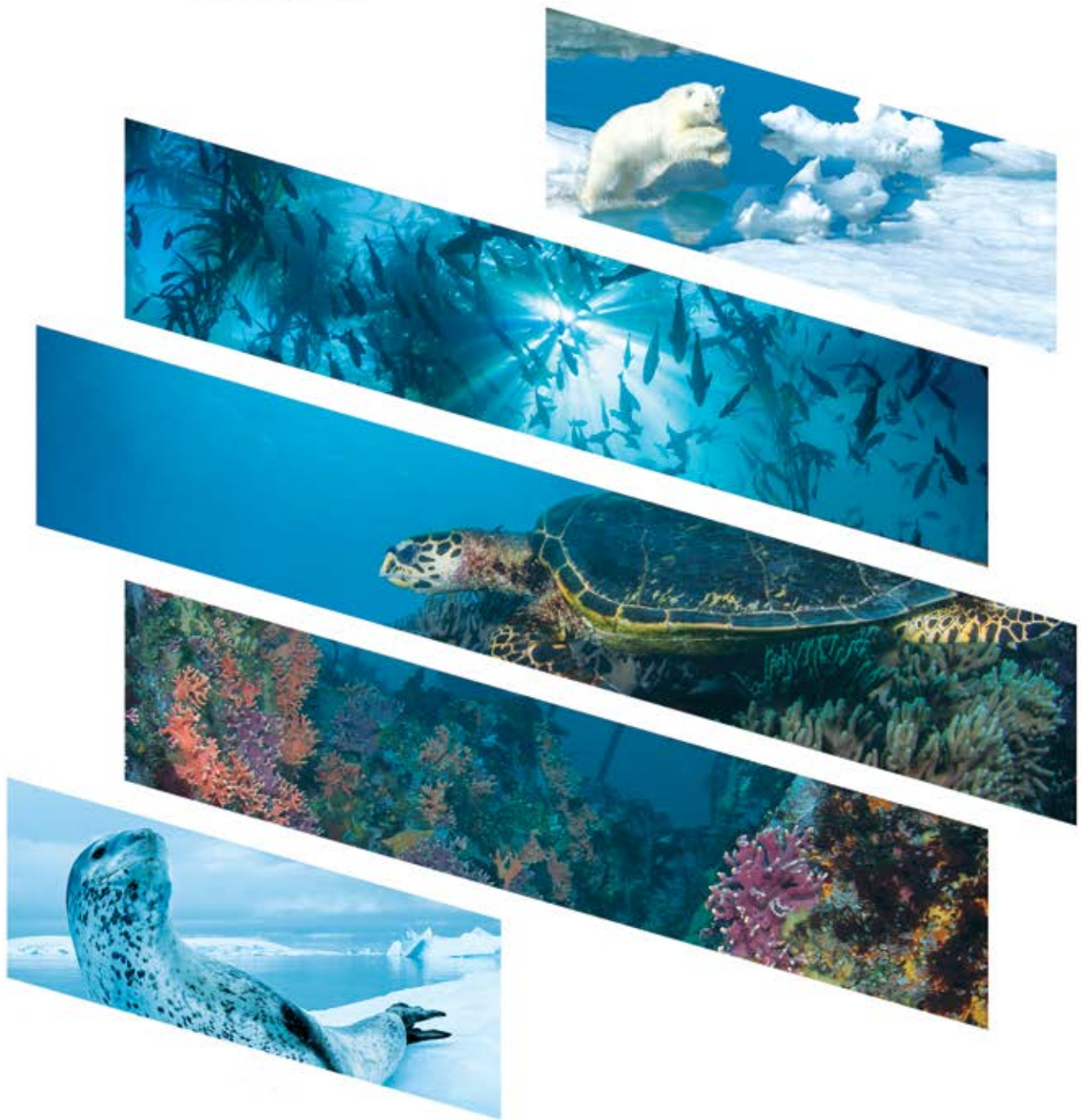


BLUE PARK



**Criteria
2021**



*Saving wild ocean places,
for us and
future generations*

Suggested citation:

Marine Conservation Institute. (2020) Blue Park Criteria: 2021. Seattle, WA, 34pp.

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Introduction to Blue Park Awards

I Introduction to Blue Park Awards

Blue Park Award Criteria

Marine Conservation Institute aims to safeguard marine biodiversity by assembling a strategic network of effective marine protected areas (MPAs) that includes replicate representation of all marine habitats in each biogeographic region and supports marine population persistence.

To make this vision a reality, we must improve the quality of MPAs and accelerate the implementation of MPAs. Despite the implementation of more than 11,000 MPAs around the world,

less than 3% of the ocean is
strongly protected.

(MPAtlas.org)

These efforts are not keeping pace with the growing threats to marine life.

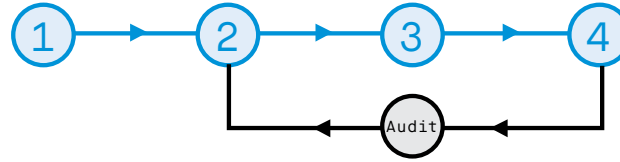
Blue Park Awards incentivize the implementation of more effective MPAs by awarding those that meet science-based standards for effectiveness. Governments and NGOs welcome Blue Park Awards because they attract tourists, local support and investors, and they bring a sense of pride to political leaders, managers, and communities. Blue Park Awards support MPA efforts around the world, complementing the work of communities, leaders, conservation groups and governments to implement MPAs and fulfill international MPA commitments.



The Evaluation Process

II

The Evaluation Process

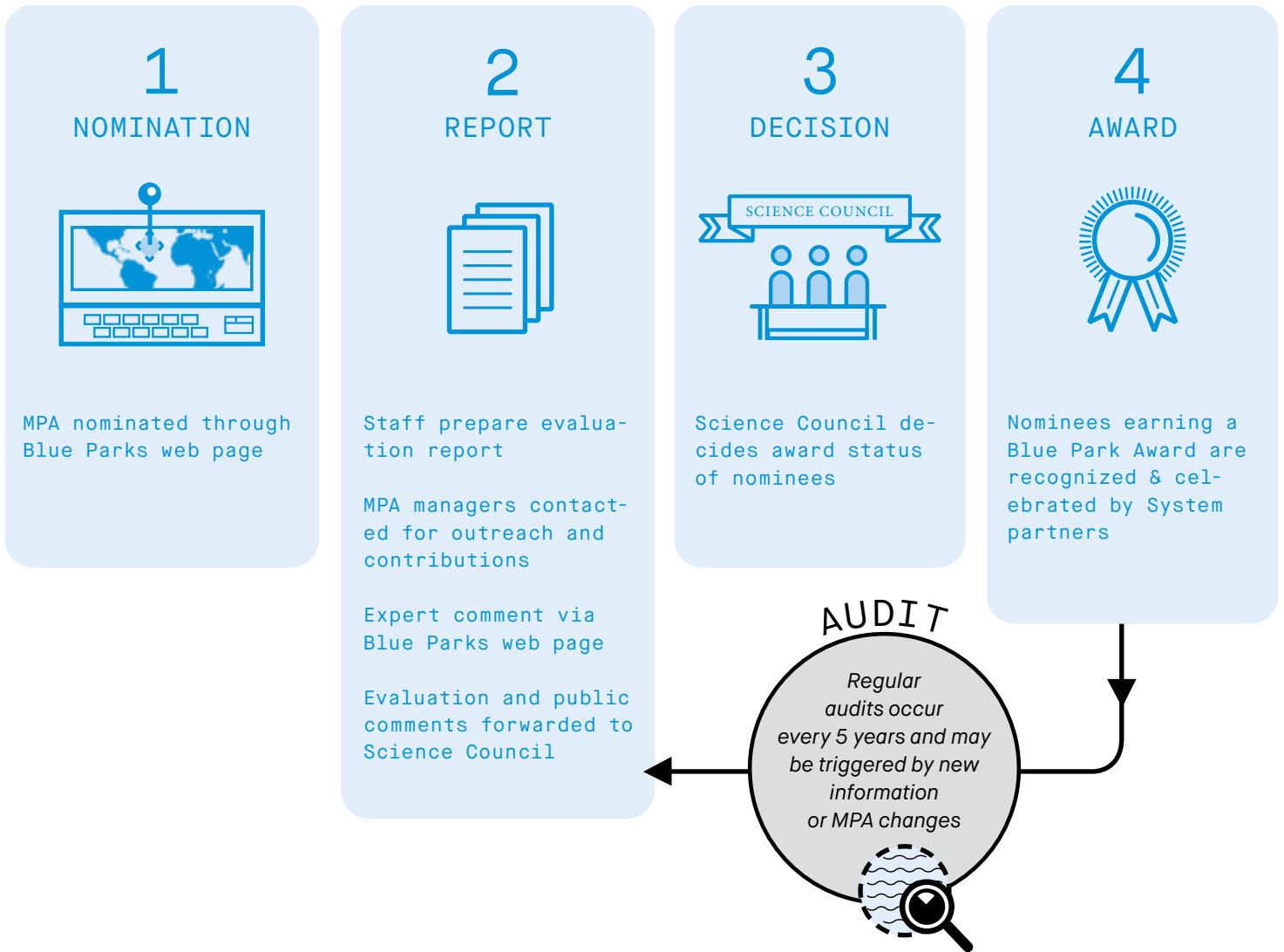


Blue Park Award Criteria

Any MPA that meets the science-based Blue Park standards defined by the following criteria qualifies for an award and inclusion in the Blue Park network. Becoming a Blue Park is a four-step process. First, MPAs are nominated through an online nomination platform that elicits information and documentation needed for the evaluation. Second, program staff complete an evaluation report for the nominee based on the criteria. During this step, program staff reach out to MPA managers to invite their contributions to the evaluation report. The evaluation report includes recommendations to improve the efficacy of the MPA with respect to safeguarding and recovering marine biodiversity. Evaluation reports are published on the Blue Parks web page for 30 days, during which time, those with experience in the nominated MPA are encouraged to submit comments as well as additional documentation or evidence to correct and refine the report. Third, the evaluation report and the collected comments are forwarded to Science Council members with expertise in the nominee's region and ecosystems. Science Council members determine the nominee's award status.

Nominees earning a Blue Park Award are publicly recognized and celebrated by Blue Park partners. All Blue Parks are subject to a review audit every five years. An earlier audit may be triggered when significant changes to a Blue Park are brought to the attention of program staff.

The Evaluation Process





The Award Criteria

III

The Award Criteria



Blue Park Award Criteria

A considerable body of scientific literature has focused on the attributes of protected areas that result in biodiversity conservation (e.g., Lester et al. 2009, Edgar et al. 2014, Zupan et al. 2018). International commitments, including the Convention on Biological Diversity, highlight the need for protected areas to be located in places important for biodiversity, effectively and equitably managed, ecologically representative and designed to support population connectivity and migration. Despite widespread interest in implementing effective MPAs, science has not typically informed the implementation of MPAs (Watson et al. 2016).

Blue Park standards rely on up-to-date science on the attributes of effective MPAs. There are three parts to the Blue Park evaluation. Nominees must meet the criteria in Part 1 to qualify for the award. The criteria in Part 2 determine the level of Blue Park Award that the nominee earns. The third part of the review process is an assessment of the conservation value the nominee adds to the network of Blue Parks via ecosystem representation and ecological spatial connectivity. Part 3 will prioritize nominees and new conservation targets that contribute most to safeguarding marine biodiversity.

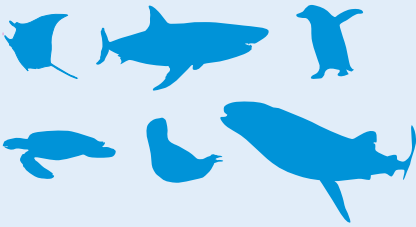
Many of the criteria included in the Blue Park evaluation require a qualitative assessment of an MPA's attributes, as quantitative thresholds will depend on context. It is the role of the Science Council members – experts from across relevant disciplines and geopolitical borders – to judge the degree to which each potential nominee meets the standards established by the Blue Park criteria. Criteria for which some circumstances are anticipated to affect the Science Council's judgement include a section entitled, "Additional Considerations."

Blue Park Award Criteria

1

ELIGIBILITY CRITERIA

1.1 Biodiversity Value



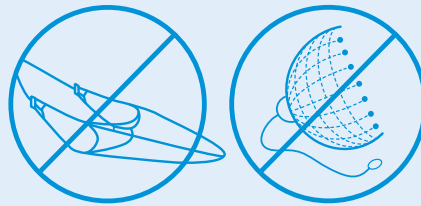
1.2 Implementation



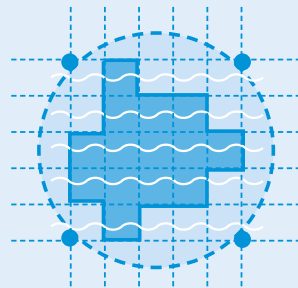
2

AWARD STATUS EVALUATION

2.1 Regulations



2.2 Design, Management & Compliance



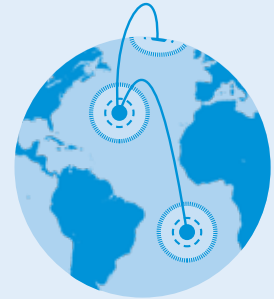
3

SYSTEM PRIORITIES

3.1 Ecosystem Representation



3.2 Ecological Spatial Connectivity



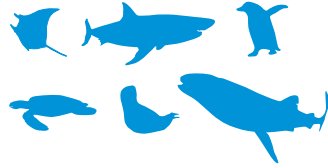
Answers to 6 key questions determine the award status of a nominated site:

- 1.1 Does the MPA protect a place that is valuable for marine biodiversity?
- 1.2 Is the MPA designated for biodiversity conservation, and is it fully implemented?

- 2.1 Does the site prohibit activities that degrade the marine environment?
- 2.2 Is the design, governance and management of the MPA consistent with effectiveness, and are local communities represented in the management?

- 3.1 What value does the MPA add to the Blue Park network in terms of replicate ecosystem representation?
- 3.2 What value does the MPA add to the Blue Park network in terms of ecological spatial connectivity?

1. Eligibility Criteria



Blue Park
Award Criteria



1.1 Biodiversity Value

Must satisfy at least one biodiversity value criterion

1.1.1 Includes area of high species richness or endemism within the context of the biogeographic region

1.1.2 Includes demonstrated historic or predicted ecological (e.g., climate) refugia or populations with known or predicted tolerance or adaptive potential

1.1.3 Includes rare, unique or representative ecosystems

1.1.4 Includes area important for threatened species (including those identified by the IUCN Red List¹ or national legislation), keystone species or foundational species – these may be migration pathways or breeding, nursery, feeding or assembly areas.

Qualifying Designations

An MPA that has earned any of the following designations has satisfied at least one of the biodiversity value criteria above (1.1.1-1.1.4).

Convention on Wetlands of International Importance (Ramsar)³

Important Bird Area (IBA)⁴

Hope Spot⁵

Specially Protected Area and Wildlife (SPAW)⁶ in the Wider Caribbean Region

Natura 2000 Special Protection Area (SPA) or Special Area of Conservation (SAC)⁷

¹ <http://www.iucnredlist.org/>

² <https://www.fws.gov/endangered/>

³ <http://www.ramsar.org/>

⁴ <https://maps.birdlife.org/marineIBAs/default.html>

⁵ <https://www.mission-blue.org/hope-spots/>

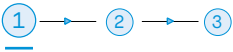
⁶ <http://www.cep.unep.org/content/about-cep/spaw>

⁷ <http://www.natura.org/about.html>

1. Eligibility Criteria



Blue Park Award Criteria



Additional Consideration: Community-based MPAs

If a community-based MPA is long-standing and appears to be durable and permanent, the Science Council may consider it eligible for a Blue Park Award without government designation.

1.2 Implementation:

Must satisfy all

1.2.1 The MPA is designated by a legitimate and functional government representing the interests of civil society, and the MPA's implementation meets the IUCN standards for recognizing indigenous peoples' rights.	<input type="checkbox"/>
1.2.2 The MPA is designated to enhance the biodiversity value of the site.	<input type="checkbox"/>
1.2.3 The MPA designation is permanent or is effective for at least 25 years.	<input type="checkbox"/>
1.2.4 The MPA has a management plan that has been updated within the last 15 years.	<input type="checkbox"/>
1.2.5 The MPA implements strategies to enforce its regulations and enhance compliance rates that are appropriate for the MPA's size, accessibility and poaching threats; managers report that the regulations are actively and consistently enforced.	<input type="checkbox"/>
1.2.6 The MPA has a budget and staff.	<input type="checkbox"/>

Qualifying Designation

An MPA that has earned the following designation has satisfied all of the implementation criteria above (1.2.1-1.2.6).

IUCN Green List of Protected Areas¹

¹ <http://www.iucn.org/theme/protected-areas/our-work/green-list>

III

2. Award Status Criteria



Blue Park Award Criteria

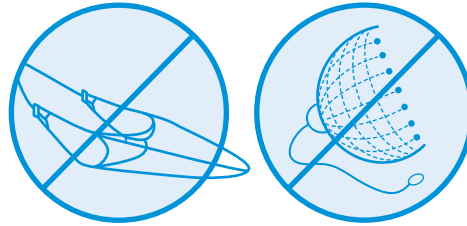


Each eligible nominee will be evaluated in terms of its regulations and its design and management attributes. Note that a lower MPA Regulations score and a higher MPA Design, Management & Compliance score are needed to earn a more prestigious Blue Park Award. Platinum, Gold and Silver Awards require the following evaluation scores:

Blue Park Awards

Award Status	2.1 Regulations	2.2 Design, Management & Compliance
Platinum	MPA regulation score ≤ 3	AT LEAST 5 Design, Management & Compliance criteria met
Gold	MPA regulation score ≤ 4	AT LEAST 4 Design, Management & Compliance criteria met
Silver	MPA regulation score ≤ 5	AT LEAST 3 Design, Management & Compliance criteria met

2.1 Regulations



Blue Park Award Criteria



Activities allowed in the MPA must be addressed by regulations in a management plan. Each regulatory zone of the MPA will be scored using the Regulation-Based Classification System for Marine Protected Areas (Costa et al. 2016), which relies on the number of fishing gear types allowed, a fishing gear impact score, bottom exploitation and aquaculture allowed, and anchoring and boating allowed. All zone scores are weighted according to their area and summed to generate an MPA score. Lower scores represent stronger levels of protection.

Additional Consideration : Other Activities

The MPA score serves as a guideline for the Science Council members in determining the award status of a nominee. Because the Regulation-Based Classification System for Marine Protected Areas is an estimate that sometimes conflates activities with very different impacts (e.g., salmon farming and oyster farming, SCUBA spearfishing and snorkel spearfishing) and excludes some damaging non-extractive recreational activities (e.g., snorkeling that results in high-impact coral reef trampling), the Science Council may decide a nominee's award status differently than the nominee's MPA score indicates.

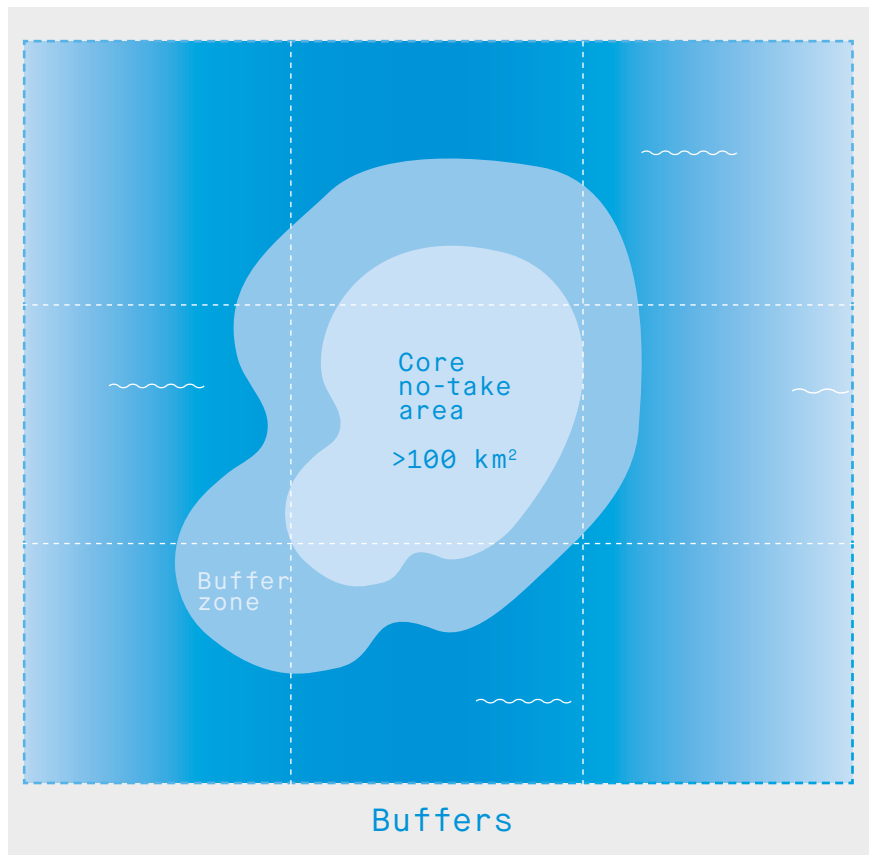


Additional Consideration : Buffers

Buffer zones – zones of reduced human impact surrounding core no-take protected areas – enhance the conservation value of core no-take areas.

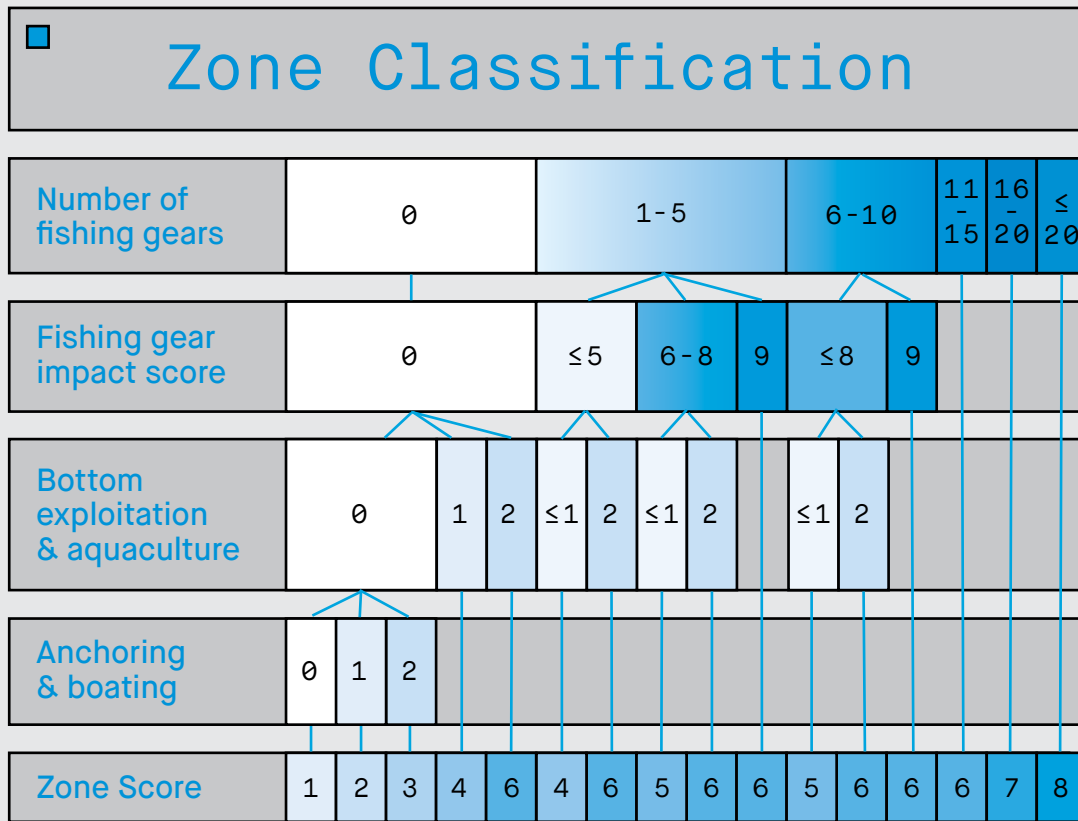
An MPA that includes a large (>100 km²) no-take zone (Zone regulation score 1-3) surrounded by a buffer zone with a score 3-5 may be considered for a Platinum Blue Park Award.

Blue Park
Award Criteria





The following decision tree is used to determine the zone score for each zone of an MPA. Fishing gear impact scores, bottom exploitation & aquaculture index, and anchoring & boating index are determined according to the subsequent tables.



Fishing Gear Impact Score

Use highest score among fishing gears allowed in the regulatory zone



Intertidal hand captures

Spearfishing/
diving



Fish traps

Fixed fish traps
"modroque"

Gillnets



Hand harvesting

Longlines
(pelagic)

Traps (lobster/
octopus/crab)



Dredges



Beach seines

Surrounding
nets near shore

Trammel net



Lines (jigs, hook
andline, rod, troll)

Purse seines
(pelagic)

Trawl (pelagic)

Longlines
(bottom)



Purse seines
(bottom)

Trawl (bottom)

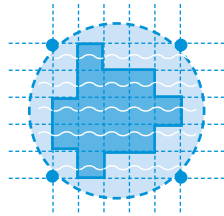
Bottom Exploitation & Aquaculture Index

Aquaculture and bottom exploitation not allowed	0
Aquaculture OR bottom exploitation allowed, but not mining/oil platforms/sand extraction/detonations	1
Both aquaculture AND bottom exploitation allowed, or only bottom exploitation including mining/oil platforms /sand extraction/detonations	2

Anchoring & Boating Index

No anchoring allowed	0
Boating and/or anchoring allowed, but anchoring is fully regulated: restricted to particular areas or mooring buoys	1
Boating and/or anchoring allowed, and anchoring is partially regulated or unregulated	2

2.2 Design, Management & Compliance



Effective MPAs have a combination of design, management and compliance attributes. Nominees must have at least 5 of these attributes to be considered for a Platinum Award, 4 to be considered for a Gold Award and 3 to be considered for a Silver Award.

Blue Park Award Criteria



<p>2.2.1 Size</p>	<p>MPA \geq 100 km² <u>OR</u> Explicitly designed as part of a network of MPAs to support population connectivity</p>
<p>2.2.2 Ecological Isolation</p>	<p>Ecological or other protected area buffers surround habitats targeted for conservation within the MPA (e.g., soft sediment or deep water surrounding coral reefs).</p>
<p>2.2.3 Age</p>	<p>MPA regulations in the MPA, comparable to the current regulations, are \geq 10 years old.</p>
<p>2.2.4 Effective Management Planning</p>	<p>The management plan identifies: 2.2.4.1 Measurable conservation targets 2.2.4.2 Threats to the conservation targets 2.2.4.3 Planned activities to mitigate threats and achieve conservation targets 2.2.4.4 Monitoring plans to measure progress towards conservation targets.</p>
<p>2.2.5 Community Engagement</p>	<p>The local community is engaged in the management of the MPA.</p>
<p>2.2.6 Resources & Capacity</p>	<p>The MPA has adequate resources and capacity (including budget, staff, training and leveraged partnerships) to implement its management plan and its enforcement strategies.</p>

3. System Priorities



Blue Park Award Criteria



To ensure the representation of all ecosystems in all biogeographic regions, the replication of representative habitats, and the ability of the Blue Park network to support marine population persistence and migration, the Blue Park evaluation includes an assessment of each nominee's contribution to the conservation value of the network.

These geographic analyses will be conducted by program staff members using information about the existing Blue Parks. As the network grows, program staff will perform gap analyses to prioritize locations for new Blue Parks.

3.1 Ecosystem Representation

Blue Parks prioritizes nominees and Accelerator projects protecting ecosystems that are under-represented within their biogeographic region (< 30% are protected in Blue Parks), or are rare in the biogeographic region.

3.2 Ecological Spatial Connectivity

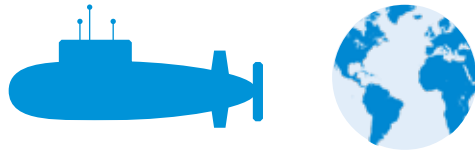
Blue Parks also prioritizes nominees and Accelerator projects that improve ecological spatial connectivity among existing Blue Parks. Ecological spatial connectivity refers to the physical and biological processes connecting areas in the marine environment in ways that support wildlife and ecosystems (Carr et al. 2017). System connectivity analyses are focused on population connectivity and migration; they rely on dispersal and migration estimates for key taxa as well as distances between Blue Parks with relevant habitats.



The Scientific Basis for Blue Park Award Criteria

IV

The Scientific Basis for Blue Park Award Criteria



The Scientific Basis
for Blue Park
Award Criteria

The Blue Park evaluation process is intended to identify MPAs that will help safeguard marine life. It is based on the best available science and has been developed over several years with the help of many marine scientists working in academia, government agencies, and non-profit conservation organizations. To ensure the Blue Park Award criteria continue to inform MPA implementation with the best available science, they will be updated regularly with the newest research. The following sections summarize the key scientific principles of the Blue Park criteria.

1. Eligibility Criteria

1.1 Biodiversity Value

To make a significant contribution to protecting marine biodiversity, MPAs must protect biologically valuable places (Devillers et al. 2014). Many MPAs are currently located in places with sub-optimal biodiversity value because their protection involves fewer political hurdles, while highly biodiverse places or areas that support threatened or endangered species remain unprotected (Agardy et al. 2011, Devillers et al. 2014). The criteria for biodiversity value closely align with many other established criteria for MPA biodiversity value (Asaad et al. 2017), and therefore, an MPA that has earned one of the qualifying designations (see Criterion 1.1 in Section III) has already demonstrated it meets one or more of the Biodiversity Value criteria. For areas where there is a lack of information on the biodiversity value as it relates to regional or global patterns, additional research may be necessary. In addition to ecological refugia that may provide significant biodiversity conservation value in the context of current and future climate change, protecting populations with greater adaptive potential will promote long-term persistence and increase resilience to climate change (Walsworth et al. 2019, Selmoni et al. 2020).

1.2 Implementation

MPAs can only become Blue Parks if they are fully implemented and designated for biodiversity conservation. Evidence of active management for biodiversity conservation includes stated objective to conserve or enhance biodiversity in the official documentation for the marine MPA (e.g., the designation legislation, the management plan or the official website). Additional evidence of the objective may include an updated management plan, a management team, a budget and an appropriate approach to enforcing protections. Blue Park Awards incentivize protections intended to be permanent that will result in long-term biodiversity conservation benefits.

To be eligible for a Blue Park Award, an MPA located in a place where indigenous people are present or have a collective attachment must comply with the IUCN Standard on Indigenous People (2006). This standard upholds indigenous peoples' rights to self-determination, the use of traditional ecological knowledge and consultation in management. This standard expressly prohibits the forced relocation of indigenous peoples for the purposes of conservation.

With respect to evidence of the enforcement of regulations and compliance with regulations in the MPA (1.2.5), program staff ask managers to self-report by responding to a multiple-choice question based on the one used in the Management Effectiveness Tracking Tool (Stolton et al. 2007) and the World Bank MPA Score Card (Staub and Hatzios 2004). Managers' responses to these two tools were used by Gill et al. (2017) as a measure of enforcement capacity and compliance; the study revealed a significant association between enforcement capacity and ecological outcomes in MPAs.

The question posed to managers is:

How would you characterize the level of enforcement and compliance with regulations in the MPA? (Please select the statement that most closely resembles enforcement and compliance in the MPA.)

- a) There are few or no rules or the staff lacks the capacity to enforce rules and regulations
- b) There are rules and regulations, but they are inconsistently enforced
- c) There are rules and regulations that are actively and consistently enforced

Additional Consideration: Other Activities

Community-based MPAs can be effective at conserving marine biodiversity (Chirico et al. 2017) and may be sustained through long-term community commitments rather

2. Award Status Criteria

2.1 Regulations

To effectively safeguard marine biodiversity, an MPA must regulate activities that negatively impact the biodiversity values of the site. The Blue Park evaluation prioritizes fully protected MPAs that exclude extractive activities (Lubchenco & Grorud-Colvert 2015), as these MPAs result in the best biological and ecological outcomes (Lester and Halpern 2008, Edgar et al. 2014, Appolloni et al. 2017, Strain et al. 2018, Aalto et al. 2019). Platinum Awards are reserved for these fully protected MPAs or those with a significant (> 100 km²) fully protected zone buffered by a zone allowing only very limited lower-impact extraction. However, 94% of all MPAs allow some fishing (Costello & Ballantine 2015), and the Blue Park criteria acknowledge the contributions of partially protected marine areas with strong regulations for biodiversity conservation (Lester & Halpern 2008, Coll et al. 2011, Tyler et al. 2011, Sciberras et al. 2013, Campbell et al. 2017, Gill et al. 2017, Giakoumi et al. 2017, Zupan et al. 2018), while recognizing that not all partially protected areas are effective at conserving fished populations (e.g., Denny and Babcock 2003, Di Franco et al. 2009). Gold and Silver awards are earned by highly protected areas (Horta e Costa et al. 2016, Zupan et al. 2018) designed, managed and enforced to contribute to biodiversity conservation.

To assess the strength of an MPA's regulations, the Blue Park evaluation employs a classification system based on the number of fishing gears allowed, their ecological impact, the types of bottom exploitation and aquaculture allowed and the regulations relating to recreational boating (Horta e Costa et al. 2016, Zupan et al. 2018). For MPAs with multiple zones, the evaluation uses a weighted average of the individual zone scores (weighted by the proportion of zone area to total MPA area). The scores produced by this simple classification system strongly correlate with scores produced by a classification system employing a rigorous assessment of all MPA regulations (Horta e Costa et al. 2016) and also correlate with the biological outcomes of MPAs (Zupan et al. 2018).

Additional Consideration: Other Activities

Science Council members may consider allowed activities and regulated activities that are not well-represented by the regulations-based MPA classification system in determining the award status of a nominee. Of particular concern may be MPAs in which non-extractive activities have a large impact on the protected ecosystem (Thurston et al. 2012), such as coral reef trampling by tourists (Williamson et al. 2016).

Additional Consideration: Buffers

Buffer zones – areas with some fishing restrictions surrounding no-take zones – do not necessarily contribute positively to the conservation value of an MPA (Claudet et al. 2008, Di Franco et al. 2009). However, a strongly regulated zone – one that would earn a Blue Park Award on its own – buffering a very large fully protected zone (> 100 km²) may be considered for a Platinum Blue Park Award, given that strictly regulated buffer zones can effectively enhance conservation outcomes (Coll et al. 2011).

2.2 Design, Management, & Compliance

MPA design, management and compliance play important roles in MPA effectiveness (e.g., Claudet et al. 2008, Le Quesne 2009, Gaines et al. 2010, McCook et al. 2010, Edgar et al. 2014). Attributes that are associated with positive biological and ecological outcomes should be standard practice in MPA implementation. To this end, the Blue Park standard requires at least 3 of the 6 attributes outlined below for Silver status, 4 for Gold status and 5 for Platinum status.

2.2.1 Size

Small no-take MPAs can have positive conservation effects (e.g., Giakoumi et al. 2017), however larger MPAs are better because they support larger population sizes (Gaines et al. 2010), they are more likely to protect self-persistent populations sustained by the local retention of larvae (Botsford et al. 2003), they are more likely to exceed the home range size of fished species (Di Franco et al. 2018), and they are more likely to contain fully functional ecosystems (McLeod et al. 2009). Larger MPAs have stronger positive impacts on biological communities (Claudet et al. 2008, Friedlander et al. 2017), particularly when those MPAs exhibit two or more other attributes of effective MPAs – effective management, longevity, isolation and no-take restrictions (Edgar et al. 2014). Using individual-based models to evaluate effectiveness of different sizes of no-take MPAs in coastal coral reef ecosystems, Krueck et al. (2017) determined that an MPA needed to be at least 2-10 km wide to achieve partial protection of fished species and 100 km wide to achieve full protection of nearly all the species they modeled. Claudet et al. (2008) and Edgar et al. (2014) defined large MPAs as > 100 km² in their analyses of MPA effectiveness. We will consider nominees > 100 km² for consideration of higher status Blue Park Awards than those < 100 km² until a more nuanced assessment of the relationship between size and conservation effectiveness across a variety of ecosystems is published.

An effective alternative to a large MPA is a network of smaller MPAs spaced closely enough to support population connectivity for species with longer dispersal distances (Gaines et al. 2010, McCook et al. 2010, Grorud-Colvert et al. 2014, Carr et al. 2017, Baetscher et al. 2019) and sized large enough to support the local retention of species with shorter dispersal distances (Carr et al. 2017).

2.2.2 Ecological Isolation

Ecosystems entirely enclosed within protected area boundaries and isolated by deep water, sand or other ecological barriers provide more conservation benefits (Edgar et al. 2014). We will also consider ecological barriers in adjacent protected areas (e.g., terrestrial protected areas).

2.2.3 Age

Older MPAs – those over 10 years old (Claudet et al. 2008, Edgar et al. 2014, Strain et al. 2018) or 15 years old (Molloy et al. 2009) – confer greater conservation benefits than younger MPAs (Friedlander et al. 2017). Depending on local environmental and species-specific population drivers, some species may not show a measurable response to protection for at least a decade (Kaplan et al. 2019). An MPA younger than 10 years old that earns Blue Park status may be eligible to earn a higher award status

2.2.4 Management Planning

Employing a management plan has been associated with positive ecological outcomes in tropical MPAs (Hargreaves-Allen et al. 2017). Effective management planning and governance involves identifying and communicating measurable objectives, prioritized threats and management activities, including monitoring for ecological outcomes (Tear et al. 2005, Bennett and Satterfield 2018). Blue Parks must design and implement an ecological monitoring program that measures progress with re-

2.2.5 Community Engagement

Though more research is needed to determine the relationship between participatory governance and ecological outcomes in MPAs (Stafford 2018), community consultation in the implementation and management of an MPA is associated with higher levels of compliance with MPA regulations (Pollnac et al. 2010, Eriksson et al. 2019) and MPA effectiveness (Batista and Cabral 2016).

2.2.6 Resources & Capacity

The capacity to carry out all management and enforcement activities is vital to the conservation performance of MPAs. Adequate staff capacity and budget is particularly important for MPA effectiveness (Gill et al. 2017, Bennett and Satterfield 2018).

3. System Priorities

The conservation value of an MPA depends, in part, on its spatial relationship to other MPAs (McCook et al. 2009, McLeod et al. 2009, Gaines et al. 2010, Batista and Cabral 2016). Blue Park criteria incorporate a geographic framework with an assessment of ecosystem representation and ecological connectivity to enhance biodiversity persistence (Magris et al. 2018), with a goal of 30% protection for each habitat type within each biogeographic region. Assessing the network value of a nominee is different from the other parts of the evaluation because it depends on an analysis of the existing protections for the ecosystems within the nominee's biogeographic region.

A biogeographic region is a large area defined by biotic distributions. Marine Conservation Institute is building both a network and a portfolio of well-protected Blue Parks distributed across the coastal biogeographic regions defined by Spalding et al. (2007). Marine Conservation Institute is also working with partners to develop a more comprehensive three-dimensional ecoregional framework for the global ocean (Sayre et al. 2017).

3.1 Replicate Ecosystem Representation

The Blue Park network must include examples of all the marine ecosystems in each biogeographic region of the ocean to protect the vast diversity of marine life (Spalding et al. 2008, McCook et al. 2009, McLeod et al. 2009), because within each region, places with comparable physical and chemical conditions tend to host similar species assemblages. The Blue Park network will include replicate sites of each ecosystem within a biogeographic region to protect against unforeseen ecological disasters and guard against biodiversity loss (Gaines et al. 2010). The goal is to include requisite sites to achieve the conservation target of at least 30% of each ecosystem within each biogeographic region, and up to 100% of particularly rare and threatened ecosystems (O’Leary et al. 2016). As the Blue Park network grows, program staff will perform gap analyses to identify priority ecosystems within each biogeographic region to target in new MPAs.

3.2 Ecological Spatial Connectivity

Marine Conservation Institute aims to assemble a network of effective Blue Parks that support marine population connectivity and migration. Avoiding extinction requires either a population’s continuous presence in a habitat or the ability to recolonize after local extinction. Population persistence in the ocean often depends on network persistence among demographically connected populations (Botsford et al. 2001, Hastings and Botsford 2006, McCook et al. 2009, McCook et al. 2010). Networks of MPAs add resilience for protected populations that are demographically connected (Moffitt et al. 2011) and for ecosystems that are ecologically connected (Carr et al. 2017). MPA networks can also provide opportunities for adaptive migration in response to climate stressors (Hole et al. 2011, Fredston-Hermann et al. 2018), and conserving sources of recolonizers is important when pulse stressors (e.g., acute coral bleaching events, storms or upwelled low-oxygen waters) cause local extinctions (Gaines et al. 2003) or mass mortality of density-sensitive species (Aalto et al. 2019). Therefore, protecting enough cumulative area and enough dispersed replicates of ecosystems that could be connected via larval, sub-adult or adult movement is an effective means of building portfolio resilience into the network of Blue Parks (McCook et al. 2009, Grorud-Colvert et al. 2014, Carr et al. 2017, Baetscher et al. 2019).



Acknowledgements

Blue Parks Partners

The Blue Parks program relies on the contributions of many diverse partners. The Blue Park Award criteria, in particular, depend on the contributions of many scientists and MPA experts from across disciplines and sectors. These criteria were first developed based on the scientific literature and on expert opinion elicited in four focused workshops hosted by Marine Conservation Institute over three years. Program staff and Science Council members review and update these criteria annually. Marine Conservation Institute is very grateful for the important contributions made by many scientists and conservation experts around the world.



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