Critical gaps in the protection of the second largest exclusive economic zone in the world

Joachim Claudet, Charles Loiseau, Antoine Pebayle

▶ To cite this version:

HAL Id: hal-03090152
https://hal.science/hal-03090152

Submitted on 29 Dec 2020

1

3

4

5   **Title:** Critical gaps in the protection of the second largest exclusive economic zone in the world

6   **Running head:** Levels of protection matter

7   **Authors:** Joachim Claudet[1], Charles Loiseau[1], Antoine Pebayle[1]

8   **Affiliations:**

9   [1]National Center for Scientific Research, PSL Université Paris, CRIOBE, USR 3278 CNRS-EPHE-UPVD,

10   Maison des Océans, 195 rue Saint-Jacques 75005 Paris, France; joachim.claudet@cnrs.fr;

11   loiseau.charles@gmail.com; antoinepeb@hotmail.fr

12   **Number of words in Abstract:** 257

13   **Number of words in Main text:** 2517

14   **Number of references:** 52

15   **Number of Figures:** 7

16   **Number of Tables:** 0

17   **Number of Appendices:** 2

18   **Corresponding author:** Joachim Claudet; joachim.claudet@cnrs.fr; National Center for Scientific

19   Research (CNRS), PSL Université Paris, CRIOBE (USR 3278 CNRS-EPHE-UPVD), Maison des Océans, 195

20   rue Saint-Jacques, 75005 Paris, France, Phone: +33 1 44 32 10 84

22 **Title:** Critical gaps in the protection of the second largest exclusive economic zone of the world

23 **Running head:** Levels of protection matter

24 **Highlights:**

25 • France aims to protect 30% of its marine territory by 2022, with 1/3 in strong protection.

26 • The 30% target is already exceeded but Ocean basins are unevenly represented.

27 • Only 1.6% of French marine territory falls within fully or highly protected areas.

28 • 80% of French full and high protection levels are concentrated in one territory

29 • Protection levels in Metropolitan France are lower than in overseas territories.

30 **One sentence summary:** Current efforts at protecting the second largest exclusive economic zone in

31 the world are unevenly distributed and are missing entire parts of ecosystems and Ocean basins.

32 **Abstract:** A healthy Ocean is critical for achieving sustainable development goals but the Ocean is

33 threatened by multiple stressors. There is a global call to increase the coverage of marine protected

34 areas (MPAs) from 10% to at least 30% by 2030. France, a major actor for marine conservation with

35 the second largest exclusive economic zone (EEZ) in the world, with territories in all oceans but the

36 Arctic, aims at reaching the 30% by 2022, for which one third shall include a strong protection status.

37 However, the strategy to reach this twofold target faces two challenges. First, while some standards

38 exist to classify the levels of protection, France is currently using a case specific, loose approach to

39 define strong protection. Second, there is no criteria that addresses the representativeness of the

40 protection across French Ocean basins. Here, we assess the protection levels of the 524 French MPAs

41 and their distribution across territories and habitats. While 33.7% of France's waters are covered by

42 an MPA, 12.5 % of these areas do not impose regulations stronger inside than outside. Full and high

43 levels of protection, the most effective for biodiversity conservation, represent only 1.6% of French

44 waters and are unevenly distributed across Ocean basins and habitats, with 80.5% concentrated in a

45 single territory. To fill this gap in protection for the second largest exclusive economic zone in the

46   world, it is critical that France's high ambition is both qualitatively and quantitatively deployed in each

47   Ocean basin to protect our ocean, its biodiversity and to sustain the livelihood of millions of people.

48   **Keywords:** conservation; UN Sustainable Development Goals; Convention on Biological Diversity;

49   Europe and overseas territories; marine policy

50

51

52   **Main text:**

53   *1. Introduction*

54   The Ocean is critical for human society as a whole. Many Sustainable Development Goals (SDGs)

55   benefit from achieving SDG 14 for a healthy ocean [1,2]. However, local and global assessments

56   consistently show that Ocean stressors are increasing [3], with direct exploitation of organisms, and

57   fishing as the most impactful stressor [4]. While new social norms should be developed to foster

58   sustainable development pathways [5,6], adaptation and mitigation strategies are still needed. Marine

59   protected areas (MPAs) are an effective area-based management tool in this respect and can help to

60   reach both ecological and social outcomes [7–9]. Member States Parties to the Convention on

61   Biological Diversity (CBD) agreed to cover 10% of their coastal and marine waters with MPAs by 2020

62   [10]. While this target has not been met [11], Member States Parties to the CBD are now discussing

63   options to raise their ambition and to cover at least 30% by 2030.

64   While the science supporting the usefulness of MPAs was mostly based on fully protected areas [12–

65   14], where all extractive activities are forbidden, the most recently established MPAs to meet the CBD

66   Aïchi target 11 are partially protected [15,16]. Partially protected areas are often preferred over fully

67   protected areas as they can satisfy access to a broader range of users. However, partially protected

68   areas often lead to a concentration of allowed uses, even if regulated [17,18], thus sometimes

69   threatening biodiversity more than in unprotected areas [19,20].

70   A recently developed regulation-based classification system for MPAs, now part of the Blue Parks

71   awarding system (https://marine-conservation.org/blueparks/) and integrated within the MPA Guide

72   (www.protectedplanet/c/mpa-guide), allows for MPAs to be classified and compared according to the

73   potential impacts on species and habitats authorized activities can have [21]. An assessment of

74   published literature on MPA effectiveness at the global scale with the application of this classification

75   system showed that, on average, MPAs delivered ecological benefits only for full protection (where all

76   forms of extractive activities are excluded) or high protection (allowing only infrequent use of some

5

77 types of non-industrial, highly selective, low impact, recreational, commercial or subsistence fishing

78 gears) [22]. A regional assessment in Hawaii showed the same pattern [23]. Protection levels are

79 therefore a good indicator of MPA performance [22] and can thus be used to assess conservation

80 strategies over large spatial scales [24].

81 France is a major actor for marine conservation. Due to its numerous Overseas Territories scattered

82 across the Ocean (but the Arctic basin; Figure 1), France possesses the second largest exclusive

83 economic zone (EEZ) in the world after the USA, covering 10,193,037 km², approximately 8% of the

84 total surface of all countries' EEZs. Following the release of the IPBES Global Assessment Summary for

85 Policymakers [4] in Paris on May 6th 2019, French President Macron called for an increase in MPAs,

86 with respect to both coverage and levels of protection, in France's coastal and marine waters. This

87 commitment was articulated at the first Ecological Defense Council held in Paris, on May 23rd, which

88 aimed to set guidelines for the ecological transition, including the preservation of biodiversity. France's

89 target is now to reach 30% of protected territory by 2022, for which one third shall have a strong

90 protection status [25]. In early 2019, France officially declared to the CBD 23.57% of its coastal and

91 marine territory was under protection (French Agency for Biodiversity, 2019). The challenge is thus

92 whether the new MPAs will hell help protect potential underrepresented territories and ecosystems

93 and whether the levels of protection of the so-called "strong" protection will be sufficient enough to

94 deliver the expected benefits to biodiversity.

95 <insert Figure 1 here>

6

10,193,037 km² of French marine territories across the Ocean

Saint-Pierre and Miquelon
Atlantic basin
12,384 km²

Metropolitan France
North Sea/Channel/
Atlantic basin/
Mediterranean Sea
345,224 km²

Wallis And Futuna
Pacific basin
263,754 km²

French Caribbean
Atlantic basin
144,267 km²

New Caledonia
Pacific basin
1,422,543 km²

Clipperton
Pacific basin
437,420 km²

French Guiana
Atlantic basin
132,120 km²

French Polynesia
Pacific basin
4,781,060 km²

Réunion, Mayotte, French Southern and Antarctic Lands
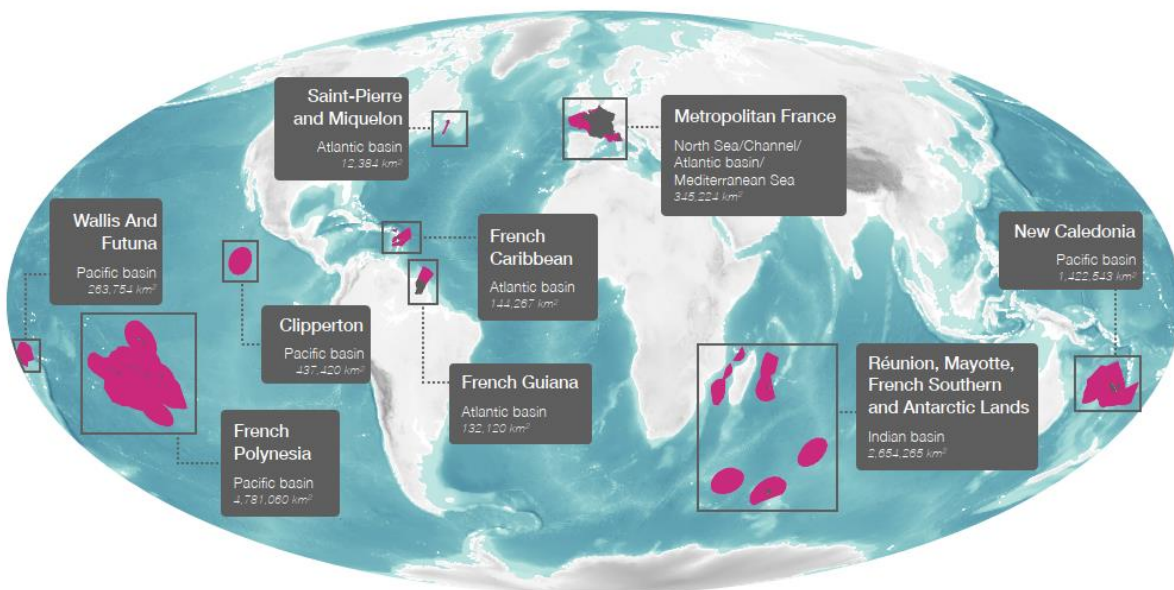Indian basin
2,654,265 km²

96

97   Figure 1: France's coastal and marine waters within its economic exclusive zone across the global Ocean.

98   Here, with a focus on France, which covers a large portion of global marine biodiversity within its EEZ

99   [26,27], which hosts a range of human pressures [28], and which features an extensive system of MPAs

100   with more than 564 protected sites, we critically assess whether the country's current conservation

101   efforts and it's new quantitative and qualitative targets are appropriately strategized to deliver

102   ecological benefits.

103   *2. Methods*

104   We complied information on legally binding MPAs from the French Agency for Biodiversity portal

105   (http://www.amp.afbiodiversite.fr/accueil_fr/ressources, 2020), the most complete database on

106   French MPAs. In the case of protected areas non-strictly marine, only the marine part was kept. All

107   identified 524 MPAs included in our study are reported to the CBD, thus counting toward international

108   biodiversity conservation targets. In the case of multiple-zone MPAs (n=20), MPAs were considered at

109   the zone level. We then collected information on allowed or prohibited activities from legal texts,

110   management plans and personal communication with MPA managers. Specific information from

111   Natura 2000 sites was also obtained from the European Environment Agency official website

112   (https://www.eea.europa.eu/data-and-maps/data/natura-10), but we cross-referenced it as in many

113   cases the information was outdated.

114   We then classified all MPAs, or zones in the case of multiple-zone MPAs, using the regulation-based

115   classification system [21]. We thus obtained a protection level for each of the 524 MPAs (or 564 zones).

116   Assigning a protection level to an MPA using the regulation-based classification system [21] consists in

117   walking through a decision tree, answering a maximum of four questions about the authorized uses

118   within the MPA. MPA protection levels range from Fully Protected, where no form of extractive

119   activities are present, Highly Protected, Moderately Protected, Poorly Protected, to Unprotected,

120   where activities with the greatest impact on species and habitats are not restricted inside the MPA. In

121   the case of MPAs which lacked a legal text or management plan in which regulations were established,

122   we assigned the MPAs to an additional non-regulated category.

123   Existing georeferenced information in the French Agency for Biodiversity portal was used. When

124   missing, in multiple instances, and for almost all zoning schemes in the case of multiple-zone MPAs,

125   additional information was obtained as detailed above for the regulations. To avoid overestimating

126   the total area covered by protection we removed overlapping areas, keeping only those conferring the

127   strongest levels of protection for each overlap. Exclusive Economic Zones were retrieved from Flanders

128   Marine   Institute,   Maritime   Boundaries   Geodatabase,   version   10   (2018;   Available   online

129   at https://doi.org/10.14284/319). Marine habitat maps were retrieved from the European

130   Environment   Agency   European   Nature   Information   System   (EUNIS),   Version   2007

131   (http://eunis.eea.europa.eu/habitats.jsp.

132   All analyses were conducted using QGIS v.2.18.0 and R [29]. Maps were generated using rworldmap

133   [30], sf [31] and tmap [32] packages. Figures were created using tidyr [33] and ggplot2 [34] packages.

134   *3.   Results and Discussion*

135   France has a long history of marine protection, with the first marine protected area (MPA) established

136   in the 1940's (Figure 2). While early MPAs often contained a portion under full protection, these

137 segments were typically few and small in size. A significant increase in number and size followed the

138 creation of the French Marine Protected Area Agency in 2006 (Figure 2). This agency has now been

139 integrated within the new French Agency for Biodiversity, established in 2020, and in charge of

140 operationalizing the French strategy for MPAs.
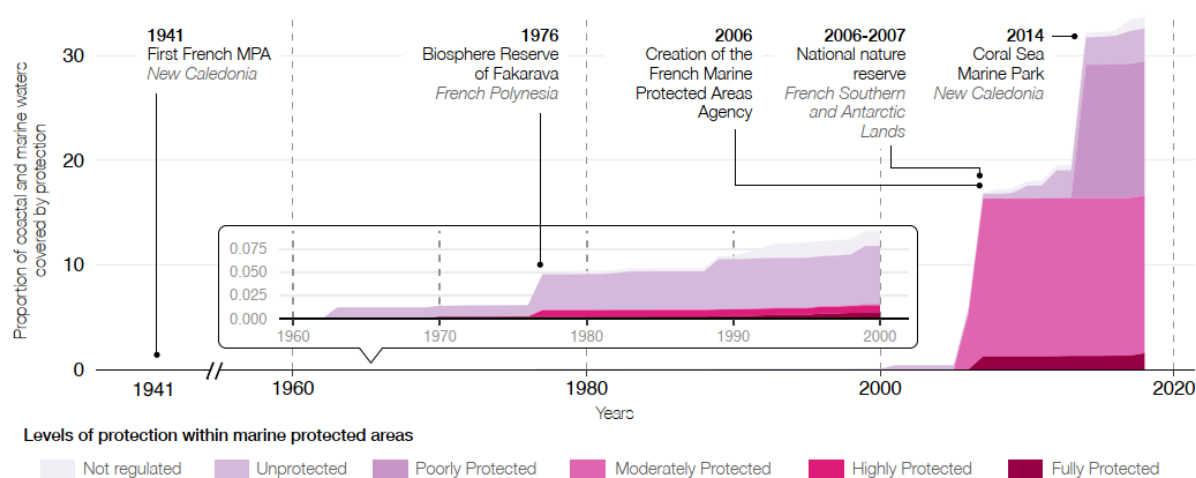
141 <insert Figure 2 here>

142

143 Figure 2: Evolution of the coverage and protection levels of French marine protected areas through time. Colors correspond

144 to the protection level within marine protected areas.

145 As of mid-2020, France has already reached its 30% target. Currently, 33.7% of France's coastal and

146 marine waters are under some level of protection. This figure is much higher than the global level,

147 with the United Nations Environment Program's World Conservation Monitoring Centre (WCMC) and

148 the International Union for the Conservation of Nature (IUCN) reporting 6.97% of global ocean

149 protection as of 2017 [16]. In France, contrary to other parts of the world where paper parks can

150 represent a large portion of declared efforts [24,35,36], only 3.3% of the areas designated as MPA

151 cannot be considered implemented as no management plan or legal text could be found. However,

152 more than 10% of the area declared as protected, although often actively managed, does not provide

153 restrictions on activities that can impact biodiversity (Figure 3). Hence, for 13.5% of the French

154 protected areas there is no difference in regulations between the inside and the outside.

155   <insert Figure 3 here>
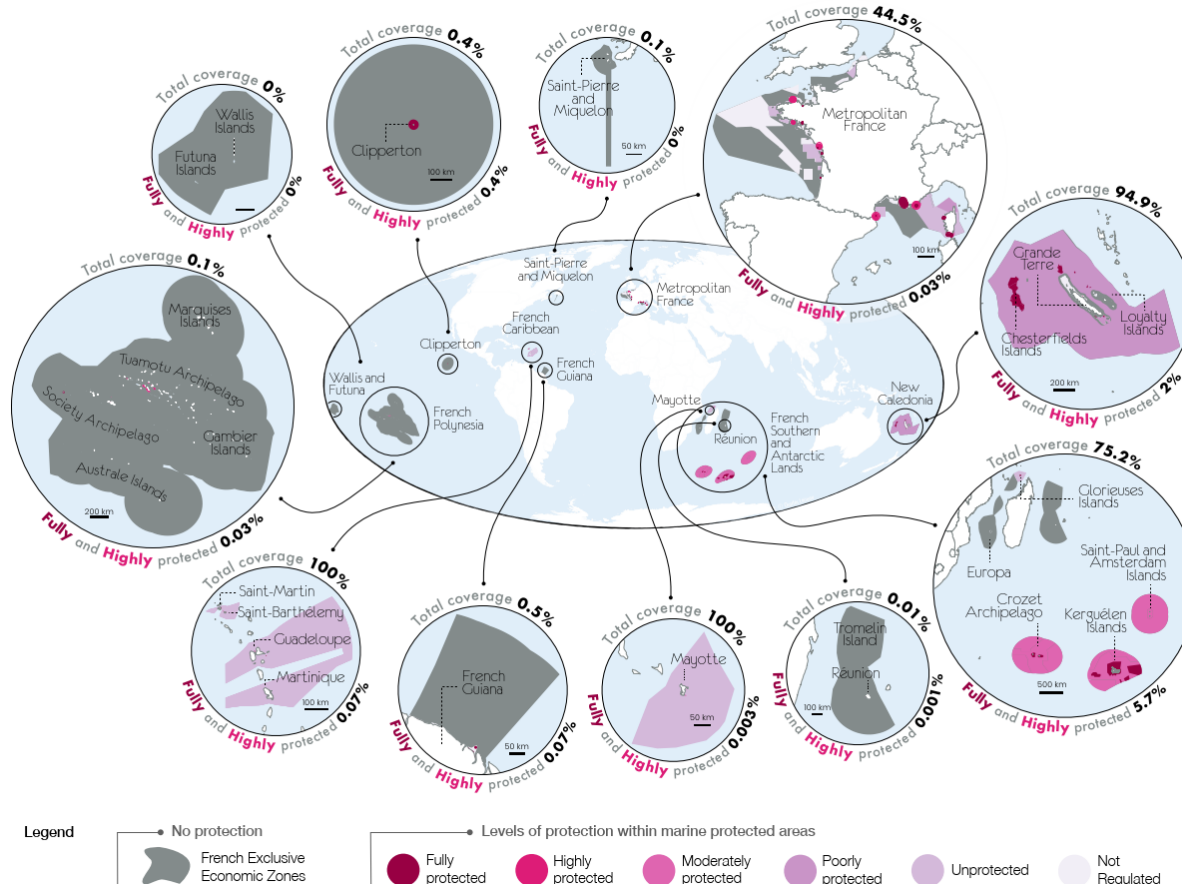
Figure 3: Coverage the different levels of protection in France's coastal and marine waters. Colors correspond to the protection level within marine protected areas. Portions of exclusive economic zone not covered by a marine protected area are depicted in grey. For each territory or region, both the total coverage of marine protected area and coverage of only full and high protection are highlighted.

Full and high protection, known to deliver ecological benefits [22,23], cover only 1.58% of France's coastal and marine waters, close to an order of magnitude below the 10% target of "strong" protection for 2022.

One of the most striking results of our assessment is that the global figures (across France's global EEZ) hardly depict the situation in each specific ocean basin, emphasizing the need for France's integrated target to be locally or regionally deployed in each ocean basin. Further, the overall effort is greatly

167   unbalanced since more than half of total marine protection, and more than 80% of full and high

168   protection, lay in French Southern and Antarctic Lands' waters (Figure 4; Figure 5).

169   In Metropolitan France, while 59.1% of the French Mediterranean is covered by MPAs, full and high

170   protection represent only 0.09% and 0.01% of the basin, respectively. The pattern is similar in the other

171   Metropolitan France basin, the French Atlantic - Channel - North Sea basin, where while MPAs

172   represent up to 39.5% of its surface, only 0.005% and 0.003% are under full and high protection,

173   respectively. If France's 10% target of "strong" protection was designed to only capture full and high

174   levels of protection, and was only adopted per Ocean basin rather than at the global EEZ scale, France's

175   two metropolitan Ocean basins would fall short of meeting the target by two to three orders of

176   magnitude. In other words, full and high protection of the Mediterranean and Atlantic - Channel -

177   North Sea basins should be increased by 100 and 1,000 fold, respectively.

178   In France, the EEZ of some territories may be embedded at 100% within an MPA (e.g. Mayotte in the

179   Indian Ocean and all of the French Caribbean Islands), but with protection levels conferring only poor

180   protection (Figure 5). Others, like Clipperton, in the Pacific Ocean, are covered only by full protection

181   (Figure 5). It should be noted that the strongest levels of protection occur in those territories that are

182   both the most remote from urban centers and where France sovereignty is disputed with other

183   countries, such as Clipperton with Mexico and some islands of the French Southern and Antarctic Lands

184   with Madagascar. While these areas host remarkable ecosystems that clearly deserve full and high

185   protection [37,38], the overrepresentation of the strongest levels of protection in those areas might

186   reflect geopolitics [39] and ease of establishment [40].

187   <insert Figure 4 here>

188   <insert Figure 5 here>

Distribution of the different levels of protection in France across Ocean basins
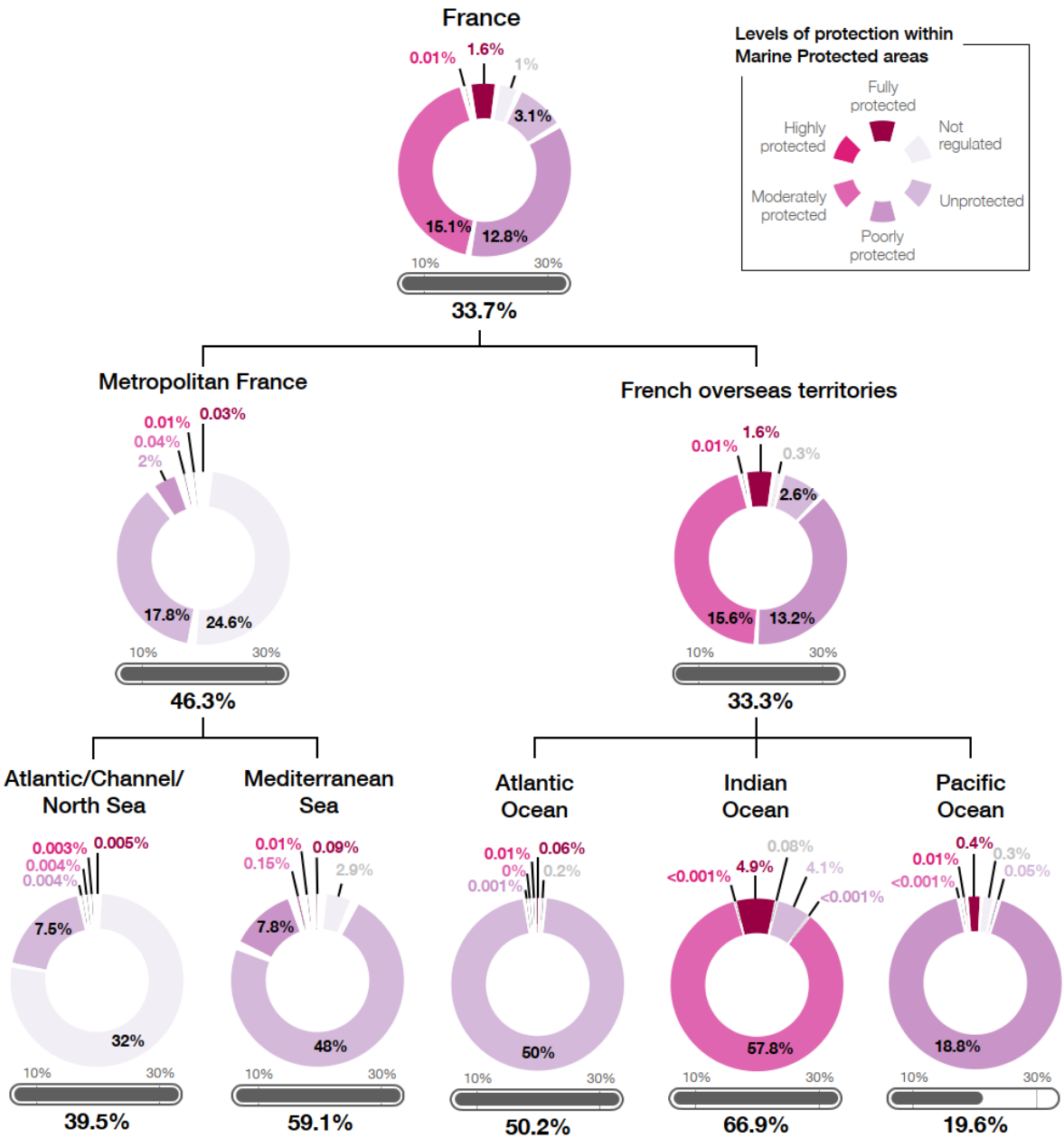

Figure 4: Distribution of the different levels of protection in France's coastal and marine waters across France's Ocean basins. Percentages below the progress bars indicate the overall percent cover of protection in the corresponding grouping, percentages in the colored pie-charts show how the different levels of protection are distributed in the corresponding grouping.

Proportion and distribution of levels of protection in French waters
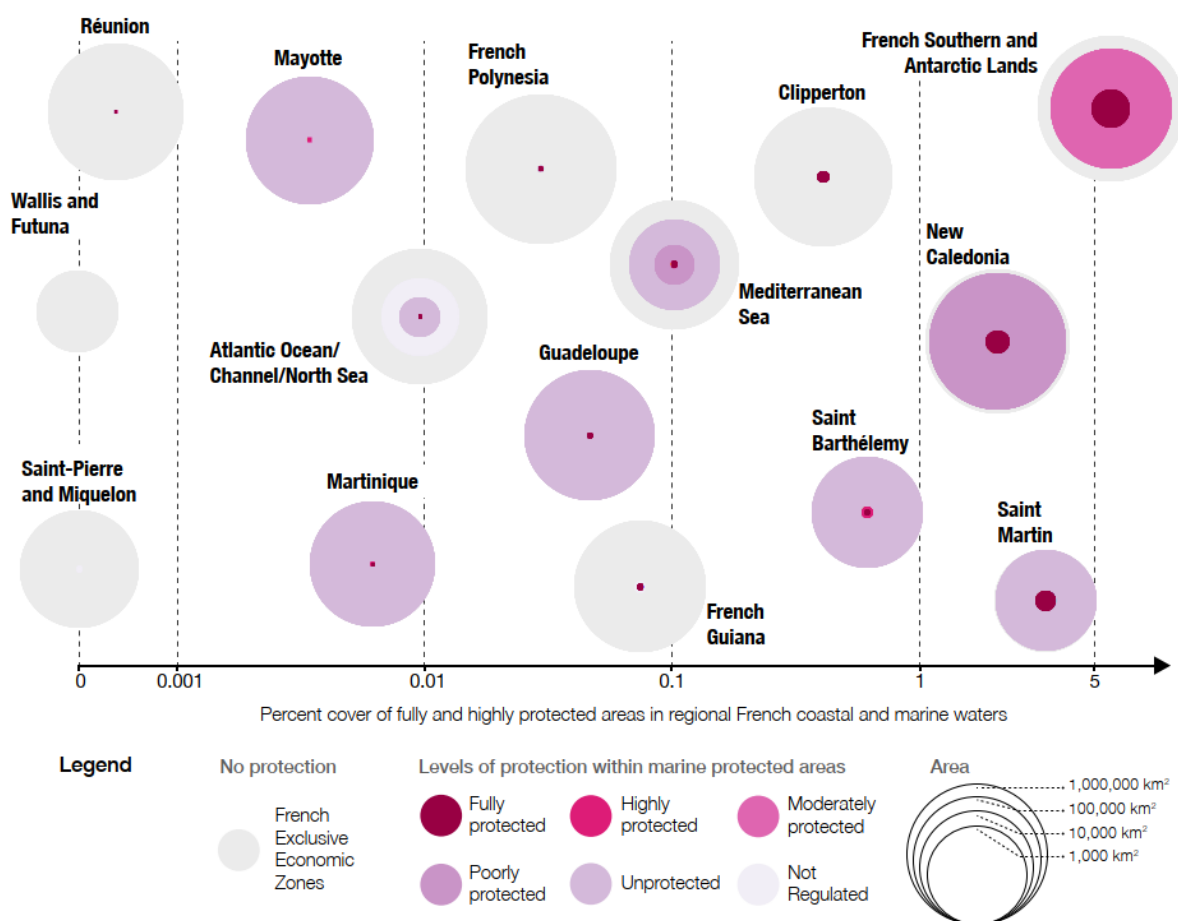
The CBD Aichi target 11 stipulates that protected areas have to be "ecologically representative" [10]. In France, we have seen that marine ecoregions (or Ocean basins) are not equally nor evenly protected (Figure 4, Figure 5). The pattern is the same within Ocean basins. Among marine habitats, coral reefs are by far the most protected. France aims to protect 75% of its coral reefs by 2021 and 100% by 2025 (Plan Biodiversité). As of 2020, 65.2% of French coral reefs falls within an MPA (Figure 6). However, the protection levels vary greatly from one territory to another with, for instance, 86.9% and 83.9% of coral reefs within full and high protection in Saint-Barthélemy and Saint-Martin, respectively, while

207   only 1.3% and 2% are under full and high protection in Martinique or Mayotte, respectively (Figure 6).

208   The larger the coral reef extent in a given territory, the lower the protection level.

209   <insert Figure 6 here>

Levels of protection in French coral reefs

210
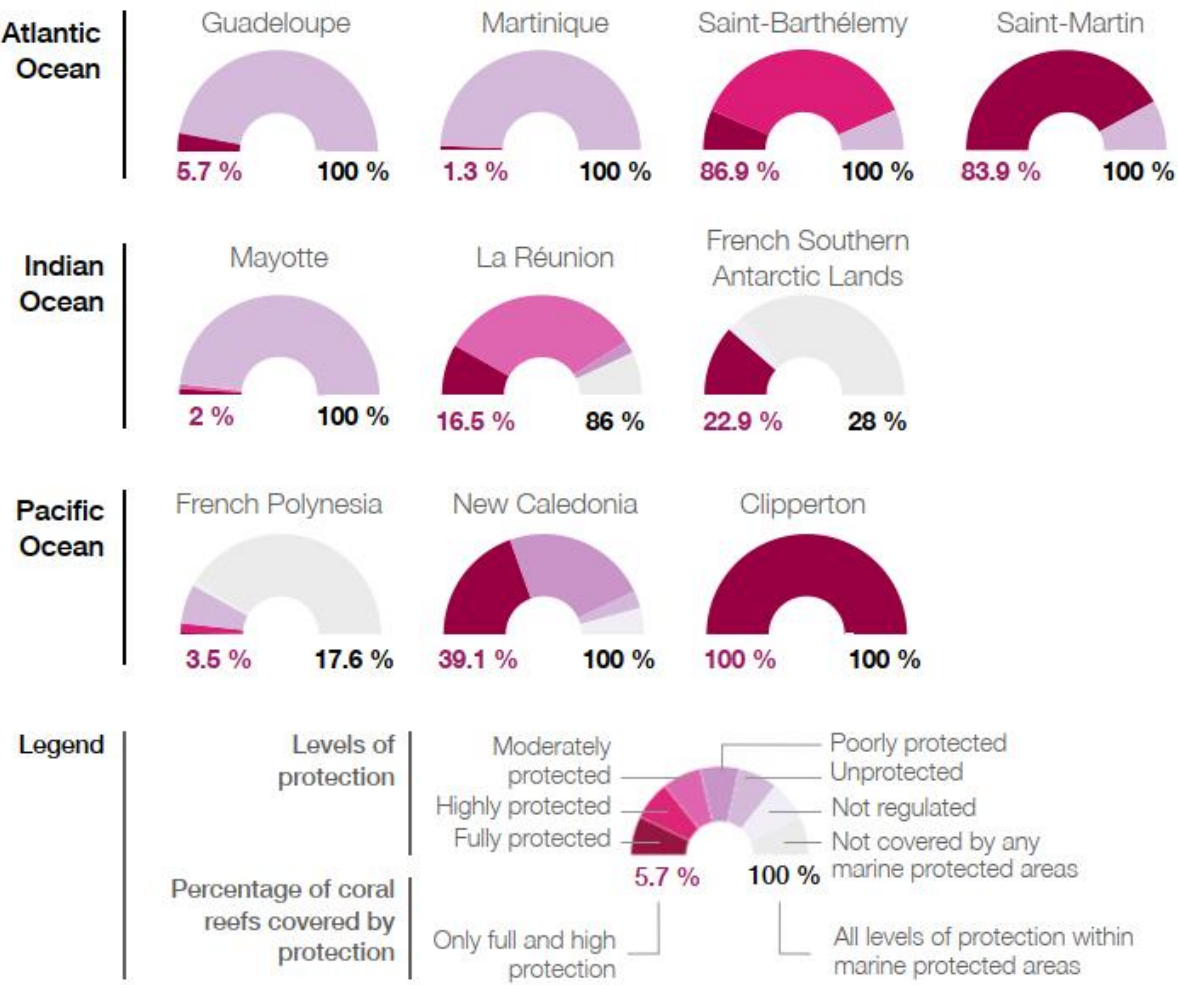
Figure 6: Proportion of coral reefs within marine protected areas, by protection level, in France's overseas territories. Black

percentages show how much of the corresponding habitat is protected by any protection level. Colored percentages show

how much of the habitat is protection by full and high protection levels.

214   In the French Mediterranean Sea, rocky substrates are the marine habitats that receive the most, if

215   not all, full and high protection (Figure 7). However, the fraction of these habitats protected under

216   such regimes remains low, with 2.7% of rocky substrates under full or high protection status. Only

217   1.43% of subtidal soft bottoms are covered by full or high protection. Deep habitats, while particularly

218   vulnerable and valuable [41], never receive similar full or high levels of protection. In the French

219   Atlantic – Channel – North Sea basin, only intertidal habitats (mostly sandy habitats) receive some full

220   or high protection (Figure 7). None of the other habitats harbor differences in regulations for

221   potentially impactful use between inside and outside the protected areas.

222   <insert Figure 7 here>

Levels of protection in French Mediterranean Sea habitats

Infralittoral rock and other hard substrata 2.6 % / 90 %	**Circalittoral rock and other hard substrata** 0.1 % / 47 %			

Sublittoral sediment

Sublittoral coarse sediment	Sublittoral sand	Sublittoral mud	Sublittoral mixed sediments	Sublittoral macrophyte-dominated sediment
0.7 % / 94 %	0.1 % / 91 %	0.03 % / 41 %	0.1 % / 57 %	0.5 % / 91 %

Deep-sea bed

Deep-sea mixed substrata	Deep-sea sand	Deep-sea muddy sand	Deep-sea mud	Deep-sea bioherms
0 % / 53 %	0 % / 59 %	0 % / 71 %	0 % / 29 %	0 % / 92 %

Levels of protection in French Atlantic Ocean, Channel and North Sea habitats

Littoral rock and other hard substrata 0.5 % / 71 %	**Littoral Sediment** 2.7 % / 78 %	Littoral mud 0.4 % / 97 %

Infralittoral rock and other hard substrata

High energy infralittoral rock	Moderate energy infralittoral rock	Low energy infralittoral rock
0 % / 74 %	0.1 % / 56 %	0 % / 52 %

Circalittoral rock and other hard substrata

High energy infralittoral rock	Moderate energy infralittoral rock	Low energy infralittoral rock
0 % / 41 %	0 % / 40 %	0 % / 33 %

Sublittoral sediment

Sublittoral coarse sediment	Sublittoral sand	Sublittoral mud	Sublittoral mixed sediments
0 % / 22 %	0 % / 26 %	0 % / 45 %	0 % / 26 %

Legend

Levels of protection: Fully protected, Highly protected, Moderately protected, Poorly protected, Unprotected, Not regulated, Not covered by any marine protected areas

Percentage of habitat covered by protection: Only full and high protection — 2.6 %, All levels of protection within marine protected areas — 90 %

223

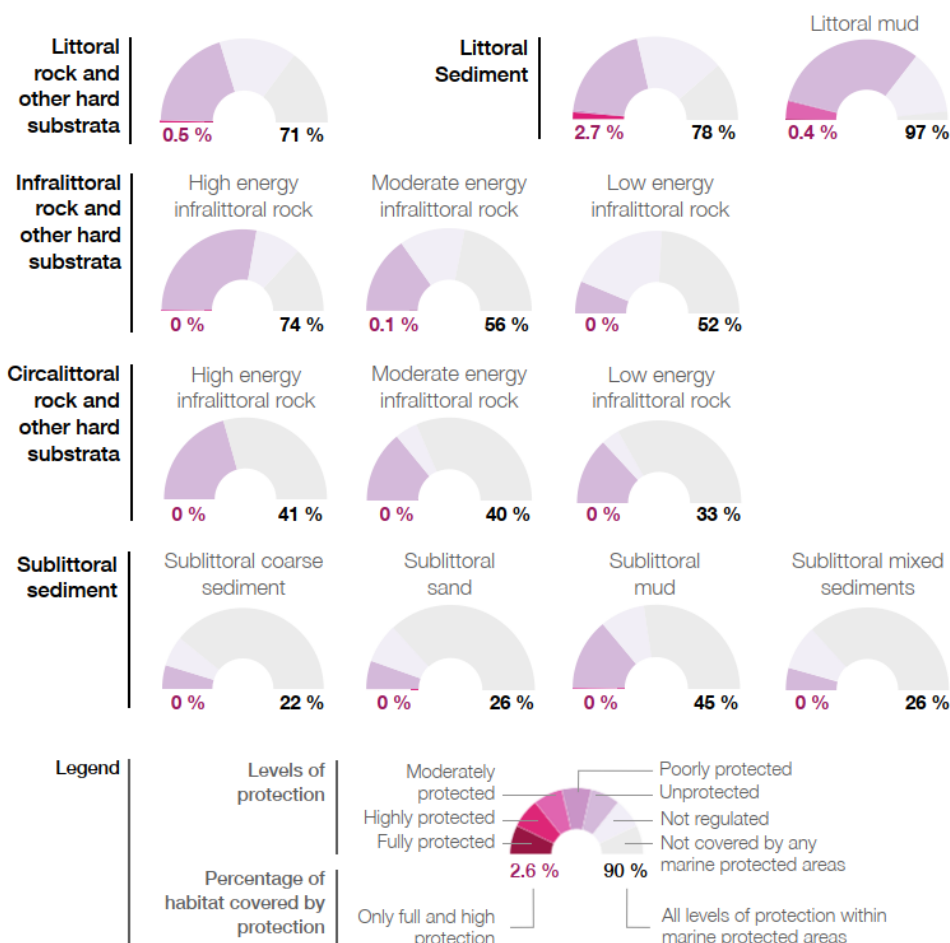Figure 7: Proportion of French Mediterranean, Atlantic, Channel and North Sea basin habitats within marine protected areas, by protection level. Black percentages show how much of the corresponding habitat is protected by any protection level. Colored percentages show how much of the habitat is protection by full and high protection levels.

227　Here, we mostly assessed the representation component of the CBD Aichi target 11 and the new

228　French strategy for MPAs. Other aspects such as effective and equitable management, or connectivity,

229　are also critical in the delivery of ecological and social outcomes [42–44]. Such information is still

230　lacking in many regions of the world [45]. While close to half of the MPAs globally are not implemented

231　but only proposed or designated [16], we identified only 1% of France's coastal marine waters within

232　MPAs without legal or management texts. While this does not reflect the effectiveness of

233　management, nor the compliance levels, France's determination to achieve effective management can

234　be observed through the increasing number of French MPAs on the IUCN Green List or receiving a Blue

235　Parks award (formally Global Ocean refuge System) [46,47].

236　President Macron's ambitions to further develop and expand France's MPAs is very promising news

237　for biodiversity conservation. However, to translate this desire into the delivery of tangible benefits

238　depends directly on the sub-targets and clear definitions that are attached to these protection levels.

239　First, and most importantly, in order to avoid to repeat the deep gaps between MPA coverage and

240　effective protection levels such as in the under-protected Mediterranean Sea [24], it is of utmost

241　importance to ensure the actual protection levels behind the 10% "strong" protection can lead to a

242　sea use change that is meaningful for biodiversity conservation [25]. In this respect, we advocate that

243　France adopts the recently developed international standards for MPA classification, such as the

244　regulation-based classification system for MPAs [21], now integrated in the soon to be released MPA

245　Guide (www.protectedplanet.net/c/mpa-guide), where full and high protection are the levels

246　recognized to deliver the benefits MPAs are expected to deliver [8,13,14,22,48–50]. France is currently

247　using case specific criteria to define strong protection (called Measure M003), which is typically not

248　more restrictive than the simple definition of an MPA according to the standards of the International

249　Union for the Conservation of Nature (https://www.iucn.org/commissions/world-commission-

250　protected-areas/our-work/marine/marine-protected-areas-global-standards-success).

251 Second, unless we consider that the French 2022 30% target is already met, as is the case when

252 computed over the whole French coastal and marine waters, this quantitative areal target (together

253 with its "strong" protection counterpart) should only be considered met if reached for each French

254 ocean basin. Only this would ensure ecological representativeness [51] and would help to distribute

255 the socio-economic benefits of conserving biodiversity more evenly across French territories [43].

256 As in other parts of the world, where weak regulations cannot deliver ecological outcomes [20,52,53],

257 or where protected areas are not properly resourced or managed [36,54], it is important to ensure

258 that the race to meet key biodiversity targets does not lead us to a false sense of security about

259 appropriate actions being undertaken [55–58]. We believe that classifying MPAs according to their

260 protection levels, such as we did here, is a much needed step towards shedding light on our actual

261 insufficient efforts at managing human uses of nature [59]. We hope this will translate into a greater

262 desire by our policy-makers to establish and appropriately manage MPAs with protection levels that

263 are able to deliver tangible benefits for biodiversity conservation [60]. To truly fill the gaps in the

264 protection of the second largest exclusive economic zone of the world, appropriate levels of protection

265 in all Ocean basins are critical to protect our ocean, its biodiversity and to sustain the livelihood of

266 millions of people.

276 ***6. Author contributions***

277 J.C. designed the study. C.L. and A.P. compiled the data. J.C. and C.L. analyzed the data. J.C. and C.L.

278 produced the figures. J.C. wrote the manuscript. All authors approved the manuscript.

279 ***7. Competing interests***

280 The authors have no competing interests to declare.

281 ***8. References***

282 [1]   G.G. Singh, A.M. Cisneros-Montemayor, W. Swartz, W. Cheung, J.A. Guy, T.-A.A. Kenny, C.J.

283   McOwen, R. Asch, J.L. Geffert, C.C.C.C. Wabnitz, R. Sumaila, Q. Hanich, Y. Ota, A rapid

284   assessment of co-benefits and trade-offs among Sustainable Development Goals, Mar. Policy.

285   93 (2018) 223–231. https://doi.org/https://doi.org/10.1016/j.marpol.2017.05.030.

286 [2]   J. Claudet, L. Bopp, W.W.L.L. Cheung, R. Devillers, E. Escobar-Briones, P. Haugan, J.J. Heymans,

287   V. Masson-Delmotte, N. Matz-Lück, P. Miloslavich, L. Mullineaux, M. Visbeck, R. Watson, A.M.

288   Zivian, I. Ansorge, M. Araujo, S. Aricò, D. Bailly, J. Barbière, C. Barnerias, C. Bowler, V. Brun, A.

289   Cazenave, C. Diver, A. Euzen, A.T. Gaye, N. Hilmi, F. Ménard, C. Moulin, N.P. Muñoz, R.

290   Parmentier, A. Pebayle, H.-O. Pörtner, S. Osvaldina, P. Ricard, R.S. Santos, M.-A. Sicre, S.

291   Thiébault, T. Thiele, R. Troublé, A. Turra, J. Uku, F. Gaill, A Roadmap for Using the UN Decade

292   of Ocean Science for Sustainable Development in Support of Science, Policy, and Action, One

293   Earth. 2 (2020) 34–42. https://doi.org/https://doi.org/10.1016/j.oneear.2019.10.012.

294 [3]   J.-B. Jouffray, R. Blasiak, A. V. Norström, H. Österblom, M. Nyström, The Blue Acceleration:

295   The Trajectory of Human Expansion into the Ocean, One Earth. 2 (2020) 43–54.

296   https://doi.org/10.1016/j.oneear.2019.12.016.

297 [4]   IPBES, Summary for policymakers of the global assessment report on biodiversity and

298   ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and

299   Ecosystem Services., 2019. https://ipbes.net/ga/spm.

300 [5]   S.H.M.M. Butchart, M. Walpole, B. Collen, A. van Strien, J.P.W.W. Scharlemann, R.E.A. a

301   Almond, J.E.M.M. Baillie, B. Bomhard, C.C. Brown, J. Bruno, K.E. Carpenter, G.M. Carr, J.

302   Chanson, A.M. Chenery, J. Csirke, N.C. Davidson, F. Dentener, M. Foster, A. Galli, J.N.

303   Galloway, P. Genovesi, R.D. Gregory, M. Hockings, V. Kapos, J.-F.F. Lamarque, F. Leverington,

304   J. Loh, M.A. McGeoch, L. McRae, A. Minasyan, M. Hernández Morcillo, T.E.E.E. Oldfield, D.

305   Pauly, S. Quader, C. Revenga, J.R. Sauer, B. Skolnik, D. Spear, D. Stanwell-Smith, S.N. Stuart, A.

306   Symes, M. Tierney, T.D. Tyrrell, J.-C.C. Vié, R. Watson, M.H. Morcillo, T.E.E.E. Oldfield, D.

307   Pauly, S. Quader, C. Revenga, J.R. Sauer, B. Skolnik, D. Spear, D. Stanwell-Smith, S.N. Stuart, A.

308   Symes, M. Tierney, T.D. Tyrrell, J.-C.C. Vié, R. Watson, M. Hernández Morcillo, T.E.E.E.

309   Oldfield, D. Pauly, S. Quader, C. Revenga, J.R. Sauer, B. Skolnik, D. Spear, D. Stanwell-Smith,

310   S.N. Stuart, A. Symes, M. Tierney, T.D. Tyrrell, J.-C.C. Vié, R. Watson, Global biodiversity:

311   Indicators of recent declines, Science (80-.). 328 (2010) 1164–8.

312   https://doi.org/10.1126/science.1187512.

313 [6]   K.L. Nash, C. Cvitanovic, E.A. Fulton, B.S. Halpern, E.J. Milner-Gulland, R.A. Watson, J.L.

314   Blanchard, Planetary boundaries for a blue planet, Nat. Ecol. Evol. 1 (2017) 1625–1634.

315   https://doi.org/10.1038/s41559-017-0319-z.

316 [7]   B.S. Halpern, S.E. Lester, K.L. McLeod, Placing marine protected areas onto the ecosystem-

317   based management seascape, Proc. Natl. Acad. Sci. 107 (2010) 18312–18317.

318   https://doi.org/10.1073/pnas.0908503107.

319 [8]   J. Lubchenco, K. Grorud-Colvert, Making waves: The science and politics of ocean protection,

320   Science (80-.). 350 (2015) 382 LP – 383.

321   http://science.sciencemag.org/content/350/6259/382.abstract.

322 [9]   J.M. Reimer, R. Devillers, J. Claudet, Benefits and gaps in use of area-based management tools

323   for the ocean Sustainable Development Goal., Nat. Sustain. (n.d.).

324 [10]   CBD, COP 10 (Decision X/2 Strategic Plan for Biodiversity 2011-2020) Convention on Biological

Diversity. Nagoya, Japan., (2010). https://www.cbd.int/decision/cop/?id=12268.

[11] S.L. Maxwell, V. Cazalis, N. Dudley, M. Hoffmann, A.S.L. Rodrigues, S. Stolton, P. Visconti, S. Woodley, N. Kingston, E. Lewis, Area-based conservation in the twenty-first century, Nature. 586 (2020) 217–227. https://doi.org/10.1038/s41586-020-2773-z.

[12] J. Lubchenco, S.R. Palumbi, S.D. Gaines, S. Andelman, Plugging a hole in the ocean: The emerging science of marine reserves, Ecol. Appl. 13 (2003) S3–S7. https://doi.org/10.1890/1051-0761(2003)013[0003:PAHITO]2.0.CO;2.

[13] J. Claudet, C.W. Osenberg, L. Benedetti-Cecchi, P. Domenici, J.A. García-Charton, Á. Pérez-Ruzafa, F. Badalamenti, J. Bayle-Sempere, A. Brito, F. Bulleri, J.M. Culioli, M. Dimech, J.M. Falcón, I. Guala, M. Milazzo, J. Sánchez-Meca, P.J. Somerfield, B. Stobart, F. Vandeperre, C. Valle, S. Planes, Marine reserves: Size and age do matter, Ecol. Lett. 11 (2008) 481–489. https://doi.org/10.1111/j.1461-0248.2008.01166.x.

[14] S.E. Lester, B.S. Halpern, K. Grorud-Colvert, J. Lubchenco, B.I. Ruttenberg, S.D. Gaines, S. Airamé, R.R. Warner, Biological effects within no-take marine reserves: A global synthesis, Mar. Ecol. Prog. Ser. 384 (2009) 33–46. https://doi.org/10.3354/meps08029.

[15] J. Claudet, Six conditions under which MPAs might not appear effective (when they are), ICES J. Mar. Sci. 75 (2018) 1172–1174. https://doi.org/10.1093/icesjms/fsx074.

[16] E. Sala, J. Lubchenco, K. Grorud-Colvert, C. Novelli, C. Roberts, U.R. Sumaila, Assessing real progress towards effective ocean protection, Mar. Policy. 91 (2018) 11–13. https://doi.org/10.1016/j.marpol.2018.02.004.

[17] M. Zupan, F. Bulleri, J. Evans, S. Fraschetti, P. Guidetti, A. Garcia-Rubies, M. Sostres, V. Asnaghi, A. Caro, S. Deudero, R. Goñi, G. Guarnieri, F. Guilhaumon, D. Kerstin, A. Kokkali, C. Kruschel, V. Macic, L. Mangialajo, S. Mallol, E. Macpherson, A. Panucci, M. Radolovic, M. Ramdani, P.. J. Schembri, A. Terlizzi, E. Villa, J. Claudet, How good is your marine protected

349   area at curbing threats?, Biol. Conserv. 221 (2018) 237–245.

350   https://doi.org/10.1016/j.biocon.2018.03.013.

351   [18] A.D. Mazaris, A. Kallimanis, E. Gissi, C. Pipitone, R. Danovaro, J. Claudet, G. Rilov, F.

352   Badalamenti, V. Stelzenmüller, L. Thiault, L. Benedetti-cecchi, P. Goriup, S. Katsanevakis, S.

353   Fraschetti, Threats to marine biodiversity in European protected areas, Sci. Total Environ. 677

354   (2019) 418–426. https://doi.org/10.1016/j.scitotenv.2019.04.333.

355   [19] M.D. Barnes, L. Glew, C. Wyborn, I.D. Craigie, Prevent perverse outcomes from global

356   protected area policy, Nat. Ecol. Evol. 2 (2018) 1–4. https://doi.org/10.1038/s41559-018-

357   0501-y.

358   [20] M. Dureuil, K. Boerder, K.A. Burnett, R. Froese, B. Worm, Elevated trawling inside protected

359   areas undermines conservation outcomes in a global fishing hot spot, Science (80-.). 362

360   (2018) 1403–1407. https://doi.org/10.1126/science.aau0561.

361   [21] B. Horta e Costa, J. Claudet, G. Franco, K. Erzini, A. Caro, E.J. Gonçalves, A regulation-based

362   classification system for Marine Protected Areas (MPAs), Mar. Policy. 72 (2016) 192–198.

363   https://doi.org/10.1016/j.marpol.2016.06.021.

364   [22] M. Zupan, E. Fragkopoulou, J. Claudet, K. Erzini, B. Horta e Costa, E.J. Gonçalves, Marine

365   partially protected areas: drivers of ecological effectiveness, Front. Ecol. Environ. 16 (2018)

366   381–387. https://doi.org/10.1002/fee.1934.

367   [23] A.M. Friedlander, M.K. Donovan, H. Koike, P. Murakawa, W. Goodell, Characteristics of

368   effective marine protected areas in Hawaiʻi, Aquat. Conserv. Mar. Freshw. Ecosyst. 29 (2019)

369   103–117. https://doi.org/10.1002/aqc.3043.

370   [24] J. Claudet, C. Loiseau, M. Sostres, M. Zupan, Underprotected Marine Protected Areas in a

371   Global Biodiversity Hotspot, One Earth. 2 (2020) 380–384.

372   https://doi.org/10.1016/j.oneear.2020.03.008.

373   [25]   J. Claudet, France must impose strict levels of marine protection, Nature. 570 (2019) 36.

374   https://doi.org/10.1038/d41586-019-01750-1.

375   [26]   M.J. Costello, M. Coll, R. Danovaro, P. Halpin, H. Ojaveer, P. Miloslavich, A census of marine

376   biodiversity knowledge, resources, and future challenges, PLoS One. 5 (2010) e12110-.

377   https://doi.org/10.1371/journal.pone.0012110.

378   [27]   D.P. Tittensor, C. Mora, W. Jetz, H.K. Lotze, D. Ricard, E. Vanden Berghe, B. Worm, Global

379   patterns and predictors of marine biodiversity across taxa, Nature. 466 (2010) 1098–1101.

380   https://doi.org/10.1038/nature09329.

381   [28]   B.S. Halpern, M. Frazier, J. Potapenko, K.S. Casey, K. Koenig, C. Longo, J.S. Lowndes, R.C.

382   Rockwood, E.R. Selig, K.A. Selkoe, S. Walbridge, Spatial and temporal changes in cumulative

383   human impacts on the world's ocean, Nat. Commun. 6 (2015) 7615.

384   https://doi.org/10.1038/ncomms8615.

385   [29]   R Core Team, R: A Language and Environment for Statistical Computing. Vienna, Austria: R

386   Foundation for Statistical Computing; 2017. R Foundation for Statistical Computing, … Free.

387   Available Internet Http//Www. R-Project. …. (2017).

388   https://scholar.google.co.in/scholar?hl=en&q=R+core+team+&btnG=#1%5Cnhttps://scholar.g

389   oogle.co.in/scholar?hl=en&q=R+core+team+&btnG=%238%5Cnhttps://scholar.google.co.in/s

390   cholar?hl=en&q=R+core+team+&btnG=%232.

391   [30]   A. South, rworldmap : a new R package for mapping global data, R J. 3 (2011) 35.

392   https://doi.org/10.32614/RJ-2011-006.

393   [31]   E. Pebesma, Simple Features for R: Standardized Support for Spatial Vector Data, R J. 10

394   (2018) 439. https://doi.org/10.32614/RJ-2018-009.

395   [32]   M. Tennekes, tmap : Thematic Maps in R, J. Stat. Softw. 84 (2018).

396   https://doi.org/10.18637/jss.v084.i06.

397   [33]   H. Wickham, L. Henry, tidyr: Tidy Messy Data. R package version 1.0.2., (2020).

398   [34]   H. Wickham, ggplot2, Springer New York, New York, NY, 2009. https://doi.org/10.1007/978-0-

399   387-98141-3.

400   [35]   M. Pieraccini, S. Coppa, G.A. De Lucia, Beyond marine paper parks? Regulation theory to

401   assess and address environmental non-compliance, Aquat. Conserv. Mar. Freshw. Ecosyst. 27

402   (2017) 177–196. https://doi.org/10.1002/aqc.2632.

403   [36]   D.A. Gill, M.B. Mascia, G.N. Ahmadia, L. Glew, S.E. Lester, M. Barnes, I. Craigie, E.S. Darling,

404   C.M. Free, J. Geldmann, S. Holst, O.P. Jensen, A.T. White, X. Basurto, L. Coad, R.D. Gates, G.

405   Guannel, P.J. Mumby, H. Thomas, S. Whitmee, S. Woodley, H.E. Fox, Capacity shortfalls hinder

406   the performance of marine protected areas globally, Nature. 543 (2017) 665–669.

407   https://doi.org/10.1038/nature21708.

408   [37]   A.M. Friedlander, J. Giddens, E. Ballesteros, S. Blum, E.K. Brown, J.E. Caselle, B. Henning, C.

409   Jost, P. Salinas-de-León, E. Sala, Marine biodiversity from zero to a thousand meters at

410   Clipperton Atoll (Île de La Passion), Tropical Eastern Pacific, PeerJ. 7 (2019) e7279.

411   https://doi.org/10.7717/peerj.7279.

412   [38]   C. Quétel, S. Marinesque, D. Ringler, L. Fillinger, T. Changeux, C. Marteau, M. Troussellier, Iles

413   Eparses (SW Indian Ocean) as reference ecosystems for environmental research, Acta

414   Oecologica. 72 (2016) 1–8. https://doi.org/https://doi.org/10.1016/j.actao.2015.12.012.

415   [39]   P. Leenhardt, B. Cazalet, B. Salvat, J. Claudet, F. Feral, The rise of large-scale marine protected

416   areas: Conservation or geopolitics?, Ocean Coast. Manag. 85 (2013) 112–118.

417   https://doi.org/10.1016/j.ocecoaman.2013.08.013.

418   [40]   R. Devillers, R.L. Pressey, A. Grech, J.N. Kittinger, G.J. Edgar, T. Ward, R. Watson, Reinventing

419   residual reserves in the sea: Are we favouring ease of establishment over need for

420   protection?, Aquat. Conserv. Mar. Freshw. Ecosyst. 25 (2015) 480–504.

421   https://doi.org/10.1002/aqc.2445.

422   [41]   A.J. Davies, J.M. Roberts, J. Hall-Spencer, Preserving deep-sea natural heritage: Emerging

423   issues in offshore conservation and management, Biol. Conserv. 138 (2007) 299–312.

424   https://doi.org/https://doi.org/10.1016/j.biocon.2007.05.011.

425   [42]   H.B. Harrison, M. Bode, D.H. Williamson, M.L. Berumen, G.P. Jones, A connectivity portfolio

426   effect stabilizes marine reserve performance, Proc. Natl. Acad. Sci. (2020) 201920580.

427   https://doi.org/10.1073/pnas.1920580117.

428   [43]   N.C. Ban, G.G. Gurney, N.A. Marshall, C.K. Whitney, M. Mills, S. Gelcich, N.J. Bennett, M.C.

429   Meehan, C. Butler, S. Ban, T.C. Tran, M.E. Cox, S.J. Breslow, Well-being outcomes of marine

430   protected areas, Nat. Sustain. 2 (2019) 524–532. https://doi.org/10.1038/s41893-019-0306-2.

431   [44]   D.A. Gill, S.H. Cheng, L. Glew, E. Aigner, N.J. Bennett, M.B. Mascia, Social Synergies, Tradeoffs,

432   and Equity in Marine Conservation Impacts, Annu. Rev. Environ. Resour. 44 (2019) 347–372.

433   https://doi.org/10.1146/annurev-environ-110718-032344.

434   [45]   M.C. Meehan, N.C. Ban, R. Devillers, G.G. Singh, J. Claudet, How far have we come? A review

435   of MPA network performance indicators in reaching qualitative elements of Aichi Target 11,

436   Conserv. Lett. (2020) e12746. https://doi.org/10.1111/conl.12746.

437   [46]   L. Morgan, E. Pike, R. Moffitt, How much of the ocean is protected?, Biodiversity. 19 (2018)

438   148–151. https://doi.org/10.1080/14888386.2018.1469432.

439   [47]   S. Wells, P.F.E. Addison, P.A. Bueno, M. Costantini, A. Fontaine, L. Germain, T. Lefebvre, L.

440   Morgan, F. Staub, B. Wang, A. White, M.X. Zorrilla, Using the IUCN Green List of Protected and

441   Conserved Areas to promote conservation impact through marine protected areas, Aquat.

442   Conserv. Mar. Freshw. Ecosyst. 26 (2016) 24–44. https://doi.org/10.1002/aqc.2679.

443   [48]   C.M. Roberts, B.C. O'Leary, D.J. McCauley, P.M. Cury, C.M. Duarte, J. Lubchenco, D. Pauly, A.

444   Sáenz-Arroyo, U.R. Sumaila, R.W. Wilson, B. Worm, J.C. Castilla, Marine reserves can mitigate

445   and promote adaptation to climate change, Proc. Natl. Acad. Sci. 114 (2017) 6167–6175.

446   https://doi.org/10.1073/pnas.1701262114.

447   [49]   M. Di Lorenzo, P. Guidetti, A. Di Franco, A. Calò, J. Claudet, Assessing spillover from marine

448   protected areas and its drivers: A meta-analytical approach, Fish Fish. 21 (2020) 906–915.

449   https://doi.org/10.1111/faf.12469.

450   [50]   G.J. Edgar, R.D. Stuart-Smith, T.J. Willis, S. Kininmonth, S.C. Baker, S. Banks, N.S. Barrett, M. a.

451   Becerro, A.T.F. Bernard, J. Berkhout, C.D. Buxton, S.J. Campbell, A.T. Cooper, M. Davey, S.C.

452   Edgar, G. Försterra, D.E. Galván, A.J. Irigoyen, D.J. Kushner, R. Moura, P.E. Parnell, N.T. Shears,

453   G. Soler, E.M. a. Strain, R.J. Thomson, Global conservation outcomes depend onmarine

454   protected areas with five key features, Nature. 506 (2014) 216–220.

455   https://doi.org/10.1038/nature13022.

456   [51]   B.C. O'Leary, M. Winther-Janson, J.M. Bainbridge, J. Aitken, J.P. Hawkins, C.M. Roberts,

457   Effective Coverage Targets for Ocean Protection, Conserv. Lett. 9 (2016) 398–404.

458   https://doi.org/10.1111/conl.12247.

459   [52]   R.A. Magris, R.L. Pressey, Marine protected areas: Just for show?, Science (80-.). 360 (2018)

460   723 LP – 724. http://science.sciencemag.org/content/360/6390/723.2.abstract.

461   [53]   J.E. Cramp, C.A. Simpfendorfer, R.L. Pressey, Beware silent waning of shark protection,

462   Science (80-.). 360 (2018) 723 LP – 723. https://doi.org/10.1126/science.aat3089.

463   [54]   A.N. Rife, B. Erisman, A. Sanchez, O. Aburto-Oropeza, When good intentions are not

464   enough...Insights on networks of "paper park" marine protected areas, Conserv. Lett. 6 (2013)

465   200–212. https://doi.org/10.1111/j.1755-263X.2012.00303.x.

466   [55]   C.J. Lemieux, P.A. Gray, R. Devillers, P.A. Wright, P. Dearden, E.A. Halpenny, M. Groulx, T.J.

467   Beechey, K. Beazley, How the race to achieve Aichi Target 11 could jeopardize the effective

468   conservation of biodiversity in Canada and beyond, Mar. Policy. 99 (2019) 312–323.

469   https://doi.org/https://doi.org/10.1016/j.marpol.2018.10.029.

470   [56]   T. Agardy, J. Claudet, J.C. Day, 'Dangerous Targets' revisited: Old dangers in new contexts

471   plague marine protected areas, Aquat. Conserv. Mar. Freshw. Ecosyst. 26 (2016) 7–23.

472   https://doi.org/10.1002/aqc.2675.

473   [57]   R. Devillers, C.J. Lemieux, P.A. Gray, J. Claudet, Canada's uncharted conservation approach,

474   Science (80-.). 364 (2019) 1243–1243. https://doi.org/10.1126/science.aax9060.

475   [58]   B.P. Visconti, S.H.M. Butchart, T.M. Brooks, P.F. Langhammer, D. Marnewick, S. Vergara, A.

476   Yanosky, J.E.M. Watson, Protected area targets post-2020, Science (80-.). 364 (2019) 239–

477   241. https://doi.org/10.1126/science.aav6886.

478   [59]   M.J. Costello, B. Ballantine, Biodiversity conservation should focus on no-take Marine

479   Reserves: 94% of Marine Protected Areas allow fishing, Trends Ecol. Evol. 30 (2015) 507–509.

480   https://doi.org/10.1016/j.tree.2015.06.011.

481   [60]   V.M. Adams, G.D. Iacona, H.P. Possingham, Weighing the benefits of expanding protected

482   areas versus managing existing ones, Nat. Sustain. 2 (2019) 404–411.

483   https://doi.org/10.1038/s41893-019-0275-5.

484

486 Table A1: Protected area (km²) by protection level and per French Territory (see Figure 5 from main text).

487

	Surface EEZ (km²)	Number of MPA	Number of zones	Protected area Total (km²)	Fully (km²)	Highly (km²)	Moderately (km²)	Poorly (km²)	Unprotected (km²)	Not Regulated (km²)
Total	10 193 037.00	524	564	3 430 387.3	160 015.9	993.8	1 534 725.2	1 304 751.4	318 137.9	111 763.2
Metropolitan France	345 224.00	340	358	153 598.5	94.5	19.9	140.5	6 921.0	61 443.4	84 979.2
Atlantic/Channel/North Sea	257 636.00	256	259	101 860.7	12.4	7.9	11.4	10.6	19 393.8	82 424.6
Mediterranean Sea	87 588.00	84	99	51 737.8	82.1	12.1	129.1	6 910.4	42 049.6	2 554.5
France overseas	9 847 813.00	184	206	3 276 788.9	159 921.3	973.8	1 534 584.8	1 297 830.3	256 694.5	26 784.0
Atlantic Ocean	288 771.00	61	71	144 969.3	172.4	25.8	-	2.6	144 202.2	566.3
Guadeloupe	91 013.00	33	33	91 012.9	41.9	-	-	-	90971	-
Martinique	47 958.00	10	12	47 958.0	1.1	3.2	-	2.6	47 951.1	-
Saint-Barthélemy	4 193.00	2	4	4 193.1	2.5	22.6	-	-	4 168.0	-
Saint-Martin	1 103.00	9	9	1 102.7	33.7	-	-	-	1 069.0	-
French Guiana	132 120.00	9	12	688.5	93.20	-	-	-	43.1	552.2
Saint-Pierre And Miquelon	12 384.00	1	1	14.1	-	-	-	-	-	14.1
Pacific Ocean	6 904 777.00	105	112	1 356 629.3	30 194.9	945.8	10.2	1 297 820.0	3 580.4	24 077.9
French Polynesia	4 781 060.00	47	54	4 142.8	391.1	908.5	10.2	-	2 766.6	66.4
New Caledonia	1 422 543.00	57	57	1 350 675.1	27 992.5	37.3	-	1 297 820.0	813.8	24 011.5
Clipperton	437 420.00	1	1	1 811.4	1 811.4	-	-	-	-	-
Wallis and Futuna	263 754.00			-	-	-	-	-	-	-
Indian Ocean	2 654 265.00	18	23	1 775 190.3	129 554.0	2.2	1 534 574.6	7.7	108 911.9	2 139.9
Mayotte	66 990.00	11	11	66 990.0	-	2.2	28.0	-	66 956.0	3.8
La Réunion	315 982.00	1	4	35.1	2.0	-	9.6	7.7	15.8	-
French Southern and Antarctic Lands	2 271 293.00	6	8	1 708 165.2	129 552.0	-	1534537.00	-	41 940.1	2 136.1

488

489

490   Table A2: Protected area (km²) by protection level and per marine habitats.

491

492

Habitats	EUNIS	Habitats area	Protected area					Unprotected	Not regulated
			Total	Fully	Highly	Moderately	Poorly		
Metropole									
French Atlantic, Channel and North sea									
Littoral rock and other hard substrata	A1	386.47	272.40	-	2.05	0.53	0.19	153.65	115.97
Littoral sediment	A2	1 253.95	972.20	1.43	32.11	2.88	8.13	492.35	435.30
Littoral mud	A2.3	358.73	346.71	1.48	-	26.28	1.63	225.18	92.14
Atlantic and Mediterranean high energy infralittoral rock	A3.1	795.38	588.30	-	-	1.84	-	440.06	146.40
Atlantic and Mediterranean moderate energy infralittoral rock	A3.2	1 020.60	573.55	-	0.94	-	-	310.20	262.41
Atlantic and Mediterranean low energy infralittoral rock	A3.3	589.24	305.19	-	-	0.00	-	73.70	231.50
Atlantic and Mediterranean high energy circalittoral rock	A4.1	405.26	167.07	-	-	-	-	167.07	-
Atlantic and Mediterranean moderate energy circalittoral rock	A4.2	1 370.04	506.67	-	-	-	-	383.96	122.72
Atlantic and Mediterranean low energy circalittoral rock	A4.3	2 531.52	846.38	-	-	-	-	662.09	184.29
Sublittoral coarse sediment	A5.1	54 318.18	11 731.06	-	0.05	-	-	5 102.20	6 628.81
Sublittoral sand	A5.2	56 693.69	14 874.41	-	0.69	11.99	-	6 156.17	8 705.56
Sublittoral mud	A5.3	5 478.09	2 476.91	-	-	12.23	-	1 515.79	948.89
Sublittoral mixed sediments	A5.4	44 074.73	11 597.10	-	-	-	-	3 690.35	7 906.75
Mediterranean Sea									
Atlantic and Mediterranean high energy infralittoral rock	A3.1	104.78	94.30	2.05	0.65	0.08	11.98	68.00	11.55
Atlantic and Mediterranean moderate energy circalittoral rock	A4.2	260.73	121.46	0.37	-	-	29.64	84.15	7.29
Sublittoral coarse sediment	A5.1	106.06	100.16	0.70	0.01	0.02	3.12	87.39	8.92
Sublittoral sand	A5.2	763.79	693.63	0.02	0.52	0.79	23.54	256.99	411.77
Sublittoral mud	A5.3	6 787.30	2 809.50	-	1.76	-	2.13	1 366.64	1 439.05
Sublittoral mixed sediments	A5.4	12 955.38	7 366.08	10.26	2.67	0.98	758.44	6 152.11	441.63
Sublittoral macrophyte-dominated sediment	A5.5	897.39	813.01	4.71	0.07	1.09	105.88	680.29	20.97
Deep-sea mixed substrata	A6.2	2 143.49	1 128.36	-	-	-	6.59	1 119.30	2.46
Deep-sea sand	A6.3	3 928.39	2 297.42	-	-	-	1 156.11	1 137.44	3.87
Deep-sea muddy sand	A6.4	5 567.90	3 955.62	-	-	-	464.07	3 491.55	-
Deep-sea mud	A6.5	113 598.78	32 433.14	-	-	-	5 262.06	27 095.33	75.76
Deep-sea bioherms	A6.6	43.43	40.00	-	-	-	27.47	12.52	-
Overseas									
Guadeloupe — Coral reefs	/	113.30	113.30	6.50	-	-	-	106.80	-
Martinique — Coral reefs	/	72.00	72.00	0.90	-	-	-	71.10	-
Saint-Barthelemy — Coral reefs	/	10.70	10.70	1.40	7.90	-	-	1.40	-
Saint-Martin — Coral reefs	/	6.20	6.20	5.20	-	-	-	1.00	-
Mayotte — Coral reefs	/	294.26	300.00	5.60	0.30	4.60	-	283.76	-
Reunion — Coral reefs	/	12.12	12.12	2.00	-	9.62	0.50	-	-
French Southern an Antartic lands — Coral reefs	/	113.9	31.86	26.04	-	-	-	-	5.82
New-Caledonia — Coral reefs	/	4 576.83	4 574.80	1 786.00	3.40	-	2 143.50	252.70	389.20
Clipperton — Coral reefs	/	4.30	4.30	4.30	-	-	-	-	-
French Polynesia — Coral reefs	/	3072.09	540.40	16.20	91.00	2.00	-	388.70	42.50
Wallis & Futuna — Coral reefs	/	410.99	0.00	-	-	-	-	-	-