquiry appropriate for describing features, context and processes of a bridging organization. In choosing an embedded design, however, parameters of analyses were pre-determined and questions of how bridging organizations influence other important aspects of a system may be overlooked. Other research limitations are outlined in Section 2.5.

2.2. Case Studies

Three case studies were used in this research. Criteria for case study selection included: (1) location in a coastal-marine territory, (2) conservation or management initiative underway, and (3) bridging organization or organizations present. The identification of these cases was carried out via a multi-step process involving literature review (using geographic and thematic criteria), analysis of organizational characteristics, and informal conversations with colleagues at Bogor Agricultural University, (shortlisted) bridging organization staff and other experts from the field.

Case study selections included the Bali MPA Network, Nusa Penida MPA and the East Buleleng Conservation Zone operating at diverse scales and embodying unique contextual characteristics (Table 2.1). Active in each of these initiatives was one or more bridging organizations, including Conservation International Indonesia, the Coral Triangle Center, Reef Check Indonesia, the Indonesian Nature Foundation, and the Buleleng Ministry of Fisheries and Marine Affairs. As mentioned, case studies here are embedded – I examined the dynamics of bridging organizations as they played out in select conservation initiatives.

Bridging organizations were identified following examination of their organizational characteristics (mission, roles, responsibilities, activities). Unlike boundary organizations, which specifically focus on the nexus between science and policy (Crona and Parker 2012), a bridging organization has a much broader scope that includes, for example, conceptualizing strategies, building capacity and/or mediating conflicts (see Chapter 3, Table 3.4 for breakdown of possible bridging organization roles).

Despite their differences, these cases shared similarities that made them amenable to cross-case comparison. All cases faced a similar spectrum of coastal-marine challenges, and shared common goals of connecting people to engage in coordinated conservation activities that reflected multiple use activities and users. Case

characteristics are outlined in Table 2.1 and each is discussed at length below. Additional details can be found in Chapters three to five.

Table 2.1. Comparison of case study characteristics

	Bali MPA Network	**Nusa Penida MPA**	**East Buleleng Conservation Zone**
Similarities across cases			
Main livelihoods	Small-scale fisheries, aquaculture, marine tourism		
Major coastal-marine challenges	Overlapping/competing uses and activities, conflicts between user groups, poor coordination, high dependency		
Common goals	To connect and engage people and organizations for coordinated conservation initiatives that are inclusive of multiple uses and users		
Differences across cases			
Type of conservation initiative	MPA Network (initiated)	MPA (finalized)	Local marine management areas (finalized) & MPA (initiated)
Scale of initiative	Province-wide	Regency (Klungkung)	Village + regency/sub-regency (Buleleng Regency/Tejakula sub-district)
Bridging organization	Conservation International Indonesia	Coral Triangle Center	Reef Check Indonesia Indonesian Nature Foundation DKP Buleleng*

*The Ministry of Marine Affairs and Fisheries, Buleleng (DKP Buleleng or DKP-B)

2.2.1. Bali Marine Protected Area Network

The Bali MPA Network (hereafter "Network") is a province-wide initiative to connect organizations (e.g., governments, NGOs, universities, special interest groups) and conservation initiatives (e.g., MPAs, conservation zones, watersheds) from across Bali, encompassing both freshwater and marine territories. Formally initiated in 2013, the development of the Network is a response to poor coordination between levels of government (central, provincial and regency), policy inconsistencies, and non-conformities in the licensing, policing and use of coastal-marine resources between and across regencies in the province (Patlis 2005). Guided by a draft management plan

("Blueprint"), the Network has a vision to ensure the sustainability of aquatic spaces and resources for social, economic and cultural benefit. Because the MPA Network extends over eight administrative regencies and one city, this initiative provides particularly appropriate context to explore boundary issues – that is, the challenges associated with working across political, jurisdictional, and geographical scales and levels. Additional details can be found in Chapters four and five.

2.2.2. Nusa Penida Marine Protected Area

The Nusa Penida MPA is located southeast of the Balinese coast, and covers some 20,000 hectares of coastal waters surrounding three islands. Declared in 2010 and finalized in 2014, the MPA contains important coral reef, mangrove, and sea grass bed ecosystems, and supports a high level of marine biodiversity – some 298 species of coral and 576 species of fish have been recorded (see Mustika et al. 2012). Ecosystems in this region are governed by the Klungkung Regency through marine and fisheries legislation, a newly established multi-stakeholder MPA Management Unit, and by community associations (formal and informal) who have localized regulations and codes of conduct.

Nusa Penida has a population of nearly 46,000 inhabitants. Major marine-based livelihoods in the vicinity include small-scale fisheries (≈850 local fishers in 40 fishers' associations), seaweed production (≈308 ha of farms), and marine tourism (over 200,000 tourists per year) (Ruchimat et al. 2013). Intensive and high-density utilization of resources in a relatively small coastal area such as this provides a unique setting to investigate issues of social pluralism. This refers to the challenge of balancing diverse actors and their sometimes competing interests and uses. Additional details can be found in Chapters three to five.

2.2.3. East Buleleng Conservation Zone

The East Buleleng Conservation Zone is located alongside 26 km of coastline in the sub-district of Tejakula, north Bali. This area contains a series of Local Marine Management Areas (LMMAs) at the village level, and is the focus of a regency-level

MPA initiated in 2011. The MPA is composed of three units, of which East Buleleng covers some 6,660 hectares of coastal waters in front of nine villages. This is Bali's richest area for fish diversity (Mustika et al 2012) and includes critical habitat for marine life such as whale sharks, sea turtles and dolphins. Ecosystems in this region are governed by the Buleleng Regency through marine and fisheries legislation, and by community associations (formal and informal) who have localized regulations and codes of conduct.

East Buleleng has a population of 54,000 inhabitants, and contains the largest number of poor communities in Bali. Major marine-based livelihoods in the vicinity include small-scale fisheries (≈1,200 local fishers in 47 fishers' associations), ornamental fisheries, aquaculture (shrimp, fish, seaweed, peals), and marine tourism (DKP 2015). The presence of comparatively bottom-up driven resource management initiatives, and relatively strong community ties, makes this case a particularly useful setting to explore the complexities of community empowered conservation and the process of scaling-up conservation. Additional details can be found in Chapters three and five.

2.3. Data Collection Procedures

The study was carried out over a nine-month period in 2013-2014, with a scoping trip having been carried out in 2012 and a follow-up interview phase in January-February 2015. Both qualitative and quantitative data collection methods were used. Methods are outlined in Table 2.2 and described in-depth below. Data was collected at multiple scales (from community to provincial) and across multiple sectors (e.g., tourism, fisheries, biodiversity conservation). Additional details about research methods can be found in the Chapters three to five, as well as in Appendices A to C.

Table 2.2. Summary of research methods and participants by case

Method	Bali MPA Network*	Nusa Penida MPA	East Buleleng Conservation Zone
Semi-structured interviews^	n= 26	n=53	n=54
Sociometric network survey	-	n=43	n=48
Participant observation	Yes	Yes	Yes
Document collection	Yes	Yes	Yes

*A network survey was not applied in this case because of the relative newness of the conservation initiative and its social network

^This number represents the total number of participants interviewed by case, regardless of whether they participated in the same interview session.

2.3.1. Semi-Structured Interviews

Two phases of semi-structured interviews were carried out. The first formed the bulk of interviews (n=133 individuals) and was loosely based on the interview guide found in Appendix A. The second phase of interviews posed follow-up questions for additional explanation or depth about a topic/observation (n=10 individuals; included in the total n reported above). Follow-up interviews were conducted with a variety of organization staff in seeking clarity on issues such as environmental and conservation efforts and bridging organization behaviour (Appendix C). Insights gained helped to strengthen findings and conclusions. The total number individuals interviewed across all three cases was as follows: Bali MPA Network (n=26), Nusa Penida (n=53), and East Buleleng (n=54). Included was a wide range of representatives from government, NGOs, community groups, resource uses, traditional bodies, private sector businesses, universities and others (see Appendix E).

Semi-structured, as opposed to structured, interviews are organized around ordered but flexible questioning that allow for depth and breadth of responses (Hay 2010). Open-ended questions and broad topics offer greater potential to yield nuanced information, in-depth responses, alternative interpretations and unanticipated insights (Hay 2010, Newig 2011). Interviews often comprised of one part formal

interviewing (e.g., asking questions, keeping on topic) and one part socializing (e.g., meeting family members, talking about community affairs, etc.). Both parts were recorded in research as a single interview session.

Interviews covered the following thematic areas: basic organization details, affiliations and relationships, conservation management and implementation processes, interactions and perceptions of bridging organizations, bridging processes and impacts/outcomes, and constrains and barriers (see Appendix A and C). Two Likert-scale and two listing type questions were included in interviews. The latter list was created based on informal conversations and feedback from research assistants and key individuals prior to interviewing. All list-type questions included opportunity for open responses. The majority of interviews were conducted face-to-face, and one interview was conducted via Skype. Interviews varied from 30 to 90 minutes and generally took place in the workplace or home of the respondent.

Semi-structured interviews were recorded using shorthand, handwritten notes. Notes were expanded upon as soon as possible after each interview, and included both descriptive (including respondent details, place, time, content) and reflective (including my thoughts, ideas and impressions) aspects. A debriefing was undertaken with the research assistant(s) after each interview to log any additional information, and/or discuss issues or comments. Care was taken to clearly label and separate field note sections to report the actual contents of the interview versus the researcher's interpretation and personal comments of it. Audio recording was used on two occasions with consent given from the respondent, and were transcribed.

The term 'personal communication' (abbreviation: pers. comm.) has been used in Chapters three and four when quoting or paraphrasing the part/whole response of a participant as collected through semi-structured interviewing. This term is often accompanied by an organizational identifier (e.g., NGO staff member, tourism staff member, etc.). In Chapter five, the term 'interview' was used, followed by an identifying number to maintain the anonymity of participant. This distinction was made given the possible sensitive nature of content covered in the latter.

2.3.2. Sociometric Network Survey

Social network data was collected using a sociometric survey. Unlike semi-structured interviews (as above), sociometric network surveys included a rigid set of questions that did not allow participants to deviate. Responses were limited to only what was included on the survey. The survey asked respondents about the presence and nature of relationships between their organizations and other organizations according to three types of relations: collaboration, knowledge-exchange, and funding or resource sharing. Questions focused on organizations and not individuals. Prompted recall-based elicitation was used for collection of data (Wasserman and Faust 1994) where respondents were asked to list from memory those organizations with whom they interact. The questions used to elicit data are found in Chapter three and Appendix B. The intent was to capture data on patterns of relations between social actors relating to the conservation and management of coastal-marine resources.

The survey was administered across two cases as follows: Nusa Penida (n=43) and East Buleleng (n=48). Only one respondent per survey was permitted (i.e., no group discussions). Respondents included a mix of representatives from government, NGOs, community groups, resource uses, traditional bodies, private sector businesses, universities and other (see Appendix E). These individuals were identified using a combination of snowball sampling and purposive (or judgmental) sampling methods (Hay 2010). Snowball sampling is a technique whereby the respondent nominates subsequent respondents with whom they have a specific kind of relation. It is helpful to identify local 'hidden populations' or key individuals that otherwise would not have been known (Bryman 2012). Purposive sampling is used to purposely handpick individuals from the population based on the researcher's own knowledge and judgment. Respondent sampling continued until data saturation was reached (i.e. no new information or insights yielded) or until all willing respondents were surveyed (within reason). All surveys were administered at the same time as semi-structured interviews, but not all interviews were administered with surveys.

2.3.3. Participant Observation

Participant observation is an unstructured, interactive means to study people – what they do and say, how they think and act, and how they participate in activities (Hay 2010, Puri 2011). This method is beneficial to accrue information on "the way things are done" (Puri 2011) and develop deeper understanding of who people are and how they interact. For the purposes of this study, observation was carried out through attendance at a series of public events and meetings relating to coastal-marine activities (e.g., planning, zoning, socialization) in each case, as well as through observation of informal gatherings in communities or workplaces. Observed events and meetings were selected based on their relevance to (a) the conservation initiative (e.g., project or planning meetings), and (b) activities or processes of the bridging organization (e.g., input forums, educational workshops). Included were public fora for discussion of MPA zoning, community socialization of MPA, a policy meeting about new regulations, and a coastal-marine education workshop.

A general analytics guide was used to document observations. Documentation of participant observations consisted of (where applicable): an account of the meeting or event, location of activity and leadership, how people behaved or reacted, what was generally said or discussed in conversation, where people were positioned in relation to one another, physical gestures, and any other detail or observation that was part. As well, the researcher recorded her own thoughts to what was observed. Care was taken to distinguish what was observed from the interpretations of the researcher. Observational data was recorded using field notes, drawings, and when the situation allowed, photography. Field notes were partially written during the participant observation activity, and expanded upon as soon as possible after the event, including as many details as possible (about e.g., body language, mood, attitudes, the general environment, interactions among participants, etc.).

First-hand observations and experiences helped gain insight about, for instance, underlying feelings and opinions from actors about conservation initiatives or processes, the state of interactions between different types of social actors (e.g., who sat together, who conversed, who was cooperative or confrontational), those actors

with social clout or power in communities, and conflicts or tensions in existence. Participant observation, in turn, added greater depth to research findings by recording more informal details (like social interactions), offering insights into behaviour (i.e. discrepancies between what people say and how they act), and by validating or disputing other data sources (i.e. triangulation).

2.3.4. Document Collection

A final method involved the collection of relevant documents pertaining to the research topic. The collection of materials was conducted on an ongoing basis prior to, during and post data collection. Documents were selected based on their relevance to the bridging organization, the conservation initiative, and the regional context within which the former two were situated. These were identified using key word searchers, word of mouth recommendations, and via interviews/observations. Both hardcopy and electronic materials were considered, and included peer-reviewed articles, project reports, mission statements, annual reports, legislations and decrees, presentations, blogs, newspaper articles, project summaries and websites. These were distinguished as: those written by bridging organizations, by non-bridging organizations (excluding government), by government, by scientific scholars (national) and by scientific scholars (international). Details such as document name, author, origin of receipt (if applicable), location of document and content were recorded. Not all documents were used in all stages of analysis; as detailed below.

Early on, document collection and review was useful for identifying research gaps/problems, justifying study questions, informing methodology, identifying suitable analytical methods, and so on (Creswell 2009). During data collection, document review was helpful to gather background information about key actors, bridging organization characteristics, processes and strategies, and institutions relevant to each case. After the fact, it aided in contextualizing research findings, and to complement and validate other data sources (i.e. triangulation).

2.4. Data Analysis Procedures

An overview of analytical methods used in this research is presented here. Additional details and theory/background can be found in Chapters three to five. Quantitative social network analysis (SNA) was used to map, describe and analyze patterns of relations between diverse sets of actors in the Nusa Penida and East Buleleng cases. This mode of analysis is beneficial to help tease apart the structural characteristics of social networks that influence key social processes of interest for natural resource governance (as per Bodin and Crona 2009). For the purposes of this study, SNA focused specifically on two measures of centrality – betweenness centrality and in-degree centrality (see Chapter 3 and Appendix D for detailed descriptions). The open-access software platform Gephi (gephi.org) was used to analyze sociometric network data and generate network maps in these cases.

Qualitative content was analyzed following basic coding procedures laid out by Creswell (2009). The process of coding was directed at discovering regularities and patterns within qualitative data (see Miles and Huberman 1994) in view of the volume and complexity of data collected herein. All semi-structured interviews (field notes and transcripts), participant observations (field notes), and some of the collected documents underwent analysis (though not necessarily at the same time). In the case of documents, focus was on the characteristics of language and concepts with attention to the content and/or contextual meaning of the text. Following Atkinson and Coffey (2011), the researcher was cognizant of the processes through which texts reported and interpreted social facts. Inclusion of collected documents in analysis was limited to only those of direct relevance to the bridging organization.

First, data was organized and prepared for analysis. The (expanded) interviews and observational field notes were typed into computer files using a specific format set for the study. As noted, data was labeled to report interviews/observations separate from the researcher's interpretation and personal comments. Relevant documents were compiled, checked for accuracy by comparing similar information and checking against other data, and sorted by case/bridging organization. Second, the data was

read through to gain a general sense of the information and overall meaning. Third, a multi-step coding analysis was conducted whereby data was disaggregated and sorted into small or large chunks, and indexed per a general set of themes. The first round of coding summarized data and identified basic patterns, which permitted more advanced coding in subsequent analysis.

Coding was both an inductive and deductive process – some themes were defined *a priori* from the initial research framework, but new themes were also allowed to emerge unrestrained from the raw data (see Hay 2010, Bryman 2012). In general, major themes included: setting and context, social structures and relationships, strategies or processes (e.g., linking, participation, learning, collaborating), and respondent perspectives and attitudes (about bridging organizations, processes, environments and activities). In addition, coding of collected documents paid particular attention to the application of language and concepts as they related to bridging organization characteristics.

As stated above, each manuscript integrated a mix of research methods and data. Together, these fostered a mutually informative research process (Creswell 2009). Chapter three combined quantitative SNA and qualitative methods in a sequential manner through which SNA findings informed, and were further studied through, qualitative work. Chapters four and five each used a combination of parallel qualitative methods. Here, multiple options for evaluation were integrated to provide more insightful understandings. Across all manuscripts findings are reflective of multiple types of data that were combined, which help to both validate and enrich findings.

2.5. Research Limitations and Challenges

This section outlines the challenges and limitations of methodological and method choices made in the dissertation. Mixed methods research has been criticized for the complexity it brings to research design, added time and expenses required in data collection and analyses, and difficulties in resolving discrepancies that arise in

conflicting results (Creswell 2009). Mixed methods research can be especially challenged by the problem of paradigm mixing given that qualitative and quantitative methods are often underpinned by differing philosophies. Whereas the quantitative paradigm is often consistent with positivism and based on rationalism and deduction, the qualitative paradigm is often aligned with a constructivist philosophy that contends reality is subjective and socially constructed by participants (see Tubey et al. 2015 for overview). This variation is significant given the implications that different philosophies have for how one understand and interprets phenomena under study (Creswell 2009). Embarking on mixed methods research can be particularly daunting given that differences have also extended beyond philosophical and methodological debates and given rise to different journals, expertise, and language. I sought to overcome some of these challenges by seeking advice from colleagues and experts on how best to mix methods and approaches upfront, as well as to account for learning timelines in scheduling.

Accounting for validity in qualitative research was a major concern. Two challenges raised were researcher bias and the effect of the researcher on study participants, also termed 'reactivity' (as per Maxwell 2005). I employed a variety of strategies to mitigate these challenges, including collecting multiple data sources to crosscheck and corroborate findings and conclusions (i.e. triangulation); asking for respondent validation and feedback about data and conclusions to rule out misinterpretation (via follow-up questions and follow-up interviews); intentionally seeking out participants at the periphery to account for alternative and/or negative views (via purposeful sampling); taking care to record in detail how case studies and data sources were selected; and using case comparisons for understanding causality. Care was taken by the researcher to reflect on and record her values and expectations, and how these might influence the conduct and conclusions of the study. The failure to account for challenges to validity can lead to findings and conclusions that are mis-represented, biased and/or oversimplified (Maxwell 2005, Creswell 2009).

Criticisms of case studies have included the problem of case selection bias, difficulties defining the scope/boundaries of cases, and issues with the 'generalizability' of case study research (George and Bennett 2005, Bryman 2012). According to Yin (2009),

generalizability is a concern about the applicability of research findings to other cases beyond the specific context. He goes on to explain, however, that a careful selection of cases and general theories can contribute to analytic (theoretical) generalization. Generalizability of my findings was enhanced by using a multi-case study methodology, and by choosing cases with an eye to typicality. That is, many of the major challenges exhibited in our cases (e.g., scalar issues, poor coordination, conflicting priorities) are representative of those challenges experienced elsewhere in the CT (cf. Fidelman et al. 2012). In addition, findings were linked to broader theories (e.g., adaptive governance, fit, political ecology), which then served as a vehicle for the applicability of findings to cases elsewhere (as per Yin 2009).

There are also limitations with the application of social network analysis (SNA) related to data and analytical process. Criticisms have included the static nature of data; that is, a concern that empirical analysis represents only a single snapshot of the network (Bodin and Prell 2011). I have sought to overcome this by examining three types of network configurations – i.e. collaborative, knowledge exchange and resource sharing – so as to better encompass the diverse ways actors might derive influence in the network (Chapter 3). Analytical criticisms have included difficulties defining network boundaries, the time/financial cost of undertaking comprehensive SNA, and issues with non-response data (Wasserman and Faust 1994, Prell et al. 2009). Others have commented that structural SNA data does not fully capture contextual or external forces that might contribute more significantly to networks (Prell et al. 2009). As such, qualitative data was used in Chapter three to interpret our SNA findings. Rather than taking SNA measures at face value, these findings were used as input in discussions with actors on how to interpret the data.

On the issue of sampling, the use of non-probabilistic snowball techniques to identify involved participants has its limitations. By following the nominations of new participants by existing participants, the perspectives of 'outsiders' in interviewing may be excluded. I sought to overcome this with the addition of purposive sampling to seek out more representative viewpoints. Nevertheless, the possibility of inadequate inclusion of 'outsider' perspectives could bias results and findings in ways that extent privilege to particular viewpoints, overlook marginalized voices and

different realities, and/or oversimplify problems or issues (as per Holstein and Gubrium 1995).

A number of challenges were encountered while undertaking data-collection in the field. A strong reluctance among some groups to meet face-to-face with others meant that opportunities for group discussions were difficult to undertake (except for those meetings sponsored by government). Instead, I tended to meet with small groups of individuals with similar backgrounds in open discussions. In addition, extra efforts were made to appear neutral in my position, and sensitivity was applied to the types of question posed. In rare cases, skepticism of research activities resulted in the reluctance of some to participate. Despite best efforts, some organizations declined to be interviewed. Given the past presence of researchers in the region, care was taken to elicit open responses and not those the participant believes the researcher would like to hear.

Lastly, as anticipated, language proved to be an issue in some circumstances. Care was taken to appropriately translate western terminology, concepts and methods (e.g., collaborative management, social network analysis, etc.), occasionally resulting in the use of drawings. In particular, I chose to omit the term 'bridging organization' from data collection tools, and instead emphasized the characteristics and processes exhibited by bridging organizations. While I am able to converse in Bahasa Indonesia, research assistants were frequently employed to garner a more detailed understanding of interviews and/or to accommodate local dialects. Extra consideration was taken to clarify participant responses translated via the research staff, mindful of the staffs' application of a local lens/view.

2.6. Ethical Considerations

This research was carried out with approval from the Office of Research Ethics of the University of Waterloo (Ethics Approval Number 17930). A permit was secured to conduct research in Bali from the Indonesian Government (permit number 393/SIP/FRP/X/2013). Ethical considerations of importance while undertaking

research included: an informed consent process, confidentiality and anonymity for research participants, sensitivity to cultural issues, and opportunities for feedback and mutual benefit.

Verbal consent was obtained from respondents prior to conducting surveys and interviews. An information sheet detailing the purpose of research was read and/or translated verbally in English or Bahasa Indonesian. It was made clear to respondents that they could remove themselves or their contributions from the research study at any time. Respondents were given the choice to be identified by organizational affiliation or anonymously. All data was stored on a password-protected laptop, and all paper notes and files used identifying numbers instead of respondent names. As well, names and titles were removed from sociometric SNA data and replaced with an ID composed of the type of organization and a unique distinguishing number.

Undertaking research in a foreign context required sensitivity to cross-cultural issues. Special consideration was given to: (1) actively engage and collaborate with researchers and organizations in the host country, (2) involve and utilize community members in data collection and communications of results, and (3) be mindful and sensitive to potential conflicts and/or power discrepancies between constituency groups. In addition, care was taken to provide organizations and community members with opportunities to review data and provide feedback on preliminary research findings in a manner that was open and accessible. This was accomplished on two occasions in May-June 2014 and January-February 2015.

2.7. Reflections on the Research Process

I left Canada for Indonesia in October 2013. I had chosen to focus on bridging organizations in the context of ongoing and developing conservation initiatives given the notable gap in theoretical and practical understanding. The setting for this research was to be the province of Bali. Having met with key organizations during a scoping trip in 2012 and having done background reading, I arrived on the island with a rough approach to address this apparent research gap.

The preliminary discussions I held with individuals from community and non-governmental organizations advised me on the various nuances of interviewing in the region, which both reassured me and revealed my ignorance in some areas. These discussions also helped inform case study site selections. I had decided on semi-structured interviews to allow for a certain degree of participant-led responses. After my social network analysis questionnaire and interview guide had been reviewed by key individuals in each of my cases, I was ready to start data collection.

Although I had been in touch with key representatives and had sought out community "gatekeepers" (Campbell et al. 2006) as research assistants, there was initial hesitation by individuals in all my sites to speak with me. At the suggestion of my research assistants, I met with heads of local government, resource use associations, and other entities to informally talk about my research, and made myself known to communities by attending meetings and other events. In the end, I conducted interviews with 133 individuals over ten months (including follow-up interviews).

Interviewing was generally a smooth process, but there was a learning curve associated with keeping interviews on track. In general, interviews comprised one part formal interviewing (e.g., asking questions, keeping on topic) and one part socializing (e.g., meeting family members, talking about community affairs, etc.). Both aspects provided important insights for research, but proved time consuming to coordinate. Interviews were conducted in a variety of venues, from open-air huts and beach shelters to government and NGO offices. Extended periods of waiting and/or rescheduling were common (this is normal behaviour in Bali).

Interviews and group discussions were fruitful in their research yields. As I carried out activities, I realized the extent of challenges faced by peoples and bridging organizations. Many regions were confronted with capacity issues, limited livelihood alternatives, corruption, external pressures, competing agendas and territorial claims, and language barriers. And yet, in many of the interviews, important positives were taken from these challenges (some more explicitly than others). One participant in particular reminded me of the importance of failure as part of the learning process.

Gathering feedback and presenting preliminary findings to participants was a (surprisingly) rewarding experience. Many were interested in network maps and expressed intent to expand their social networks and collaborations. Follow-up questions from bridging organizations and requests for research summaries were plentiful, which I took to be a good sign. These meetings were also an opportunity to thank villagers, organization staff, and key individuals for their support. I left Indonesia for Canada in July 2014. It would not be an exaggeration to say that my research and communication skills have been greatly enhanced by conducting this research.

CHAPTER 3
Bridging Organizations Drive Effective Governance Outcomes for Conservation of Indonesia's Marine Systems

3.1. Chapter Summary

This study empirically investigates the influence of bridging organizations on governance outcomes for coastal-marine conservation in Indonesia. Conservation challenges require ways of governing that are collaborative and adaptive across boundaries, and where conservation actions are better coordinated, information flows improved, and knowledge better integrated and mobilized. We combine quantitative social network analysis and qualitative data to analyze bridging organizations and their networks, and to understand their contributions and constraints in two case studies in Bali, Indonesia. The analysis shows 1) bridging organizations help to navigate the 'messiness' inherent in conservation settings by compensating for sparse linkages, 2) the particular structure and function of bridging organizations influence governing processes (i.e., collaboration, knowledge sharing) and subsequent conservation outcomes, 3) 'bridging' is accomplished using different strategies and platforms for collaboration and social learning, and 4) bridging organizations enhance flexibility to adjust to changing marine conservation contexts and needs. Understanding the organizations that occupy bridging positions, and how they utilize their positionality in a governance network is emerging as an important determinant of successful conservation outcomes. Our findings contribute to a relatively new body of literature on bridging organizations in marine conservation contexts, and add needed empirical investigation into their value to governance and conservation in Coral Triangle nations and beyond.

3.2. Introduction

A major challenge to effective conservation outcomes in the southeast Asia Coral Triangle (CT) is the 'messiness' of contemporary marine governance. People and groups bring different values, interests, perspectives, knowledge and power to

conservation situations that span geographical and jurisdictional scales and levels (e.g., Mills et al. 2010, Clifton and Majors 2012, Fidelman et al. 2012, 2014, von Heland et al. 2014). In Indonesia, decentralized governance and limited technical and financial capacity (Fidelman et al. 2014, Weeks et al. 2014a) further complicate definitions of effective conservation and efforts to achieve outcomes. Meaningful engagement is needed with actors and organizations, both government and nongovernment, to enhance coordination, improve information flows, and mobilize different sources of knowledge. These issues take us into the realm of governance, which we refer to here as the principles, rules, norms and institutions that guide public and private interactions to address challenges and create opportunities within society (Armitage et al. 2009). However, more collaborative and adaptive forms of governance that account for societal and ecosystem complexity are difficult to achieve (Dietz et al. 2003, Folke et al. 2005, Armitage et al. 2009). The aim of this paper is to empirically investigate how bridging organizations contribute to better conservation outcomes by affecting key processes for adaptive marine governance in the CT context. We seek to examine in particular how regional and local-scale actors and actions may be better connected through the activities of bridging organizations, and how different forms of information, knowledge and resources may also be better exchanged.

Bridging organizations are defined here as entities that connect diverse actors or groups through some form of strategic bridging process (Crona and Parker 2012). Their relevance for collaboration and learning in adaptive governance contexts has been emphasized (e.g., Hahn et al. 2006, Olsson et al. 2007, Crona and Parker 2012). One reason for an increased interest in such organizations is their utility as arenas for trust building, sense making, and conflict resolution where bridges are built, as for example, between science and other forms of knowledge (e.g., local knowledge), and between government and nongovernmental actors (Berkes 2009). Recent evidence from different natural resource management settings shows that bridging organizations can add value to governing processes by providing platforms for coordination of actors and actions and shared learning, and by reducing the transaction costs of management (e.g., Olsson et al. 2007, Marin and Berkes 2010, Schultz and Lundholm 2010, Jacobson and Robertson 2012). Still, few assessments of bridging organizations have been undertaken in the context of conservation

governance generally, and in the CT region more specifically (although see Cohen et al. 2012 on Solomon Islands, Horigue et al. 2012 on Philippines). How such organizations affect, negatively or positively, the processes and conservation outcomes of governance in such situations requires further empirical examination.

Conservation challenges are inherently complex (e.g., diversity of stakeholders, scale). Adopting more collaborative and adaptive approaches to conservation governance is hypothesized to enhance successful outcomes in the CT and elsewhere (e.g., Lowry et al. 2009, Green et al. 2011, Horigue et al. 2012, Weeks et al. 2014a, 2014b, Wyborn et al. 2016). Such approaches are framed by three attributes: 1) interaction between diverse organizations and institutions that are linked with, and supported by, others at and across scales and levels (Olsson et al. 2007, Armitage 2008), 2) continuous social learning where deliberative platforms for dialogue involve scientists, governments, resource users, and civil society to enable shared understanding, information transmission and integration of knowledge (Armitage et al. 2008, Newig et al. 2010), and 3) social networks and bridging organizations as governance mechanisms to share responsibility, build trust and flexibility, and enhance collaboration and information flow (vis-à-vis attributes one and two) (Hahn et al. 2006, Berkes 2009). However, while such governance attributes have gained wide conceptual appeal, with some applications in CT contexts (e.g., Cinner et al. 2006, McClanahan et al. 2008, Cohen et al. 2012), their implementation in practice has been limited (e.g., Huitema et al. 2009, Evans et al. 2011).

The CT region generally, and Bali Indonesia specifically, offer an instructive setting to examine the intersection of conservation, governance and the role of bridging organizations. The region is characterized by high marine biodiversity (Allen 2008) and high dependence on coastal-marine systems for food security, livelihoods and culture (Burke et al. 2012). Yet an array of threats from overfishing and other destructive fishing practices, land-based pollution, coastal development, and climate change are contributing to regional ecosystem decline (Bruno and Selig 2007, Mustika et al. 2011, Burke et al. 2012). The region falls under the policy umbrella of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF), a multilateral partnership among six nations to jointly address marine resource issues

(CTI Secretariat 2009 – see below). The challenges of undertaking conservation in the CT are well documented, and include fragmented governance, complex institutional arrangements, misaligned scales of governing, competing objectives, and limited understanding and inclusion of social dimensions of resource use and conservation (e.g., Majors 2008, Mills et al. 2010, Fidelman et al. 2012, 2014, Foale et al. 2013, von Heland et al. 2014). Our analysis provides conservation managers, scientists and policy makers empirical insight on the value of bridging organizations as a key mechanism to grapple with ongoing conservation governance challenges in CT nations and other marine contexts.

We begin this paper with a brief outline of the research context, focusing on two study sites in Bali, Indonesia. The methods used for data collection are then described, and include questionnaires and social network analysis (SNA), semi-structured interviews, observation and document collection and review. This approach mixes quantitative and qualitative methods of data collection and analysis for a mutually informative research process. A mixed method approach is useful as a way to explore the structural and relational characteristics of bridging organizations from an 'outsider' perspective, along with attention to the meanings and outcomes of bridging from an 'insider' perspective. The results focus first on identifying and characterizing bridging organizations and their networks. Second, we show the attitudes and perceptions of respondents about the bridging organizations in question, and their contributions to coastal-marine governing processes and conservation. The discussion explores opportunities and challenges for inclusion of bridging organizations in facilitating adaptive governance processes that can lead to better conservation outcomes. We offer conclusions to help nest these insights in broader conservation contexts, and point to future research directions/needs.

3.3. Materials and Methods

3.3.1 Study Sites: Conservation and Governance Along the Balinese Coast

The Indonesian province of Bali is located in the westernmost end of the Lesser Sunda Islands (Fig 3.1) in the Coral Triangle (CT) region of southeast Asia, a global center of marine biodiversity and abundance (Allen 2008). The province supports close to 4 million inhabitants, the majority of which are intimately linked to the sea as a source of livelihoods, food security and culture. In 1999, a series of local autonomy laws transferred authority and responsibility to manage coastal and marine resources from the national level to sub-governments, granting local governments (regencies and city) almost absolute authority over the natural resources within four nautical miles of the coastal shoreline (Patlis 2005). This shift has resulted in conflicts, confusion and questions within the Indonesian legal system about laws made at different levels of government (see Patlis 2005). A variety of government bodies (e.g., Ministry of Marine Affairs and Fisheries, Ministry of Forestry), local governments (provincial and regency) and others (e.g., NGOs, universities, community groups) help to manage the Balinese coast (see below). These management bodies are in addition to existing local traditional authorities (e.g., *Adat*) and customs (e.g., *sasi*, *awig-awig*), which vary by strength across different regions (see e.g. Satria et al. 2006). This customary law outlines rights, rules and sanctions associated with the interactions and management of natural resources in a given area. By management we refer to the operational decisions and practices in natural resource use that influence governance (Folke et al. 2005).

Increased pressure on marine resources in Bali and elsewhere in the CT has resulted in local, national and global initiatives to improve governance of coastal-marine ecosystems and conservation outcomes. The Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF), as mentioned above, is one such initiative. The multilateral partnership among Indonesia, Philippines, Malaysia, Papua New Guinea, Solomon Islands and Timor Leste was adopted to address threats to coastal and marine environments, while also seeking to alleviate poverty and ensure food security in the region (CTI Secretariat 2009). A Regional Plan of Action was collaboratively

developed, which outlines core principles, goals and targeted actions for the next 10 years. The CTI-CFF aims to achieve these "…*through accelerated and collaborative action, taking into consideration multi-stakeholder participation*…" (CTI Leaders Declaration 2009:1). The Plan of Action is supported by a number of actors, including CT country governments, international NGOs, the United States and Australian governments, and the academic community.

Two study sites in Bali were chosen for their mixture of land and sea use activities, and the diverse social and environmental pressures they face: 1) Nusa Penida Marine Protected Area, south Bali, and 2) East Buleleng Conservation Zone, north Bali (Fig 3.1).

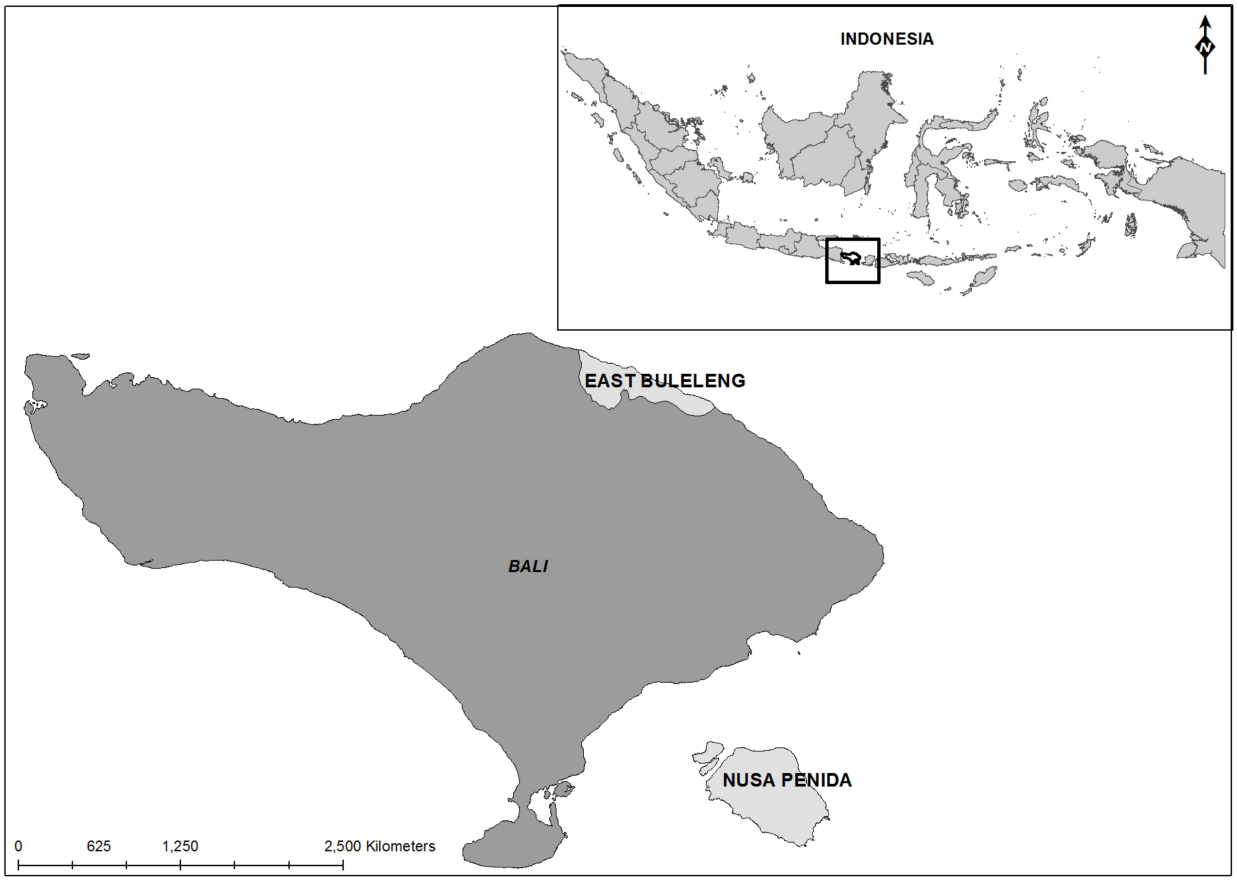

Figure 3.1. Map of Bali, Indonesia showing the two research locations: Nusa Penida MPA and East Buleleng Conservation Zone

Nusa Penida Marine Protected Area, south Bali. Nusa Penida is an island chain southeast of the Balinese coast and is under the administration of the Klungkung Regency, Bali Province (Fig 3.1). Approximately 46,000 inhabitants are spread over three islands: Nusa Penida, Nusa Cenigan, and Nusa Lembongan. The MPA is host to highly diverse coral ecosystems and large charismatic species such as the mola mola (sunfish), manta rays, and sharks, and sees some 200,000 tourists per annum (CTC 2014). Still, marine areas are overexploited because of competing income-generating activities, including seaweed production, aquaculture, capture fisheries and marine tourism (Welly 2009). Other threats to biodiversity include pollution, sewage, destructive anchoring practices, coral mining, coastal development and climate change. The area was declared a national MPA in 2010 and was gazetted in 2014. The MPA is governed by the newly established Nusa Penida MPA Management Unit under the administration of the Ministry of Marine Affairs and Fisheries, Klungkung. The Unit consists of representatives from multiple agencies, and includes a joint patrol team and resource use monitoring experts. Other key groups include community associations, private sector diving associations and traditional bodies (*Adat*) who have localized regulations and codes of conduct – see Table 3.1.

East Buleleng Conservation Zone, north Bali. The Tejakula sub-district is located in north Bali and is under the administration of the Buleleng Regency, Bali Province (Fig 3.1). In 2013 the sub-district was home to approximately 54,000 peoples in ten villages (BPS 2014), of which we focus on four: Bondalem, Tejakula, Les, and Penuktukan. One of the poorest regions in Bali, marine-based livelihoods here include pelagic fisheries, the marine aquarium trade and tourism. North Bali has a tumultuous history associated with destructive fishing practices involving cyanide and dynamite, but has since reformed to be a leading exporter of ornamental fish (see Frey and Berkes 2014). The area has been identified as a future location for the development of marine tourism. Ongoing marine pressures include plastic waste, illegal fishing and fish collection, destructive fish practices and coastal development. Ecosystems in this region are governed by the Regency through marine and fisheries legislation, but also by community associations who have localized regulations and codes of conduct – see Table 3.1. Here it is common for community members to hold membership in multiple associations simultaneously. In addition to village-level Marine Management Areas

(MMA) that were started in 2008-2009, the district as a whole was recently declared an MPA that is divided into three units. The East Buleleng MPA unit covers the waters in front of all nine villages in the sub-district of Tejakula and is currently the focus of zoning and planning processes.

Table 3.1. Typology of organizations in the Nusa Penida MPA & East Buleleng Conservation Zone

Type	Scale	Description
Fishers' association	local	Geographically-defined cooperatives of fishers
Ornamental fishers' association	local	Geographically-defined cooperatives of fish collectors – *East Buleleng only*
Seaweed farmers' association	local	Family or geographically-defined cooperatives of seaweed farmers – *Nusa Penida only*
Community-based organization	local	Organizations within communities defined by shared experience or concerns
Traditional authority	local – regency	Customary territorial authorities
Monitoring & enforcement agency	local – national	Formal and informal regulatory and monitoring bodies
Government agency	local – national	Government bodies with interest or authority over resources or geographic territories
Non-government organization	local – int'l	Non-profit organizations defined by common interests and organized around specific issues
Private enterprise	local – int'l	Private businesses or operators associated with the tourism industry
Funding organization	local – int'l	Donor or funding body

3.3.2 Ethics Statement

The research project was approved by the Office of Research Ethics of the University of Waterloo (Ethics Approval Number 17930). A permit was secured to conduct research in Bali, Indonesia (permit number 393/SIP/FRP/X/2013). Verbal consent was obtained from participants prior to conducting questionnaires and interviews. During the consent process, an information sheet detailing the purpose of research and how data would be utilized was read and/or translated verbally to participants. This also specified their rights to withdraw participation from the

research at any time. Individual names were not recorded, however, participants were given the choice to be identified by organizational affiliation or anonymously. The use of verbal consent was approved by the ethics committee prior to undertaking field activities.

3.3.3 Methods

Data collection occurred in two study sites over an eight-month period from 2013-2014, with a follow-up interview phase in January-February 2015. Research methods included: 1) surveys to collect network data (n=43 Nusa Penida, n=48 East Buleleng) and 2) semi-structured interviews to collect respondent attitudes and perceptions (n=53 Nusa Penida, n=54 East Buleleng) with a broad range of actors in each site (e.g., resource users, government agencies, NGOs, community groups, traditional authorities, private sector representatives) – Table 3.1. Other methods included participant observation of public MPA planning meetings to gather information on coordinated activities (two per site), and document collection and review of related materials (e.g., annual reports, internal documents, policy briefs, newspaper articles, etc.).

Participants were identified using a non-probabilistic snowball sampling technique (Miles and Huberman 1994) where individuals nominate subsequent participants, starting with key organizations in each of the networks. Snowball sampling is a common technique used in qualitative research (Hay 2010) and is helpful to identify local 'hidden populations' or key individuals that otherwise would not have been known. In addition, snowball sampling is useful to obtain research or knowledge about the social network connecting actors or groups. We chose this technique given the diversity of stakeholders included in our study that made defining an adequate sampling frame difficult. Participant sampling continued until the point of data saturation was reached where no new information or insights were yielded.

Social network analysis (SNA) (Wasserman and Faust 1994) was used to map, describe and analyze the patterns of how organizations interact with a particular focus on application in conservation settings (e.g., Alexander and Armitage 2014).

Network data was gathered via questionnaire by asking respondents three separate questions about the relationships among their organization and others according to different network configurations: collaboration, knowledge-exchange and funding or resource sharing (see Table 3.2). Each configuration represents a different process for governance. The questionnaire focused on organizations, not individuals, and used prompted recall-based elicitation of network data. Using questionnaire responses we assigned organizations to groups based on their type (see Table 3.2).

Table 3.2. Different types of social network configurations examined, and the chosen questions used to elicit information

Configuration type	Type of network	Question posed
Collaboration configuration	Participation in shared actions or interactions, strategies, technical partnerships, etc.	Q1. With whom do you most often collaborate on marine projects or issues? These issues may include management plans, fieldwork, joint campaigns, etc.
Knowledge-exchange configuration	Exchange of information or knowledge about coastal-marine environment and/or resources	Q2. With whom do you most often share information or knowledge about the marine environment? This knowledge may include scientific data, history, advice, perspectives, concerns, etc.
Funding or resource-sharing configuration	Sharing of financial or non-financial resources such as equipment, office space, machinery, etc.	Q3. With whom do you receive/share/give funding or other resources? Other resources may include lending equipment, office space, boats, etc.

SNA focused on two calculated measures of centrality: 1) betweenness centrality and 2) in-degree centrality (*sensu* Wasserman and Faust 1994, Prell 2011). Certain structural and relational characteristics are linked in theory to governance processes and outcomes (e.g., Bodin and Crona 2006, 2009, Newig et al. 2010), including those associated with collaboration and learning in bridging organizations (e.g., Crona and Parker 2012). Betweenness calculates the number of shortest paths that run through an organization, indicating power and importance for connecting others in the network who were not otherwise connected (Prell 2011). The more 'in between' an organization might be, the better able that organization is to access and diffuse different types of knowledge and information among others in the network (Bodin

and Crona 2009). Importantly, there can be multiple organizations in a network with high betweenness centrality scores at the same time. Betweenness is a useful measure to consider because it aligns with how many scholars structurally conceive the concept of bridging organization (e.g., Hahn et al. 2006, Crona and Parker 2012). In contrast, in-degree is an indicator of the popularity or prestige of an organization in the network, and measures the number of connections an organization receives from other organizations (Wasserman and Faust 1994). Because they have many connections, these organizations are considered to be 'hubs', and are better able to exert influence over others in the network. Taken together, analysis of these measures is a first step to identify and characterize bridging organizations in a network.

Key individuals (n=107) were interviewed in-depth to assess, among other things, their perception and attitude of how bridging organizations impact social processes and network members with reference to key governance processes hypothesized to lead to successful conservation outcomes (e.g., participation, coordination, collaboration, cross-level, deliberation, learning, knowledge-exchange). Interviews lasted 30 to 90 minutes. Questions focused on the contributions of bridging organizations to coastal-marine governance and conservation with regards to: a) collaborative and knowledge-exchange (learning) processes in the network as a whole, and b) changes within individual organizations as a result of direct bridging organization intervention. Lastly, respondents were asked to reflect on the constraints and barriers to establish or strengthen new relationships in each of the networks. Results from interviews have been corroborated with other sources of information (e.g., annual report, newspaper articles), as well as through shorter follow-up interviews conducted.

3.4. Results

Results are presented here in two parts. First, we synthesize the outcomes of the SNA to map and characterize the network in each case and to identify bridging organizations using measures of centrality. We review what organizations are involved in collaborative, knowledge-exchange and funding or resource-sharing

relationships, what organizations connect or facilitate these relationships, and what organizations reside in positions of influence. In the second part we analyze respondent perceptions and attitudes of bridging organizations to distinguish functionality and their effects on social processes and organizations in the network with regard to coastal-marine governance. We draw on examples from the field to demonstrate their implications for conservation outcomes.

3.4.1 Network Structure & Identifying Central Organizations

3.4.1.1 Nusa Penida MPA

Respondents identified 86 organizations in the Nusa Penida MPA network, representing various sectors of society and divergent interests (see Table 3.1). These are organizations that could affect, or be affected, by marine resource governance and conservation decisions to varying extents. Of these, the collaborative configuration registered 67 organizations connected by 141 relations, the knowledge-exchange configuration registered 59 organizations connected by 100 relations, and the funding configuration registered 50 organizations connected by 72 relations. The network maps in Figure 3.2 illustrates these findings as relational patterns of collaboration (panel A), knowledge-exchange (panel B) and funding or resource-sharing (panel C) (see also Table 3.2). The network was largely dominated by local organizations (shown in red, Fig 3.2A, 3.2B and 3.2C) and regency-level organizations (in orange). Analysis showed a low density of connections in all network configurations (i.e. few connections between organizations). Fig 3.2A and 2B highlight several distinguishable clusters where organizations are more closely connected to one another than the rest of the network.

An examination of betweenness indicated that in all three network configurations the Coral Triangle Center (CTC), a national NGO, held the maximum score for 'bridging' or connecting otherwise disconnected organizations (Table 3.3). In Figure 2A, 2B and 2C the sizes of the nodes are proportional to betweenness scores. As explained, because of its location 'between' others, it is implied that the CTC is a natural coordinator or broker of collaborations, and can control or influence the flow of information or resources within the network (e.g., Hahn et al. 2006, Bodin and Crona

2009). Those organizations with the second highest betweenness rankings included two community-based organizations and a regency government agency. Even so, the overall gap in scores between the first and second place organizations was significant – in one case the CTC's betweenness score was more than three times greater than that of the organization with the second highest score. SNA data clearly demonstrates that the CTC plays the most central bridging role in the network and is thus the focus in this paper. Details of the betweenness scores for the top ten ranking organizations in the network are given in the Supplementary data (Table F1).

When considering in-degree measures (Table 3.3), the highest scores in the collaboration and knowledge-exchange configurations were also attributed to the CTC (i.e. it had the largest number of connections with others in the network). The NGO connected with 20 community organizations, nine district, one national and four international organizations, represented from a variety of sectors. Others with a relatively high number of connections included the Ministry Marine Affairs and Fisheries, Klungkung (DKP-K) with regards to funding and resource sharing. Nevertheless, a high level of betweenness and high in-degree suggest that CTC is an important bridging organization in the Nusa Penida MPA network.

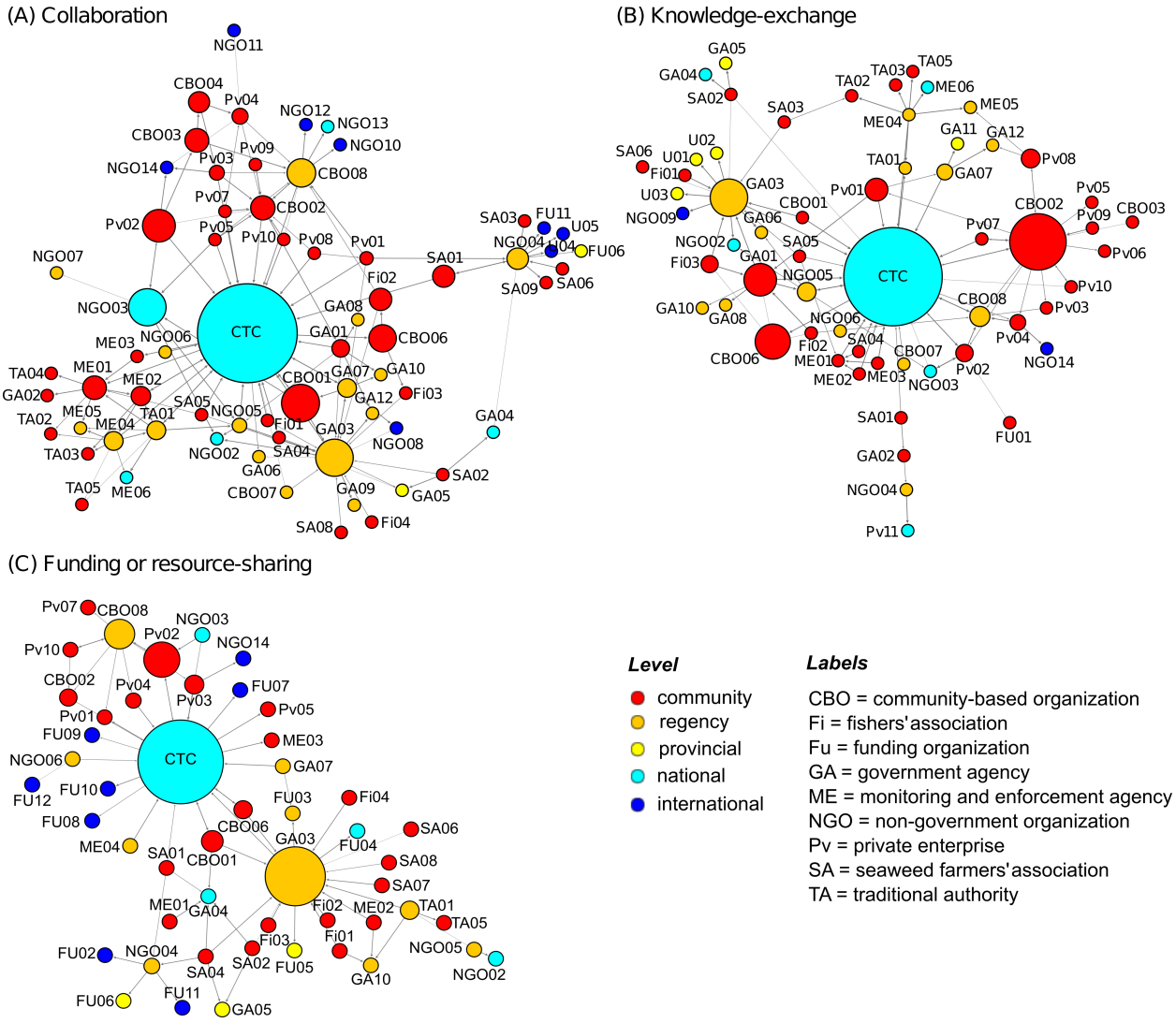

Figure 3.2. Network maps of the Nusa Penida MPA network. Network maps illustrate relationships (represented by lines) between organizations (represented by circles) associated with the network. The size of the circle indicates its betweenness centrality (bigger circles=higher betweenness) and the colour of each circle indicates its level. Betweenness measures based on: (A) collaborative relations (n=67), (B) knowledge-exchange relations (n=59) and (C) funding or resource-sharing relations (n=50). Labels are composed of the type of organization, and a unique number to distinguish them from others in the group.

Table 3.3. Betweenness and in-degree centrality measures of highest scoring organizations within the Nusa Penida and East Buleleng governance networks.

	Nusa Penida		**East Buleleng**					
	Coral Triangle Center		**Reef Check Indonesia**		**DKP Buleleng**		**LINI** (b)	
Configuration type	between	in-degree	between	in-degree	between.	in-degree	between	in-degree
Collaboration	1158.3	24	366.5	16	355.3	17	-	14
Knowledge-exchange	839.3	22	302.6	11	220.7	15	226.7	7
Funding & resource sharing	491.5	12 (a)	77.2	5	94	14	-	-

(a) This is the second highest in-degree measure in the CTC funding and resource sharing network. The highest is attributed to the Ministry of Marine Affairs and Fisheries, Klungkung (in-degree = 13)

(b) Only measures that ranked in the top three in the network were included here (i.e. LINI has a high betweenness measure for knowledge-sharing, but a medium to low betweenness measure for collaboration and funding)

3.4.1.2 East Buleleng Conservation Zone

The respondents identified 62 organizations in the East Buleleng Conservation Network from differing sectors and scales (overview in Table 3.1). Similar to the Nusa Penida, these are organizations that could affect, or be affected, by marine resource governance and conservation decisions to varying extents. The collaborative configuration registered 46 organizations connected by 137 relations, the knowledge-exchange configuration 36 organizations connected by 91 relations, and the funding configuration 46 organizations connected by 69 relations. The network maps in Figure 3.3 illustrates these findings as relational patterns of collaboration (panel A), knowledge-exchange (panel B) and funding or resource-sharing (panel C) (see also Table 3.2). Local organizations (shown in red, fig 3.3A, 3.3B and 3.3B) and international level organizations (in dark blue) constitute the two largest groups. Comparatively, organizations in the East Buleleng network are proportionally better connected to one another, but overall network cohesion is still low.

Three organizations from both the NGO and government community shared the highest 'bridging' scores in the East Buleleng Conservation network: 1) Reef Check Indonesia (RC-I), a national-level NGO, 2) the Ministry of Marine Affairs and Fisheries, Buleleng (DKP-B), a regency-level government agency, and 3) the Indonesian Nature Foundation (LINI), a national-level NGO. Collectively, these organizations were important to help coordinate or facilitate collaboration, influence the flow of information or knowledge, and/or influence the flow of funding or resources in the network, although not equally so (see Table 3.3). For instance, LINI helps to moderate information flow within and across the network, but is not especially involved in brokering relationships or affecting the flow of funding and resources. High betweenness scores were similar among the first and second place rankings of organizations (in the collaboration and funding configurations, respectively), and among the first, second and third rankings of organizations (in the knowledge-exchange configuration). Details of the betweenness scores for the top ten ranking organizations in the network are given in the Supplementary data (Table F2).

Those with highest betweenness also tended to have high in-degree measures, meaning that while these organizations have a great many connections they also tended to form these connections across others that are more disconnected. DKP was linked to 20 community organizations, two district, two national and two international organizations; RC-I was connected with 15 community organizations, four district, one national and five international organizations; and LINI was connected with 16 community, two district, two national and two international organizations. All three organizations are also connected to one another, as referenced in the following sections. Taking both measures together, Table 3.3 helps to identify central actors that might be playing more active and influential roles in the network.

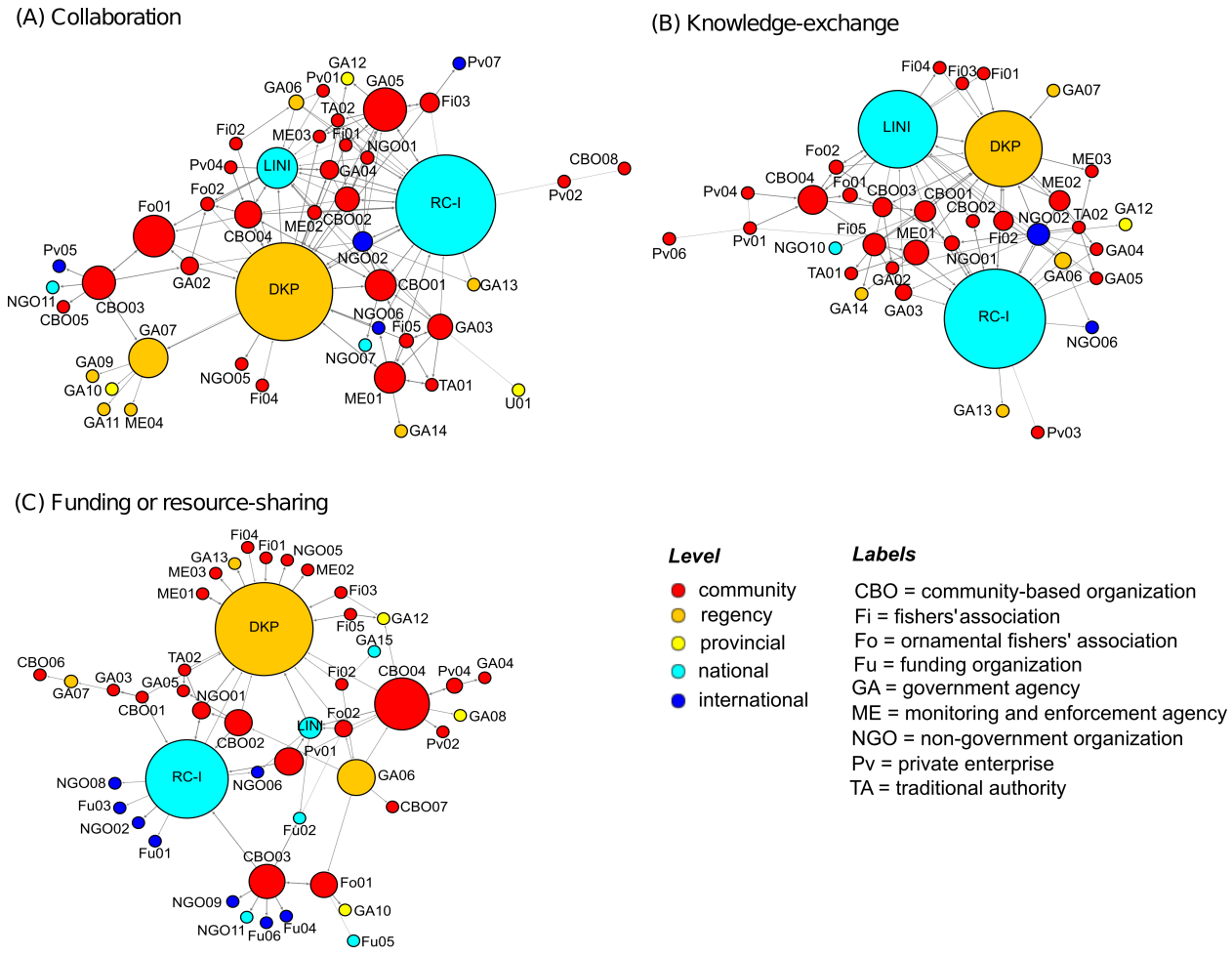

Figure 3.3. Network maps of the East Buleleng Conservation Zone. Network maps illustrate relationships (represented by lines) between organizations (represented by circles) associated with the network. The size of the circle indicates its betweenness centrality (bigger circles=higher betweenness) and the colour of each circle indicates its level. Betweenness measures based on: (A) collaborative relations (n=46), (B) knowledge-exchange relations (n=36), and (C) funding or resource-sharing relations (n=46). Labels are composed of the type of organization, and a unique number to distinguish them from others in the group.

3.4.2 Functionality of Bridging Organizations in Governance Networks

We complemented our SNA findings with in-depth interviews designed to assess the functionality and perceived impacts/influence of each bridging organization for coastal-marine governance, and their subsequent implications for

conservation outcomes. Only those respondents who stated they had interacted with the bridging organization in question on one or more occasions over the last year are included in the results. Results from interviews were complemented with other secondary information sources. The main results are summarized in Table 3.4 and discussed in-depth in the sub-sections below. Results are presented by case and by bridging organization. A brief description and history of each organization is given, followed by respondent perceptions of the roles and contributions of bridging organizations, and their implications for conservation outcomes. Finally, we discuss the constraints and barriers for building new relationships in each case.

Table 3.4. Summary of findings on main bridging organizations in Nusa Penida MPA and East Buleleng Conservation Zone

	Nusa Penida	**East Buleleng**		
	Coral Triangle Center	**Reef Check Indonesia**	**DKP-Buleleng**	**LINI**
Type	NGO (national)	NGO (national)	Government (regency)	NGO (national)
Network community	Three Nusa Islands	Buleleng Regency (focus Tejakula sub-district)	Buleleng Regency	Buleleng Regency (focus Les & Penuktukan villages)
Focus of activity	Establishing and implementing an MPA in Nusa Penida	Supporting community-led sustainable marine resource management	Actualizing management of fisheries and ensuring welfare of resource users in the Regency	Creating a sustainable marine ornamental fishery
Roles and contributions	Provide expertise on the est. of MPA plan	Liaise with gov'nt to facilitate local and sub-district MPAs	Coordinate sub-district MPA zoning plan and associated activities (e.g., face-to-face meetings)	Building local capabilities for ornamental fisheries by transferring skills and knowledge to local community
	Coordinate and empower collective MPA forums (e.g., working group, mgmt. unit)	Support and empower community-based institutions like MMAs by e.g., building capacity	Provide financial and in-kind support to marine resource user groups	Coordinate data collection and management, and distribute data sets to relevant parties

	Help to catalyze local institutions and forums for interaction	Coordinate with local community to conduct education & awareness programming	Facilitate legal grounds for conservation	
	Carry out educational programming and promote 'learning sites'			
Implications for conservation outcomes	Balance of multiple objectives, & integration of scientific and experiential knowledge and tradition by e.g., 'giving locals a voice', multiple-use planning & zoning	Locally-relevant & scale-appropriate conservation by e.g., nesting local MMAs in sub-district MPA	Interactive participation of diverse actors, their interests and knowledge, in conservation planning via e.g., public forums to create a more holistic understanding of marine resource needs – 'we cannot do conservation alone'	Enhanced local capacity, competency and leadership in sustainable ornamental fishery via e.g., new skills, exchange of knowledge
	Better coordinated conservation actions via cross-level, multi-stakeholder management – e.g., MPA working group, management unit	Improved local responsibility and leadership in conservation via e.g., MMA groups, community-based *Pecalang Segara*	Linked government and nongovernment actors in meaningful ways via e.g. extension agents or public forums	Empowered community-based conservation action – e.g., training in production and installation of artificial reef structures
	Improved social networks for interaction and knowledge sharing via institutions and forums – e.g., Lembongan Marine Assoc., MPA learning site			

3.4.2.1 Nusa Penida MPA

The Coral Triangle Center is an environmental NGO that oversees two main programs across Indonesia. Its engagement with the Nusa Penida area began in 2008, when the CTC was still a subsidiary of US-based NGO The Nature Conservancy (it became an independent foundation in 2010). The Center believes that enhancing the capacity of conservation managers and practitioners is the path to improved ecosystem health, and its core values support building partnerships among stakeholders to find joint solutions (see also CTC 2015). In the context of Nusa Penida, an NGO staff member explained: "*CTC's role is to bring actors together…[and it] strongly advocates a collaborative approach*" (pers. comm. 2013). Under the guidance of the CTC, Nusa Penida is being developed into an international 'learning site' to provide a platform for managers and practitioners, government agencies, community groups, scientists and NGOs to share knowledge and experiences about tropical conservation (see also CTC 2014).

The NGO was acknowledged by just over half of respondents (57%) for its contributions to knowledge and information exchange. It has played a large technical advisory role and has worked closely with governments and stakeholders to lend expertise on the development of an MPA plan. As a government staff person stated (pers. comm. 2014), "*CTC works caused changes in our organization. We created new rules based on CTC recommendations. [Our agency] become more concerned on conservation because CTC give information about the importance of conservation for tourism in Nusa Penida*". In 2012, CTC jointly facilitated the development of a marine tourism code of conduct in cooperation with the Klungkung government, Lembongan Marine Association, and Indonesian Marine Tourism Association. The code regulates diving and snorkeling activities specifically to protect manta rays and mola mola (sunfish). At the same time, CTC has held educational opportunities about, e.g., marine ecology, fisheries net making, and coral reef monitoring across the islands. To support the development of local mangrove ecotourism (below), for instance, it conducted training among community members about basic mangrove ecology and restoration, and how to perform surveys to identify mangrove species (CBO member, pers. comm. 2014). As a conduit for information exchange, several diving operators and local

organizations noted that it was common practice to forward observational data to CTC, including that associated with wildlife sightings and illegal activities.

When asked about the influence of the CTC, respondents most frequently mentioned its role in linking stakeholders and building collaborative partnerships. The NGO has helped to connect district and provincial governments, NGOs, traditional authorities, community representatives and private sector operators via formal platforms such as the MPA Working Group and the subsequent Nusa Penida MPA Management Unit and Joint Patrol Team (formalized under district decree no. 30/2013). The nascent Management Unit is composed of representatives from government, fishers' association, traditional council (*Majelis Alit*), the Indonesian Navy, dive operators, NGOs and community groups to guide the overall management of the MPA. Other lesser formal platforms engaged by the CTC to connect organizations have included public consultation forums, training or skills sessions, and community-oriented education and awareness campaigns.

As of June 2014 the NGO had facilitated over sixty focus group discussions and stakeholder meetings, in part, as a way to "*give locals a voice*" (CBO member, pers. comm. 2014) to participate in broader discussions about the MPA. One outcome of this has been the development of an MPA zoning plan that incorporated the use preferences and customs (e.g., sacred territories, resource use patterns) of diverse stakeholder groups, including local peoples. The zoning system integrates scientific information with experiential knowledge and traditional practices to encompass areas for sustainable traditional fisheries, marine tourism, seaweed farming, local culture and tradition, biodiversity conservation and transport use, as well as accommodating other uses such as research and education. As well, the CTC has been credited by respondents for "*increasing group unity*" (CBO member, pers. comm. 2014) among particular sub-groups (e.g., tourism operators) in the MPA by helping to catalyze new institutions and forums for interaction. These have included the development of a Mangrove Tourism Association for local ecotourism operators in Nusa Lembongan, and the aided establishment of the locally-based Lembongan Marine Association (LMA) for private-sector diving businesses. These institutions have in turn

contributed to greater collaborative outcomes: "*the work the LMA has been doing is very unifying*" (tourism staff member, pers. comm. 2014).

However, connecting different organizations with differing interests, perspectives and knowledge has been no easy task. In describing the role of the CTC one respondent stated: "*I feel sorry for them…they are stuck between a rock and a hard place*" (tourism staff member, pers. comm. 2014), referring to the NGO's position between conflicting stakeholder demands. Another respondent voiced frustration with the collaborative process, explaining that it is "*…all talk and no action…exhausting and demotivating…*" (tourism staff member, pers. comm. 2014). Over half of respondents interviewed observed and cited ongoing conflicts among organizations in the MPA. Constraints or barriers to building and strengthening future collaborative and knowledge-exchange relations were identified and are listed in Table 3.5.

Table 3.5. Responses for top constraints and barriers to establish or strengthen collaborative and knowledge-exchange relationships in Nusa Penida MPA and East Buleleng Conservation Zone

Nusa Penida MPA	East Buleleng Conservation Zone
▪ Lack of expertise ▪ Insufficient time ▪ Incompatible organizational goals and priorities ▪ Availability of funding ▪ Political tensions and conflicts ▪ Lack of interest ▪ Lack of or weak leadership ▪ Competition and jealousy ▪ Language and cultural barriers ▪ Inadequate mechanisms for communication ▪ Lack of human resources	▪ Availability of funding ▪ Lack of expertise ▪ Insufficient time ▪ Lack of or weak leadership ▪ Incompatible organizational goals and priorities ▪ Lack of interest ▪ Power imbalances ▪ Political tensions and/or conflicts between organizations

3.4.2.2 East Buleleng Conservation Zone

This region hosts three bridging organizations, each with their own similar yet distinct role in coordinating the network. Hence, strong communication and coordination between all three organizations is crucial for network-level coordination.

Reef Check Indonesia. The environmental NGO was founded in 2005 as a chapter of US-based Reef Check International, and operates in multiple sites across Indonesia. RC-I focuses on coral reef conservation and community well-being by promoting sustainable collaborative governance, science, and education and awareness (see also RC-I 2015). In East Buleleng, it works to empower local governments and communities, and assists in the development and planning of nested local and sub-regency marine management areas. One staff member explained, RC-I aims to "*…involve […] local communities, stakeholders and governments in the whole management process. [To] facilitate and assist collaboration of all components in the communities in the management of coastal and marine ecosystems*" (pers. comm. 2014). The RC-I main office is located in Denpasar, three hours south of the Buleleng Regency, but a staff member is semi-permanently housed in the office of the Ministry of Marine Affairs and Fisheries, Buleleng.

In line with the above, the NGO was credited by just under half of respondents (42%) for improving collaboration, communication and the flow of information between different organizations in the network. RC-I has worked closely with government and other stakeholders in developing local-level and sub-district MPAs. Part of its programming has enabled the standardization of fish and coral species names, which has, as one NGO staff explained, facilitated the collection of biophysical and fisheries data both by and through RC-I across Buleleng (pers. comm. 2014). In addition, RC-I has established the 'GoBlue' webpage as a digital node for information sharing about marine and coastal environments with wider audiences (i.e. outside the community).

According to respondents, RC-I has been influential in building capacity and contributing knowledge for community-based governance. In 2008, the NGO supported the development of three community groups for Local Marine

Management Areas (LMMA) in each of the villages of Bondalem, Tejakula and Penuktukan. These groups have since become platforms for collective community action, including the establishment of community-based *Pecalang Segara* (traditional guardians of the sea) to monitor for illegal activities and enforce traditional regulations. Around the same time the NGO established the Reef Check Center, an information and education center, to raise public awareness in nearby communities and schools. Numerous respondents from government and local organizations were quick to attribute changes in community mindset to its programming: "*I didn't know about MMAs, about corals or fish. We thought to* use *resources. To take. […] We are lucky to have big NGOs in Bali*" (CBO member, pers. comm. 2015). Through these and other informal forums, RC-I has directed financial and human capital to carrying out skills and training workshops about marine ecology, coral reef and fisheries monitoring, reef restoration techniques, and the development of a marine tourism sector. It had also built local capacities via regular diver and EcoDiver certification of community members for the purposes of autonomous coral reef monitoring and the development of alternative livelihood opportunities.

DKP Buleleng. A regency-level government agency, the Ministry of Marine Affairs and Fisheries, Buleleng is responsible for the regulation of fisheries and other marine resources in the regency according to regency and provincial policies. One resource user described: "*they are like our fathers and mothers, they set the law*" (CBO member, pers. comm. 2014). The agency's mission is closely tied to enhancing the welfare and economic opportunities/growth for fisheries and coastal communities in the district. It works especially closely with Reef Check Indonesia: at the time of data collection the Ministry housed a permanent staff member of the NGO. Unlike all other bridging organizations in East Buleleng, DKP-B has the legal authority to make and/or enforce rules.

The respondents viewed the main contribution of DKP-B as enabling better collaboration about marine (regulatory) issues. At the time of data collection the government agency was hosting regular meetings with multiple stakeholders, both with villages individually and the sub-district as a whole, to share information and participate in discussions related to the establishment of a sub-district MPA and its

zoning plan, including regulations about marine resource use. A staff member from DKP-B was careful to point out, "*we cannot do conservation alone*" (pers. comm. 2014), listing examples of MPA failures from other regions of Indonesia. Numerous respondents from local organizations and NGOs remarked on DKP Buleleng's role in coordinating stakeholders and their interests associated with the MPA via public forums: "*…the government accommodates issues from […] organizations by organizing public consultancy. There are so many organizations involved: the NGOs, tourism actors, the fishermen groups and others [that] come to that occasion delivering their interests, ideas or aspirations*" (NGO staff member, pers. comm. 2014). As part of its regulatory programing, DKP-B employs 'extension agents' who are responsible for building relationships with, and regulating, local fisher associations in each of the villages, as well as carrying out related programming in the sub-districts.

In addition, numerous respondents cited the government agency for its financial and in-kind contributions to resource management and conservation initiatives in the region. One resource user put forward as an example the DKP-B's financial donation to the making of fish domes, noting "*we do project-based work with DKP. We do not have an ongoing partnership*" (CBO member, pers. comm. 2014).

The Indonesian Nature Foundation. The NGO was established in 2008 to promote community-based marine conservation and sustainable fisheries in Indonesia. LINI aims to support ecosystem conservation and restoration through science, education and capacity building with communities and local governments (see LINI 2015). One staff member explained, "*you cannot force people to protect the environment. You have to start by helping them with livelihoods and understanding*" (NGO member, pers. comm. 2013). In East Buleleng, LINI operates largely at the community level and at present works most closely with the villages of Les and Penuktukan to foster a sustainable marine ornamental fishery.

LINI was also acknowledged by over half of respondents for its efforts in facilitating collaborations (identified by 68% of respondents) and improving information sharing (identified by 59% of respondents). In addition to introducing new knowledge and ideas via programming and training opportunities as mentioned below, the NGO has

played a strong role in both the collection and management of data related to fisheries and ornamental fisheries. Using local middlemen LINI has facilitated data collection about fishers, fish species, catch numbers, fish distribution, and fish supply chains, as well as fish rearing/aquaculture data. It serves as a conduit to move information from local to high-levels, and LINI has worked closely with government on the management of fisheries data to inform future allowable catch quotas.

According to the respondents, the main contributions of LINI included capacity building via the transference of new skills and the exchange of knowledge. Importantly, both contributions were closely tied to ornamental fisheries programming. LINI has been heavily involved in transitioning ornamental fisheries practices in the area from cyanide-based to net-based and other friendly catch methods (see Frey and Berkes 2014 for historical overview). The NGO has been a leader in the training of local community members in the production and installation of various types of artificial reef structures (fish domes, shrimp pots, 'roti buaya') both locally and across Buleleng. As of January 2014, over 100 fish domes and 1000 shrimp pots had been installed on the reef (CBO member, pers. comm. 2014). The NGO has also carried out training about new practices and methods for sea and land-based aquaculture, and as of early 2015 the construction of a new facility for long-term training and research of the marine aquarium trade in Les was near completion.

3.5. Discussion: Bridging Organizations for Governance and Conservation Outcomes

The evidence presented here indicates that bridging organizations contribute to more adaptive and collaborative forms of governance among different sets of actors and across scales and levels. This in turn drives successful conservation outcomes in Bali, with applications for the CT region and beyond. Four insights for conservation governance and the presence of bridging organizations are offered here. We draw on both quantitative SNA and qualitative data, including specific examples from the field, as a basis for each insight. Our intent here is it to draw out the opportunities

and challenges associated with the inclusion of bridging organizations in facilitating adaptive governance processes that can lead to better marine conservation outcomes.

Bridging organizations help to navigate complex and dynamic conservation settings across boundaries. Results from network analysis show that bridging organizations connect an immense diversity of organizational types spanning geographic and jurisdictional boundaries, from different sectors (e.g., fisheries, aquaculture, government, enforcement, etc.), and representing differing perspectives, knowledge and values. In East Buleleng, all three bridging organizations had established connections to government agencies, NGOs, community groups, monitoring and enforcement agencies, private sector representatives and funding organizations operating from local to international levels, and had also connected lesser/newly formalized institutions such as ornamental fishers' associations, community marine management groups and *Pecalang Segara* (guardians of the sea). In Nusa Penida we see a similar diversity of connections by the CTC from local to international levels, including also those to the *Majelis Alit* traditional council and fishers' and seaweed farmers' associations. Linking across boundaries – jurisdictional, geographic, cultural – is an important consideration in achieving successful conservation outcomes in general (Armitage et al. 2012, Kark et al. 2015) and in the CT region specifically (see Mills et al. 2010, Fidelman et al. 2012, Cros et al. 2014)

Bridging organizations here facilitate the creation of social networks for diverse stakeholder participation in conservation. An important contribution in our cases has been the connection of local organizations to various external ones to inform and engage communities in conservation (a challenge that is ongoing in the CT region – see e.g., Fidelman et al. 2012, Weeks et al. 2014a, 2014b). Linking to the CTC, RC-I, DKP-B and/or LINI is the main conduit through which community-level actors are able to connect with higher-level organizations, although exceptions do exist. For instance, the CTC works directly with district and provincial level governments on MPA demarcation and management, but its largest number of connections is with local-level organizations such as private enterprises and community groups. Similarly, LINI plays a key role in connecting actors at the community level that are

associated with fisheries and the marine aquarium trade, but it also connects to district governments and national/internationals NGOs.

The connection of local and higher-level conservation activities (in keeping with e.g., Lowry et al. 2009, Mills et al. 2010, Green et al. 2011, Cros 2014) reflects another critical contribution of bridging organizations. For example, strategic linking between organizations in East Buleleng resulted in existing locally managed marine areas (MMA) providing the foundation for 'scaling up' to the sub-district level. The subsequent demarcation of the East Buleleng sub-district MPA is composed of nested MMAs (though zoning is not yet finalized). In conservation, bridging organizations may be the only pathway for local voices, knowledge and interests to be represented at other scales. Increased connectivity between organizations both supports and facilitates conservation outcomes that better reflect the diversity inherent in societies, and is a first step in bridging the gap between local and regional conservation actions in the CT (e.g., Mills et al. 2010, Green et al. 2011, Fidelman et al. 2012).

It is important to note is that the functions carried out by bridging organizations (e.g., educational programming, building capacity – Table 3.4) are not necessarily exclusive to this type of organization. Indeed, elsewhere in Indonesia non-bridging organization NGOs or governments may regularly carry out some of these roles. What makes them unique here is that bridging organizations perform these functions and take on roles as part of an explicit aim to bridge actors and groups.

Despite the diversity of organizations bridged in each conservation network there are still issues of representation and inclusiveness of participation. In Nusa Penida, for example, snorkeling operators have been largely overlooked even though they are active users of MPA waters and, according to some, a source of conflict given a lack of regulations and enforcement: "…*snorkelers are a nightmare at the moment*" (tourism staff member, pers. comm. 2014). In East Buleleng, less organized groups such as those earning income from local dolphin and fishing tours were absent from MPA planning meetings. There are also likely to be additional stakeholders that emerge from the establishment of both MPAs. Without inclusion and meaningful participation of relevant stakeholders, at all relevant levels, differing and possibly conflicting views

and priorities about conservation may be overlooked or ignored (see CT examples Campbell et al. 2012, Foale et al. 2013, von Heland et al. 2014). The result can undermine local acceptance, instigate resistance and, ultimately, result in conservation implementation failure. Bridging organization staff in the CT then must be cognizant of the diverse and shifting nature of stakeholders and their priorities in these settings, and provide a platform or mechanism to allow for trade-off negotiations and conflict resolution.

Unsurprisingly, linking across scales and sectors is not enough. High organizational diversity means there are also multiple and possibly competing interests or agendas. Decisions about conservation in the CT require bridging organizations to deal with the reality of trade-offs (Hirsch et al. 2011, McShane et al. 2011). This is especially important in the CTI-CFF context to identify the extent to which diverse objectives such as sustainable development, poverty reduction, food security and biodiversity reduction are mutually exclusive (*sensu* Fidelman et al. 2012, Foale et al. 2013, von Heland et al. 2014). For instance, a staff member from LINI expressed concerns over the perceived compatibility of ornamental fisheries and biodiversity conservation, making note: "*…we need to move away from pushing people out of conservation areas*" (pers. comm. 2013). We observed some positive evidence of trade-off deliberation in the CTC-led formation of a multiple-use zoning plan for the Nusa Penida MPA. As explained above, deliberation among different groups facilitated the amalgamation of objectives for fisheries, seaweed farming, marine tourism, culture and biodiversity conservation. Although still in the early stages of zoning and planning, we see similar prioritization of multiple-use by DKP-B and RC-I in the East Buleleng Conservation Zone.

The structure and function of a bridging organization influence the marine governance process. In Bali, bridging organizations come in many shapes and sizes, and thus have differing implications or outcomes for governance and conservation outcomes. In Nusa Penida, the CTC was the sole bridging organization and the most highly connected for collaboration and knowledge-exchange. No other organization came close to its central position. This means that critical relationships among organizations in the network are to a large extent created and maintained by the CTC,

which allows for ease of communication and flow of information and resources (see Horigue et al. 2012 for comparison). However, high singularity also means that the Nusa Penida MPA network may be vulnerable to fragmentation should the CTC be removed or become dysfunctional. The same can be said for its centrality in the success of conservation outcomes. In contrast, three organizations shared central positions in the East Buleleng network. Their roles in Buleleng are nested and somewhat redundant, since there are examples of how each bridging organization connects slightly different sets of organizations around different issues. Partial redundancy in bridging organizations is beneficial to provide contingency and buffer in support of conservation (as per Fidelman et al. 2014, Weeks et al. 2014a). All three bridging organizations in East Buleleng are currently connected. However, coordination in the network as a whole, and thus the success of conservation efforts, is still highly dependent on how and if these overlapping organizations choose to interact in the future. This reinforces the importance of knowledge-exchange platforms, addressed in the following section.

Research findings show that a bridging organization's influence on the structure of a network (i.e. who it connects and how) varies according to type of network configuration. In other words, bridging organizations were not in all cases central in equally facilitating collaborative, knowledge-exchange and funding or resource sharing relationships (evidenced by betweenness scores). For example, LINI exhibited high importance to moderate information flow and knowledge aggregation, and much lesser importance in brokering collaborations and affecting the flow of funding and resources. On the other hand, the CTC exhibited its highest importance in brokering collaborations, and DKP-B in the flow of funding and resources. These findings imply that bridging organizations have different strengths or niches with regards to governance. Recognizing this variation is important to understand how certain bridging organizations can be engaged in the CT to achieve desired processes (e.g., sharing information, coordinating governments, improving enforcement, generating resources), and, hence, desired conservation outcomes.

Differences between bridging organizations were also found with regard to functionality. All four organizations supported some version of conservation, yet their

mandates varied in priority between biodiversity conservation, livelihood development and fisheries management. Disparity between motivations or framings of conservation by an organization with high betweenness can result in differences in, for example, governance structure, scale of intervention, political processes and/or funding priorities (see e.g., Berdej et al. 2015). This is illustrated in the case of LINI where its organizational emphasis on a community-based marine ornamental fishery has prioritized programming implemented at the local level that is focused on development of the marine aquarium trade. We suggest that the failure to recognize differences in the motivations, incentives and objectives of bridging organizations can overlook their far-reaching implications for how they shape social networks and prioritize conservation outcomes (cf. von Heland et al. 2014).

Moreover, diversity among bridging organizations was recorded with regard to their characteristics. Three of the four bridging organizations examined were non-governmental organizations operating projects at the community (LINI), regency (RC-I) and national (CTC) levels. The DKP-B, on the other hand, was a governmental organization operating at the regency level. We suggest that the nature of a bridging organization (i.e. its type and scale of operation) is likely to have specific influence on governance and conservation outcomes. Consider, for example, how a bridging organization that is an NGO is more apt to experiment freely and take risks in projects and policy compared to one that is governmental.

In thinking about differences between bridging organizations, we were also able to distill a set of common characteristics that make these organizations effective in playing a role in conservation governance. Common attributes among bridging organizations examined included: active and engaged staff; knowledge of how to build partnerships with others; effective relationships with key (local) partners; integrative and synergistic in involving actors (to varying degrees); skills to deal with diverse groups and ideas in a constructive way; view of collaboration as necessary for success; and organizational flexibility (see below). This list is helpful to consider when thinking about how best to support and engage bridging organizations to achieve more effective conservation governance.

Importantly, bridging organizations do not necessarily represent the interests or views of everyone, or do so equally. In particular, regulating who is and who is not 'bridged' has implications for inclusiveness and meaningfulness of participation in conservation, as well as power (re)distribution. This in turn can influence the legitimacy and local acceptance of conservation (e.g., von Heland et al. 2014, Fidelman et al. 2014). It is not surprising that three of the four bridging organizations in our sites are NGOs. Not only in Indonesia, but also elsewhere in the CT, environmental NGOs play a profoundly influential role (Rosen and Olsson 2013, Fidelman et al. 2014). However, Foale et al. (2013) notes that the proliferation of international environmental NGOs in the CT has skewed focus toward biodiversity conservation over development. When we consider formal authority in the bridging organizations in our cases, only the government agency DKP-Buleleng has official power vis-à-vis the state. The NGO bridging organizations, instead, amass power from being embedded and very central in the network. Although the influence of both types of bridging organizations is based on very different grounds and may be useful for different purposes, both are equally important to achieving successful conservation outcomes.

'Bridging' is accomplished using different strategies and platforms for collaboration and social learning. Results from semi-structured interviews show that bridging organizations foster opportunities for community members, policy makers and practitioners to interact and share knowledge, as well as help to combine traditional, scientific and management knowledge associated with conservation – a guiding principle of the CTI-CFF (CTI Secretariat 2009). Cohen et al. (2012) observe that cooperation and learning are more likely to occur among those stakeholders within a shared social network (i.e. where connections have been established).

Collaboration in this context involves the shared actions or interactions of individuals or groups, including communities, toward a collective process of decision-making (Kark et al. 2015). In both case sites bridging organization(s) generated new avenues for face-to-face interaction through a variety of formal and informal platforms. These included mandated MPA working groups (by the CTC and DKP-B), coral reef and fisheries monitoring groups (by RC-I and LINI), and sector-specific associations (as in the case of the CTC with mangrove tourism). Such platforms have better enabled

organizations to engage more directly with other agencies and identify new partners. In the case of East Buleleng, for instance, intervention by RC-I and LINI have fostered new partnerships between community groups and neighbouring hotels over their mutual interest in the development of sustainable dive tourism. In Nusa Penida, the CTC-guided nascent MPA Management Unit forms a coordinating body to represent the diverse stakeholders of the park, identify shared problems and opportunities, and work together to address undesirable social-ecological changes. Research has demonstrated that decisions generated through collaborative processes are more likely to garner broader support (see Kark et al. 2015 for advantages and disadvantages). Importantly, however, collaboration as a normative process for conservation is likely to require a decision-making framework to allow for trade-off negotiations and conflict resolution, as mentioned above.

Social learning involves a process of iterative reflection where different actors share ideas and experiences with one another with the intent to foster collective understanding of a problem, debate solutions, and foster changes in understanding that go beyond the individual and challenge existing assumptions and practices (Armitage et al. 2008, Reed et al. 2010). Knowledge-exchange platforms catalyzed by bridging organizations in our case sites ranged from those at the community level, such as the East Buleleng community groups for MMAs or the Lembongan Marine Association for diving businesses in Nusa Penida, to the international level, as in the case of the CTC-led designation of Nusa Penida MPA as an international learning site for practitioners across the CT and beyond. These platforms and networks provide opportunity for peer-learning across vertical (local, regency, province and so on) and/or horizontal (local to local organizations) scales by serving as arenas for the experiences, objections, perspectives, and information of various organizations to be exchanged, negotiated and synthesized. We see some evidence of the responses or outcomes of social learning for conservation in our sites. For example, a series of community and stakeholder meetings organized by the CTC served as common ground to share and integrate scientific information with the experiential knowledge and tradition of local groups in the design of a multiple-use zoning plan in Nusa Penida that incorporated biodiversity, livelihood and cultural factors.

Learning also involves the development of requisite knowledge and skills to engage in conservation. Research findings highlight the importance of bridging organizations to introduce and transmit information and knowledge among network members. In East Buleleng, for instance, RC-I founded an educational facility that spread awareness and understanding of marine conservation issues to surrounding communities. Similarly, partnerships with the CTC have provided government agencies with access to technical knowledge and expertise about MPA planning. In yet another example, LINI has worked with regency government to train staff on the management of fisheries data to inform future total allowable catch quotas. Training of community leaders, skills workshops and educational programming were also among the strategies used to build community capacity to engage in conservation. RC-I has trained local community members in East Buleleng to carry out autonomous coral reef monitoring on their behalf, while the CTC organizes an annual reef-monitoring program in Nusa Penida carried out alongside local diving businesses. Each bridging organization in our study sites provided a forum(s) and incentive(s) to foster broad collaboration, knowledge-exchange and learning to better align conservation outcomes with the heterogeneous social, cultural, economic and political realities of the CT context (as per Weeks et al. 2014a, 2014b).

Bridging organizations enhance flexibility for marine governance and conservation. Situated in the unique position at the nexus of where organizations meet and information and knowledge flow, a bridging organization is a space where holistic understanding might be developed, and opportunities for innovation shared. Familiarity of the many different organizations in a network means that staff within bridging organizations will tend to know who to connect, how to connect them, and when. For instance, in 2013 CTC staff guided a collective response to damage caused by the installation of new underwater electrical cables between mainland Bali and the Nusa Penida islands. It engaged key local experts trained in scientific diving and monitoring to survey the damage, and coordinated a response among local communities, the Lembongan Marine Association and others, which it communicated to the electricity company PT PLN in charge of the installation. In response, the company agreed to support reef rehabilitation efforts in the area (although the program has yet to be started) (De Meo et al. 2012). The flexibility to draw upon

appropriate actors and resources (e.g., experts, funding sources, information holders) allows for more coordinated and timely responses to conservation challenges in times of crisis. It also increases the impact or extent of conservation outcomes compared to responses or action undertaken by a single individual/organization alone by drawing on the collective knowledge and resources of the many.

The structure of some bridging organizations themselves is flexible. Compared to the government bridging organization, all three NGO bridging organization in this paper exhibited relatively high flexibility. None subscribed to fixed structures with regular, regimented programming that would require a large administration, and all three utilized community members as organizational extensions (to carry out e.g., data collection, programming, facilitating). For example, the bridging organization LINI employed local community members to act as 'middlemen' to collect data on fish catch and fish supply chains in surrounding communities. This flexible structure can also accommodate new actors and interests as they emerge, shifts to address more pressing conservation demands, and takes advantage of opportunities as they arise (e.g., funding, partnerships, networks). In addition, flexibility in bridging organization structure allows one to shift its role/programming depending on current need. For instance, two of the bridging organizations described in this paper identified their current function as 'filling the gaps' in conservation and management by e.g., building capacity, coordinating stakeholders. Yet, both organizations viewed this role as temporary, and expressed future plans to shift from coordinating to advisory roles.

However, a possible drawback to organizational flexibility concerns the consistency and long-term viability of conservation programming. A lack of continuity between conservation programming carried out by bridging organizations may result in non-standardized practices, gaps, redundancies, or omission of technical competency (see Indonesia example in Patlis 2005). As well, skills or knowledge gained from the delivery of one-off training, without subsequent follow-up, can be quickly lost. While the roots of these issues do not necessarily lie in flexibility of bridging organizations alone, it is nonetheless important to acknowledge possible drawbacks of these organizations in marine governance and conservation.

3.6. Conclusions

Conservation challenges experienced in the CT, and Bali specifically, require governance approaches that are collaborative and adaptive across scales. Conservation actions must be better coordinated, information flows improved, and knowledge better integrated (Armitage et al. 2012, Kark et al. 2015, Wyborn et al. 2016). Still, fragmentation of governance, human, technical and financial deficiencies, and the 'messiness' inherent in contemporary conservation settings hinder an effective governance regime for successful conservation outcomes in Indonesia (see Fidelman et al. 2012, 2014). The bridging organizations analyzed here demonstrate that they can and do play a profound role in nurturing conservation networks, and subsequently interactive processes for adaptive marine governance. For instance, we have outlined the many ways in which these organizations have allowed cooperation and built pathways for interaction, knowledge-exchange, and resource sharing, and have served as arenas/platforms for collaboration, capacity building and learning. In addition, we highlight the diverse structures and functions of these organizations, and their unique flexibility to adjust to changing contexts and needs (although not equally so). Using examples from both case sites we illustrate how bridging organizations have implications for conservation outcomes. We document, for example, a better balancing of multiple objectives and interests, greater coordination of efforts across scales, and encompassing diverse conservation actors, empowerment and capacity building for community-based conservation and leadership.

These research findings contribute to a relatively new body of literature on bridging organizations in conservation contexts and add much needed empirical investigation. By drawing on adaptive governance and social network literatures together, we gain complementary insights on how bridging organizations shape conservation networks, and the implications of this for conservation governance. The benefits of applying SNA in a range of environmental settings are only just beginning to emerge (e.g., Bodin and Crona 2009, Prell 2011, Alexander and Armitage 2014). In this paper, we combined quantitative SNA and qualitative methods to demonstrate how knowledge gained about bridging organizations through the analysis of networks in conservation

governance could be further studied with the application of interviews, participatory observation and document collection and review. This mixed method approach added value to the research by allowing both an 'outsider' perspective in terms of the structural positions of bridging organizations and their relational characteristics in networks, and also gaining data on bridging organizations from an 'insider' perspective, including perceptions and conservation outcomes of those involved. Future research may benefit from the inclusion of other quantitative SNA measures, such as measures of edge centrality (cf. De Meo et al. 2012), to provide further insight on questions such as e.g., how strong are relationships with bridging organizations? are some relationships more important than others? and how well connected are bridging organizations to one another?

Yet, the bridging organizations assessed here are relatively new and their long-term impacts are uncertain. Our findings highlight a need for additional research on the role of power, motivation, agenda setting and the policy narratives that shape conservation efforts (Berdej et al. 2015). For example, how do bridging organizations promulgate particular narratives or agendas? And what are the implications of this for the actors, actions and conservation outcomes? How do bridging organization (re)distribute power in conservation? Who is included or excluded? In this regard, Berdej et al. (2015) draw attention to how the framing of conservation challenges and opportunities in the CTI-CFF have material effects on the design and implementation of conservation initiatives and programmes in the CT.

We derived our findings from two networks in Bali. However, the insights are applicable to other conservation contexts. In the CT region, including Indonesia, coastal-marine systems encompass multiple administrative jurisdictions, cultural systems and socio-economic diversity (e.g., Majors 2008, Mills et al. 2010, Clifton and Majors 2012, Fidelman et al. 2012, 2014) that call for innovative multi-level and pluralistic solutions to governance challenges. The insights from this analysis show how bridging organizations add value to heterogeneous networks in conservation settings, and the importance of these organizations to governance. Understanding which organizations occupy bridging positions and how they utilize that position is important to achieve conservation outcomes. At stake are biodiversity and ecosystems

of global importance, and the wellbeing of millions of people who depend on those ecosystems.

CHAPTER 4

Bridging for Better Conservation Fit in Indonesia's Coastal-Marine Systems

4.1. Chapter Summary

Efforts to improve the fit between conservation initiatives (e.g., marine protected areas, no-take zones) and the dynamic social dimensions of coastal-marine systems remain underdeveloped. We empirically illustrate here how opportunities to enhance 'conservation fit' are influenced by bridging organizations that serve to (1) better align conservation initiatives with characteristics of the social context that influence conservation outcomes (e.g., institutions, culture, values, local practice), (2) foster coordinated and adaptive approaches to conservation that are reflective of multiple perspectives and knowledge, and (3) better connect people and conservation actions across jurisdictional and geographical boundaries. Qualitative methods were used in this research, including semi-structured interviews, observation of key events and meetings, and document collection and review. We draw from three coastal-marine conservation cases in Bali, Indonesia, that exemplify different approaches to bridging for conservation fit: the Bali MPA Network, the Nusa Penida MPA, and the East Buleleng Conservation Zone. Our synthesis of these cases identifies different strategies used by bridging organizations to deal with conservation fit issues, including their capacity to integrate actors and perspectives using flexible approaches, actualize hybrid forms of decision-making, build capacity and leadership, and foster cross-scale conservation and scale-bridging social networks. We also examine the limitations of bridging organizations and offer direction for future research for coastal-marine conservation in Indonesia specifically, and the Coral Triangle region generally. More broadly, this analysis contributes new insights on emerging forms of governance designed to deliberatively fit conservation initiatives to coastal-marine social-ecological systems experiencing rapid change.

4.2. Introduction

The success of marine conservation in southeast Asia's Coral Triangle (CT) requires modes of governance that deliberately fit conservation initiatives to underlying social dimensions. Insufficient consideration of social dimensions in conservation initiatives has contributed substantially to limited progress in this regard. To this end, we investigate the issue of 'conservation fit', which we refer to here as the dynamic alignment of the governing system for conservation and the social dimensions of a system that influence the outcomes of conservation policy and practice.

Governance is an umbrella term that refers to the "…integrated system of formal and informal rules, rule-making systems, and actor-networks at all levels of human society…" (Biermann et al. 2009: 4). For our purposes, governance describes the interactions of different actors and networks that formulate and implement conservation. By social dimensions we refer to the multilevel patterns of interaction between actors and organizations, their values, interests and social customs, and the processes and instruments that drive, support or constrain the practice of conservation (*sensu* Galaz et al. 2008, Meek et al. 2013, Epstein et al. 2015). This characterization recognizes that governance systems affect, are affected by, and are also a part of the broader suite of social dimensions that make up coastal-marine social-ecological systems.

To examine the issue of conservation fit, we focus on the role of bridging organizations, which are entities that connect social actors or groups through some form of bridging process (Crona and Parker 2012). These organizations link actors and actions to facilitate coordinated, integrated responses in contexts where resources or capacity are limited. However, few studies have explored their role in developing, implementing and adapting conservation initiatives, or their influence on conservation outcomes (see e.g., Jamal et al. 2007, Schultz and Lundholm 2010, Jacobson and Robertson 2012, Bodin et al. 2014). Building on previous work in the region (Berdej and Armitage 2016a), this paper empirically demonstrates that

bridging organizations can help to better align conservation initiatives with their social context, foster appropriate processes and instruments to pursue coordinated and adaptive conservation, and better connect people and conservation actions across scales and levels. However, as this paper also shows, bridging organizations are not without their limitations, and we identify a number of constraints or barriers that require further consideration.

Our focus here is on the congruence of the governing system for conservation and the other crucial social dimensions of a system that influence overall conservation effectiveness – what we term 'conservation fit'. The concept builds on critiques of conservation initiatives that point to a lack of meaningful engagement with, and integration of, social dimensions such as socioeconomic or cultural context, stakeholder relations, knowledge diversity, or the multiplicity of political scales and domains of action (see CT: Clifton 2009, Foale et al. 2013, Fidelman et al. 2014, von Heland et al. 2014). Where there is insufficient consideration (or 'poor' fit) – as in cases where new conservation policies and rules are introduced without attention to local or indigenous legacies (Majors 2008), or where trade-offs between biodiversity conservation and development are overlooked (Foale et al. 2013), problems of ineffective and inefficient conservation often result. As such, the concept of conservation fit is a useful frame to understand why certain conservation initiatives may not work as intended and how they might be strengthened via bridging organizations.

Conservation fit is of particular relevance to coastal-marine systems (Berkes 2006, Crowder et al. 2006), which were until recently perceived by scientific tradition as largely people-less seascapes (Shackeroff et al. 2009, 2011). On the contrary, many of these spaces are overlaid with cultural, social and economic activities that include, for example, systems of customary tenure, socio-cultural traditions of resource stewardship, and ecosystem engineering efforts (Samonte et al. 2010, Kittinger et al. 2012). Coastal-marine systems in the CT are characterized by varying socio-political, cultural and economic contexts, and are sources of importance to an immense diversity of actors and interests across geographical and jurisdictional scales (e.g.,

Mills et al. 2010, Fidelman et al. 2012, Foale et al. 2013, von Heland et al. 2014, Cohen and Steenbergen 2015).

In Indonesia, the partial decentralization of government has afforded greater opportunity for participatory approaches in conservation, but has also contributed to political tensions between levels, governance fragmentation and conflicting government policies (see below – Patlis 2005, Wiadnya et al. 2011). Further, marine conservation efforts in this region are facing rapidly expanding and increasingly mobile populations, emerging markets for marine commodities, and a limited ability to enforce rules and regulations (Majors 2008). Many scholars across the CT have stressed the importance of connecting people and conservation practice in ways that communicate knowledge and foster learning, reconcile diverse objectives and views, and which forge relations across domains and governance levels (e.g., Fidelman et al. 2012, von Heland et al. 2014, Pietri et al. 2015). However, until recently, relatively little work has explicitly investigated the influence of bridging organizations in facilitating these needs in the CT, and none has examined their role in the practice of conservation in Indonesia (see Berdej and Armitage 2016a).

In the following section, we introduce the concept of conservation fit and examine bridging organizations as an organizational strategy to foster fit. We outline three categories of conservation fit that serve to frame the analysis, and highlight their key challenges in the CT. We then present three cases from Bali, Indonesia, that illustrate the role of bridging organizations in different conservation contexts, and draw on these cases to generate insights about key strategies applied by bridging organizations to influence conservation fit. Finally, we identify a number of constraints or barriers that require further consideration, and speak to commonalities underlying successful bridging approaches that are relevant beyond the particular conservation settings we examine here, recognizing that each case reflects a slightly different social, political and ecological context.

4.3. Theoretical background

4.3.1 Defining the Problem of 'Conservation Fit'

Our concept of 'conservation fit' emerges from a broader discourse on institutional and governance fit. For example, fit has been discussed as part of institutional dimensions of global environmental change (Young 2002, Ekstrom and Young 2009), resilience of social-ecological systems (Folke et al. 2007, Galaz et al. 2008, Epstein et al. 2015), and common pool resources (Ostrom 2007). Much has been written on how well governing systems 'fit' ecological dynamics (e.g., Ekstrom and Young 2009, Folke et al. 2007), and, more recently, on the fit between governing systems and social dynamics (e.g., Brown 2003, Meek et al. 2013, Pittman et al. 2015). However, agreement on what constitutes a good fit and how such fit can be achieved remains a research puzzle (Ekstrom and Young 2009, Bodin et al. 2014). In particular, limited understanding of the conditions and implications of fit for the practice of marine conservation is a gap in the literature.

Conservation initiatives should be more effective in the long-term where the governance system is aligned with, and responsive to, the complexity and dynamism of the social system (see e.g., Brown 2003, Christie et al. 2003, Christie 2004, 2011, Shackeroff et al. 2009, Ban et al. 2013, Kittinger et al. 2014, von Heland and Clifton 2015, Guerrero and Wilson 2016). Our concept of fit responds to calls for more participatory and pluralistic conservation approaches that allow for learning and adapting (Berkes 2007, Armitage et al. 2012), clarify hard-choices and trade-offs (Hirsch et al. 2011), and which seek social legitimacy and ethical imperatives in conservation (Brechin et al. 2003, Mascia 2003) – all of which have been difficult to actualize in practice, as detailed below.

A 'poor' fit, as mentioned, can undermine the effectiveness of conservation initiatives by resulting in inadequate understanding of contentious social issues, unintended negative consequences, missed opportunities for positive change, and an incomplete understanding of the system (Christie et al. 2003, Christie 2011). Situations of 'poor' fit (or misfit) can arise, for example, where governance underplays community norms

and livelihood needs (Clifton 2009, Ferse et al. 2010), or is unable to account for diverse worldviews and belief systems (Majors 2008, Clifton and Majors 2012). Alternatively, a 'good' fit should contribute to the salience of conservation by generating meaningful benefits, improving perceived legitimacy and sense of ownership, and by reducing the probability of negative impacts. Positive examples include cases where conservation initiatives are hybridized with local or customary practice (Cinner and Aswani 2007), social networks are built to connect local management to higher-level policy-making (Cohen et al. 2012), or where governance learning networks are created to bridge cultural and jurisdictional boundaries (Pietri et al. 2015).

Improved conservation fit alone may be necessary, but not sufficient for conservation success. Even where conservation initiatives are compatible with social dimensions, they may not adequately provide for ecological dimensions or 'ecological fit'. Although our focus in this paper is on social dimensions, we join other authors in affirming the importance of engaging both dimensions in the context of developing and ongoing conservation initiatives (see, e.g. Epstein et al. 2015). There is also no 'ideal' conservation fit since social systems and the factors that influence them differ and are constantly changing. Instead, fit is a means to an end, not an end in itself. For analytical purposes, we distinguish three general categories of conservation fit associated with: (1) aligning conservation initiatives with characteristics of the social context (e.g., institutions, culture, values, local practice), (2) enabling governance processes and instruments to bring together and meaningfully engage actors, their interests, norms and knowledge to pursue coordinated and adaptive conservation, and (3) effectively linking conservation initiatives and social actors across scales and levels (Table 4.1). We make no claim to have articulated all social dimensions influencing conservation policy and practice at this point. Rather, these categories are reflective of the main issues from the literature on fit theory, and which are derived from applicable cases and lessons-learned from across the CT.

Table 4.1. Categories of conservation fit and their key challenges in the Coral Triangle based on literature review (a)

Fit category	**Explanation**	**Key challenges**	**CT-related references & examples** (b)
Aligning with social context	Governance should strive to align with the dynamic socio-political, cultural and economic characteristics of the social system in shaping conservation initiatives	Identifying and integrate patterns of resource use, norms, interests and priorities How to ensure appropriate and fair incentives for conservation (economic, social, political) How to merge existing informal/customary management systems and science-based conservation Valuing and incorporating local expertise and stakeholder/traditional knowledge systems	Cinner and Aswani 2007, Majors 2008, Clifton and Majors 2012, Cohen and Steenbergen 2015, Glaser et al. 2015
Use of appropriate governance processes and instruments	Need to foster appropriate collaborative and adaptive processes and instruments in developing, implementing and adapting conservation initiatives	Broadening meaningful stakeholder engagement and deliberation Need to foster capacity for (local) stewardship, empowered governance, and strong leadership Identifying and negotiating trade-offs btw objectives for e.g., biodiversity, fisheries, food security Platforms are needed for knowledge exchange & fostering learning networks Mechanisms are needed for conflict resolution	Fidelman et al. 2012, Cohen et al. 2012, Foale et al. 2013, Pietri et al. 2015
Linking across scales and levels	Social actors and actions for conservation should be connected, coordinated and supported across scales and levels of governance	Overcoming scale-dependency to allow for multi-lateral actions, and cross-scale/ multi-level linkages Resolving jurisdictional and functional overlaps btw governance units at different levels Fostering social networks needed to e.g., leverage resources, expertise and capacities across scales and levels	Lowry et al. 2009, Mills et al. 2010, Green et al. 2011, 2014, Rosen and Olsson 2013

(a)This list is not intended to be inclusive of all issues of fit in the CT

(b) Note: many of the authors and examples listed here are applicable to multiple fit categories simultaneously

Attempts to identify strategies to expand the inclusion of social dimensions in conservation in the CT have been plentiful (e.g., Lowry et al. 2009, Mills et al. 2010, Green et al. 2011, Foale et al. 2013, Weeks et al. 2014ab, Berdej and Armitage 2016a),

and a number of relevant conceptual frameworks are proposed (e.g., Ban et al. 2013, Kittinger et al. 2014, Guerrero and Wilson 2016). All are useful when discussing issues of conservation fit. However, there is limited practice-based guidance on how to move from recognition of the need for greater inclusion of social dimensions to actual operationalization of best practices in different contexts. Practice-based strategies to grapple with conservation fit issues (via e.g., trade-off analysis, ecosystem-based management, integrated coastal zone management) have been slow to emerge and face a range of implementation barriers (see e.g., Folke et al. 2007, Hirsch et al. 2011, Christie 2011, Kittinger et al. 2014, Ramirez 2016). In the next section we introduce bridging organizations as one potential way to help actualize the conditions and processes necessary to enhance conservation fit.

4.3.2. Bridging Organizations for Fit

Bridging organizations can help improve conservation fit by taking on a number of roles and responsibilities. A bridging organization, as mentioned, is defined as an entity that connects diverse actors or groups through some form of strategic bridging process such as knowledge-sharing or collaborative relations (Crona and Parker 2012). These organizations come in many shapes and sizes, as well as levels of formalization. Brown (1991) argued that bridging organizations are central players in an increasingly multi-sectoral paradigm and hold a critical role in liaising actors to solve problems that neither would have been able to solve on their own. These organizations can provide an arena for knowledge co-production, trust building, sense making, social learning, vertical and horizontal collaboration, and conflict resolution (e.g., Hahn et al. 2006, Olsson et al. 2007, Berkes 2009, Schultz and Lundholm 2010, Crona and Parker 2012). Furthermore, they can fill technical and financial gaps by linking experts and expertise across levels of society, and by mobilizing ideas, resources and leadership.

Inherent in bridging different social actors is often a need to overcome some degree of mistrust. Hence, consensus building and conflict resolution are important features in governance, but can be difficult to establish and maintain (Folke et al. 2005). Bridging organizations can facilitate depoliticized arenas that contribute to lowering

institutional and cultural barriers between stakeholder groups and aligning their interests (Crona and Parker 2012). Kowalski and Jerkins' (2015) case study on the science-policy interface of ocean management showed that bridging organization leadership coordinated collective action and resolved group issues within and among scientific and policy communities. Developing neutral space is advantageous for dealing with the ambiguity of multiple objectives, entrenched conflicts, and for navigating power differentials among social actors.

Important contributors to successful conservation often include government and intermediary non-governmental organizations (NGOs), as well as local actors such as community groups, civil society organizations, and customary decision-making bodies. By building linkages to external social actors, bridging organizations help those at the local level to cross geographical and political scales in ways that would have otherwise been difficult, if not impossible. Hahn et al. (2006) showed how a bridging organization linked local actors with other levels of governments to generate legal, political and financial support in a wetlands landscape in Sweden. Through bridging, communities and others are able to gain access to non-local expertise and resources, including technical and financial resources, sources of technology, donors and alternative trading networks (Folke et al. 2005). Such access can enable capacity building for more engaged or empowered involvement in conservation (e.g., Jamal et al. 2007).

However, the literature also suggests a need for a more sophisticated understanding of the influence of bridging organizations on social interactions and social networks for governance generally (Crona and Parker 2012), and for conservation governance specifically (Berkes 2007, Jacobson and Robertson 2012). Despite an increased scholarly interest in bridging organizations, few have empirically addressed their function and implications in conservation contexts (see e.g., Hahn et al. 2006, Jamal et al. 2007, Jacobson and Robertson 2012). This investigation builds on our recent work in the region, in which we report that bridging organizations contribute in several ways to positive governance outcomes by nurturing social networks and interactive processes (Berdej and Armitage 2016a).

Here we seek to examine bridging organizations in relation to conservation fit. We expand the discussion of bridging organizations to assess the different ways through which they develop, implement, and adapt conservation initiatives to fit a broad range of social dimensions associated with conservation of coastal-marine systems (e.g., cultural context, local politics, knowledge systems, multiplicity of scales and levels). As demonstrated and discussed below, bridging organizations embody a number of characteristics that make them well suited to grapple with conservation fit issues (e.g., cross boundary capabilities, extensive networks). Although these organizations are the focus of inquiry in this paper, we acknowledge that their presence alone is no guarantee to enhance fit. Bridging organizations do not function in isolation, but rather interact with, and are influenced by, the many social, economic and political contexts and forces at play; an observation discussed below. Nevertheless, we contend that bridging organizations have strong capacity to contribute to conservation initiatives in ways that make them more inclusive, adaptive and cross-scale, and which will ultimately lead to greater conservation fit.

4.4. Material and methods

4.4.1. Research Context and Sites

The Coral Triangle (CT) comprises marine waters of Indonesia, Philippines, Malaysia, Papua New Guinea, Solomon Islands and Timor-Leste. The region is globally regarded for its extraordinary marine biodiversity (Allen 2008) and its exceptional importance to local economies and societies (CTI Secretariat 2009). As part of efforts to address marine resource decline, the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) was established in 2009 – a collaboration among the six nations to better manage the region's coastal-marine resources. The CTI-CFF sets out a diverse set of goals for the region, from an ecosystem approach to management of fisheries to climate change adaptation. The establishment and effective management of marine protected areas (MPAs) is seen as a key conservation tool in this regard, and is the CTI-CFF's third goal.

Each of the CT nations has unique ecological, socio-cultural and governance arrangements for defining and establishing MPAs and other conservation initiatives. In Indonesia, the Government has committed to establish 20 million hectares (or 6.5% of territorial waters) of marine conservation area by 2020. MPAs here are declared and administered by national, provincial, and regency or municipal governments, and take on a number of forms (see White et al. 2014). In addition, there are a growing number of community-based conservation areas. Of the 15.7 million hectares of MPAs already designated, however, the majority of MPAs (>85%) offer little to no protection due to budgetary constraints, governance weakness, lack of marine management capacity, and political will (Burke et al. 2012, White et al. 2014). As stated above, these challenges are compounded by a deficit of understanding and incorporation of the social dimensions of conservation (Clifton 2009, Foale et al. 2013, Fidelman et al. 2014, von Heland et al. 2014).

Our research focused on three cases across Bali, Indonesia (Table 4.2). Cases were selected based on literature review and consultations with Indonesian partners and other experts using geographic and thematic criteria of relevance (e.g., Indonesia, marine, conservation, bridging, coastal-resource management, sharing, learning). Additional details on rationale for selection of bridging organizations can be found in Berdej and Armitage (2016a). The use of the term MPA in our cases refers to a type of Indonesian conservation initiative entitled 'Kawasan Konservasi Perairan' (literally translated to 'aquatic conservation area'), whose definition encompasses both marine and freshwater areas that are managed by a zoning system.

Table 4.2. Study site summaries

	Location	Type of conservation initiative	Management status	Active bridging organization(s)
Bali MPA Network	Across all regencies, Bali Province (head office in Denpasar)	MPA Network	Initiated (2011)	Conservation International Indonesia
Nusa Penida MPA	Klungkung regency	Regency-level MPA	MPA established (finalized March 2014) (a)	Coral Triangle Center
East Buleleng Conservation Zone	Buleleng regency (Tejakula sub-district)	Local marine management areas & regency-level MPA	LMMAs established (2008-2009) MPA declared (August 2011)(a)	Reef Check Indonesia & The Indonesian Nature Foundation

(a) The difference between an 'established' MPA and a 'declared' MPA is the state of its spatial zoning and management plans

4.4.2. Data Collection & Analysis

Data was collected over eight-months in 2013-2014, with a follow-up visit in January-February 2015. A case study approach (Yin 2009) was used and included semi-structured interviews (n=53 Nusa Penida, n=54 East Buleleng, n=26 Bali MPA Network), participant observation of key meetings (n=5) and document collection and review. Interviewees included individuals from government (n=17), NGOs (n=12), resource user groups (n=19), other community groups (n=11), traditional bodies (n=3), private sector businesses (n=14), universities (n=1) and other (n=1). Some of these organizations were affiliated with more than one study site. A combination of snowball sampling and purposive (or judgmental) sampling methods (Hay 2010) was used to identify participants. Snowball sampling is a technique whereby the current participant nominates subsequent participants (Hay 2010). The approach is helpful to identify 'hidden populations' or key individuals that might have otherwise not been known. Purposive sampling occurs where the researcher purposefully identifies individuals from the population based on her/his own knowledge and judgment.

Themes covered in interviews included basic organization details, affiliations and relationships, conservation management and implementation processes, interactions and perceptions of bridging organizations, and constraints and barriers. Interviews were conducted face-to-face in English or Bahasa Indonesia with the aid of a local research assistant. The majority of interviews were recorded by handwritten notes, given that a digital voice recorder was deemed inappropriate to the context. Key public meetings were observed related to each of the cases on the topics of marine planning and MPA socialization. Document collection and review was conducted to complement and validate data collected, and focused on thematic areas stated above. Documents included annual reports, policy briefs, copies of presentations and newspaper articles.

Data analysis was framed around the three conservation fit categories outlined in the previous section (Table 4.1). These categories were developed from a review of relevant literature on fit theory, and using applicable cases and lessons learned from across the CT. Analysis of qualitative data from the field (including interviews, participant observation and some document collection) was carried out using an inductive approach to provide insights into emerging patterns of strategies used by bridging organizations. These findings were sorted and grouped, and then linked to one of the three conservation fit categories. We acknowledge that the use of pre-defined categories may overlook or restrict other themes. To counter this, we intentionally chose broad categories to allow for findings to emerge as unrestrained as possible from the raw data, while also linking them to the theoretical base driving the research.

This research was carried out with approval from the Office of Research Ethics at the University of Waterloo (Ethics Approval Number 17930). All participants gave verbal consent prior to conducting interviews. An information sheet explaining the purpose of the research and how data would be used was read and/or translated verbally to participants. Participants were made aware of their right to withdraw participation from research at any time.

4.5. Case studies

We introduce three cases below that are illustrative of the diverse ways bridging organizations can influence conservation fit in Bali. This section is organized by case, as opposed to fit category, to give the reader a more holistic understanding of the conservation setting and of how bridging organizations are situated therein. Each sub-section briefly outlines the context, followed by an introduction of the bridging organization or organizations, and an overview of their roles and responsibilities. Results are synthesized according to each of the fit categories of our framework in the section that follows.

4.5.1. Towards a Bali MPA Network – Crossing Scales, Crossing Boundaries

4.5.1.1. Context

The province of Bali is located in the westernmost end of the Lesser Sunda Islands, covers almost 565,000 hectares, and comprises the main island of Bali and a series of satellite islands. High marine biodiversity is documented in the area (Mustika et al. 2012), and important habitats include coral reefs, mangrove forests and seagrass beds. There are over four million people in the province, spread across eight administrative regencies and the capital city of Denpasar. Coastal and marine resources are a cornerstone of Bali's economies and societies, supporting livelihoods such as fisheries, ornamental fish collection, mariculture (e.g., shrimp, fish, seaweed) and a burgeoning marine tourism industry.

Partial decentralization, as mentioned earlier, has led to fit challenges associated with poor coordination between levels of government, policy inconsistencies, and non-conformities in the licensing, policing and use of coastal-marine resources between regencies (see Patlis 2005). The inequitable distribution of assets and access to these resources has fueled ongoing conflicts between villages, between regencies, and between sectors. Together, these have hindered efforts to address pressures from overfishing and destructive fishing practices, marine litter and nutrient run-off, and the rapid development of coastal areas and watersheds (Mustika et al. 2012). In this

context, the environmental NGO Conservation International Indonesia has emerged as a key player in the movement towards coordinated, cross-scale conservation practice.

4.5.1.2. Conservation International Indonesia

Since 2010, Conservation International Indonesia has been a driver behind the development of a Bali MPA Network (hereafter "Network"; Indonesian: Jejaring Kawasan Konservasi Perairan). CI-I has been active in Indonesian seascapes in general since 2004 with a mission of "building upon a strong foundation of science, partnership and field demonstration, [to empower] societies to responsibly and sustainably care for nature, our global biodiversity, for the well-being of humanity" (CI-I 2015: website). In Bali it has taken on a number of roles and responsibilities, including: biological monitoring to inform Network design; identification and engagement of partners; coordination of activities related to Network planning; and facilitated development of a management planning document (hereafter "Blueprint").

To initiate planning for the Network, CI-I and its partners facilitated a multi-stakeholder workshop in 2010 and together identified 25 sites across Bali for possible inclusion. Site selection was informed by some 66 representatives from government, universities, NGOs, private sector, and community and traditional leaders in attendance from across the province. Marine Rapid Assessments were then carried out by CI-I in each of the proposed sites with data collected about marine biodiversity, coral reef community structure, and current condition of coral reefs and related ecosystems (see Mustika et al. 2012). This was combined with earlier assessments (Allen and Erdman 2008) and used to inform the evolving design of the Network. Included was the recommendation of nine of the 25 sites for priority as MPAs due to their high ecological, economic and cultural value.

The Network was formally initiated in 2013 through a memorandum of understanding signed by all ten heads of marine affairs and fisheries agencies in Bali – comprising nine regency agencies and one provincial agency. Its overall vision is "the creation of harmony and synergy between national, provincial and regency

governments in Bali in the management of aquatic resources, with strong support and participation of the community and other institutions, and for the sustainable enhancement of social, economic and cultural benefits" (Gunawan and Dewantama 2014: 7 translated). In practice, the Network is intended to foster cross-boundary coordination to synergistically align all aquatic-related efforts of regencies with the province, while at the same time, respecting the autonomous rights of regencies to manage programs in their territorial waters (CI-I staff member, pers. comm. 2014).

A multi-stakeholder, multi-agency task force was established for Network planning, comprising 28 representatives from provincial and regency government (including tourism, environment, planning, and marine and fisheries agencies), existing parks and reserves, traditional councils, and NGOs (see Bali Gov. Decree 2013). The task force is chaired by the head of the Bali Ministry of Marine Affairs and Fisheries, and network members have described the role of CI-I as project lead and coordinator. Other groups such as local governments and civil society organizations are not members of the Task Force. However, they are expected to contribute to individual working groups on policy-making, spatial planning and funding as part of the ongoing planning process (which has yet to begin; see Gunawan and Dewantama 2014).

The MPA Network is based on the principle of 'One Island, One Management' through which Bali is viewed as a single ecosystem composed of terrestrial, marine and aerial space that requires integrated, cross-scale management to deal with conservation challenges. This has been described as a "*…need to manage as an island instead of eight or nine separate entities within the island...[where regencies] have to sit down together to talk about general issues and the environment*" (anon. pers. comm. 2014). Objectives are set for ecological and social connectivity to "…braid cooperation between MPA managers in Bali for more effective, efficient, comprehensive and sustainable management and conservation" (Gunawan and Dewantama 2014: 21 translated). This is a means for actors to share their experiences, lessons learned and capacities.

Three pillars inform the ideology of the Network – scientific evidence, rule of law, and culture. A series of Balinese 'local wisdoms' have been adopted, including: 'Nyegara Gunung' (translates to 'ridge to reef' that signify the integration of mountains and sea), 'Tri Hita Karana' (a philosophy on sustainability emphasizing interrelation and harmony of human, God and nature), and 'Sad Kerti' (six strategies to maintain the balance of nature that are include the soul, human, forest, lake or fresh water, sea and the universe). In practice, this translates to a fixed inclusion of local and cultural values, as well as cultural seascapes, in the design and implementation of MPAs. The inclusion of Balinese wisdoms is also intended to uniformly strengthen the "*cultural sovereignty of Balinese in conservation*" (CI-I staff member, pers. comm. 2014).

To support coordination and operation of the Network, a Blueprint document was created to provide consistency in approaches and laws in the planning of aquatic areas across Bali, as well as in setting minimum standards of compliance. These guidelines are to serve in part as reference in developing protected areas (marine or terrestrial) at the level of regency, and include ecological, socio-economic and governance considerations (see Gunawan and Dewantama 2014).

Still, there are numerous challenges facing the actualization of the Bali MPA Network. Cooperation from governments and stakeholders remains problematic given conflicting interests, high turnover of government staff that inhibits relationship-building, and a general lack of trust between groups. An NGO representative was careful to make the distinction between those organizations or agencies in the MPA Network that were "*happy*" to be included but rarely participate, and those who were "*enthusiastic*" in moving the process forward by actively participating (local NGO staff member, pers. comm. 2014). Many regencies still do not have dedicated staff, or sufficient budget, for MPA planning and implementation. In addition, concern has also been raised about the possibility of conflict where the 'One Island, One Management' idea could be interpreted by some as an attempt by the province to regain power over coastal-marine decision-making (national NGO staff member., pers. comm. 2014).

4.5.2. Nusa Penida MPA – Pluralism & Multiple-Use in Conservation

4.5.2.1. Context

The Nusa Penida MPA is located southeast of the Balinese coast comprising three islands: Lembongan, Ceningan, and Penida. Its 46,000 inhabitants are distributed across 16 administrative and 46 customary village divisions. Major livelihood activities include capture fisheries (≈850 local fishers in 40 fishers' associations), seaweed production (≈308 ha of farms), and marine tourism (over 200,000 tourists per year) (Ruchimat et al. 2013). The area is well known among divers for its large charismatic species such as the ocean sunfish (*Mola mola*) and manta ray (*Manta birostris*).

Nusa Penida is part of the Klungkung Regency, Bali Province. In addition to regency and village administrative laws, there is customary law implemented by local traditional bodies (Indonesian: *Adat*) and a Tribes' Council (Indonesian: *Majelis Alit*). This law is focused on religious and cultural activity, but can also include rules and sanctions associated with natural resources. In Lembongan, for example, customary law forbids logging of mangroves or collection of sea sand. Other regulatory bodies on the islands include a newly formed consortium of diving businesses, and separate fishers' and seaweed farmers' associations through which activities are regulated socially.

Intensive utilization of coastal resources and overlapping or competing income-generating activities in a relatively small region such as the one presented here, have posed challenges to fit, and contributed to many ecosystems becoming overexploited (see Welly 2009). These too have fueled conflicts between various user groups (e.g., tourism and fishers, tourism and seaweed farmers). Here an NGO bridging organization has taken on the central role of facilitating the region's many stakeholders and uses in creating and managing the MPA.

4.5.2.2. The Coral Triangle Center

The Coral Triangle Center, an Indonesian environmental NGO focused on capacity building, has been the lead facilitator of the Nusa Penida MPA since it was initiated in 2008. At the time, CTC was a subsidiary of the US-based NGO The Nature Conservancy, but became an independent foundation in 2010 and now operates in multiple sites across Indonesia. A key objective of CTC is to "…stimulate partnerships with leaders in sectors such as tourism, fisheries, agriculture, and business development, recognizing that holistic and inclusive approaches are necessary for the sustainability of coastal ecoregions and health and economy of local communities" (CTC 2011: 2). The major roles of CTC in the MPA include: identification and engagement of local partners; collection of stakeholder inputs and data to inform MPA design; coordination of activities related to MPA planning; and technical advisory and training.

Preceding the declaration of the MPA, CTC coordinated a series of 33 public consultations to gather input and mutual agreement on MPA establishment – some 1,200 individuals from 16 villages participated between 2009 and 2010 (CTC staff member, pers. comm. 2014). This information would later inform MPA design. In 2010, the Nusa Penida MPA was officially declared by decree of the Head of the Klungkung Regency Government (decree no.12/2010). In an effort to better align benefits to local stakeholders with marine conservation, three objectives were established: (1) biodiversity protection, (2) sustainability of fisheries, and (3) sustainability of marine tourism. A multi-agency, multi-stakeholder working group was created and tasked with disseminating information and undertaking preparations for the MPA.

The MPA design process was informed by scientific data (biological assessments and socioeconomic surveys), policy assessments of law and regulation, and stakeholders' input. To be inclusive of the many stakeholder groups, and their interests and knowledge, CTC conducted an additional 30 public stakeholder meetings at the village and regency levels about boundaries and zoning preferences. According to CTC staff, one of its major roles is to "*bring people together*" (CTC staff member, pers.

comm. 2013) – it engaged and included stakeholders from regency (Klungkung Regency) and central governments, NGOs, community groups, tourism operators, traditional leaders, teachers, youth groups, and local fishers' and seaweed farmers' associations.

The resulting MPA zoning system consists of four maritime zones and a series of sub-zones: (1) core zone for education and research purposes (469 ha), (2) sustainable fisheries zone – including traditional fisheries sub-zone (16,916 ha), temporally controlled special use sub-zone (905 ha) (see below), and seaweed farming sub-zone (464 ha), (3) utilization zone – including marine tourism sub-zone (1,221 ha) and marine harbor sub-zone (35 ha), and (4) other zone – including traditional sacred sub-zone (47 ha). This zoning system integrates utilization activities and cultural perspectives alongside biodiversity conservation, and in balance.

To ensure impacts on local fishers were minimized, some 80% of MPA waters remain accessible either as prioritized fishing grounds or in multiple use zones. Existing seaweed-farming territories on each island were allocated their own zones. A desire to protect and integrate Balinese culture into planning led to the creation of a 'traditional sacred zone', which limits speedboat and tourist access in waters located adjacent to an important temple on the coast. To minimize conflicts between fishers and marine tourism operators in a number of areas along the north coasts of Nusa Penida and Nusa Lembongan, 'special use zones' were created to allow temporally controlled access. Between the hours of 4pm and 9am fishing is permitted in these areas, however, outside of these hours only marine tourism activities are permitted.

A pluralist management unit composed of representatives from various actor groups was formalized in 2013 to allow for representative decision-making, and is supported by a joint patrol team, and biophysical and socioeconomic monitoring teams facilitated by CTC. Team representatives include those from regency government, traditional village police, fishers' associations, the Indonesian Navy, the Indonesian Police Unit, local dive operators, the Tribe's Council, and associated NGOs and community groups. Joint patrols and monitoring are conducted monthly. In addition, CTC coordinates annual reef health monitoring surveys in 12 sites across the islands

together with the Management Unit and local partners, and conducts community perception and engagement surveys every two years. These activities are meant to both build skills and capacity for local stewardship (via training and certification of locals by CTC), as well as foster learning that feeds back into the ongoing development of the MPA.

In addition to the aforementioned bodies, the process of MPA development has helped to connect several new social networks within different interests in Nusa Penida. For example, an association of local dive operators was founded to link businesses and self-regulate dive tourism practices through agreed codes of conduct. Likewise, a mangrove tourism association to connect local fishers arose out of CTC-led efforts to develop community-managed mangrove ecotourism. In addition, a memorandum of understanding was recently signed with the management unit of Nusa Penida MPA to enable CTC to use the area as an 'MPA Learning Site' and living laboratory for learning exchanges and training visits among practitioners and sites across the CT region.

However, the MPA faces a number of new and ongoing challenges moving forward. Unsurprisingly, building stakeholder relationships is a work-in-progress. Some respondents made note of ongoing tensions between and within groups, particularly between on- and off-island fishers or tourism operators, and between snorkeler and dive operators. Both cultural and language barriers persist between some stakeholder groups. Concern has also been raised about the burgeoning tourism industry and the ability to regulate and enforce tourist carrying capacities on reefs given the number of informal and off-island operators.

4.5.3. East Buleleng Marine Conservation Zone – Scaling-Up Empowered Community Conservation

4.5.3.1. Context

The Marine Conservation Zone resides along 26 km of coastline located in northeastern Bali. This is the province's richest area for fish diversity (Mustika et al 2012) and includes important habitat for marine life such as whale sharks, sea turtles

and dolphins. Its 54,000 inhabitants are distributed across ten administrative and 60 customary village divisions that compose the Tejakula sub-district. Coastal communities rely on fisheries (≈2,000 local fishers in 47 fishers' associations), the marine aquarium trade, aquaculture (shrimp, fish, seaweed) and tourism to meet subsistence and livelihood needs (DKP 2015). According to the head of the ornamental fishers association and NGO field staff, there are less than 100 ornamental fishers in the sub-district.

Tejakula is part of the Buleleng Regency, Bali Province. Similarly to Nusa Penida, coastal-marine regulations here stem from regency and village administrative laws, as well as customary law. Other regulatory bodies include fishers' and ornamental fishers' associations, and community groups responsible for Local Marine Management Areas (LMMAs) (Indonesian: Daerah Perlindungan Laut). Major challenges to fit here include intra- and inter-community tensions associated with overlapping use and access. For example, the ongoing development of beachfront hotels has meant increasing exclusion of fishers and ornamental fishers from marine spaces. Local people are highly dependent on coastal-marine systems and livelihood alternatives are limited. In addition, capacity to combat environmental threats such as coral mining and pollution, as well as destructive and illegal fishing practices, is limited. Two environmental NGOs have played central, but differing, roles in supporting a transition toward community empowered conservation practice in this region: Reef Check Indonesia and the Indonesian Nature Foundation.

4.5.3.2. Reef Check Indonesia

Reef Check Indonesia, a chapter of a US-based environmental NGO of the same name, has been active in the Buleleng region since 2006. The NGO embodies a philosophy of "integrated coastal and marine ecosystem management to enhance the welfare of coastal communities" (RC-I 2015: website) and was founded on three pillars of activity: science and technology, collaborative management, and education and awareness. Their main office is located in south Bali, but at the time of data collection a member of RC-I staff was also housed semi-permanently in the office of the Ministry of Marine Affairs and Fisheries, Buleleng. RC-I has taken on a number of roles in the

region, including: support of LMMA planning; facilitation of traditional guards; community capacity building and training; and coordination of MPA design and development.

Between 2008 and 2009, RC-I worked together with community members and local governments in developing a series of LMMAs in villages across the sub-district, with the aim to curb illegal activities and promote sustainable resource use. LMMA zoning was guided by a mix of local knowledge and scientific data collected by RC-I on coral reef health. According to one staff member, this involved "*sharing sessions"* held with different organizations – such as fishers' associations, traditional authorities, community groups, local NGOs and tourism operators – to better understand and integrate their interests in conservation solutions that "*accommodate collective importance*" (RC-I staff member, pers. comm. 2014). Zoning was undertaken on a village-by-village basis and includes categories for core zones where extraction activities are prohibited, buffer zones where limited fishing is permitted, and utilization zones where non-destructive activities are permitted.

As well as establishing LMMAs, community-based organizations were created for each, and take on the majority of responsibility to implement, manage and monitor these spaces. The head of one such organization described its purpose as helping to create a more sustainable marine environment, while at the same time educating their community and improving community welfare (LMMA member., pers. comm. 2014). In this context, RC-I has directed effort to building local capacity – it conducts training on practice and theory of marine ecology and conservation, diving skills (general and scientific), and ecological monitoring techniques (snorkeling and diving). Local fishers are taught and certified to identify and record the health of their coral reefs and fisheries, and have been actively collecting data both independently and alongside RC-I over the last five years (LMMA member., pers. comm. 2014). Dive training has served the dual purpose of conservation and ecotourism: several LMMA organizations are also tourist dive centers.

RC-I has sought to strengthen local stewardship by inaugurating certified diver fishers into community groups called '*Pecalang Segara*' or 'traditional guardians of the

sea'. The marine-based Pecalang are an extension of the terrestrial-based traditional body (i.e. *Adat*). Following training, they are tasked with undertaking surveillance and enforcement of regulations in LMMAs. According to the head of an LMMA organization, the enacting of Pecalang strengthens the community's "*cultural responsibility*" to protect the environment (LMMA member, pers. comm. 2014).

In 2011, RC-I partnered with the Ministry of Marine Affairs and Fisheries, Buleleng to facilitate the designation of the East Buleleng Marine Conservation Zone, part of a regency-level MPA that would include the already-established LMMAs. The process of scaling-up began in 2013 through a series of public consultations at the village and sub-district levels to gather input and mutual agreement on MPA zones, boundaries, and allowable activities. In attendance were members from fishers' and ornamental fishers' associations, hotels and spas, government, local NGOs, community associations and others. A regency government official explained that MPA zones are meant to align with those in existing LMMAs so that one would strengthen the other (government official, pers. comm. 2014).

At the time of data collection, substantial progress had been made in zoning, but finalization had yet to take place. The zoning system will include four categories: (1) core zone – for protection of ecosystems, traditional cultural sites, and research and education; (2) limited use zone – for tourism and recreational activities, as well as research and education; (3) sustainable fisheries zone – for non-destructive catch and cultivation of fish, tourism and recreational activities, as well as research and education; and (4) other zone – for specific purposes such as port harbours, rehabilitation of specific marine biota or traditional territories. Similarly to the Nusa Penida MPA, this zoning system is meant to balance utilization activities and cultural perspectives alongside objectives for biodiversity conservation.

However, the creation of LMMAs and subsequent MPA has not been embraced or accepted by all. Numerous fishers and ornamental fishers voiced discontent about their exclusion or the extent of their exclusion from coastal areas. There is also persistent belief among some community members that the word 'conservation' implies absolutely no use activities permitted. One business owner explained that it

will be difficult for some fishermen to see the benefit of the MPA because they tend to think short term, and MPA benefits will be a long-term gain (business owner, pers. comm. 2014).

4.5.3.3. The Indonesian Nature Foundation

The Indonesian Nature Foundation has been active in the Buleleng Regency since 2008, with many of its staff having operated in the Regency since 2000. LINI is an NGO from south Bali with a mission to "…work with marginalized coastal communities to reverse the degradation of Indonesian coral reefs and raise awareness about responsible and sustainable marine resource use" (LINI 2015: website). It works most closely at the community level, particularly with the villages of Les and Penuktukan, to foster a sustainable marine ornamental fishery as part of wider conservation efforts. LINI subscribes to the idea that "*…you cannot force people to protect the environment, [rather], you have to start by helping them with livelihoods and understanding (education)*" (LINI staff member, pers. comm. 2013). In this respect, it has taken on a number of roles, including community capacity building and skills training on reef restoration and ornamental fishery; biological and socioeconomic data collection; identification and engagement of local partners and partnerships.

LINI has been a leader in building capacity for community-driven coral reef restoration. It trains local fishers in the production and installation of various types of artificial reef structures, including fish domes, shrimp pods, and 'roti buaya' (rough logs of artificial substrate). These are made, deployed and occasionally designed by villagers themselves. With help from LINI, fishers from Les village have taken on stewardship of reef restoration in the area since 2010. As of January 2014, over 100 fish domes and 1000 shrimp pods had been installed on the reef in multiple sites in East Buleleng (ornamental fisher, pers. comm. 2014). These structures serve the dual purpose of encouraging coral re-growth, and providing nurseries for the marine aquarium trade to fuel local livelihoods.

Alongside reef restoration activities, LINI has sought to foster human and institutional capacity in coastal communities for a sustainable ornamental fishery,

including sea and land-based aquaculture development. The gathering of ornamental fish has a rich history in the region, but it has tended to come with destructive practices such as cyanide use (see e.g., Frey and Berkes 2014). LINI delivers practical skills training about e.g., marine conservation, fish collection methods, post-harvest handling techniques, fish rearing and mariculture, and diving (general and scientific). It has assisted in the development of an ornamental fish export business by community fishers, including the building of land facilities for a fish rearing program (ornamental fisher, pers. comm. 2014). Construction has recently been completed on a new Aquaculture and Training Centre in Les village designed to offer skills training, research and work experience in marine conservation and aquaculture.

In addition, LINI plays an important role in collecting and distributing information across scales. It has described itself as "*…a big knowledge hub, and a trafficker of information*" (LINI staff member, pers. comm. 2014). The NGO has established and maintained an extensive database on ornamental fish harvests, fisheries catches, supply chains, and aquaculture data from the village to regional scales. As well, it has been monitoring the progress of reef restoration by recording numbers and species of fish. This information is collected by LINI staff, community members, or with other NGOs such as RC-I. LINI works with regency government on the use of such data to inform fisheries quotas in the region.

However, despite strides in the advancement of a sustainable ornamental fishery, some concerns have been raised about its long-term viability in the region. An ornamental fisher explained that many stakeholders in the area – including some local authorities and tourism operators – continue to be suspicious of the activities of ornamental fishers (ornamental fisher, pers. comm. 2014). It has an unfavorable image, he explained, even though methods have changed significantly. In addition, there are far fewer ornamental fishers than pelagic fishers and, consequently, their position in the region may not be as strong.

4.6. Results: Contributions of Bridging Organization to Fit

Results are organized here according to the three main categories of conservation fit outlined in our framework earlier in the paper. These are: (1) aligning conservation initiatives with characteristics of the social context (e.g., institutions, culture, values, local practice), (2) facilitating governance processes and instruments to bring together and meaningfully engage actors to pursue coordinated and adaptive conservation, and (3) effectively linking conservation initiatives and social actors across scales and levels. We identify and discuss in detail the strategies used by bridging organizations to promote and sustain aspects of conservation fit, which are summarized in Table 4.3. To this end, we draw on specific examples and evidence (e.g., from interviews, document review) from the cases above, as well as surveyed responses from participants about bridging organization contributions (Table 4.4). As illustrated below, however, not every strategy was employed in every case or to the same degree.

Table 4.3. Summary of results

Fit category	**Bridging strategy**	**Examples of use by bridging organization(s)** (a)
Aligning with social context	Integrating actors & interests	• Identification and flexible integration of diverse users and use objectives (livelihoods, culture, conservation) in conservation initiatives – via multiple-use spatial and temporal zoning (CTC & RC-I, advocated by CI-I), social-ecological synergies (LINI)
	Knowledge diversity	• Multiple knowledge systems and perspectives informing conservation initiatives – via integrating local wisdoms and philosophies (CI-I), mixing science and culture in planning and design (CTC & RC-I), and/or utilizing experiential knowledge (LINI)
Use of appropriate governance processes and instruments	Hybridizing & inclusiveness	• Supported creation of pluralist governing structures – via multi-stakeholder, multi-party working groups, task forces, management units (CI-I, CTC) • Integration of customary institutions and territorial authorities in governance arrangements – via inclusion of *Adat*, *Adat* councils and/or *Pecalang Segara* (CI-I, CTC & RC-I) • Opportunities for meaningful participation and input – via public meetings, group discussions, and/or membership on monitoring teams, patrol units, and joint committees (all)

	Capacity building	• Human and institutional capacity increased in resource use planning, management, monitoring and/or enforcement – via technical training, certification, practical experience (CTC, RC-I & LINI) • Support of locally-empowered and/or decentralized leadership – via LMMAs (RC-I) and community-driven programming (LINI)
Linking across scales and levels	Connectivity	• New and strengthened horizontal and vertical linkages between diverse social actors (all) • Development of issue-specific sub-networks (CTC) and cross-scale learning networks (CI-I & CTC)
	Scaling	• Conservation initiative appropriately scaled across boundaries to foster coordinated responses – via MPA Network (CI-I) • Local initiatives scaled-up and supported from higher-levels – via nested LMMAs in regency MPA (RC-I)

(a) CI-I = Conservation International Indonesia, CTC = Coral Triangle Center, RC-I = Reef Check Indonesia, and LINI = Indonesian Nature Foundation

4.6.1. Alignment with Social Context

Integrating actors and interests. Bridging organizations help to identify and represent multiple social actors and their various and often divergent interests. It is widely acknowledged that the long-term success of a conservation intervention hinges in part on its integration with (local) people, and by association their needs for livelihood and wellbeing (see Ferse et al. 2010, Glaser et al. 2015). Our cases in Nusa Penida and East Buleleng show how bridging organizations use public meetings, community consultations, and focus group discussions to identify and elicit information about the interests and resource use patterns of affected stakeholder groups. To accommodate this heterogeneity in conservation initiatives, we observed that bridging organizations exercised flexibility in design and implementation.

Indeed, all bridging organizations examined in this paper showed some degree of flexibility in their integration of multiple alternative objectives. In East Buleleng, for example, a process of multiple-use zoning was used to represent and integrate the different interests of social actors related to biodiversity protection, sustainable fisheries, ornamental fisheries, marine tourism and culture. A community member here explained,

> I don't want to do just conservation. I want conservation for all – for people, for culture. There needs to be balanced conservation that includes nature, but also people and their needs, their culture, their recreation, and their economic status. There needs to be a balance between nature conservation and social conservation. (community member, pers. comm. 2014)

The CTC similarly orchestrated multiple-use spatial and temporal zoning in Nusa Penida to resolve overlapping objectives between fishers, seaweed farmers and marine tourism activities. Other strategies, such as the utilitarian approach applied by LINI, explicitly identified synergies between social and ecological objectives. A representative of LINI stated,

> Absolutely 'no-take' areas are problematic. They are not feasible according to the Balinese way of living. That would mean no fisheries, no tourism. […] In Indonesia, people have the philosophy that 'nature is there for us to use'. Conservation must consider this. (LINI staff member, pers. comm. 2014)

These actions are in line with calls from across the CT for greater flexibility in conservation, where solutions seek to balance the immediate needs of resource users with conservation or long-term sustainability agendas (see Foale et al. 2013, Weeks et al. 2014a, Von Heland et al. 2014).

Knowledge diversity. Bridging organizations help to integrate knowledge systems and perspectives from different social spheres. Scholars advocate drawing from, and combining, multiple types of knowledge to better understand the conservation context and problem (e.g., Majors 2008, Clifton and Majors 2012). A representative from RC-I described this process as finding the "*right mix of science and culture*" for conservation initiatives (RC-I staff member, pers. comm. 2013). Another interviewee commented on the inseparability of the two: "*when we talk about Bali, you cannot avoid the culture…once you talk about marine, you talk about terrestrial, you talk about the people, about culture*" (CI-I staff member, pers. comm. 2014). The incorporation of scientific and technical knowledge in our cases was achieved where bridging organizations connected to universities, local research institutes, NGO scientists, and/or managers.

Each bridging organization also included its own research-oriented activities to collect scientific data: CI-I undertook marine rapid assessments, CTC carried out biophysical and socioeconomic baseline surveys, and RC-I and LINI collected data on the state of coral reef health and fisheries.

The incorporation of local and traditional knowledge in our cases was achieved where bridging organizations involved the expertise of those with long-standing ties to the area – community members, traditional leaders, resource users, teachers, etc. For example, the experience-based knowledge of ornamental fishers in East Buleleng has been used to guide the installation of some artificial reef structures, and traditional custom (i.e. *Adat*) has been incorporated and reinforced in MPA planning in Nusa Penida through the creation of a sacred zone. Likewise, 'local wisdoms' such as 'Tri Hita Karana' and 'Nyegara Gunung' have been integrated into the Bali MPA Network so as to merge scientific ideas of conservation (e.g., ecological connectivity, social networks) with the Balinese cultural perspective (e.g., 'ridge to reef' thinking, harmony between human and nature). A government official added, "*If BMN (Bali MPA Network) is applied with awig-awig (customary law), it will work very strongly because most Balinese think of the ocean and beach as sacred place*" (government rep., pers. comm. 2014: translated).

Table 4.4. Responses for top contributions of bridging organization to marine conservation and management processes by case (a)(b)

Conservation International Indonesia	Coral Triangle Center	Reef Check Indonesia	Indonesian Nature Foundation
▪ Facilitating collaboration (82%) ▪ Knowledge building & learning (47%) ▪ Other (47%)(c) ▪ Capacity building & training (23%)	▪ Facilitating collaboration (61%) ▪ Knowledge building & learning (57%) ▪ Education & awareness (53%) ▪ Conflict resolution (32%) ▪ Other (32%) (c)	▪ Capacity building & training (67%) ▪ Knowledge building & learning (54%) ▪ Facilitating collaboration (42%) ▪ Conflict resolution (33%) ▪ Education and awareness (33%)	▪ Capacity building & training (74%) ▪ Facilitating collaboration (68%) ▪ Knowledge building & learning (58%) ▪ Education and awareness (53%)

(a)Respondents were asked, 'how does [X] bridging organization contribute to marine conservation and management processes in the [region/initiative]?'

(b) The initial categories included here were further refined and consolidated in line with the main themes in Table 4.1

(c)The 'other' category included contributions such as funding, administrative tasks, technical facilitation, creating new rules, providing checks & balances, and supplying data.

4.6.2. Facilitating Appropriate Governance

Hybrids & inclusiveness. Bridging organizations help actualize hybrid forms of decision-making that combine different sets of public, private and civil society actors. Hybrid approaches reflect recognition that many coastal-marine resources are too complex to be governed by a single social actor or agency (Berkes 2009). One interviewee commented, "*we cannot do conservation alone. It requires a long process of negotiation and compromise between many groups of stakeholders*" (government official, pers. comm. 2014). One way bridging organizations in our cases pursued inclusiveness was to support co-governance arrangements, consisting of collaboration and interplay between diverse representatives from across sectors and scales. In Nusa Penida this took the form of a multi-stakeholder, multi-agency working group (now management unit), and in the Bali MPA Network this was expressed as a 28 member joint Task Force. Hybridizing was also pursued in merging local institutions as part of

governance frameworks. In East Buleleng, for example, RC-I helped integrate aspects of customary institutions (i.e. *Adat*) with conservation governance by extending and incorporating the *Pecalang Segara* as traditional territorial authorities in LMMAs. This was similarly carried out in the Nusa Penida MPA.

A general consensus is that broadening meaningful participation, especially of local communities, is indispensable for the success of marine conservation in the CT and beyond (Mascia 2003, Christie et al. 2003, Clifton 2009, Ferse et al. 2010, Glaser et al. 2015, Ramirez 2016). In expressing greater inclusion, a community member in Nusa Penida stated, "…*CTC provides a link between government and [us]. They give us a voice*" (community member, pers. comm. 2014). Opportunities for stakeholder inclusion and input facilitated by bridging organizations in our cases ranged from participatory mapping of resource use, public meetings and focus group discussions on zoning, to membership on monitoring teams, patrol units, and joint committees. In practice, such opportunities become venues for discussion and debate, coordination, sharing information, mobilizing resources and organizing training activities.

Capacity building. Bridging organizations aid in building requisite knowledge, skills and capacity for conservation practice and governance, especially where sub-national or local governments lack the capacity (or desire) to fill gaps. Methods observed to foster (local) capacity and leadership ranged from formal to informal. Capacity building activities undertaken by RC-I in East Buleleng, for example, have enabled LMMA managers to actively participate and assume increasing responsibility for planning, implementation, ecological monitoring and enforcement in their coastal-marine areas. The NGO described an aim of its activities to "…*broaden the roles of community members from fishers to tourism operators and reef protectors*" (RC-I staff member, pers. comm. 2014). Enlisting resource users in data collection and analysis educates participants, builds capacity and can foster trust (Mascia 2003). Likewise in Nusa Penida, joint patrol and monitoring teams now perform the tasks of enforcement and data collection following facilitation and training by CTC. In describing their interactions, a representative from a local community organization stated,

> CTC has provided training to us and have built our capacity to make collaborations and strengthen management. […] We now serve as a facilitator for the socialization and communication of the MPA and work with various stakeholders about conservation issues in the context of the MPA. (CBO staff member., pers. comm. 2014)

Some bridging organizations also developed local leaders, and not just involvement, in conservation governance. An NGO staff member expressed the importance of fostering "*local champions*" to facilitate on-the-group relationships and build stewardship over conservation initiatives (international NGO staff member, pers. comm. 2014). Attempts to decentralize leadership include those where bridging organizations sought to empower locally based organizations (as in the case of LMMAs) and where initiatives were managed and implemented by community members (as in the case of reef restoration). As well, the embedding of key community or traditional leaders in conservation planning and implementation teams, such as working groups, management units or patrol teams, strengthens the overall involvement and conservation leadership of community members.

4.6.3. Alignment of Scales

Connectivity. As entities that connect others, bridging organizations convene a diversity of social actors to create and hold together scale-bridging social networks for conservation. Social networks are important to embrace diversity of perspectives and knowledge representing multiple social actors across seascapes to facilitate adaptive thinking (cf. Folke et al. 2005, Armitage et al. 2009). Through bridging efforts, horizontal linkages have been cultivated across, for example, regency government agencies (as in the case of CI-I) and community groups (as in the case of the CTC). Vertical linkages meanwhile have been fostered between, for example, communities and governments (as in the case RC-I and CTC), and between resource use associations and market actors (as in the case of LINI). Bridging organizations were also the catalyst for the formation of sub-networks of stakeholders focused on particular issues such as dive tourism and mangrove ecotourism in Nusa Penida MPA.

Some bridging organizations in our cases have worked collaboratively in the region for upwards of a decade strengthening connectivity between social actors. This is an important pre-condition for coordination, communication, and learning in conservation across the CT (see Lowry et al. 2009, Cohen et al. 2012, Pietri et al. 2015). For example, the CTC connects Nusa Penida MPA to a wider 'learning network' of MPAs, which allows managers and practitioners to share knowledge and experiences between sites in the CT and beyond. Similarly, under the guidance of CI-I, a key function of the Bali MPA Network is to connect MPA managers across the province to enable the exchange of experiences and knowledge:

> There are many, many NGOs and other organizations that work in Bali, and have not always coordinated. […] The Bali MPA Network is good to share lessons. It serves as an umbrella for multiple organizations to collaborate and connect…it is about sharing knowledge. (national NGO staff member, pers. comm. 2014)

> Coordination with other stakeholders is difficult because each stakeholder has their own interest, and sometimes this leads to conflicts. BMN (Bali MPA Network) will support information exchange between each regency's DKP (Ministry of Marine Affairs and Fisheries), and conflicts caused by misunderstandings or lack of information could be reduced. (provincial government official, pers. comm. 2014)

Scaling. Bridging organizations help foster cooperation to appropriately scale conservation initiatives across geographic and governance boundaries. As urged elsewhere in the CT (Lowry et al. 2009, Green et al. 2011), bottom-up as well as top-down conservation ingenuity is needed. This is shown in the Bali MPA Network, where transboundary conservation is planned to foster coordination across provincial, regency and city units of governance, as well as across sector boundaries (tourism, environment, planning, fisheries). In explaining the challenge, one interviewee stated,

> Administrative separation by regency has caused differences in managerial decisions and policies between regencies. Bali is a small island, therefore the marine area around Bali is ecologically connected […]. This means regency management will not work without synchronization with other regencies. This is where BMN (Bali MPA Network) is needed to unite marine management systems in Bali. (NGO staff member, pers. comm. 2014)

Here, provincial-level prescriptions are a starting point to identify spatial priorities and provide guidelines for the process of MPA design and implementation, which can be scaled-down and adjusted to accommodate local context and opportunities. Alternatively, under the guidance of RC-I, LMMAs in East Buleleng are being scaled-up and reinforced by higher-level governance units through the development of a regency-level MPA. Aligning conservation initiatives with the regency unit of governance was needed to enforce and implement rules that are beyond the reach of community sanctions, and to resolve inconsistencies and conflicts between LMMAs.

4.7. Discussion: Observations on Bridging and Strengthening Conservation Fit

The cases presented in this paper illustrate that bridging organizations promote and sustain aspects of better conservation fit, although with some limitations. In this regard, conservation fit is a means to an end, not an end to itself. By enacting bridging strategies that integrate actors and interests using flexible approaches, actualize hybrid forms of decision-making, build capacity and leadership, and foster cross-scale conservation and scale-bridging social networks, bridging organizations are indeed successfully enhancing aspects of conservation fit. The outputs of these efforts include conservation initiatives that are better aligned with their social contexts, which bring together and empower various public, private and civil society actors, and which better connect people and actions across scales and levels in ways that are locally beneficial.

Our findings show that not all bridging organizations made use of the same bridging strategies or did so to the same degree. In part, this is because bridging organizations and the conservation fit issues they seek to address vary with context. Most bridging organizations have distinct identities, priorities and strengths or weaknesses that undoubtedly come into play (see Berdej and Armitage 2016a). This implies that different bridging organizations may have different niches with regards to addressing conservation fit issues. Simultaneously, issues of fit can vary by strength, complexity,

urgency and/or scale. Recognizing this variation is important to understand how different bridging organizations can be engaged in different ways to address particular conservation *mis*fits.

We observed that bridging organizations share a number of unique features that make them well poised to grapple with conservation fit issues. First, the organizations we studied are able to work across the political or jurisdictional, programmatic and scalar boundaries that tend to serve as organizational barriers to collaboration and information sharing elsewhere. Second, the bridging organizations examined here are positioned at the intersection of diverse actors, and so they are able to draw on broader collections of partners – and their expertise, knowledge and resources – to work together in overcoming barriers and finding common ground. Third, these organizations embody a high degree of organizational flexibility, meaning they tend not to be under the same kind of bureaucratic restrictions or silos as government actors. This allows them to be more nimble in responding to emerging issues, shift programming according to needs, and alter their roles to suit current challenges.

Our cases have also brought to light a number of new and ongoing constraints or barriers that indicate the challenges in achieving conservation fit. Social systems in the CT are invariably dynamic and heterogeneous, comprising multiple sub-groups with differing values, interests and priorities that can change and shift over time (see Fidelman et al. 2012, 2014). Bridging strategies that are successful in one place and time and with one set of stakeholders may not be successful elsewhere. By the same token, a bridging organization is subject to competing demands of various stakeholders, not all of whom have equal ability to voice concerns or exert influence. A major obstacle to fit then is overcoming power asymmetries (see also Clement 2013). In Bali, for example, tourism is a main source of the province's revenue, creating imbalances with other sector interests such as fisheries. As well, corruption remains an ongoing issue (Fidelman et al. 2014), and curbing it is a priority if long-term conservation successes are to be achieved.

Differing ideologies and understandings of conservation pose a sizable challenge to bridging organizations in the pursuit of better fit. Social groups embody unique

knowledge of marine environments, and can have differing ideas of how resources should be conserved, used, or exploited (e.g., von Heland and Clifton 2015). A business owner in East Buleleng explained this as: "*…a balance between a village life that has been established for centuries, and the rather new and fanciful idea that we need to protect reefs, which has not been understood or grasped in its entirety meaning by the local people*" (business owner, pers. comm. 2014). The integration of differing ideologies can be difficult in the CT given an overreliance on a western conservation narrative (Berdej et al. 2015), general lack of social science data generation, and limited involvement of domestic (social science) academics (Fidelman et al. 2014, von Heland et al. 2014). Bridging organizations may not possess comparable expertise on, for example, economic development, poverty alleviation, or urbanization (cf. Foale et al. 2013). Moreover, bridging organizations themselves, as mentioned, have their own ideologies, agendas and priorities that can favour particular viewpoints and narratives (see Berdej et al. 2015). There is therefore strong need for additional research on the political ecological dimensions of bridging organizations in the region.

Lastly, the pursuit of conservation fit can be time-consuming and costly. There are significant costs associated with bridging activities, including funding, time commitments, staffing, and resource expenses. Funding and capacity for conservation is limited in Indonesia, as elsewhere in the CT, and many government bodies do not have staff or budget to engage sufficiently – plans are often made but not followed on the ground (cf. Mills et al. 2010). Decades of disempowerment have also constrained the capacity of many local institutions and communities to organize, innovate and act. This raises questions about the long-term sustainability of conservation fit outcomes in the absence of bridging organizations. For the time being, a reliance on foreign aid has caused tensions, including those related to implementation of conservation activities based on donor timelines (cf. von Heland et al. 2014). One interviewee voiced frustration over donor timeline expectations that do not align with the reality of building relationships and conducting activities on the ground (anon. pers. com. 2014).

4.8. Conclusions: Future Directions and Insights for the CT

Efforts to improve the fit between conservation initiatives (e.g., marine protected areas, no-take zones) and the dynamic social dimensions of coastal-marine systems are still rare. This research offers empirical insights for conservation practitioners and policy-makers into the social complexity behind coastal-marine conservation in Bali, and in the CT more broadly, and how bridging organizations can improve navigating this complexity. We contribute understanding of the advantages and limitations of bridging organizations as a governance strategy to foster more robust conservation measures that fit underlying dynamic and shifting social dimensions. In Indonesia, decentralized governance has presented both the opportunity and challenge to involve multiple social actors and sectors of society, and work on how bridging organization navigate conservation fit issues such as social context, appropriateness of governance and scale holds promise.

Our findings demonstrate key strategies applied by bridging organizations to deliberately address major conservation fit issues faced in the region. These findings have broader relevance to other regions of Indonesia and the CT, which are challenged by similar social and institutional barriers to achieving positive conservation momentum (see Mills et al. 2010, Foale et al. 2013, Fidelman et al. 2014, Weeks et al. 2014a, von Heland et al. 2014). In demonstrating the efficacy of bridging organizations to operationalize conservation fit, we offer the following insights:

(1) Exercising flexibility in conservation planning and practice is important to align efforts with the reality of complex social and ecological contexts across the CT. A bridging organization by its nature is situated in a central position where diverse social actors meet and knowledge flows, and so provides space where multiple institutions or practices, perspectives, and alternative objectives might be shared, debated and balanced.

(2) Pluralist structures and inclusive decision-making arrangements involving diverse social actors are an important dimension of efforts to govern coastal-marine resources. A bridging organization can fill requisite capacity gaps to operationalize

and institutionalize hybrid governance arrangements through opportunities for inclusion and local leadership, technical advisory and skills training, and/or access to non-local expertise and resources.

(3) Interaction among and across scales and levels is a conservation priority. Through its connections, a bridging organization extends the reach of conservation initiatives by bridging together public, private and civil society actors in social networks for conservation, and by working across geographic and governance or bureaucratic boundaries for coordination.

(4) A bridging organization is not without limitations. Such organizations must contend with obstacles such as changing social contexts, corruption and competing stakeholder demands, as well as ideological differences, power dynamics, influence of donor and funding agendas, and diverse conservation narratives. Some of these may prove especially challenging to overcome in practice. Even so, our findings indicate that bridging organizations have strong capacity to shape conservation initiatives in ways that make them more inclusive, adaptive and cross-scale, and which will ultimately lead to higher likelihood of success.

Moving forward, our findings highlight a need for additional research to understand the implications of bridging organizations for the long-term ecological and social success of conservation initiatives. In many of our cases, for example, the conservation initiatives fostered by bridging organizations are not yet institutionalized and further analysis is needed to understand how that process may evolve under different conditions or in their absence. As such, there is a need to undertake a large-'n' comparative analysis of bridging organizations in geographically differentiated marine conservation contexts that reflect different social, political and institutional realities.

The three bridging organizations of focus in this paper have distinct origins, structures and/or functions, which raise added questions about how these differences dictate organizational effectiveness toward conservation fit. Are some bridging organizations more effective than others? As mentioned, critical political and ecological analysis is needed of how bridging organizations influence social processes

such as power, agenda setting and policy narratives that shape conservation (as per Berdej et al. 2015). We do not claim that bridging organizations are guaranteed to enhance conservation fit, but our evidence indicates that they play an important role in leading the conservation process forward, and in fostering multi-actor strategies that meaningfully engage with the social dimensions of marine conservation.

CHAPTER 5
A Political Ecology Perspective on Bridging Organizations Influencing Marine Conservation in Indonesia

5.1. Chapter Summary

In this paper we draw on key areas of inquiry from the political ecology literature to critically examine the political dynamics of bridging organizations in conservation. Bridging organizations are hypothesized to facilitate coordinated conservation action involving diverse social actors across scales. There is a growing body of evidence to support this hypothesis, although as we show in this paper, how such organizations interpret conservation needs and objectives can vary immensely, and with far-reaching consequences for conservation policy and practice. The manner in which bridging organizations define and give meaning to particular conservation issues, and how this meaning is translated to on-the-ground implementation is an area in need of further consideration. Using insights from political ecology – namely those on narratives, power and control, and social cost and consequences – we critically examine two conservation-focused bridging organizations in southern Indonesia. Specifically, we compare and contrast the conservation narratives of each bridging organization to demonstrate how ways of framing conservation issues are enmeshed in value judgments that steer conservation towards certain solutions. These in turn embody and alter power dynamics, and produce specific consequences for people and actions in social-ecological systems. These findings contribute to a relatively new body of literature on bridging organizations in conservation contexts, and offer a productive entry point to engage these organizations in a more reflexive and critical manner. This is of particular relevance to settings of high biodiversity and low income that have tended to attract non-government organizations and donor-led interventions.

5.2. Introduction

The emergence of bridging organizations in contemporary conservation governance raises important questions about power and politics, and about the influence of conservation narratives on social-ecological systems. Across the southeast Asia Coral Triangle (CT) conservation efforts involve a constellation of social actors (including governments, NGOs, resource users) with differing backgrounds and agendas (Fidelman et al. 2014). Bridging organizations – i.e. those organizations designed to connect diverse actors or groups through bridging processes such as collaboration or knowledge sharing (Crona and Parker 2012) – are active in this context (Berdej and Armitage 2016a, 2016b). However, as this paper shows, different bridging organizations tend to 'frame' conservation needs and objectives in terms of different overarching visions and rationales.

This paper examines and compares the conservation narratives of two bridging organizations in the CT region. We demonstrate that narratives about conservation are framed by ideological, political and economic value judgments, which both embody and alter power dynamics, and produce specific social and ecological consequences. By conservation narrative we mean the repetitive ways conservation problems and solutions are framed in policy (*sensu* Roe 1991), and which privilege certain ways of thinking, rationalize specific conservation interventions (e.g., protected areas, community management, alternative livelihood schemes), and which bring about a particular set of consequences (see Berdej et al. 2015). This paper uses a political ecology approach to support a critical perspective in the emerging body of literature on bridging organizations in conservation. This is of particular importance to nations such as Indonesia that are characterized by high ecological biodiversity and low income (sometimes called "hotspots"), and which have tended to attract non-government organizations and donor-led interventions (see Rodríguez et al. 2007).

The objectives of this paper are threefold. First, we outline three separate but interdependent insights from the political ecology literature that we suggest provide useful strands of inquiry for bridging organization research. Second, we apply these

insights with reference to two bridging organization case studies in Bali, Indonesia. We compare and contrast their divergent ways of framing conservation issues, how they exercise and translate power dynamics on the ground, and discuss subsequent social costs and consequences of each. Third, we draw out some lessons for understanding the political ecology of bridging organizations, with some suggestions for research and inquiry moving forward.

Our intent is not to challenge the value of bridging organizations in conservation efforts. Indeed, previous work has demonstrated their benefit in relation to conservation governance and fit (Berdej and Armitage 2016a, 2016b). Rather, we seek to encourage critical reflection in order to gain better insight into the different ways bridging organizations shape conservation policy. This is important to understand how best to engage bridging organizations to achieve less coercive and more effective conservation processes and outcomes.

5.3. Bridging Organizations and Insights from Political Ecology

The exact roles and functions of bridging organizations within natural resource governance, and conservation settings more specifically, are still being explored. Bridging organizations have been identified as a mechanism for knowledge co-production, trust building, sense making, social learning, vertical and horizontal collaboration, and conflict resolution (Hahn et al. 2006, Olsson et al. 2007, Berkes 2009, Schultz 2009, Schultz and Lundholm 2010). They primarily facilitate relations in ways that connect people, allow the exchange of information, and build pathways to share technical and financial resources (e.g., Rathwell and Peterson 2012, Jacobson and Robertson 2012, Berdej and Armitage 2016a). While such organizations vary in size, scope, formalization and diversity of stakeholders (Crona and Parker 2012), non-government organizations often act as bridging organizations within the natural resource governance arena.

Yet, it is important to acknowledge that bridging organizations are independent of those they connect, and have their own distinct mandates, worldviews, capacities and

shortcomings that undoubtedly come into play. These organizations are not value-neutral, nor are they outside of wider political debates. On this subject, scholars have raised concerns over the increasingly dominant role of international NGOs in transforming conservation processes, particularly in the global South where biodiversity tends to be high and income low (Chapin 2004, Rodríguez et al. 2007, Brockington 2008). Issues such as power differentials among social actors, funding and alliances with corporate interests, concerns about accountability, and the imposition of Western environmentalisms have been highlighted here, and are issues we touch on throughout the paper. We contend that scholarship on bridging organizations would benefit from closer analysis of the social and political dimensions of conservation to inform policy that is more transparent and in ways that lead to desired social and ecological outcomes.

Scholars have used the term 'political ecology' since the 1970s in referring to relationships between ecological conditions and political and social processes. This interdisciplinary field has a broad range of intellectual origins, but one important area includes critiques about the lack of attention to the politics of nature conservation (Brechin et al. 2003, Robbins 2004, Brosius et al. 2005). A significant point of departure between political ecology and other ways of studying ecological systems is its commitment to "taking an explicitly normative approach rather than the one that claims the objectivity of disinterest" (Robbins 2004: 05). Political ecologists argue not only that nature needs to be understood materially as the outcome of political processes, but also that the way nature itself is understood is political (Peet and Watts 1996, Forsyth 2003).

The social and political dimensions of conservation have received attention (Zimmerer and Bassett 2003, Robbins 2004). There has been general interest in areas of research about narratives in nature conservation (e.g., Campbell 2002, Hutton et al. 2005, Zinngrebe 2016), the legitimization and exercise of power and control in the name of conservation (e.g., Peluso 1993, Brockington 2008), and about the social costs and consequences of conservation interventions and policies as they relate to, for example, user rights, livelihood strategies, and political processes (e.g., West et al. 2006, Adams and Hutton 2007). We contend that political ecology provides useful

insight for a more critical and comprehensive perspective on the study of bridging organizations. Specifically, we draw on three key areas of inquiry as they relate to: (1) conservation narratives, (2) conservation and control, and (3) social costs and consequences. Each is briefly outlined below.

First, political ecology seeks to show how ideas and narratives about conservation are commonly framed by the ideological, political, and economic rationales of those that produce and sustain them. In other words, conservation is a social construction (Castree 2001), and actors will frame problems, include or exclude different aspects and people, and prioritize certain kinds of solutions in very different, and culturally dependent ways (CT examples: Berdej et al. 2015, von Heland and Clifton 2015). A narrative may be promoted to encourage certain interests and particular actions, and to discourage others. Multiple conservation narratives can co-exist, overlap and/or compete with each other (e.g., Hutton et al. 2005, Zinngrebe 2016). Political ecologists have examined the way such narratives embody assumptions about the legitimacy of knowledge systems (Forsyth 2003) and scales (Brown and Purcell 2005, Sievanen et al. 2013), and how narratives define roles for experts and for communities therein (Campbell 2002, Hastings 2015, Bixler et al. 2015). All of these assumptions can distort or simplify complex situations.

Second, a point made in much of the political ecology literature is that the act of declaring and implementing conservation is a value-laden exercise by groups with differential power, who employ a range of strategies to control resources. This is certainly true in interventions such as protected areas, where the state or other powerful actors seek to establish borders that define who can use nature and where, when and how they can do so. Although there is no single definition of power (Raik et al. 2008), we define it in a general sense here as the capacity to cause effect. Questions of power are not only about the imposition of one's will over another through coercion or constrain (i.e. agent-centered power), but are also about the social structures such as hegemonic views that influence people and policy agendas (i.e. structural power) and about dominant discourses that define the spectrum of possibilities (i.e. discursive power) (as per Lukes 2005, Raik et al. 2008). Here we tend to focus on the latter two. There has been interest in examining the roles of the state

(Peluso 1993, Peet and Watts 1996) and of NGOs (Chapin 2004, Brockington 2008) in directing, legitimizing and exercising power and control in the name of conservation. But, Rodríguez et al. (2007) and others have expressed concern over the growth of large conservation NGOs in recent decades, who are said to increasingly set and reinforce a global conservation agenda at the detriment and disempowerment of local people and their interests (also in the CT: Foale et al. 2013, von Heland et al. 2014).

Third, as a social process involving decisions about access and use, conservation inevitably has social costs and consequences. Indeed, there is widespread recognition among political ecologists (and others) that conservation efforts, including protected areas, can and do have significant social and political impacts that need to be addressed (see West et al. 2006 or Holmes and Cavanagh 2016 for overview). Conservation efforts, though well intentioned, have been shown in some cases to disrupt local power structures or gender relations, marginalize certain interest groups, and/or cause or exacerbate issues of social justice (e.g., Brechin et al. 2003, Nayak et al. 2014). Others have observed how different interpretations and narratives of conservation can shape the implementation and application of participation in significant ways (e.g., Campbell 2002, Adams and Hutton 2007, Bixler et al. 2015). So, concern for social impacts in conservation has both ethical and practical foundations (Brechin et al. 2003, Adams and Hutton 2007), and is not necessarily linked to conservation outcomes.

Insights from political ecology can contribute to a more reflexive understanding of bridging organizations, and offer productive avenues of inquiry about their influence on the social and political dimensions of conservation. Attention to the influence of conservation narratives in social-ecological systems is warranted given that these can have significant and far-reaching ramifications for people, their interactions and power relationships (as seen in Campbell 2002, von Heland and Clifton 2015, Berdej et al. 2015), and often serve as blueprints for conservation policy that may lead to radically different outcomes (see Hutton et al. 2005). Further to this, dominant narratives are typically propagated by those with power (e.g., governments, NGOs), and in ways that may undermine efforts to enhance social equity.

Table 5.1 outlines key areas of inquiry from the political ecology literature that we contend contribute to more comprehensive and critical assessments of bridging organizations. To illustrate the relevance of these insights to the current state of knowledge, we apply them to two case studies below.

Table 5.1. Insights from political ecology for application in the study of bridging organizations

Areas of inquiry	Explanation	Key criteria of interest	References & CT examples
Conservation narratives	Nature conservation is a social construction that is framed by dominant ideas, rationales and objectives	Aspects of framing: - scale/boundaries - key elements - goals & values - notions of relevant knowledge	Campbell 2002, 2007, Hutton et al. 2005 CT: Berdej et al. 2015, von Heland and Clifton 2015
Conservation and control	The act of conservation is an exercise of control over resources among those with differential	Types of power: - agent-centered - structural - discursive Consequences of power	Chapin 2004, Rodríguez et al. 2007, Raik et al. 2008, Brockington 2008 CT: Foale et al. 2013, Fidelman et al. 2014
Social costs and consequences	Conservation efforts can have significant social costs and consequences that need to be recognized and addressed	Social (e.g., practices, conflict) Economic (e.g., use rights) Political (e.g., power & authority) – *we focus here*	Brechin et al. 2003, West et al. 2006 CT: Christie 2004, Clifton 2013

5.4. Methods and Case Studies

This section outlines the methods used to collect data and conduct analysis. An overview of the regional setting and description of each of the case study sites is also included below.

5.4.1. Data Collection & Analysis

This study was informed by the lead author's fieldwork conducted between 2013 and 2015. It was designed to reveal dynamics of bridging organizations as they play out within specific conservation initiatives in Bali Province, Indonesia. Case studies were chosen based on literature review and consultations with Indonesian partners and other local experts using geographic and thematic criteria of relevance (e.g., coastal-marine, conservation, bridging, collaboration). Bridging organizations were further identified through analysis of organizational, structural and relational characteristics (see Berdej and Armitage 2016a).

Data was collected using a mix of semi-structured interviews, participant observation of key meetings and events, and document collection and review of related materials (e.g., internal reports, decrees, related journals, blogs and web sources, newspaper articles, etc.). Interviewees included individuals from government agencies, NGOs, resource user groups, community groups, traditional bodies, private sectors, and academia. Interviews (n=26 Bali MPA Network, n=53 Nusa Penida) covered a range of topics, including conservation planning and management, interactions and perceptions of bridging organizations, bridging processes and outcomes, and constraints and barriers.

Analysis of data from the field – i.e. interviews, participant observations and documentation – was conducted following procedures outlined by Creswell (2009) to provide insight on the influence of bridging organizations on the social and political dimensions of conservation. Data was prepared and organized for analysis, reviewed to make general sense of it, and then sorted and organized into increasingly more specific categories. Such categories were tied to the areas of inquiry and their respective criteria outlined in Table 5.1, which were developed from a review of relevant literature on political ecology and from drawing on applicable case examples from across the CT.

5.4.2. Case Studies: MPAs and MPA Networks in Bali

Like many regions across the Coral Triangle (CT) Balinese seas are characterized by exceptional marine biodiversity and abundance (Burke et al. 2012) and are home to critical habitats such as coral reefs, mangrove forests and seagrass beds (see Mustika et al. 2012). With a lengthy history of use, coastal-marine ecosystems here are of interest to various groups, such as coastal communities, commercial interests, different government agencies, researchers, and development and conservation NGOs. An important feature of environmental politics in Bali has been the national decentralization movement started in the late 1990s. This has resulted in Bali's regencies and city being devolved authority over coastal-marine resources within four nautical miles of the shoreline, while provincial jurisdiction extends to 12 miles (Siry 2011).

Decentralization has led to a subsequent rise in opportunities for community-based and collaborative approaches (Patlis 2005), and increased importance given to customary authorities (*Adat*) and laws (e.g., *sasi*, *awig-awig*) in decision-making (see Wardana 2015). This period, however, has also led to political tensions and poor coordination between governments, fragmented and sectoral decision-making, elite capture, and territorial conflicts (Patlis 2005, Siry 2011, Wardana 2015). Moreover, decades of disempowerment of local governments, institutions and customary authorities have left many weakened and with limited capacity.

Conservation of coastal-marine resources has become an important policy goal in Bali and across Indonesia, and arguably signals a growing intertwining of environmentalism and politics. Spurred by the decline of coral reef and fisheries health (Burke et al. 2012) and the formation of the southeast Asia Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) (www.coraltriangleinitiative.org), the Indonesian Government has called for the expansion of the extent of coastal and marine waters under some form of protection. Bali as a province currently has two established MPAs, and several others initiated. Efforts to date have been significantly assisted by non-state organizations such international donors, NGOs, and private sector (Siry 2011).

Two cases studies were selected for cross-case comparison in Bali: (1) Conservation International Indonesia in the Bali MPA Network, and (2) the Coral Triangle Center in the Nusa Penida MPA. Despite differences, these cases face a similar spectrum of coastal-marine challenges, and each bridging organizations shares in a common goal to connect and engage actors in coordinated conservation activities. Case study characteristics are outlined in Table 5.2 and discussed in-depth in the following section.

Table 5.2. Summary of case study characteristics

Site characteristics		
Initiative	*Bali MPA Network*	*Nusa Penida MPA*
Type of initiative	MPA Network (initiated 2011)	MPA (finalized 2014)
Scale of initiative	Province wide	Regency (Klungkung)
Key interests	Small-scale fisheries, aquaculture, marine tourism	Small-scale fisheries, aquaculture (specifically seaweed farming), marine tourism
Major interest groups	Provincial and regency governments (marine and fisheries, tourism, environment, and planning agencies), MPA/PA staff, NGOs, traditional leaders	Local governments (Klungkung Regency), community groups, NGOs, traditional leaders, tourism operators, and local resource users
Major challenges	Poor coordination, non-conformities in regulations, policy inconsistencies, uncontrolled coastal development	Overlapping/competing resource use activities, high dependency, overexploitation of marine resources
Bridging organization characteristics		
Bridging organization	*Conservation International Indonesia*	*The Coral Triangle Center*
Type	NGO (national)	NGO (national)
Mission	To protect nature as a source of food, fresh water, livelihoods and stable climate	To enhance capacity of marine managers and practitioners to care for coastal and marine ecosystems

5.4.2.1. The Bali MPA network

5.4.2.1.1. Context

The province of Bali is home to some four million inhabitants, spread across its eight regencies and one city. Much of the population is closely tied to coastal and marine resources as a source of food security, livelihood and culture. Major livelihoods include small-scale fisheries, aquaculture (e.g., seaweed, shrimp, fish, pearls), and a rapidly growing marine tourism industry. As mentioned previously, poor coordination between governments has resulted in fragmented decision-making, policy inconsistencies, and nonconformities in the use and policing of resources in provincial waters (Patlis 2005). This has fueled conflicts around issues of equitable distribution of assets and access to resources, and has hindered efforts to address threats and pressures to ecosystem health.

5.4.2.1.2. Conservation International Indonesia

Conservation International Indonesia (CI-I) is a main driver behind the development of a comprehensive network of MPAs to span the province of Bali. It is a chapter of the US-based NGO by the same name, whose overarching goal is to protect nature as a source of food, fresh water, livelihoods and stable climate (CI 2016a). CI-I has been active in Indonesia since 1991 in partnership with the Ministry of Forestry and the Ministry of Marine Affairs and Fisheries, and has a program office in south Bali. CI-I describes its role in Bali Province as: "…working to promote the importance of nature and culture in Bali as an asset for sustainable tourism and local livelihoods…[and] also provide technical assistance to the Government of Bali Province (9 regencies/cities) and the Ministry of Marine Affairs and Fisheries in establishing a network of 73,000 ha of water conservation areas" (CI-I 2016a: website, translated).

A main rationale for conservation here is framed by CI-I as a means for island-wide protection of natural and cultural resources, as well as socio-economic services compatible with conservation efforts. The underlying argument is that cross-boundary thinking that supports connectivity between regencies as well as

biophysical connectivity will help support resilient habitats, ecosystem processes and societies.

To this end, CI-I proposed the development of the Bali MPA Network (Indonesian: *Jejaring Kawasan Konservasi Perairan*). Starting in 2010 and in partnership with the Provincial Ministry of Marine Affairs and Fisheries, CI-I coordinated a workshop to produce an agenda that addressed "[r]apid coastal development [that] has not yet been balanced with a proper long-term management plan" (Executive Director CI-I in Mustika et al. 2012: vi). In attendance were groups of scientists, NGOs and officials from related government agencies and customary villages, who together nominated 25 locations as potential MPA network sites (Nurhayati 2010), of which nine were later recommended. Bio-ecological monitoring of these areas was conducted in 2011 as part of Conservational International's "Rapid Assessment Program" (CI 2016b) to collect data about biodiversity, coral reef condition, and conservation status of hard corals and coral reef fishes (see Mustika et al. 2012). A marine biologist linked to CI-I took the lead role in writing the assessment report, in which socio-cultural and economic analyses were notably absent.

By 2013 a memorandum of understanding was signed by all heads of Marine Affairs and Fisheries agencies in Bali, and a multi-agency Task Force (read: working group) was set up to allow participation in network planning. Included are representatives from provincial and regency government (including tourism, environment, planning, and marine and fisheries agencies), other conservation interventions (e.g., existing parks, reserves), traditional councils, and NGOs (see Bali Gov. Decree 2013). Representatives from the community level are not directly included here. The secretariat is housed in the provincial Ministry of Marine Affairs and Fisheries in the capital city of Denpasar. The mission of the MPA Network has been outlined as threefold:

> To build commitment/agreement between stakeholders about the management of water resources in an integrated manner in order to realize sustainable development / To provide a reference document ['Blueprint'] for the development of marine protected areas for the district/city and province of Bali, with a good linkages [connectivity]

> approach to ecological, socio-economic and governance / To encourage cooperation, partnership and coordination of intergovernmental, inter-sector and inter-stakeholders in the management of marine resources in Bali. (Gunawan and Dewantama 2014: 7, translated)

Since the inception of the MPA Network in 2010, planning has reflected a relatively top-down approach where provincial and regency actors have shaped and applied an island-wide vision or regional 'blueprint' for water conservation. This Blueprint seeks to standardize MPA policies and implementation, encourage cooperation, and guide ongoing MPA development in an integrated manner (Gunawan and Dewantama 2014). This is to be applied under the principle of 'One Island, One Management' – described as the "…integration between upstream and downstream areas (land and water) as well as the integration of the province of Bali with all districts [regencies] / cities" (Gunawan and Dewantama 2014: 45, translated).

5.4.2.2. The Nusa Penida MPA, south Bali

5.4.2.2.1. Context

Nusa Penida is located southeast of mainland Bali and covers some 20,000 hectares of coastal waters surrounding three islands. The region supports a population of roughly 46,000 inhabitants, most whom are linked to major livelihood activities such as small-scale fisheries (≈850 local fishers in 40 fishers' associations), seaweed production (≈308 ha of farms), and marine tourism (over 200,000 tourists per year) (Ruchimat et al. 2013). High dependency and intensive utilization of coastal-marine resources in a relatively small area has resulted in resource overexploitation and has led to conflicts between user groups.

5.4.2.2.2. The Coral Triangle Center

The Coral Triangle Center (CTC) has been the lead facilitator in the development and management of an MPA in Nusa Penida. The CTC is a former regional training arm of US-based conservation NGO The Nature Conservancy, and became an independent foundation in 2010. With a mission to enhance capacity of

marine managers and practitioners to care for coastal and marine ecosystems (CTC 2016), the CTC operates in multiple sites across Indonesia and, more recently, throughout the Coral Triangle region. It has worked in the Klungkung Regency (Nusa Penida) of Bali Province since 2008. In describing itself, the CTC has stated: "With a focus on training and enabling local communities, the CTC supports marine protected areas, coordinates a learning network for MPA practitioners, connects the public and private sector on coastal issues, and is developing a center of excellence in tropical marine resources management" (CTC 2014: 1)

For the CTC, a main rationale for conservation efforts in Nusa Penida is framed as a way to maintain and enhance marine biodiversity to allow people and communities to provide for their social, cultural and economic wellbeing. This is reflected in its vision for "healthy seas that enrich people and nature" (CTC 2016: website). A central argument made here is that in order for coastal-marine resources to be protected they must be valued, and value is often derived through utilization/sustainable use. According to a recent publication, the CTC believes "ensuring benefit streams are developed for local communities (wherever possible) in connection to MPA design and development, is a critical step in building the foundation for a sustainable future" (CTC 2014: 3).

The CTC has advocated a collaborative approach in its Nusa Penida Program in which stakeholders were involved early in the MPA process. Over two years of public consultations were held with affected communities and stakeholder groups between 2008 and 2010 in a two-step process: to first educate and collect mutual agreement on the establishment of an MPA, and second, to gather input and consensus among key stakeholders about MPA boundaries and zoning design (CTC 2012, 2013). Here, the CTC facilitated collaboration between local governments (Klungkung Regency), central government (Ministry of Marine Affairs and Fisheries), community groups/local NGOs, traditional leaders, dive tourism operators, and local resource users. This early step also resulted in the creation of an MPA Working Group in 2009, which consisted of Klungkung regency officials, community representatives, and NGOs.

According to its Management Plan, the long-term vision is "the effective management of the Nusa Penida MPA, for the benefit of culture, sustainability, and for the welfare of the community" (PEMKAB 2012: 18, translated). To this end, three objectives were set for the MPA: biodiversity protection, sustainability of fisheries, and sustainability of marine tourism. As well, a focus of the CTC's Nusa Penida Program has been on educating the locals of Nusa Penida on alternative livelihoods such as seaweed farming and mangrove ecotourism (CTC 2014). An MPA zoning system and long-term management plan were finalized in 2011 and 2012, respectively. The former reflects a multiple use strategy: four zones and seven subzones were created to accommodate a variety of activities. Over 80% of MPA waters remain open to fisheries (with gear restrictions), and specific territories are designated for no-take (i.e. no extractive utilization), seaweed farming, marine tourism, and cultural purposes.

The MPA is managed at the regency level under the Ministry of Marine Affairs and Fisheries Klungkung via a multi-stakeholder Management Board housed on Nusa Penida Island (finalized in 2012 under Regency decree). It is supported by a joint patrol team, and biophysical and socio-economic resource use monitoring teams. The CTC collaborates with MPA management, local communities and dive operators to conduct annual reef health monitoring (Nurhayati 2014). In mid-2014, the Nusa Penida MPA was officially declared (four years after it was established). The mission of the MPA over the next 20-years is threefold: "To encourage collaborative management among stakeholders in the Nusa Penida marine protected area / To promote sustainable marine tourism that benefits public welfare / To implement a system of fisheries that is environmentally friendly and sustainable" (PEMKAB 2012: 18, translated).

5.5. Political Ecology of Bridging Organizations in Bali

In this section we demonstrate the value added of political ecological insights to the study of bridging organizations, particularly in the context of developing and ongoing conservation initiatives. Drawing from the cases above, we examine narratives, control and power dynamics, and the social costs and consequences of

conservation efforts to illustrate the various ways bridging organizations shape and influence the social and political dimensions of conservation. We acknowledge up front that many of our observations are intertwined.

5.5.1. Narrative

By situating analyses of bridging organizations in contestations over narratives, we can identify and deconstruct the various ways such organizations frame specific conservation issues. Previous assessment of narratives in the CT region (Berdej et al. 2015) has sought to unpack some of the assumptions about social actors and natural systems through which conservation initiatives arise. This work has drawn attention to how framing determines what problems are captured and prioritized, what responses are taken to address them, and what experts and knowledge can be legitimately called upon to do so. We expand on this work by examining narratives in each of our cases, as evidenced through the framing of conservation issues by respective bridging organizations.

In relation to the case of the Bali MPA Network, CI-I cites "rapid and largely uncoordinated development" of coasts and watersheds, and a "lack of clear marine spatial planning for the island" (Mustika et al. 2012: 1) as threatening Bali's nature and culture; and hence requiring a regional approach to management that includes a connected network of MPAs. In the case of Nusa Penida, the CTC cites increasing pressure on critical coastal resources from high livelihood dependency and utilization (CTC 2012, 2014; also PEMKAB 2012) as the rationale for conservation and sustainable use efforts by means of establishing an MPA. Inherent in each of these frames, however, are value judgments about what and who is included, and what issues, question and solutions are prioritized.

Ways of framing in our cases have defined and bounded conservation issues around particular scales. CI-I has framed the issue of conservation in provincial terms where Bali is viewed as a large, interconnected water system. The philosophies of 'One Island, One Management' and 'ridge to reef' (Gunawan and Dewantama 2014), mentioned above, have been adopted and supported by the NGO in order to reinforce

what one interviewee has described as "*island-scale thinking*" (Interview 3). This was further elaborated on as,

> [C]urrent conservation initiatives in the Bali Island are launched in small scale and sporadically, making less substantial impacts on a local level. However, the problems are prevalent throughout the entire island, and they require holistic approach. (CI-I unknown: 7)

> We spend a lot of money and investment in small areas in Indonesia – in Jakarta Bay, in Seribu National Park. We spend a lot of money just for a small, tiny island. […] But we don't think about connectivity. It is a similar case [in Bali]. We focus on Nusa Penida and we forget to attach it to the seascape around it. Right? But after ten years, you cannot dive in Seribu National Park anymore because it is completely changed. But the change is not coming from the reef, it is coming from the outside. […] We need to have intervention at the level where policy is made … in order to influence a bigger picture. (Interview 3)

The CTC's framing of the issue of conservation occurred in more local terms where geographic focus is on a set of satellite islands at the sub-regency level. Here, substantial emphasis has been placed on the local level – the MPA was created in part to sustain "*the welfare of local communities"* (CTC 2014: 1) with the intent to *"give us [communities] a voice*" (Interview 52) in conservation decision-making. A recent publication from the NGO has stated:

> Local communities are gaining direct benefits from the protection of marine habitat and biodiversity being achieved through MPA implementation due to increased revenue generated by tourism arrivals. […] [T]he effective management and conservation of these habitats and associated species is critical to the local economy of the area and the livelihoods of many of the local residents. (CTC 2014: 2)

Each frame focuses on some element of conservation, and in turn, favours some type of agenda and action. CI-I has focused on issues of connectivity and cross-boundary integration in conservation (or lack thereof), which serve as justification for the development of a connected network of MPAs. As outlined in its management plan, objectives for the MPA Network include those for ecological and social connectivity to "...braid cooperation between MPA managers in Bali for more effective, efficient, comprehensive and sustainable management and conservation" (Gunawan and

Dewantama 2014: 21 translated). The CTC has focused on issues of sustainable use and collaborative management in conservation, which provide rationale for a multiple-use MPA. Emphasis has been on the importance of sustainable use aspects, evidenced in the MPA objective "to protect the marine biodiversity of the area, while sustaining fisheries, marine tourism, and the welfare of local communities" (CTC 2014).

Both bridging organizations place importance on 'protecting' marine biodiversity at least in part for its intrinsic value, as well as for its other instrumental values such as sustaining livelihoods. Each has advocated some measure of exclusion or limited use in conservation initiatives via, for example, no-take zones or restrictive regulations. Initiative goals in each case are defined in terms of people-oriented terms (e.g., establishing an MPA and MPA network for human benefit) but are not people-solutions (i.e. they do not explicitly address issues such as poverty alleviation or rights and justice). In Nusa Penida, for example, this is evident in its vision for "effective management of the Nusa Penida MPA, for the benefit of culture, sustainability, and for the welfare of the community" (PEMKAB 2012: 18, translated). A tendency of conservation-oriented organizations to overemphasize preserving ecological integrity above social outcomes such as achieving food security has been observed and criticized elsewhere in the CT (Foale et al. 2003, von Heland et al. 2014).

In addition, these frames have called upon a particular kind of knowledge – chiefly expert science and technology (CI-I/CTC) and, to a certain degree local knowledge (CTC) – in diagnosing and solving conservation issues. For example, criteria used for the selection of priority conservation sites for the Bali MPA Network included those for bio-ecology of fisheries, limnology, coral reef community structure, and current reef condition (Mustika et al. 2012), which were acquired through CI-I's in-house marine program (see CI 2016b). Accordingly, the design of the MPA zoning system in Nusa Penida was informed by scientific data (biological and socio-economic assessments) and stakeholders' input/local knowledge, and made use of MARXAN technical planning software (CTC 2013).

Ways of framing are influenced by wider conservation debates and contexts. For CI-I, an island-wide frame mirrors aspects of the large-scale conservation movement visible in both the science and policy arenas that advocates ecosystem scales of management (see Brosius and Russell 2003, Hastings 2015). Following this international trend, Conservation International has developed the concepts of "hotspots" and "seascapes" to map and prioritize conservation sites globally (CI 2016c). According to Conservation International's website,

> Conservation works best when it is at scale – taking into account an entire area rather than dividing it up piecemeal, especially when that area has fluid boundaries. […] Seascapes are designed to be large enough to encompass different levels of government from local to national, but not too large to manage effectively. (CI 2016a website)

In contrast, the CTC's overall frame has echoes of the community-based conservation movement, which stresses the need for inclusion and leadership of local people in management processes (see Campbell 2002, Hutton et al. 2005). As outlined in its 2011-2014 Strategic Plan, one of the long-term goals of CTC is to "inspire leaders and communities throughout the Coral Triangle with excellent training programs designed to strengthen their professional competence and institutional capacity to effectively care for marine resources and coastal ecosystems" (CTC 2011: 3).

Taking a closer look at narratives offers a productive entry point to examine how bridging organizations define and give meaning to particular conservation issues. Narrative (or framing) inquiry upholds that bridging organizations are not value neutral, but rather have their own distinct mandates, worldviews, approaches and capacities that they bring with them. Unchallenged, these narratives may leave little room for the interests and agendas of other social groups. It is integral then to be cognizant of bridging organizations and their narratives so as to avoid the possibility of ideological or discursive hegemony. McShane et al. (2011) have warned that a failure to reflect on our assumptions about the 'right' approach to conservation can lead to omission of critical discussions about difficult trade-offs. This is especially important given that such frames narrow the 'room to maneuver' or 'policy space' of

decision-makers (Roe 1991) in ways that may lead to radically different outcomes for people and actions, a trend which we detail below.

5.5.2. Conservation and Control

The relationship between bridging organizations and conservation is mediated by relations of power. Bridging organizations tend to occupy central positions in social networks at the confluence of diverse actor connections, information flows and resource pathways. We have previously measured and mapped patterns of interactions in some of our cases using a social-network approach (see Berdej and Armitage 2016a). Figure 5.1 depicts the network in Nusa Penida graphically, showing the central role of the bridging organization – the CTC – in connecting collaborating actors. Ideally, however, networks of interaction should not only be measured in terms of their structural and relational makeup (as they are in Figure 5.1), but also in terms of the exercise and distribution of power. In light of this, we draw on political ecology to explore power dynamics of bridging organizations in the context of conservation, and to better understand the consequences of this for other actors.

Although CI-I and the CTC do not possess any formal authority in our cases, there is evidence to show that these NGOs embody and exercise power in conservation processes through structural and discursive means. CI-I and (until recently) the CTC are chapters of some of the biggest NGOs in the world – US-based Conservation International and The Nature Conservancy, respectively. These parent NGOs employ tens of thousands of people, control billions of dollars and set global conservation trends (Chapin 2004, Rodríguez et al. 2007). Moreover, each of these parent NGOs is legally registered in a handful of developing countries worldwide (CI 2016a, TNC 2016). Additionally, CI-I and the CTC are official partners in the multi-million dollar program, Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF), that spans six nations and sets a vision and policy agenda for regional management of coastal and marine resources (CTI Secretariat 2009). Hence, each bridging organization is embedded within broader social structures and political contexts that simultaneously influence and empower them to shape conservation agendas and decisions in particular ways.

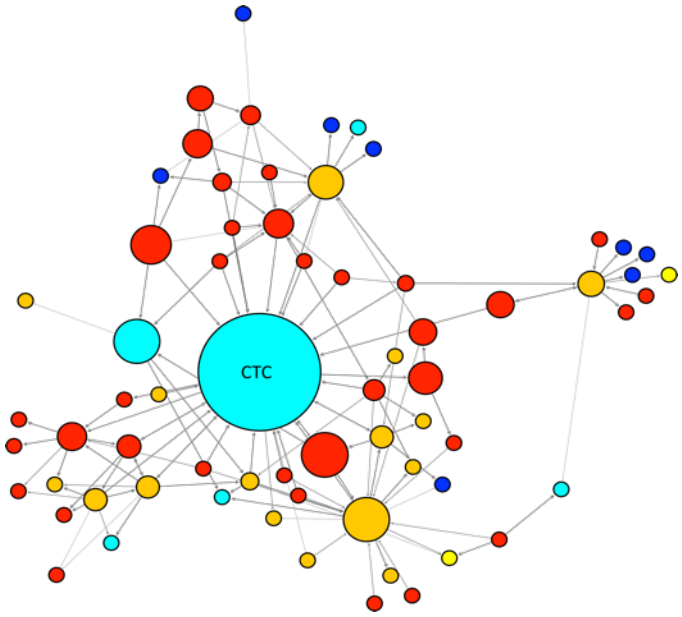

Figure 5.1. Network of interactions between social actors in the Nusa Penida MPA, and the bridging organization Coral Triangle Center. Actors are represented by circles and relationships represented by lines. The size of the circle represents their importance for connecting otherwise unconnected actors (bigger circles = higher connectivity). The colours of circles represent the functioning level of the organization: red = community; orange = regency; yellow = provincial; teal = national; and dark blue = international

The Bali MPA Network and Nusa Penida MPA have never been out of government control, but CI-I and the CTC are represented in working groups and management boards (CI-I via Provincial decree), and often in leadership positions. One interviewee explained,

> Officially, the head of the [Bali MPA Network] is from the provincial government. This is typical practice in Indonesia to make sure the stakeholders are at the helm of the project […] Unofficially, CI-I is the lead on the project. (Interview 1)

CI-I and the CTC are also the main suppliers of information and scientific expertise in each of their cases. Whereas CI-I led bio-ecological baseline data collection using its in-house Rapid Assessment Program (CI 2016b; also Mustika et al. 2012) to prioritize possible MPA sites, the CTC has filled a key technical advisory role in MPA planning

via collection of biological and socio-economic data and in designing a zoning system using specialized software (CTC 2013). Hence, bridging organizations have gained and maintain power via their positionality in projects and social networks (as also per our findings in Berdej and Armitage 2016a), and via their considerable control over information production and technology.

In addition, we observed that bridging organizations had strategic alliances with governments in ways that reinforced and legitimized their presence. Each NGO has played an important role in government capacity (by supplying e.g., training, expertise, resources) and budgets (via bilateral assistance agencies and foreign moneys). Simultaneously, bridging organizations carried out educational activities and training to familiarize governments with key concepts and approaches such as marine ecology, connectivity, or multiple use zoning. A representative from government explained, "*We created new rules based on CTC recommendations. [Our agency] become more concerned on conservation because CTC give information about the importance of conservation for tourism in Nusa Penida*" (Interview 29). In filling these roles bridging organizations arguably gain a degree of bureaucratic influence over how governments define their conservation policies.

How power is exercised by bridging organizations has real consequences for the power relations of others (see Raik et al. 2008). Previous work in the region (Berdej and Armitage 2016a, 2016b) has demonstrated that bridging organizations give direct advantage to those with whom they interact by offering, e.g., greater accessibility to financial and technical resources, capacity building prospects, and greater ability to take advantage of opportunities. A community member in Nusa Penida explained,

> CTC has provided training to us and has built our capacity to make collaborations and strengthen management [...] We have been involved in monitoring activities and training activities associated with the [MPA]. We now serve as a facilitator for the socialization and communication of the MPA… (Interview 58)

Simultaneously, bridging organizations can also disadvantage/disempower some actors and interests (intentionally or not) in how they build collaborations and set

agendas. Not all groups have equal ability to vocalize their needs or exert pressure on a bridging organization (*sensu* Raik et al. 2008, Reed et al. 2009) – an issue we explore below. Several respondents in our cases made note of favoritism or benefit inequities between social groups (Interview 21, 55), with one individual explaining "*there is always politics*" (Interview 14). For example, there is little evidence in any of our cases to show that gender issues have been taken into account. Moreover, in advocating particular agendas, bridging organizations place importance on some values over others. Consider the following statement by local government,

> There is a need to recognize and emphasize the economic value of Jungut Batu's ecology. A dead turtle, for example, will bring a fisherman 500,000 rupiah on one occasion, whereas it can bring much, much greater economic gain on a daily basis from tourism. From snorkelers and divers who come to see these species. […] It is important to let fishermen know this. To help them understand this. (Interview 37)

Political ecology points to the importance of viewing bridging organizations as political entities that both embody and exercise power and influence. Analysis of power is critical to identify the reality of asymmetrical power relations in conservation settings, and the function of a bridging organization in either addressing or exacerbating these. For example, studies elsewhere have observed that the customary bodies and membership organizations often sought out in leading interventions are not always democratic and may represent vested interests of elites (see Brosius et al. 2005). The challenge of conservation then grows exponentially more difficult where relationships are glaringly asymmetrical, which in turn can negatively impact the legitimacy and local acceptance of conservation (see CT: von Heland et al. 2014, Fidelman et al. 2014).

5.5.3. Social Costs and Consequences

Consideration of the politics of conservation provides fruitful territory to explain both the positive and negative social costs and consequences of bridging organization as they manifest through conservation initiatives. By costs and consequences we refer generally to the social, economic and political effects that stem

from the development and implementation of conservation initiatives such as MPAs. These include, for example, changes to use rights and social practices, displacement, aggravation of conflicts, and subsequent shifts to power relations and authority. We pay special attention here to costs and consequences as they relate to the latter, and examine how bridging organizations influence power relations as they are connected to the processes of conservation.

We begin from the acknowledgement that political debate about coastal-marine conservation – i.e. how it is seen, understood, produced and controlled – is limited by who is allowed to participate (Reed et al. 2009, Hastings 2015, Bixler et al. 2015). As shown earlier, bridging organizations in our cases prioritized conservation issues around particular scales and, in doing so, preferenced certain actions and types of actors at those scales. On the one hand, CI-I had advocated a move to 'push up' coordinating authority to the provincial level through a 'One Island, One Management' regional approach led by the Bali Ministry of Marine Affairs and Fisheries. Justification for this was explained as,

> A need to manage as an island instead of eight or nine separate entities within the island. […] The [regency heads] also need to understand that [Bali] is basically a relatively small island, which means they need to sit down together to talk about general issues and the environment. And conservation is definitely a general issue. (Interview 1)

The CTC on the other hand had promoted a move to 'push down' authority to the local and sub-regency level via a collaborative approach. An interviewee explained, "*CTC's role is to bring people together to implement a collaborative approach. Not government only, not community only. Collaborative*" (Interview 27). As outlined in its Management Plan (PEMKAB 2012), the Nusa Penida MPA is to be led by a multi-stakeholder management board (or 'collaborative council') that includes representatives from local government, traditional council, local fisheries, seaweed farming, marine tourism, and transportation. In each of these cases, a scenario has been created that favours the installation of leadership and the application of participation in divergent ways, a trend also seen elsewhere (see Bixler et al. 2015).

However, this redistribution of authority via bridging organizations has not been without backlash. Several respondents viewed the Bali MPA Network as an attempt to usurp and/or reduce authority of regency and city level governments over coastal-marine territories (Interview 5, 7, 14), and it has been criticized for largely precluding local actors from conservation processes (Interview 4, 15, 19). One interviewee elaborated, "*right now the [MPA] network is very top-down. There needs to be a grassroots network to support this. Top down needs to meet bottom up*" (Interview 4). Another interviewee explained,

> When you are talking about government you need to see what policy and legislation exists at sea between [regency] and province, otherwise there will be conflict […] The management authority in Bali rests largely at the [regency] level, and moving it to the provincial level will undoubtedly cause conflict. If [CI-I] comes at it from a management aspect, there will be conflict. (Interview 7)

In Nusa Penida, others had expressed dissatisfaction over their limited participation as listeners, or the poor engagement of some key social actors such as off-island fishers or tourism operators (Interview 21, 42, 48, 51). Several interviewees expressed their discontent over the limited inclusion of snorkelling operators in conservation processes given that, as one interviewee explained, "*[they] are a nightmare at the moment*" and lack of regulation and enforcement (Interview 62). Others vocalized the ongoing tensions around issues of monitoring and enforcement with one interviewee explaining, "*I can't say anything directly to locals if I see poor [scuba diving] behaviour. No one would listen to warnings from a foreigner*" (Interview 22).

A lack of or limited participation of some actors may cause dissatisfaction or anger for giving rise to conservation solutions/outcomes that were not publically agreed upon. For example, when asked about the fairness of the MPA process in Nusa Penida (see Appendix A) over half of respondents stated that it was 'not fair' (15%) to 'moderately fair' (40%), while few stated they perceived it as 'fair' (15%) (30% stated they did not know). One interviewee explained, "*if you have money, you have a bigger voice in [MPA] discussions. Problems can be resolved by money*" (Interview 55). Another interviewee expressed his dissatisfaction of the conservation approach altogether,

> People want the MPA to be self-managing, along the lines of 'your country's nature is your country's treasures'. But local people won't see it this way. Perhaps local people aren't the best ones to be managing the MPA. (Interview 20)

In the context of the Bali MPA Network, another interviewee commented that it was not the lack of participation that caused tensions among social actors, but *how* they participated in conservation processes (Interview 7). The interviewee went on to explain that participatory effort has been directed largely at the Ministries of Marine Affairs and Fisheries of each regency, and has tended to undervalue other government agencies and actors. These perceptions can negatively impact the salience and credibility of both the bridging organization and subsequent conservation interventions.

In settings such as these where negotiations over conservation include material effects of rights and use, and where potential for conflict is high, additional scrutiny of bridging organization outcomes and impacts is warranted. It is expected, as mentioned, that some actors may choose to purposefully align themselves with bridging organizations to support their own agendas, which may be to the detriment of other marginalized actors. Political ecology provides productive territory to raise questions about the material consequences of such organizations as they play out through conservation efforts undertaken at particular scales. Further, it promotes greater awareness of social justice and human rights issues herein (*sensu* Brechin et al. 2003).

Table 5.3. Summary of analysis by case

Areas of inquiry	Bali MPA Network – CI-I	Nusa Penida MPA – the CTC
Conservation narratives	• Focus on intervention at provincial-regency level – 'island-scale' thinking • Concerned w/ lack of ecological and social connectivity & poor cross-boundary integration, leading to rapid, uncoordinated development • Value placed on protecting marine biodiversity for human benefit w/ people-oriented goals • Science to diagnose and problem solve – network design based largely on ecological criteria	• Focus on intervention at local level – community involvement via collaborative approach • Concerned w/ sustainable use and collaborative management in the context of increasing pressures on coastal resources • Value placed on protecting marine biodiversity for human benefit w/ people-oriented goals • Science *and* local knowledge – MPA design informed by scientific data (biological and socio-economic assessments) and local input/knowledge
Conservation and control	• CI-I is embedded in, and empowered by, its international parent NGO, and its partnership w/ the CTI-CFF – both are powerful forces • CI-I has no formal authority, but exercises power to shape decisions via its positionality, control over information production and expertise, and its strategic alliances w/ governments • Activities of CI-I reallocate power among actors through agendas setting and collaborations, but not equally so – e.g., implicit constraint on some activities	• The CTC is a former training branch of an international conservation NGO, and partner w/ CTI-CFF – both influence CTC behaviour • The CTC has no formal authority, but exercises power to shape decisions via its position in the network/project, control over information, expertise & input, and strategic alliances • Activities of the CTC reallocate power among actors through agenda setting and collaborations, but not equally so – e.g., bias toward particular actor groups
Social costs and consequences	• CI-I seeks to 'push up' coordinating authority – leadership is endorsed at the provincial level w/ the Bali Ministry of Marine Affairs and Fisheries • Participation aimed at regency and provincial level actors, and largely government agencies – risk of creating oversimplified solutions • Some have viewed this as an attempt to usurp and/or reduce authority of regency and city level governments • Exclusion of local actors has been criticized – can overlook local dependencies and interests	• The CTC seeks to 'push down' management authority – leadership is endorsed at the sub-regency level via multi-stakeholder management board • Participation aimed at social actors at the community to regency levels representing diverse interests – more inclusive/holistic solutions generated, but risk of disconnect to wider issues • Some have been critical of the lack of stakeholder inclusiveness, and the unequal emphasis on some participatory actor types over others – risk of fostering discontent or perceived fairness issues

5.6. Discussion and Conclusions

The intent of this paper was to think more carefully – and more critically – about bridging organizations in conservation, especially given their proliferation in contemporary conservation governance (e.g., Jamal et al. 2007, Schultz et al. 2007, Jacobson and Robertson 2012). To this end, we drew on the political ecology literature to investigate how bridging organizations shape the social and political dimensions of conservation. We used examples from two conservation-oriented bridging organizations in Bali to illustrate how they propagate particular conservation narratives, embody and exercise power and control, and the social consequences of their involvement in conservation. What are some general lessons learned from a political ecology perspective of bridging organizations? And what does this mean for conservation research and policy moving forward?

First, bridging organizations are not value neutral. Rather, each is a combination of individual agendas, interests, norms, and worldviews that can give rise to – and legitimize – particular interpretations of conservation problems and subsequent solutions. Ways of framing conservation issues are not necessarily attuned to the specific regional context or local people, and may omit other important trade-offs (i.e. they may only represent *some* voices). Moreover, the values held by bridging organizations can be deeply rooted in broader organizational cultures and Western ideas about how conservation should be practiced, for what, and by who (see e.g., Berdej et al. 2015). These values may be repeated and reinforced to ensure an ongoing role for the bridging organization or to gain advantage with others (such as donors).

Second, bridging organizations do not exist in a vacuum, nor should they be viewed outside the influence of other social and institutional debates of a wide-ranging nature (i.e., broader narratives or discourses). Bridging organizations – and their ways of framing – are frequently entrenched in ongoing (and global) debates about the interactions of people and nature, whose knowledge counts in conservation, and how to balance protection of marine biodiversity with concerns for human welfare. For example, both CI-I and the CTC are tied to some of the largest (and most powerful)

conservation NGOs in the world, and are also situated within the broader social-ecological context of the CTI-CFF that has been funded in large measure by international donors. Although beyond the scope of this paper, bridging organizations such as those examined here are dependent on fundraising, and should not be viewed as beyond the influence of the agendas of their donors (as per Chapin 2004).

Moreover, the scale at which a bridging organization is institutionalized can influence the nature of the organization. Consider, for example, how bridging organizations situated at different scales may have differential access to knowledge and resources, exposure to narratives and discourses, and the types of stakeholders making demands on them. While both bridging organizations examined in this paper were situated at the national level and with strong ties to international entities, bridging organizations at lower or higher levels are likely to be influenced by different types of actors and pressures. For example, previous work (Berdej and Armitage 2016a) has illustrated how community-specific needs and interests have shaped the agenda of a locally situated bridging organization in north Bali.

Third, through political, scientific and bureaucratic channels, a bridging organization can embody and exercise power over and in conservation. These organizations tend to reside in the central position between social actors/information flows/resources (as per Figure 5.1; Berdej and Armitage 2016a), and may ensure their own relevance via strategic alliances with others. This makes a bridging organization a powerful force that may go unchallenged unless equally powerful actors exist. As this paper suggests, a bridging organization can shift or sustain the power relations of other social actors around them, but not necessarily in ways that contribute to greater social equity.

Fourth, in conveying different interpretations of conservation a bridging organization has direct and indirect social consequences for social-ecological systems, which need to be recognized and addressed. Such an organization, as mentioned, can give direct advantage to those with whom it is linked via social connections, information or resources (Berdej and Armitage 2016a). Using power relations as an example, we have illustrated how ideas of conservation are laid out by bridging organizations in ways

that define who should lead conservation efforts and who should participate. While our cases illustrate examples of bridging organizations 'pushing up' (CI-I) or 'pushing down' (CTC) authority, these represent but two examples of the many ways in which power can be redistributed. These choices have consequences for either the empowerment or marginalization of social actors, as was the case in Bali MPA Network where local actors have been largely overlooked in favour of higher-level authorities.

These conclusions are not meant to undermine the potential value of bridging organizations for more effective governance and conservation outcomes (as demonstrated by Berdej and Armitage 2016a, 2016b). Rather, they offer up strong impetus to view their influence more critically through the addition of insights offered by the political ecology literature. It is clear from the examples of the Bali MPA Network and Nusa Penida MPA that bridging organizations are influential in shaping the politics of conservation. Indeed, there is still a crucial need for bridging organizations to act as coordinating bodies for conservation initiatives and policies, and to direct resources and expertise where needed (as per Berdej and Armitage 2016a, 2016b). This is especially true in countries such as Indonesia where bridging organizations have significant influence on a wide range of actors and conservation processes.

At the same time, however, there is need for greater transparency of the roles and influences of bridging organizations. Moving forward, we suggest that the political ecology of bridging organizations provides a useful entry point for researchers, policy makers and resource managers to think through and evaluate how conservation initiatives operate. Using a political ecology lens would encourage the deconstruction of narratives and assumptions, critical reflection on power dynamics, and would raise important questions of human wellbeing and social equity in the analysis of impacts and outcomes. Moreover, the inclusion of other critical literatures such as those on the politics of knowledge (e.g., Forsyth 2003) or the politics of scale (e.g., Sievanen et al. 2012) could also provide more pointed lines of inquiry in critical investigation. Taking a closer look at bridging organizations may reveal instances where they may not be

relevant to specific social-ecological conservation contexts, or where interpretations of problems and solutions may be skewed or oversimplified.

Finally, we want to encourage more research on the political ecology of bridging organization across contexts – do bridging organizations embody single or multiple narratives? In what ways do impacts differ under local versus international bridging organizations? Do they affect long-term environmental policy and management? How well do interventions succeed when bridging organizations depart? This paper offers a productive way forward in our pursuit of a more comprehensive and critical understanding of bridging organizations in coastal-marine conservation. Identifying how bridging organizations shape narratives, and what actions and consequences flow from these narratives, can contribute to more effective interventions and conservation policy.

CHAPTER 6
Summary and Conclusions

This chapter reviews the major findings of the dissertation in relation to the overall aim and objectives of the research. Findings are discussed with regard to both individual manuscripts and the dissertation as a whole. The theoretical and practical contributions of this research are synthesized. Lastly, I offer recommendations for future practice and suggest potential research avenues moving forward.

6.1. Review of Findings

The conservation of coastal-marine resources is a global issue with enormous implications for future human welfare. Yet, policy makers, managers and practitioners are still struggling to identify and implement the best strategies to tackle this challenge. In the CT, the success of conservation initiatives will depend in part on navigating the 'messiness' inherent in dynamic and socially complex coastal-marine settings. Specifically, innovative ways of governing are needed in conservation that are collaborative, adaptive and cross-scale, and which deliberately fit conservation initiatives to underlying social dimensions. This means not only engaging with a diversity of social actors and organizations, but also with the breadth and depth of other social dimensions in these settings, such as culture, power and politics, and narrative.

The overall aim of the research was to describe and critically assess the roles and functions of multiple bridging organizations to better understand their influence on coastal-marine conservation governance and initiatives. Four objectives were laid out to: (1) describe and characterize relevant bridging organizations, (2) assess how they support/constrain governance outcomes, (3) examine how they enhance/inhibit conservation fit, and (4) examine their political dynamics and processes. The Bali MPA Network, Nusa Penida MPA and the East Buleleng Conservation Zone served as case studies operating at diverse scales and embodying varying levels of social complexity. Despite their differences, they all faced similar coastal-marine challenges

(e.g., overlapping use, conflicts, poor coordination), and shared common goals of connecting people to engage in coordinated, multiple-use conservation activities.

Research findings were presented in three separate but interrelated manuscripts. Table 6.1 provides a summary of major findings from each manuscript, according to each of the research objectives.

Table 6.1. Summary of research findings by dissertation objective and relevant chapter

Research Objective	**Chapters**	**Main Findings** (a)
To describe and characterize BOs relevant to the Indonesian context and Bali in particular	Ch. 3, 4, 5	• Five BOs were characterized using quantitative and qualitative techniques. All but one shared in their designation as NGOs, but varied in their sources of origin (external: CI, RC-I; internal: CTC, LINI, DKP) and their scale of engagement (local to national). • In terms of structural and relational attributes, no two BOs were the same. They varied by their centrality, as well as in their influence by network configuration (i.e. collaborative, knowledge-exchange and resource sharing). The functional roles taken on by BOs also differed (e.g., providing expertise, coordinating, building local capacity, education, giving finances, legal advice, etc.). This means that BOs have different strengths or niches that are more so or less applicable to certain conditions or goals. • How a BO chooses to interpret conservation needs and objectives can vary and is, as results showed, based in part on the individual agendas, interests, norms, and worldviews of the BO itself.
To assess how BOs support or constrain governance outcomes for coastal-marine conservation	Ch. 3	• BOs nurture social networks and interactive processes, leading to more adaptive and collaborative forms of governance. They connect diverse organizational types spanning geographic and jurisdictional scales/levels, differing sectors, and representing different interests, values and knowledge. Through these actions, a BO fosters and shapes a social network from the 'messiness' inherent in social-ecological systems. • 'Bridging' is accomplished by BOs using varied strategies and platforms for collaboration and social learning. These ranged from fostering opportunities for face-to-face interaction via working groups or monitoring programs, to building requisite technical knowledge and skills, to developing capacity building and peer-learning networks. • Because the structure and function of BOs vary, how they influence a social network and the types of relations they broker (i.e. collaborative, knowledge-exchange and resource sharing) also vary. In turn, BOs have implications for conservation outcomes. These included, for example,

		better balancing of multiple objectives zoning, greater coordination across scales, and capacity building for community-led conservation.
To examine how BOs enhance or inhibit conservation fit, and using what processes/ strategies specifically	Ch. 4	• Coastal-marine conservation in Bali – and the CT more broadly – occurs in socially complex settings. BOs are able to foster more robust conservation measures to better fit underlying dynamic social dimensions. Key strategies observed included those to integrate actors and interests using flexible approaches, actualize hybrid forms of inclusive decision-making, build capacity and leadership, and foster interactions across jurisdictional and geographical scales and levels. • On the ground, such strategies translated to conservation initiatives that were better aligned with their social context (e.g., institutions, culture, practices), promoted appropriate governance processes and instruments, and enabled cross-scale conservation and scale-bridging social networks. • But, BOs are limited in their efforts to enhance fit in a number of respects. They must contend with obstacles such as changing/variable social contexts, corruption and competing stakeholder demands, as well as ideological differences, power dynamics, the influence of donor and funding agendas, and diverse conservation narratives.
To examine the political dynamics and processes of BOs	Ch. 5	• How BOs interpret conservation needs and objectives can vary immensely – and with far-reaching consequences. The results suggested that BOs are not value neutral. Rather, they embody value judgments that steer (and legitimize) conservation towards certain interpretations. Such interpretations are not necessarily shared by all or attuned to the regional context. In addition, BOs are frequently embedded in, and influenced by, wider debates and agendas about conservation. • BOs use political, scientific and bureaucratic channels to embody and exercise power over and in conservation. This makes them a powerful force that may go unchallenged. Through their actions – and in conveying their interpretations of conservation – a BO has social consequences for people (by e.g., defining leadership, who participates) that should be recognized and addressed.

(a) BOs = bridging organization

The first manuscript (Chapter 3) presented a comparative analysis of four bridging organizations and their social networks in two case studies. Examining the structures, attributes and processes of social networks showed the relational and functional ways bridging organizations nurtured conservation networks and interactive processes for adaptive marine governance. These in turn have implications for conservation outcomes. Findings from this chapter suggested that bridging organizations added value in the formation and navigation of heterogeneous networks for more collaborative and adaptive forms of governance for conservation.

The second manuscript (Chapter 4) offered an empirically-based synthesis of strategies used by bridging organizations to enhance (or in some circumstances inhibit) aspects of conservation fit in three case studies. Findings highlighted the importance of these organizations for deliberately aligning conservation initiatives with their social context, fostering appropriate governance processes and instruments, and enabling cross-scale conservation and scale-bridging social networks. Specifically, the manuscript documented six strategies associated with processes of bridging including, integrating actors and interests, knowledge diversity, hybridizing and inclusiveness, capacity building, connectivity, and scaling.

The final manuscript (Chapter 5) provided an examination of the political dynamics of bridging organizations, and put forward evidence of the utility of political ecological insights for more comprehensive and critical investigations. Findings showed the value context and power dynamics of each bridging organization, focusing specifically on how they steered conservation towards particular narratives in ways that produce different consequences for people and actions. Four insights were offered here about politics and bridging organizations: (1) they are value-laden, and are composed of a combination of agendas, interests, norms and worldviews that support particular interpretations of conservation, (2) they are influenced by historically and geographically contingent debates and discourses about 'nature', (3) they can embody and exercise power over and in conservation through political, scientific and bureaucratic channels, and (4) in conveying different interpretations of conservation they have direct and indirect social costs and consequences for social-ecological systems.

In addition to the individual contributions of manuscripts, this research offers salient theoretical and practical contributions that have emerged across the dissertation as a whole (i.e. across all manuscripts). New conceptual and methodological approaches were developed and applied to provide nuanced information about bridging organizations' role in transforming coastal-marine conservation processes/outcomes. These wider outcomes complement and build upon existing bridging organization research. I discuss these wider findings at length in the following section.

6.2. Contributions

6.2.1. Theoretical/Academic Contributions

From a theoretical perspective, this dissertation subscribed to a number of distinct yet overlapping scholarly areas to analyze bridging organizations in the context of conservation initiatives in the CT. *Governance* scholarship was important to explain the consequences of bridging organizations for the organizational structures of societies (e.g., rules, processes, institutions), and how these translated in conservation settings. The use of *social network analysis* helped examine the structural and relational characteristics of bridging organizations, and their implications for shaping conservation networks. *Institutional fit* scholarship was useful to explain the challenges in matching conservation initiatives to underlying dynamic social dimensions, and in analyzing various strategies applied by bridging organizations to influence fit. *Political ecology* was used to examine and understand the influence of bridging organizations on power and politics in conservation, namely associated with conservation narratives. Against this backdrop, three specific contributions have been generated.

First, this dissertation represents a salient contribution to theory in demonstrating the utility of crossing theoretical lines for empirical analyses of bridging organizations. A hybrid analytical framework (Chapter 1, Table 1.1) was generated and applied in research to expand thinking about bridging organizations as part of wider conservation debate (after arguing that previous approaches have been inadequate; see Adams and Hutton 2007). Linking complementary theory from literatures on governance, institutional fit and political ecology has provided a strong foundation to think through and evaluate bridging organizations, as well as people-conservation discourses and practices more broadly. In doing so, new questions were raised about, for example, actor plurality and network relations (see Chapter 3), matching conservation initiatives to social contexts (see Chapter 4), and narratives and power dynamics (see Chapter 5) in the context of bridging organization efforts. A greater focus on interdisciplinary and critical analyses of bridging organizations will likely lead to a more comprehensive understanding of their influence in the multiple

contexts within which conservation occurs. The analytical framework presented in this dissertation is a step in that direction.

Use of a hybrid framework also contributed to the advancement of theory related to bridging organizations themselves. Mid-range theory of bridging organizations suffers from a number of deficiencies related to categorization, conceptualization of bridging functions and roles, and consideration of political dynamics. Building on Crona and Parker (2012), findings from this dissertation extend conceptualizations of bridging organizations in ways that better account for insights on organizational diversity (i.e. types, roles and functions), their capacity to deal with complexity and uncertainty, and associated issues of legitimacy and power dynamics. For example, the nascent finding of bridging organizations as value-laden extends conceptualization of them as political entities. This adds to, and opens up, possibilities for future research. Overall, this research nudges the field of bridging organization theory toward a more comprehensive and critical direction.

In addition, this work illustrated the methodological utility of a social network perspective to identify and better understand the dynamics of bridging organizations. Chapter three outlined the potential contributions of this perspective with regard to understanding bridging organization influence on networks and governance processes – by accounting for structural attributes and relational ties. Furthermore, it illustrated how such a perspective can be used to understand variable governance processes such as collaboration, knowledge exchange, and resource sharing.

The second contribution concerns the ongoing re-orientation of thinking about conservation initiatives toward a greater emphasis on social dimensions. Findings here feed into wider literatures on the need for greater social dimensions input to inform conservation processes, particularly in contexts where people are affected (e.g., Kittinger et al. 2012, Shackeroff et al. 2011, Ban et al. 2013). As noted previously, tools and mechanisms to think through and integrate social dimensions in conservation practice – such as culture, stakeholder values or local practices – have been limited in their uptake (Hirsch et al. 2011, Christie 2011). Here, I argued the potential role of bridging organizations to engage and integrate social dimensions through influencing

governance networks (Chapter 3) and in addressing issues of conservation fit (Chapter 4). The extent to which bridging organizations can foster more robust conservation measures that fit underlying dynamic and shifting social dimensions was highlighted.

In addition, the introduced concept of 'conservation fit' provides an umbrella and touchstone through which long-standing and existing literatures on social dimensions in conservation can be brought together and mainstreamed in practice. These include contributions from literatures such as value-based decision-making (Gregory 2002), social-ecological systems thinking (Ban et al. 2013) and/or cultural values in ecosystem services (Satterfield et al. 2013). The concept of conservation fit provides a process and language that may speak to those who see and seek to enact conservation in a particular way.

The third contribution is illustrating the importance of thinking critically about bridging organizations, and the utility of a political ecology perspective to do so. While bridging organizations in my research sites facilitated diverse connections between actors and contributed positively to governance and conservation outcomes (Chapters 3 and 4), findings also illustrated that they are independent of those they connect. Each has its own mandate, worldview, capacities and priorities that in turn favour particular viewpoints (see Chapter 5). To this end, bridging organizations should not be treated as passive or neutral in the context of conservation. Previous studies of bridging organizations have tended to focus on their positive contributions to governance and have rarely applied a critical lens. An often-overlooked aspect in the literature has been that these organizations, to some extent, are driven by their own self-promotional views and goals. Chapter five showed several examples of the less positive aspects of 'bridging', such as implicitly biasing or constraining actors/interests, or oversimplifying local context. A political ecology perspective with its interest in history, narratives and power can facilitate more comprehensive and critical investigations of bridging organizations, which address identified limitations of existing bridging organization literature. Accordingly, the potential for abuses of power suggests that more comprehensive and critical examinations of these organizations should be considered a requisite feature of research. This is important

to understand how best to engage bridging organizations to achieve less coercive and more sustainable conservation processes and outcomes.

6.2.2. Contributions for Policy and Practice

In addition to theoretical contributions, this dissertation adds a number of practical contributions that are of relevance to policy makers, managers and practitioners and which are applicable to the design and implementation of future and ongoing conservation initiatives. Findings are based on research undertaken in Bali but are applicable to wider contexts, especially those regions of Indonesia and the CT that face similar conservation challenges and opportunities (see Fidelman et al. 2012). These create an opportunity to link theory to practice/policy at a time when there is growing space for a plurality of actors in conservation decision-making, and an emphasis on engaging and better integrating the full breadth of social dimensions in these settings (see Christie 2011, Ban et al. 2013, Tallis and Lubchenco 2014, Hicks et al. 2016). Accordingly, I reflect on the practical contributions of my research as they relate to four key challenges: (1) navigating social complexity and uncertainty, (2) transitioning to more inclusive conservation, (3) addressing scalar issues, and (4) diversity and limitations of bridging organizations.

First, the potential role for bridging organizations in navigating the social complexity and uncertainty of coastal-marine settings was suggested, leading to more robust and holistic conservation initiatives. As mentioned previously, coastal-marine systems in Bali are characterized by high social complexity – for example, actor and institutional diversity, competing resource use activities, and high dependency. However, tools and mechanisms to capture complexity in conservation have not been adequate. Focusing exclusively on social networks and governance processes among actors and groups (Chapters 3 and 4) has affirmed that bridging organizations matter critically in connecting people and organizations, and in enabling key governance processes such as collaboration, knowledge sharing, and social learning. Chapter four empirically illustrated the potential contributions to be gained from bridging organizations with regards to actualizing hybrid forms of decision-making, broadening meaningful participation and helping to integrate different knowledge systems in particular. In

the context of environmental governance, approaches are needed that are coordinated and adaptive, where information flows, and where knowledge is better integrated (Dietz et al. 2003, Armitage et al. 2009).

Second, specific inputs and strategies that contributed to more inclusive conservation initiatives were identified. As mentioned previously, there is growing demand for inclusive approaches to conservation that represent a greater number of voices and values in the charting of conservation science, practice and policy (as per Rodríguez et al. 2007, Tallis and Lubchenco 2014, Kittinger et al. 2014). Actors and organizations within my study sites varied, and were incentivized by different ecological, socio-economic, and cultural values. In fostering social networks, research findings in Chapter three demonstrated how bridging organizations provided the structure, processes and incentives to draw in and connect diverse voices to discussions of conservation. Similarly, in addressing issues of conservation fit, findings in Chapter four showed how bridging organizations employed a range of different strategies to, for example, integrate actors and perspectives using flexible approaches, build capacity and foster local leadership to engage. Greater inclusion is a means to bring about meaningful actor participation and therefore greater fairness, transparency, and social equity to conservation initiatives (see Ban et al. 2013, Tallis and Lubchenco 2014). However, Chapter five outlined some examples of bias in bridging organizations, and so there is a need for critical reflection of the voice(s) and values put forward by bridging organizations in driving conservation initiatives.

Third, the potential role for bridging organizations in addressing scalar challenges was empirically illustrated. Following Mills et al. (2010), a mismatch of scale refers to the failure of regional planning and local scale conservation actions to inform one another. Herein, I outlined and empirically illustrated the merits of bridging organizations to promote and maintain social networks that 'reach' across scales and levels (Chapter 3), and to foster platforms for engagement and social learning that bring together actors from different sectors, organizations, jurisdictions and political levels (Chapter 4). The implications of these efforts for conservation outcomes were expressed as, for example, scaling-up local MPAs nested in district-level planning, coordinated responses via cross-level multi-stakeholder management units, and

planning regions based on ecological and social connections. The success of conservation is intimately linked to the ability to organize actors and ideas not only within organizations, but also outside of and between organizations (Berkes 2006). However, as documented in Chapter five, scalar choices had profound implications for how conservation was understood, acted upon, and its material consequences. This chapter suggested that questions of bridging organizations and scale should not be separated from questions of representation and power.

Fourth, it has been noted and demonstrated throughout the dissertation that not all bridging organizations are characteristically or functionally equal, and many face constraints and limitations in practice. Although previous work has emphasized the importance of these organizations in theory (Olsson et al. 2007, Berkes 2009), few studies have outlined the extensive roles and functions of bridging organizations in practice. Five bridging organizations were examined that varied by type of organization (government, non-governmental) and scale of operation (local to international). I have outlined the structural and functional differences of these organizations (Chapter 3), different approaches they used to engage and bridge actors (Chapter 4), and differences in the ideologies and politics between them (Chapter 5). Findings here represent a potentially important step forward in the categorization of bridging organizations generally (addressing limitations of existing research – Crona and Parker 2012). Understanding differences and commonalities, moreover, is important to take into account as different bridging organizations are likely to affect the long-term impact on governance and conservation outcomes in different ways.

In addition, constraints and limitations of bridging organizations were identified and their implications outlined. As shown, even where there was interest in conservation, bridging organizations must sometimes contend with contextual issues such as politics and power asymmetries, ideological differences, and competing stakeholder demands that could undermine success. Other issues such as availability of funding, lack of expertise, incompatible goals, or insufficient time can also hinder relationship building among actors. Taken together, these issues can make negotiating conservation initiatives a highly complex undertaking that requires understanding of the strengths and weaknesses of different bridging organizations as they function in

different contexts. Managers and practitioners must be realistic in their expectations of these organizations, and think carefully about how such organizations can be best engaged or leveraged to improve odds of overcoming specific issues.

6.3. Practical Recommendations

Bridging organizations have the potential to produce beneficial social and ecological outcomes in regard to conservation initiatives. This dissertation has identified and outlined a wide range of inputs and strategies used by bridging organizations that contribute to the achievement of these. Here, I offer a number of practical recommendations to policy makers, managers and practitioners with regard to bridging organizations and conservation initiatives. While such recommendations are focused on the Bali-Indonesia context, they are also applicable to wider contexts. Recommendations include:

1. Actively encourage and support bridging organizations in the region. Where possible, time and resources should be committed to seeking out and engaging NGOs, education centers, research institutes, development agencies and others as bridging partners (local to international). Access existing forums where these actors interact, such as provincial NGO networks, CTI-CFF networks, conferences, etc. Focus on identifying and communicating examples of how existing bridging organizations are adding value to conservation initiatives in the region. Establish best practice guidelines for cultivating partnerships with bridging organizations.

2. Assess the degree to which different bridging organizations and expertise can be leveraged in conservation to address particular issues. To reiterate my earlier point, different bridging organizations function differently when applied to different contexts or environmental problems. Therefore, care should be taken by policy makers/managers/practitioners to identify the specific bridging organization(s) that is best suited to contribute to a particular context or problem. Focus on identifying and communicating examples of

bridging organization activities and projects operating from local to international levels. Consider opportunities for sharing experiences working alongside bridging organization.

3. Ensure that emphasis is placed on the social dimensions of conservation. Relevant stakeholders, knowledge, and social/economic/cultural factors should be included to advice bridging organization thinking and practice. Make certain the commitment to engage underrepresented actors, organizations and/or sectors.

4. Cultivate learning partnerships with bridging organizations that are two-way. Capacity building, technology transfer, and learning opportunities should be hallmark characteristics of the relationships between bridging organizations and those they engage (e.g., policy makers, managers, practitioners, communities). Long-term emphasis should be placed on building sufficient capacity for initiatives to function in the absence of the bridging organization(s).

5. Consider utilizing insights from political ecology as a performance metric to monitor progress in conservation initiatives. As mentioned previously, bridging organizations can embody bias in ways that can (negatively) impact people and practice. Critical assessments of bridging organizations, as well as other aspects of conservation initiatives such as power asymmetries, are warranted.

6.4. Suggestions for Future Research

There are many complex variables that simultaneously affect conservation governance and conservation effectiveness. My dissertation research has provided valuable insight into how bridging organizations contribute to processes and outcomes of conservation governance using cases from across Bali, Indonesia, and with application to conservation efforts across the CT and beyond. Yet, there are a

number of future research avenues that are worth pursuing. These include long-term follow-up studies, additional analyses under variable social/political/institutional conditions, and expanded theoretical considerations for future comparative and critical research. More broadly, there is opportunity for bridging organization research to contribute to some of the wider challenges in conservation policy and practice.

Many of the bridging organizations assessed in this dissertation are relatively new and their long-term impacts in conservation contexts across Bali are uncertain. As well, two of the three conservation initiatives of focus here were not yet institutionalized. Future research should aim to collect longitudinal data on these bridging organizations for long-term ecological and social successes. In what ways do bridging networks change over time? How do the functions of these bridging organizations shift with the progress of conservation initiatives? What are the conditions that contribute to long-term success of bridging organizations/bridging outcomes? A particularly pressing question that remains is whether bridging organizations in our cases have built sufficient capacity in both people and initiatives in order to sustain progress in their absence. As mentioned earlier, a number of the bridging organizations examined in this study have expressed long-term plans to hand over initiatives to stakeholders. While many of the governance and conservation outcomes of these cases have been attributed to bridging organization influence or intervention, there is concern that these may be limited in the absence of bridging organizations in the future.

The research was focused on the province of Bali specifically, but further analyses are needed to understand how bridging processes and outcomes may evolve under variable social, political and institutional conditions. How do bridging organizations function differently in the global north compared to the south? Under what conditions are certain bridging strategies more favourably applied than others? How do contextual variables such as commercialism, corruption, history of conflict or poverty influence bridging organization interactions? A promising research avenue would be to conduct a large-'n' comparative analysis of bridging organizations in geographically differentiated marine conservation contexts. Comparing the realities,

interactions, challenges and outcomes of diverse bridging organizations would aid to further understanding of how such organizations operate and glean lessons from across studies. Additionally, there is need for research to be undertaken comparing the variation of bridging organizations as it relates to, for example, organizational type (e.g., NGO, governmental, private), scale (e.g., local, national, international) and/or extent of ties (i.e. connections to other key actors).

Further political ecological analyses are needed of the ways in which bridging organizations influence the political dynamics of conservation. As noted in Chapter five, issues of power, politics and narrative are not isolated to bridging in Bali (as evidenced in works by e.g., Chapin 2004, Rodríguez et al. 2007, Brockington 2008). One research avenue would be to conduct an organizational ethnography of bridging organizations to pursue questions related to how these organizations decide to carry out particular initiatives, informed by what information, and the extent to which they drive the agenda of those initiatives. The degree to which bridging organizations contribute to and are shaped by global conservation narratives and discourses requires further inquiry. Similarly, there is need to better understand the role of donor funding in influencing bridging organization views and their subsequent activities (conservation or otherwise). Moreover, research would benefit from the addition of the politics of knowledge literature (see Forsyth 2003) to investigate how knowledge transmission and integration are intertwined with political processes exercised through bridging organizations.

Finally, there is opportunity for additional investigation into relations between bridging organizations and advancements in conservation policy and practice more broadly. Further work is needed to understand the extent to which bridging organizations contribute/constrain re-focusing conservation toward an inclusive ethic; that is, one that is acceptant of the full breadth of voices in conservation across genders, cultures, ages and values (cf. Tallis and Lubchenco 2014). Can bridging organizations explicitly contribute to social equity in conservation? To human well-being? To what extent can they reduce inequalities and imbalances of power? At the same time, additional understanding is needed of the extent to which bridging organizations can engage and integrate the breadth and depth of values in

conservation settings (those associated with e.g., human well-being, equity, power – see Hicks et al. 2016). How do bridging organizations facilitate trade-off deliberations? In what ways do they influence the crafting of policies?

6.5 Final Reflections

Addressing global conservation challenges requires change in how we think about and pursue sustainable solutions. The variable success of conservation efforts to date signals need for greater understanding of the specific approaches and tools that contribute to social and ecologically successful outcomes. While bridging organizations are not a panacea to solve all social and ecological challenges, they have potential to add significant benefit and value to conservation processes and outcomes in ways that are more inclusive, responsive and cross-scale. This PhD was dedicated to contributing understanding here, and has explored how bridging organizations can initiate, shape and catalyze coastal-marine conservation governance processes and outcomes. This work was situated in the broader context of social and ecological systems thinking, which recognizes the global importance of biodiversity and ecosystems, and places the same importance on the wellbeing of millions of coastal people who depend on them as a source of income, livelihoods, food security and culture.

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Appendix A. Semi-structured Interview Guide

The semi-structured interview guide outlines questions I asked respondents during interviewing. In many cases, these questions were tailored to suit the particular respondent's organization or background. Not all questions included here were asked to all respondents (with the exception of ranking or rating questions), nor were questions necessarily asked in the order shown below.

Introduction

Thank you for sharing your time with me. I m a PhD student at the University of Waterloo in Ontario, Canada, and I am conducting this research as part of my graduate studies.

This research seeks identify how different organizations interact and collaborate in the context of marine conservation and management in Indonesia. Specifically, I am interested marine conservation and management, and the role of key organizations ("bridging organizations") in facilitating multi-party collaboration. The goal of the survey is to gain a better understanding of your organizations, the types of individuals/groups with who you interact, and your opinions of a number of topic related to [project/site].

This research has received ethics clearance as part of a project on marine social-ecological transformations supervised by Dr. Derek Armitage. Your participation in this interview is voluntary. You can choose to skip any of the questions and may withdraw your participation at any time.

With regards to the information that you are providing during this interview, how would you like to be cited in any publications, reports, etc. – by your name, your organization, or anonymously?

If you would like a copy of the results of this study upon its completion, you can contact me at the Department of Geography and Environmental Management, University of Waterloo, 200 University Avenue West, Waterloo, ON, N2L 3G1.

Email: sberdej@gmail.com

Relevant Terminology

Marine conservation and management = any interventions by governments, NGOs, and communities to manage marine resources to a wide variety of ends, including, but not limited to, conservation.

Organization = a group of persons organized for a particular purpose. Examples include national to local government agencies, NGOs, education or research institutions, community or traditional organizations, private organizations or others.

Respondent name: **Date:**

Organization:

SECTION I: Organizational Information

Please take a moment to describe your organization.

Organizational Attributes:

- Type (government, NGO, university, private, resource etc.)
- Mission or purpose
- Scope/scale
- Frequency of organized meetings

What types of activities does your organization undertake in [site name]?

Do you make or follow rules/regulations related to coastal and marine management (formal or informal)? Can you walk me through the regulatory setup in [site name]?

Please rate your organization's participation in the following processes in [site], from 1 to 5. (1 = no participation, 2 = low participation, 3 = moderate participation, 4 = high participation, 5 = very high participation).

(a) Making decisions about marine resource use and policy? 1 2 3 4 5
(b) Communicating and raising awareness of marine issues? 1 2 3 4 5
(c) Enforcing rules and policing? 1 2 3 4 5
(d) Building partnerships and coordination? 1 2 3 4 5
(e) Monitoring? 1 2 3 4 5
(f) Other: 1 2 3 4 5 Specify:

SECTION II: Organizational Perspective

I wondered if you could tell me a little about the region with respect to environmental and management challenges.

Possible Questions

- In your view what are the most important parts of the coastal and marine environment about [site name]? Why?
- In your view, what were/are the major coastal and marine environmental issues in [site name]?
- Have there been any major conflicts or issues about coastal and marine resources in the area?
- What are the main causes of these environmental problems?
- Who is currently addressing these problems?
- Who do you think should address these problems? Explain.
- What is your opinion about the establishment of [project name]?
- What do you think are some of the good and bad things about [project name] being established?

- In your view, is [site project] fair to all stakeholders in [site name]? Explain. (1 = not fair, 2 = moderately fair, 3 = very fair, 4 = do not know).

SECTION III: Relational Information (Part A)

[*If applicable, sociometric network survey is also inserted here – see Appendix B – and merged with questions below*]

SECTION III: Relational Information (Part B)

Thank you for the very insightful information so far. I now wanted to speak with you about collaborations in the region, and patterns of interaction between your organization and others.

Is there any organization or organizations that stand out in your mind as particularly important with respect to building collaborations and partnerships in [site name]?

Is there any organization or organizations that you would like to work with (or work with more) in the future?

I am interested in understanding the role of [bridging organization or BO] in the overall planning and implementation of this [site project]:

- How frequently do you interact with [BO]?
- Have you ever gone to a meeting led by [BO]? (when, about what)
- What do you think about how [BO] is involved with [site name]?

- What do you think [BO] does? What types of activities specifically are undertaken by the [BO] (formal or informal)?
- Are there any specific challenges that you believe [BO] is effective in addressing?
- Are there any specific challenges that you believe [BO] is not effective in addressing?
- Has [BO] contributed to marine conservation and management in [site name]? If so, how? (*e.g., fostered collaboration, mediate conflicts, capacity building, education, knowledge building & learning*)
- Has interactions with [BO] resulted in any direct changes for your organization? (*changes may include e.g., new goals, new partnerships, new staff expertise, new practices, etc.*)

Generally, what factors facilitate collaborations or relationship-building between your organization and other organizations? Please read the options listed below, and choose the three factors you feel are the most common facilitators.

(a) Availability of funding
(b) Compatible organizational goals
(c) Informed staff
(d) Interest
(e) Good relations between organizations
(f) Strong leadership
(g) Time availability
(h) Other

Generally, what factors constrain collaborations or relationship-building between your organization and other organizations? Please read the options listed below, and choose the three factors you feel are the most common constraints.

(a) Insufficient funding
(b) Incompatible org. goals
(c) Lack of expertise
(d) Lack of interest
(e) Political tensions between organizations
(f) Lack of or weak leadership
(g) Time constrains
(h) Other

SECTION IV: Respondent Information

Please take a moment to describe your personal and professional characteristics.

Respondent Attributes:

- Sex (m/f)
- Organization, position and responsibilities
- Number of years in position
- Highest degree received
- Other occupation(s)
- Involvement in other committees, forums (formal/informal)

How much of the time that your spend on professional activities (i.e. at work) is related to marine conservation and management activities in [site name]? (activities include e.g., research, planning, advocacy, consulting, teaching). Please check one.

__0 to 20% of time
__21 to 40% of time
__41 to 60% of time
__61 to 80% of time
__81 to 100% of time

SECTION V: Wrap up

Thank you very much for taking the time to complete this survey. We greatly appreciate the opportunity to learn from you. A couple final questions for you:

Is there anything else we should know that we haven't already discussed?

If we come back or if we had some additional questions, would it be all right if we contacted you again?

Thank you again for your time. If you have any questions or should your wish to obtain a copy of the results of this study upon completion, please contact Ms. Samantha Berdej at +62.0821.1036.1212 or smberdej@uwaterloo.ca

Appendix B. Sociometric Network Survey

The sociometric network survey included here was administered to respondents face-to-face, and often as part of the semi-structured interview process (see Appendix A). The survey used prompted recall-based elicitation for the collection of data, meaning respondents were asked to list from memory those organizations with who they interact (as oppose to from a list or roster). Questions focused on organizational patterns of interaction.

Instructions

For each of the three questions posed please list up to five organizations* in response, together with the names of one or two contact persons. For each organization and question, please indicate the strength of each relationship by circling the corresponding number: (1) = strong, (2) = moderate/medium, (3) = weak.

*Organizations may include, for example, government agencies, non-government organizations, education or research institutions, civil society organizations, private businesses, or others.

Relevant Terminology

Collaboration = the action of jointly working with others to achieve or produce something more than any one actor or organization could achieve on its own.

Q1. With who do you most often collaborate on marine projects or issues? (Examples of possible projects or issues include management planning/plans, fieldwork, joint education campaigns, etc.)

Q2. With who do you most often share information or knowledge about the marine environment? (Examples of information or knowledge include scientific data, observations, advice, concerns, etc.)

Q3. With who do you receive/share/give funding or other resources? (Examples of "other resources" may include the lending of equipment, sharing of office space, boating and dive equipment, etc.)

Q1.	***Organization***	***Contact person(s)***	
	1.	1.	1 2 3
	2.	2.	1 2 3
	3.	3.	1 2 3
	4.	4.	1 2 3
	5.	5.	1 2 3
Q2.	***Organization***	***Contact person(s)***	
	1.	1.	1 2 3
	2.	2.	1 2 3
	3.	3.	1 2 3
	4.	4.	1 2 3
	5.	5.	1 2 3
Q3.	***Organization***	***Contact person(s)***	
	1.	1.	1 2 3
	2.	2.	1 2 3
	3.	3.	1 2 3
	4.	4.	1 2 3
	5.	5.	1 2 3

Appendix C. Follow-up Interview Guide

The follow-up interview guide lists follow-up questions asked to respondents with who I had already spoken with on at least one other occasion. In many cases, these questions were tailored to suit the particular respondent's organization or background. Not all questions included here were asked to all respondents, nor necessarily in the order they are included below.

Introduction

Thank you for sharing your time and agreeing to meet with me again. Our last meeting was very insightful and helped me in better understanding marine conservation and management efforts in the area. There are a couple areas I am looking to better understand/clarify. Questions here will be focused on: patterns of interaction between your organization and other, your opinion of current conservation processes, and what you see as future challenges/opportunities with respect to [site project].

As I mentioned in our last encounter, your participation in this interview is voluntary. You can choose not to answer any of the questions and may withdraw your participation at any time.

This should not take any longer than 15 minutes.

Possible Questions

Background:

- Can you tell me a little more about your organization's activities as they relate to [site name]?

Environment & conservation efforts:

- A lot of outsider organizations come to Bali talking about conservation – what do you think about this? what do they want?
- What do you think about the rise/decline of tourism/fisheries/seaweed farming/ornamental fisheries?
- How did you lean about [site name] being protected?
- What do you think of how [site name] is being managed?

Bridging organization(s):

- Can you tell me more about the ways in which your organization interacts with [BO]? Please give specific examples where possible.
- [BO] is described by some as a community-based/national/international organization – do you agree with this?
- In your view, what is the main purpose of [BO]? What the plusses/minus of what they do? Please give examples where possible.
- In [site name] there are many different groups – for example, fishermen, government, NGOs, tourism operators, etc. These can have different needs and priorities. In your view, how (if at all) does [BO] bring together or balance these differences? Can you think of any specific examples where [BO] involvement has lead to or facilitated new relationships between stakeholders?
- Are there any specific issues or challenges that you believe [BO] is effective in addressing? Please elaborate.
- Are there any specific issues or challenges that you believe [BO] is not effective in addressing? Please elaborate.
- Do you ever talk to [BO] about their activities?
- In the future, what more could [BO] do in order to help your organization more effectively participate in management planning and decision-making in [site]?

Appendix D. Social Network Analysis Measures and Analysis

The social network measures outlined here represent those used in dissertation research on bridging organizations. Table D1 describes each of the network concepts, and outlines its relevance for governance. This follows that certain structural and relational characteristics in social networks are linked in theory to governance processes and outcomes (Bodin et al. 2006, Prell et al. 2009, Bodin and Crona 2009, Newig et al. 2010).

Table D1. Network concepts relevant for this dissertation

Network Concept	Explanation	Relevance to governance
Betweenness centrality	A calculation of the number of shortest paths that run through an actor/organization that connect actors who are themselves disconnected	- Actors w/ high betweenness have the ability to influence the flow of resources and diffuse information to the larger network - Actors that link across disconnected segments of the network have the most holistic view of the network - Who occupies positions of high betweenness and how they utilize a favourable position will have an impact on governance outcomes - But, these actors can feel constrained or torn between the many different actors in the network
In-degree centrality	A calculation of the number of direct connections an organization received from other organizations	- The greater number of ties an actor possesses, the greater the popularity or influence of the actor in the social network - But, a high in-degree alone does not necessarily mean the actor is influential (considerations of structural position or formal authority are also helpful)
Network density	A measure of the proportion of possible ties in the network that are actually present	- Indicates how well connected all actors in the network are to one another - Higher network density indicates higher possibilities for communications and increasing trust, leading to increased levels of collective action
Types of network ties	There is variation in the nature of ties or relationships between sets of actors/organizations, indicating different types of processes	- The nature or premise of connections between sets of actors varies and represents different social processes (e.g., communication, collaboration, knowledge or information exchange, resource sharing)

Strength of ties(a)	Refers to the strength (or 'weight') of the tie or relationship between actors/organizations	- Strong ties between sets of actors promote and maintain trust and reciprocity, and are good for communicating complex information; but can also cause redundancies and less exposure to new ideas - Weak ties between sets of actors promote connectivity of diverse and far reaching actors, greater exposure to new ideas and resources; but there is less trust, and ties tend to be easily broken

Sources: Wasserman and Faust 1994, Hanneman and Riddle 2005, Bodin et al. 2006, Prell et al. 2009, Bodin and Crona 2009

(a) The terminology of 'strong' and 'weak' is used in the literature, but can include multiple value units.

Network data was analyzed using the open-access software package Gephi version 0.8.1 beta (gephi.org). Sociometric data was first compiled in Microsoft Excel spreadsheets, and then relational data (i.e. ties) was converted into binary form (i.e. 0s and 1s) for import into the Gephi program. The following steps were included as part of analysis:

- Locating 'bridging' actors: betweenness measures were calculated to highlight particular actors that were playing a more active role in the network in connecting others. This analysis was based on our network composed of strong to weak ties.
- Locating influential actors: in-degree measures were calculated to highlight influential actors in the social network. In-degree – as opposed to out-degree or degree – is a calculation based on the number of ties an actors received directly from others. This analysis was based on our network composed of strong to weak ties.
- Calculating density: density scores were calculated for each network where 1 indicates that all actors in the network are directly connected to one another, and 0 indicates that the network is fully disconnected. This analysis was based on our network composed of strong to weak ties.
- Separating weak and strong ties: this gives us an understanding of how strongly connected some actors were over others. During data collection (Appendix B) respondents were asked to indicate the strength of each relationship listed (1 =

strong, 2 = moderate/medium, 3 = weak). These were applied to the network but were not visualized in network diagrams.

Analysis of data as outlined above was undertaken for all three network configurations: 1) collaboration, 2) knowledge-exchange, and 3) funding and resource sharing.

Appendix E. List of Respondents

Table E1. Typology of different organization types

Type of organization	Scale	Description
Government	local – national	Government bodies with interest or authority over coastal and marine resources or territories
Non-government organization	local – int'l	Non-profit organizations defined by common interests and typically organized around specific issues such as biodiversity conservation or livelihood development
Private business	local – int'l	Private businesses or operators typically associated with the tourism industry, include those affiliated with dive tourism, snorkeling and transport
Resource user group	local	Includes fishers' associations (Nusa Penida & East Buleleng), seaweed farmers' associations (Nusa Penida) and ornamental fishers' associations (East Buleleng). Typically geographically or family defined cooperatives with internal rules.
Community based organization	local	Organizations within communities defined by shared experience or concerns
Traditional organization	local – regency	Customary territorial authorities.
University	provincial	
Other	-	Includes funding agencies, anonymous groups,

Table E2. Types of organizations and number of participants per organization type (indicated by the number in brackets) by case study

Type of organization	Case Study			SUM
	Bali MPA Network	**Nusa Penida**	**East Buleleng**	
Government agency	4 (9)	6 (9)	10 (15)	20 (33)
NGO	8 (13)	5 (9)	4 (10)	17 (32)
Private business	-	11 (12)	5 (5)	16 (17)
Resource user groups	-	4 (15)	7 (13)	11 (28)
Community-based org.	-	7(7)	4 (9)	11 (16)
Traditional org.	-	1 (1)	2 (2)	3 (3)
University	1 (1)	-	-	1 (1)
Other	2 (3)	-	-	2 (3)
SUM	15 (26)	34 (53)	32 (54)	81 (133)

Appendix F. Supplemental Materials for Chapter 3

Table F1. Top ten betweenness scores for organizations in the Nusa Penida MPA network. The ID is composed of the type of organization, and a unique number to distinguish them from others in the group. Organizations here are labeled as Coral Triangle Centre (CTC), community-based organization (CBO), non-government organization (NGO), government agency (GA), monitoring and enforcement agency (ME), traditional authority (TA), and private enterprise (Pv).

Collaboration		Knowledge-exchange		Funding or resource-sharing	
Org. ID	**between**	**Org. ID**	**between**	**Org. ID**	**between**
CTC	1158.3	CTC	839.3	CTC	491.5
CBO01	338	CBO02	430	GA03	315
GA03	331.6	GA03	245	Pv02	146.5
NGO03	331.2	CBO07	222.7	CBO08	106.5
Pv02	269.8	GA01	197.2	CBO01	46.5
CBO08	214.1	Pv01	102.3	Pv03	29.5
CBO06	198.83	CBO08	75.5	TA01	26
CBO02	157.68	Pv08	63	CBO06	23.5
CBO03	150.67	NGO05	61.3	CBO02	17.5
ME01	149.17	Pv02	49.2	NGO06	6

Table F2. Top ten betweenness scores for organizations in the East Buleleng Conservation Zone Network. The ID is composed of the type of organization, and a unique number to distinguish them from others in the group. Organizations here are labeled as Reef Check Indonesia (RC-I), Ministry of Marine Affairs and Fisheries, Buleleng (DKP-B), Indonesia Nature Foundation (LINI), fishers' association (Fi), ornamental fishers' association (Fo), community-based organization (CBO), non-government organization (NGO), government agency (GA), monitoring and enforcement agency (ME), and private enterprise (Pv).

Collaboration		Knowledge-exchange		Funding or resource-sharing	
Org. ID	**between**	**Org. ID**	**between**	**Org. ID**	**between**
RC-I	366.5	RC-I	302.6	DKP-B	94
DKP-B	355.5	LINI	226.7	RC-I	77.2
GA05	127.9	DKP-B	220.7	CBO04	46.7
Fo01	120.9	CBO04	56.6	GA06	28
LINI	117.5	ME01	42	CBO03	26
GA07	112	Fi05	34	Pv01	18
CBO03	86.8	NGO02	32.7	CBO02	16.7
ME01	77.6	CBO01	29	Fo01	16
CBO01	77.4	ME02	27	LINI	10.8
CBO04	60	Fi02	23.5	NGO01	6