

Editorial—Marine protected areas in Cambodia: a call for collaborative action

Marianne TEOH*, KIM Sour, Matthew GLUE & CHEA Phallin

Fauna & Flora International Cambodia Programme, No. 19, Street 360, Boeung Keng Kang 1, Phnom Penh, Cambodia.

* Corresponding author. Email marianne.teoh@fauna-flora.org

Cambodia's marine ecosystems underpin the country's growing coastal economy, food security and resilience of coastal communities. Connected habitats such as coral reefs, mangrove forests and seagrass meadows provide vital support to fishing and tourism industries, coastal communities and endangered wildlife but face mounting pressure from destructive and exploitative fishing, habitat degradation and coastal pollution (Selig & Bruno, 2010; Boulton *et al.*, 2016; Hughes *et al.*, 2017; Thaug *et al.*, 2017). These challenges are compounded by increasing demands for seafood, a rapidly growing coastal tourism industry, poorly regulated coastal development and climate change impacts such as rising ocean temperatures, sea level rise and ocean acidification (Rizvi & Singer, 2011; van Bochove *et al.*, 2011; Mulligan & Longhurst, 2014). The present pandemic could potentially exacerbate these issues by shifting fishing effort and altering market trends.

Despite recent progress in protecting marine ecosystems and improving fisheries management in Cambodia, capacity for coastal management remains limited and investments in marine conservation and sustainability initiatives have been disjointed. With a short coastline just 435 km in length, the increasingly complex nature of coastal resource management in the country necessitates stronger collaborative action. To ensure effective management and efficient investments, an unprecedented coalition is needed between government and non-government agencies, coastal communities and private and tourism sectors. In this article, we review recent developments in marine conservation and management in Cambodia, highlight the importance of cross-sector participation and dialogue and stress the need for greater inter-ministerial collaboration.

Progress towards marine protection

Recent progress has been realised through advances in small-scale fisheries management and increased attention to ecosystem-based approaches such as marine protected areas (MPAs). MPAs are management tools which aim to conserve marine biodiversity, manage dwindling fish stocks, promote sustainable tourism and protect coastal ecosystem integrity (Lubchenco, 2013; Edgar *et al.*, 2014). While the global coverage of MPAs has expanded rapidly in the past two decades, their effectiveness is subject to continued debate (Pendleton *et al.*, 2018). Nonetheless, as a relatively new actor on the MPA stage, Cambodia has a unique opportunity to learn from global experiences in MPA effectiveness and best practices (Selig & Bruno, 2010; Gill *et al.*, 2017).

The first coastal protected areas in Cambodia were developed between 1993 and 1999 and include Peam Krasop Wildlife Sanctuary, Ream National Park, Botum Sakor National Park and the Koh Kapik Ramsar Site (Fig. 1), which are under the authority of the Ministry of Environment. Until recently, these sites have had limited formal management and focused on terrestrial and wetland habitats, with no zoning, monitoring or active protection of marine habitats (Ministry of Environment, 2017, 2018).

The designation of the Koh Rong Archipelago Marine Fisheries Management Area in 2016 was a landmark for marine protection in Cambodia (Ministry of Agriculture, Forestry and Fisheries, 2016) (Fig. 1). This was the nation's first large-scale and dedicated MPA and was created to protect marine biodiversity and ecosystem services that support fisheries and tourism. The 405 km² of coastal waters comprise conservation areas where no resource extraction is allowed, fishery refugia for seasonal stock recovery, recreational areas for tourism activities and community fishery areas that allow regulated family-

CITATION: Teoh, M., Kim S., Glue, M. & Chea P. (2020) Marine protected areas in Cambodia: a call for collaborative action. *Cambodian Journal of Natural History*, 2020, 1–6.

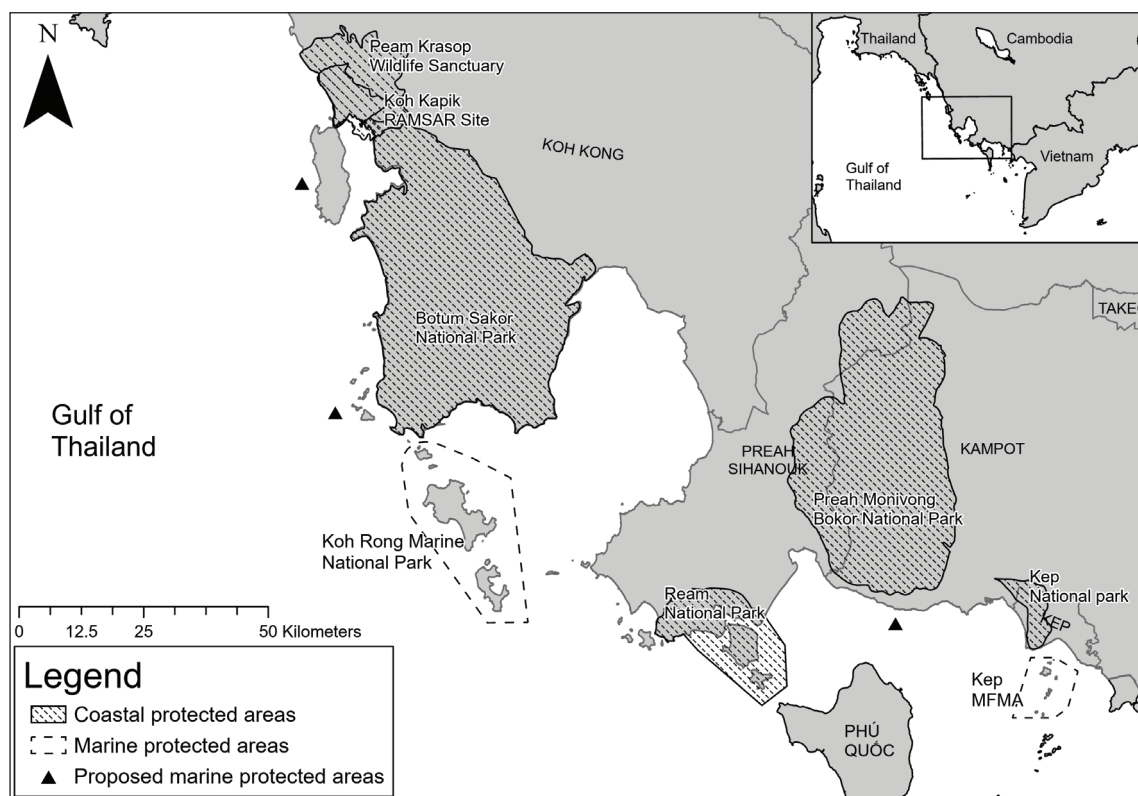


Fig. 1 Coastal and marine protected areas in Cambodia.

scale fishing (Fisheries Administration, 2016). These multiple-use areas are collaboratively managed and patrolled by community fishery teams and local government, with support from NGOs. This approach was replicated and adapted with the designation of the Kep Marine Fisheries Management Area (117 km²) in 2018 (IUCN, 2018) (Fig. 1) and development of two additional marine fisheries management areas is now underway in Kampot Province and the Koh Sdach Archipelago in Koh Kong Province.

Following the creation of the Department of Marine and Coastal Zone Conservation within the Ministry of Environment in 2016, the nation's first marine national park was established around the Koh Rong Archipelago in 2018 (Royal Government of Cambodia, 2018) (Fig. 1). This new form of designation incorporates terrestrial (53 km²) and marine (471 km²) habitats across two provinces and supersedes and expands upon the Koh Rong Marine Fisheries Management Area declared in 2016. Given plans to create additional marine national parks in priority areas such as Koh Kong, further expansion of Cambodia's MPA network is imminent.

There has also been progress beyond the designation coastal and marine protected areas. Active manage-

ment plans now exist for the Koh Rong Marine Fisheries Management Area (Fisheries Administration, 2016) and Peam Krasop Wildlife Sanctuary (Ministry of Environment, 2018) and a management plan was recently approved for the Kep Marine Fisheries Management Area. Community groups and conservation organisations along the coastline are actively protecting and restoring coastal habitats, and socioeconomic and ecological monitoring programmes are underway. While there is continued evidence of over-exploitation and environmental damage, there are also initial signs of ecological stability and recovery in MPAs (Roig-Boixeda *et al.*, 2017; Reid *et al.*, 2019; Glue & Teoh, 2020). Additionally, the crucial role of community members and local fishers in effective marine management has been recognised and community networks and exchange programmes now exist along the coastline (Savage, 2017; Barter, 2018).

Cross-sectoral coordination and dialogue has also improved through the Technical Working Group for Fisheries and the Cambodian Coral Reef Monitoring Network (established in 2019), which provide forums for government, academic institutions, development agencies, NGOs, and private sector representatives to interact. In the case of the technical working group for the Koh

Rong MPA, such groups can also provide a platform for community representatives to participate in coastal resource management and decision-making (Preah Siha-nouk Provincial Hall, 2014). These developments are collectively promising, although marine conservation efforts in Cambodia are still at a relatively early stage.

Control of illegal & unsustainable fishing

Illegal, unreported and unregulated (IUU) fishing arguably poses one of the greatest threats to Cambodian marine resources due to over-exploitation of fish populations and degradation of marine habitats from destructive fishing practices (Fisheries Administration, 2018; Reid *et al.*, 2019). IUU fishing is often associated with humanitarian crimes in the region (Sylwester, 2014; Mutaqin, 2018). It also undermines national fisheries management and conservation efforts, discriminates against and demotivates fishers who act responsibly, and destabilises food and job security (Teh *et al.*, 2017). As a consequence, increased surveillance and enforcement capacity is critical to achieving successful fisheries management and conservation in Cambodia. For example, management of the Koh Rong MPA is limited by the capacity of community-led patrol teams who cannot confront large fishing vessels operated by outsiders or issue penalties for infractions unless accompanied by fisheries enforcement officers (Roig-Boixeda *et al.*, 2018). These community patrols are important and effective management and awareness-raising measures for MPAs. However, they cannot address shifts in fishing effort to less patrolled areas and are insufficient to deter offshore and large-scale fishing which often occurs at night (Roig-Boixeda *et al.*, 2018; Glue & Teoh, 2020).

Remote sensing technologies that are being explored can potentially address some of these issues and improve the detection capacity of enforcement efforts. In addition, the Fisheries Administration is also developing national plans to address identified governance needs for fisheries. These include a national plan for fisheries conservation, a national plan to deter and eliminate IUU marine fishing (Fisheries Administration, 2018), and a national plan for control and inspection in the marine sector. Provided community fisheries continue to be strengthened and marine fisheries management areas and fisheries refugia are well designed, collaboratively managed and actively enforced, further advances in marine fisheries management can be expected in the coming years.

Governance of MPAs & fisheries

Fisheries management and food security cannot be decoupled from marine conservation and coastal manage-

ment in a Cambodian context. Marine environments are often open access and coastal communities and fishing industries rely on their biodiversity. As such, MPAs in the country will need to integrate fisheries management objectives with biodiversity conservation objectives to achieve their social, environmental and economic goals. Because Cambodia is highly dependent on fish protein and generates significant revenue from fish exports, innovative management approaches must be considered in the design and management of MPAs.

Effective MPAs are especially important in protecting marine habitat and fisheries stock where conventional fisheries management is weak (Edgar *et al.*, 2014). Marine management often sits at the nexus between competing government ministries and frequently straddles fisheries, environmental and sometimes economic divides. There are examples globally where different government agencies found ways to successfully co-manage marine resources, but these are complex approaches reliant on compromise and communication. In Guinea-Bissau for example, a country similar to Cambodia in its high resource exploitation and limited financial resources, shared responsibilities and collaborations between fisheries and protected area agencies have helped to reconcile conservation and fisheries objectives within its MPAs (Weigel *et al.*, 2014). Given Cambodia's creation and expansion of marine national parks in sites with high incidences of IUU fishing, fisheries-dependent coastal communities and marine waters under existing fisheries management, unprecedented collaborations will be required between the Fisheries Administration and the Ministry of Environment to ensure their social, governance and biodiversity goals can be met. As such, ongoing dialogue between these two agencies will be key to the future success of national marine and fisheries management through MPAs.

Governments worldwide are under pressure to increase the coverage of marine protected areas and this has often resulted in opportunistic rather than systematic designations (Toropova *et al.*, 2010; Hansen *et al.*, 2011). The continued creation of marine fisheries management areas by the Fisheries Administration and the development of marine national parks by the Ministry of Environment will expand the coverage of MPAs in Cambodia and this momentum is commendable. However, without effective collaboration between government agencies, overlapping jurisdictions and unclear mandates for management will hamper action on the ground (Souter *et al.*, 2016). Once an MPA has been designed and established, the ongoing management effort is significant. Large-scale boundary demarcation and awareness efforts on land and at sea must be undertaken to ensure basic

levels of understanding and compliance in areas which are often undergoing rapid development for tourism and other purposes. Coastal habitats and offshore waters must be regularly patrolled and conservation and fishery regulations must be effectively enforced. Terrestrial, in-water and fisheries monitoring must also be undertaken to assess progress towards ecological, socio-economic and other management goals. Given these requirements, collaborative management between government agencies should not be regarded as an aspirational ideal to strive towards, but as a prerequisite for efficiently managing complex coastal and marine sites.

Participatory design & management of MPAs

Allied to the need for collaborative management, successful MPAs rely on strong support, engagement and leadership from local communities (Giakoumi *et al.*, 2018). Participatory approaches to MPA zoning and design are critical for local compliance, especially where the capacity for regulation and enforcement is low. These were employed in the design of the Koh Rong MPA for example (Boon *et al.*, 2014), where subsequent studies reported high levels of voluntary compliance and perceived decreases in illegal fishing activities (Hamilton, 2012; Roig-Boixeda *et al.*, 2017, 2018). Roig-Boixeda *et al.* (2017) also indicated high levels of local awareness of the MPA (88%) and its rules (80%), with most respondents (92%) reporting that the MPA benefited their village. These findings were attributed to the perceived legitimacy of the MPA and collaborative approach taken in its design and management. Notably however, Roig-Boixeda *et al.* (2017, 2018) also found low awareness within the private and tourism sectors and low compliance among outsiders. The latter was attributed to a lack of law enforcement capacity and absence of effective boundary demarcation.

While the ecological benefits of strict no-take MPAs are well documented (e.g., Lester & Halpern, 2008), MPAs are not closed ecological systems. Marine systems are inherently connected by the migration of fish species across habitats and long-distance dispersal of marine

organisms (Luo *et al.*, 2009; Hughes *et al.*, 2010). Further, while integrated approaches for coastal management are well known in Cambodia, the land-sea interface is often ignored in MPA planning (Lyngby *et al.*, 2017; Prak *et al.*, 2018). Because ineffective management actions on land negatively influence marine systems, this discrepancy needs to be addressed in management plans and policies to ensure the resilience of marine systems. Significant collaborations between government agencies, land developers and the tourism sector will be required to this end.

Mobilising support for marine conservation

Although the number of conservation organisations active in Cambodia's marine environment remains relatively small, several large projects have begun in recent years that consider integrated approaches to coastal management. Recognising the critical need for such approaches, several international development agencies and organisations are now engaged in or exploring investment opportunities for sustainable management of coastal and marine resources¹. Collaborations between these projects have begun, and if successful and sustained, these could amplify benefits for coastal livelihoods, industries and the ecosystems upon which they rely. They may also catalyse meaningful engagement with coastal stakeholders from the tourism sector, land and infrastructure developers, marine defence sector and inter-agency government committees².

A strong desire for environmental action exists in much of the private sector in coastal Cambodia, especially in the tourism industry whose revenue relies on healthy and attractive coastal ecosystems. However, businesses and developers are often ill-informed about existing initiatives and working groups, and resource management measures are not designed in a way that engages these fast-paced sectors. Mobilising private sector support will be crucial going forward (Barter, 2018). Moreover, engaging the private sector in collaborative coastal and marine management can generate additional funding opportunities. For example, a collaborative manage-

¹ Relevant programmes include: The 'South China Sea Fisheries Refugia Project' of the Southeast Asian Fisheries Development Centre, United Nations Environment Programme and Global Environment Facility aims to improve management of fisheries and fisheries refugia. The European Union funded 'CAPFISH' project will provide direct support to the Cambodian fisheries sector and support monitoring and enforcement in marine fisheries. The 'CamAdapt' project led by the Food and Agriculture Organisation of the United Nations will support coastal communities in adapting and improving resilience to climate change. A project led by Fauna & Flora International and a consortium of local partners aims to strengthen a network of marine protected areas that support biodiversity and livelihoods across the Cambodian coastline. The World Bank is conducting assessments to inform investments in integrated coastal zone management and blue economy development, and a forthcoming project of the Asian Development Bank will support inclusive development of coastal and marine fisheries value chains and sustainable tourism.

² Examples of inter-agency government committees include the National Committee on Management and Development of the Coastal Zones, the National Council for Sustainable Development and the National Committee on Maritime Security.

ment and financing mechanism has been proposed for the Koh Rong MPA to attract private investments alongside philanthropic and tourism capital. The intention of the mechanism is to boost the financial stability of MPA management and support local communities and site managers (Agulto *et al.*, 2020) and its success will depend on collaborations between public agencies, private businesses, NGOs and local communities.

Conclusions

The stage is set for effective management of MPAs in Cambodia. However, to move MPAs beyond seemingly arbitrary lines on a map, participatory and evidence-based approaches to their design and ongoing management must be adopted to enhance community compliance and balance social equity. Focused efforts will also be required to facilitate collaborative management between sectors and direct much-needed investments and technical support to managing marine resources and securing long-term conservation gains.

An ambitious coalition is needed to facilitate links and dialogue between the many stakeholders in coastal Cambodia, including local communities, the private sector, NGOs and a range of government agencies. Forums for open dialogue between these stakeholders can be created and MPA planning should be embedded in broader plans for fisheries and coastal development. Enhanced leadership from government will be crucial to navigating these exciting but uncharted waters.

References

- Agulto, B., Teoh, M. & Pascal, N. (2020) *Developing Collaborative Management and Financing Solutions for the Koh Rong Marine National Park*. Unpublished concept note to the Royal Government of Cambodia, Phnom Penh, Cambodia.
- Barter, L. (2018) *An investigation into Cambodia's first marine managed area: current state, strengths and areas for improvement*. MSc thesis, University Centre of the Westfjords, Iceland.
- Boon P.Y., Mulligan, B., Benbow, S.L.P., Thorne, B.V., Leng P. & Longhurst, K. (2014) Zoning Cambodia's first marine fisheries management area. *Cambodian Journal of Natural History*, **2014**, 55–65.
- Boulton, A.J., Ekeboom, J. & Gislason, G.M. (2016) Integrating ecosystem services into conservation strategies for freshwater and marine habitats: a review. *Aquatic Conservation, Marine and Freshwater Ecosystems*, **26**, 963–985.
- Edgar, G.J., Stuart-Smith, R.D., Willis, T.J., Kininmonth, S., Baker, S.C., Banks, S., Barrett, N.S., Becerro, M.A., Bernard, A.T.F., Berkhout, J., Buxton, C.D., Campbell, S.J., Cooper, A.T., Davey, M., Edgar, S.C., Försterra, G., Galván, D.E., Irigoyen, A.J., Kushner, D.J., Moura, R., Parnell, P.E., Shears, N.T., Soler, G., Strain, E.M.A. & Thomson, R.J. (2014) Global conservation outcomes depend on marine protected areas with five key features. *Nature*, **506**, 216–220.
- Fisheries Administration (2016) *Management Plan for the Koh Rong Archipelago Marine Fisheries Management Area 2016–2020*. Ministry of Agriculture, Forestry and Fisheries, Royal Government of Cambodia, Phnom Penh, Cambodia.
- Fisheries Administration (2018) *International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Inregulated Marine Fishing 2018–2022*. Ministry of Agriculture, Forestry and Fisheries, Royal Government of Cambodia, Phnom Penh, Cambodia.
- Giakoumi, S., McGowan, J., Mills, M., Beger, M., Bustamante, R.H., Charles, A., Christie, P., Fox, M., Garcia-Borboroglu, P., Gelcich, S., Guidetti, P., Mackworth, P., Maina, J.M., McCook, L., Micheli, F., Morgan, L.E., Mumby, P.J., Reyes, L.M., White, A., Grorud-Colvert, K. & Possingham, H.P. (2018) Revisiting “success” and “failure” of marine protected areas: a conservation scientist perspective. *Frontiers in Marine Science*. DOI 10.3389/fmars.2018.00223
- Gill, D.A., Mascia, M.B., Ahmadi, G.N., Glew, L., Lester, S.E., Barnes, M., Craigie, I., Darling, E.S., Free, C.M. & Geldmann, J. (2017) Capacity shortfalls hinder the performance of marine protected areas globally. *Nature*, **543**, 665–669.
- Glue, M. & Teoh, M. (2020) *Koh Rong Marine National Park: Coral Reef Status Report*. Fauna & Flora International, Phnom Penh, Cambodia.
- Hamilton, M. (2012) Perceptions of fishermen towards marine protected areas in Cambodia and the Philippines. *Bioscience Horizons*. DOI 10.1093/biohorizons/hzs007
- Hansen, G.J.A., Ban, N.C., Jones, M.L., Kaufman, L., Panes, H.M., Yasué, M. & Vincent, A.C.J. (2011) Hindsight in marine protected area selection: a comparison of ecological representation arising from opportunistic and systematic approaches. *Biological Conservation*, **144**, 1866–1875.
- Hughes, T.P., Graham, N.A.J., Jackson, J.B.C., Mumby, P.J. & Steneck, R.S. (2010) Rising to the challenge of sustaining coral reef resilience. *Trends in Ecology & Evolution*, **25**, 633–642.
- Hughes, T.P., Barnes, M.L., Bellwood, D.R., Cinner, J.E., Cumming, G.S., Jackson, J.B.C., Kleypas, J., Van De Leemput, I.A., Lough, J.M. & Morrison, T.H. (2017) Coral reefs in the Anthropocene. *Nature*, **546**, 82–90.
- IUCN (2018) *Establishing Kep Marine Fisheries Management Area for Improved Management of Marine Fisheries Resources*. <https://www.iucn.org/news/cambodia/201808/establishing-kep-marine-fisheries-management-area-improved-management-marine-fisheries-resources> [Accessed 29 May 2020].
- Lester, S.E. & Halpern, B.S. (2008) Biological responses in marine no-take reserves versus partially protected areas. *Marine Ecology Progress Series*, **367**, 49–56.
- Lubchenco, J. (2013) Large marine ecosystems: the leading edge of science, management and policy. In *Stress, Sustainability, and Development of Large Marine Ecosystems during Climate Change: Policy and Implementation* (eds K. Sherman & S. Adams), pp. 2–19. United Nations Development Programme, New York.

- USA and Global Environment Facility, Washington DC, USA.
- Luo, J., Serafy, J.E., Sponaugle, S., Teare, P.B. & Kieckbusch, D. (2009) Movement of gray snapper *Lutjanus griseus* among subtropical seagrass, mangrove, and coral reef habitats. *Marine Ecology Progress Series*, **380**, 255–269.
- Lyngby, J., Jeppesen, G. & Vann M. (2017) *Integrated Coastal Zone Management and Planning Principles in Cambodia*. United Nations Environment Programme, Horsholm, Denmark and Ministry of Environment, Phnom Penh, Cambodia.
- Ministry of Agriculture, Forestry and Fisheries (2016) *Proclamation on the Establishment of Marine Fisheries Management Area Of Koh Rong Archipelago in Preah Sihanouk Province, Cambodia*. Royal Government of Cambodia, Phnom Penh, Cambodia.
- Ministry of Environment (2017) *National Protected Area Strategic Management Plan 2017–2031*. Royal Government of Cambodia, Phnom Penh, Cambodia.
- Ministry of Environment (2018) *Management Plan for Peam Krasop Wildlife Sanctuary 2018–2022 Koh Kong*. Royal Government of Cambodia, Phnom Penh, Cambodia.
- Mulligan, B. & Longhurst, K. (2014) *Research and Recommendations for a Proposed Marine Fisheries Management Area in the Koh Rong Archipelago*. Fauna & Flora International, Phnom Penh, Cambodia.
- Mutaqin, Z.Z. (2018) Modern-day slavery at sea: human trafficking in the Thai fishing industry. *Journal of East Asia and International Law*, **11**, 75–76.
- Pendleton, L.H., Ahmadi, G.N., Browman, H.I., Thurstan, R.H., Kaplan, D.M. & Bartolino, V. (2018) Debating the effectiveness of marine protected areas. *ICES Journal of Marine Science*, **75**, 1156–1159.
- Prak V., Nay, S. & Rafael, B. (2018) Strengthening local capacity for ICM implementation and scaling up in Preah Sihanouk, Cambodia. In *Local Contributions to Global Sustainable Agenda: Case Studies in Integrated Coastal Management in the East Asian Seas Region* (eds Chua T.-E., Chou L.M., G. Jacinto, S.A. Ross & D. Bonga), pp. 459–468. Partnerships in Environmental Management for the Seas of East Asia and Coastal Management Center, Quezon City, Philippines.
- Preah Sihanouk Provincial Hall (2014) *The Creation of Technical Working Group for the Koh Rong Archipelago Marine Fisheries Management Area of Preah Sihanouk Province*. Preah Sihanouk Provincial Hall, Preah Sihanouk, Cambodia.
- Reid, A.E.A., Haisoune, A. & Ferber, P. (2019) The status of coral reefs and seagrass meadows in the Kep Archipelago, Cambodia. *Cambodian Journal of Natural History*, **2019**, 24–39.
- Rizvi, A.R. & Singer, U. (2011) *Cambodia Coastal Situational Analysis*. IUCN, Gland, Switzerland.
- Roig-Boixeda, P., Chea P., Brozovic, R., You R., Neung S., San T, T., San T., Teoh, M. & West, K. (2018) Using patrol records and local perceptions to inform management and enforcement in a marine protected area in Cambodia. *Cambodian Journal of Natural History*, **2018**, 9–23.
- Roig-Boixeda, P., Chea P., West, K., Schneider, H. & Teoh, M. (2017) *Compliance and Enforcement in the Koh Rong Archipelago Marine Fisheries Management Area: Knowledge, Attitudes & Perceptions Survey*. Fauna & Flora International, Phnom Penh, Cambodia.
- Royal Government of Cambodia (2018) *Sub-decree on the Establishment of the Koh Rong Marine National Park. Sub-decree No. 14 dated 8 February 2018*. Royal Government of Cambodia, Phnom Penh, Cambodia.
- Savage, J.M. (2017) The design and implementation of marine management strategies in Cambodia. PhD thesis, University of Southampton, UK.
- Selig, E.R. & Bruno, J.F. (2010) A global analysis of the effectiveness of marine protected areas in preventing coral loss. *PLoS ONE*, **5**, 1–7.
- Souter, N.J., Simpson, V., Mould, A., Eames, J.C., Gray, T.N.E., Sinclair, R., Farrell, T., Jurgens, J.A. & Billingsley, A. (2016) Will the recent changes in protected area management and the creation of five new protected areas improve biodiversity conservation in Cambodia? *Cambodian Journal of Natural History*, **2016**, 1–5.
- Sylwester, J.G. (2014) Fishers of men: the neglected effects of environmental depletion on labor trafficking in the Thai fishing industry. *Pacific Rim Law & Policy Journal*, **23**, 423–459.
- Teh, L.S.L., Witter, A., Cheung W.W.L., Sumaila, U.R. & Yin X. (2017) What is at stake? Status and threats to South China Sea marine fisheries. *Ambio*, **46**, 57–72.
- Thaung R., Muñoz, V.H., Holden, J., Willcox, D. & Souter, N. J. (2017) The Vulnerable fishing cat *Prionailurus viverrinus* and other globally threatened species in Cambodia's coastal mangroves. *Oryx*, **52**, 636–640.
- Toropova, C., Kenchington, R., Vierros, M. & Meliane, I. (2010) Benefits and challenges of MPA strategies. In *Global Ocean Protection: Present Status and Future Possibilities* (eds D. Laffoley, C. Toropova, I. Meliane, E. Matthews & M. Spalding), pp. 11–24. IUCN, Gland, Switzerland.
- Van Bochove, J.-W., Ioannou, N., McVee, M. & Raines, P. (2011) Evaluating the status of Cambodia's coral reefs through baseline surveys and scientific monitoring. *Cambodian Journal of Natural History*, **2011**, 114–121.
- Weigel, J.Y., Mannle, K.O., Bennett, N.J., Carter, E., Westlund, L., Burgener, V., Hoffman, Z., Da Silva, A.S., Kane, E.A., Sanders, J., Piante, C., Wagiman, S. & Hellman, A. (2014) Marine protected areas and fisheries: bridging the divide. *Aquatic Conservation, Marine and Freshwater Ecosystems*, **24**, 199–215.