

# Review management policy marine conservation area of Wakatobi National Park

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**Abstract.** Marine conservation areas have an important role in the protection of species and biodiversity. This paper aims to review policy issues in the management of marine conservation areas in Wakatobi National Park (WNP). The research is located in WNP Southeast Sulawesi Province, Indonesia. The method used in this research is qualitative method, Technique of data collecting done through, interview and observation beside study of policy document. Policies are reviewed based on text analysis. Marine conservation areas have an important role in the protection of species and biodiversity. The results of the Wakatobi national park management policy review, there are two authorities that have a role in the management of the area. Coordination and cooperation are required in the management so that the sustainability of conservation areas can run well.

## 1. Introduction

Conservation areas have an irreplaceable role as bastions of species protection and for conservation of biodiversity. Currently there are more than 150,000 conservation areas in the world with an area of about 19 million km<sup>2</sup> or 12.7% of the earth's surface [1]. Law of the Republic of Indonesia No.5/1990 on Conservation of Natural Resources and Ecosystems, national parks are defined as natural conservation areas that have native ecosystems, managed by zoning systems, and utilized for research, science, education, aquaculture, nature tourism, and recreation. Wakatobi National Park (WNP) is seven of the national marine parks managed by the zonation system. The area of WNP at 13,900 km<sup>2</sup> including the marine area and terrestrial islands of the region comprising 97% of the sea and 3% of the land [2]. Conservation policies as an integral part of sustainable development at present still face very tough challenges as well as complex and interrelated issues [3]. Marine Protected Areas (MPAs) are promoted as an important marine ecosystem management tool. However, they are complex systems that, from a governance perspective, raise serious challenges with regard to their effectiveness [4]. The stakeholders WNP are divided into several groups: the government consists of central government and local government, private groups, local communities, and academics [5]. The purpose of this paper is to review policy issues in the management of marine conservation areas.

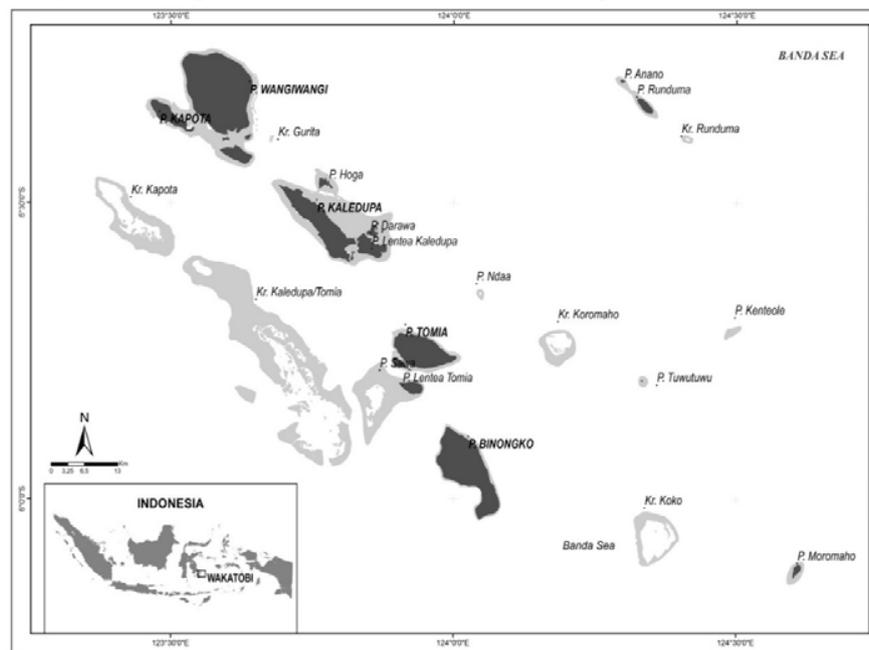
Rules and regulations governing the use of resource within Indonesia's protected areas are formulated centrally by the Ministry of Forestry in Jakarta and apply nationally [6]. However, management of protected areas is devolved to the provincial offices of the Conservation of Natural Resources (CNR) a sub-department of the Ministry of Forestry. Conventional management schemes for areas such as WNP assume that it is possible to manage resource and environmental use through rules and regulations [8]. Marine protected areas, specifically no take areas (NTAs) designed to restrict



all extractive uses, are now widely-used to promote sustainable fisheries and protect marine biodiversity [9].

## 2. Methods

The study is located in WNP South East Sulawesi in eastern Indonesia, and is centrally located within the Coral Triangle, a region with exceptional marine biodiversity [7] (figure 1). The study is qualitative method, technique of data collecting done through, interview and observation beside study of policy document [10]. Policy analysis is done descriptively qualitative by using text analysis [11]. The analysis is conducted on policies that are both vertical and horizontal in relation to the content of policy texts and policy contexts on regional management, coordination among policy actors, and the interrelationship between policy content. Technically, content analysis includes the efforts, the classification of symbols used in communication, using criteria in classification, and using certain analytical techniques in making production. This analysis is often used in verification analyses. The workings or logic of this analysis are in fact the same as most qualitative data analysis. Researchers begin the analysis by using certain symbols, classify the data with certain criteria as well as predict with certain analytical techniques as well. Conservation area management in WNP.



**Figure 1.** Location map of Wakatobi National Park.

## 3. Results

### 3.1. General condition of WNP area

WNP is one of the seven marine national parks in Indonesia, with the second largest area after Teluk Cendrawasih Bay National Park. Appointment through Decree of the Minister of Forestry No. 393/KPTS-VI/1996 dated 30 July 1996, and its stipulation is based on the Decree of the Minister of Forestry. 7651/Kpts-II/2002 dated 19 August 2002 covering 1.39 million hectares including the territorial waters and the entire islands of the region [13]. Wakatobi is an acronym for the four main islands of Wangi-Wangi, Kaledupa, Tomia, and Binongko with 97% of the sea and 3% of the island's land [13]. The population is 94,985 people by 2015, up 0.29% from 2014, while the population density is 223/ km<sup>2</sup> [15]. The purpose of the establishment of this national park is to ensure the life buffer system for biodiversity conservation as representative of ecosystem of Banda-Flores marine ecology

area (Banda Flores Marine Eco-region), ensuring the realization of sustainable development of the regional economy, especially from fisheries and tourism sectors, and ensuring the availability of sustainable livelihood for local communities. UNESCO has designated Wakatobi as a world biosphere reserve at the 18th International Conference on the Committee for the UNESCO MAB Biosphere Reserve Program in Paris on 2-4 April 2012 [19]. Included in the world's triangle coral reef marine biodiversity is one of the highest in the world, there are 396 species of corals scleractinian, 942 fish species, 31 species of fungal corals, 31 species of foraminifera and 34 species of stomatopods [17].

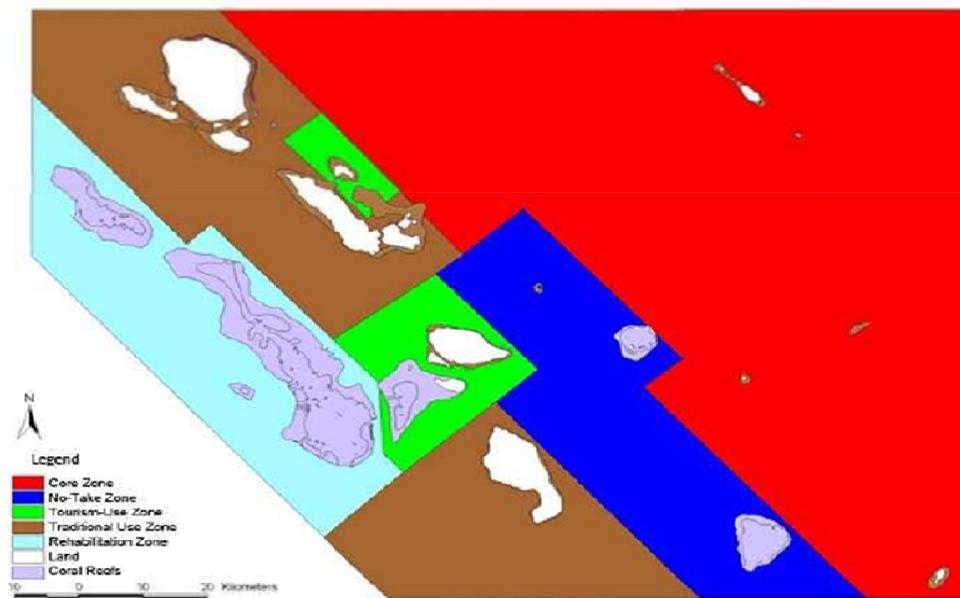
The focus of resource management on 8 important resources, coral reefs, mangroves, turtle habitats, seagrass ecosystems, coastal bird habitats, marine mammal habitats, and important economic fish. The National Park management partnership has intensive cooperation with Wakatobi District Government, Ministry of Marine Affairs and Fisheries, Indonesian Institute of Sciences (LIPI), TNC-WWF, customary institutions, local communities and other institutions. Results of monitoring of resources include: (1) coral reefs; to date there are 396 hard coral species, 28 soft coral genus and 31 species of mushroom corals. Coral reef types in WNP consist of: fringing reef, barrier reef, atoll reef, and reef patches. The area of coral reefs in Wakatobi is  $\pm$  54,500 ha, of which Kaledupa Atoll is the longest atoll in WNPA [15]. Results of coral reef monitoring 2012-2016 by WNPA show coral health conditions 2012 to 2016 in WNP is significantly higher in the no-take zone than in the utilization zone, with the best conditions in main island habitats. Bleaching coral reef health monitoring results from 2012 to 2016 tend to be low (<2%).

The highest percentage occurred in 2010. Even the results of monitoring by quadratic method, showed more surprising results, where nearly 60% of coral colonies affected bleaching in Wakatobi in 2010. (2) reef fish; as many as 590 species of fish found in Wakatobi, even extrapolated using coral fish diversity index, estimated reef fish in Wakatobi reach 942 species [13]. The number of fish from 2012 to 2016 on monitoring of SPAGs in WNP is fluctuating, the highest number of fish found in 2013 in December, 2014 in November and 2016 in March. The number is >1000 tail during observation in that year. (3) mangroves; the results of mangrove monitoring by WNPA in 2008-2012 were conducted on 14 sites around three major islands namely Wangi-Wangi, Kaledupa and Tomia in WNP encountered 13 genera and 28 species, 24 species found in Kaledupa Island, 12 species in Wangi- fragrance and Tomia 12 types. The Rhizophoraceae genus has the highest density of up to 30 individuals per m<sup>2</sup> in the growth stages of seedlings, 1 individual per m<sup>2</sup> at the stake, and 1,400 ind per ha at the tree level. The distribution of mangrove species in the community in the last four years is relatively stable with the highest frequency of encounters in the Rhizophoraceae genus. (4) Seagrass; the results of seagrass monitoring by WNPA 2008-2012, 11 of 12 types of seagrasses in Indonesia are found in Wakatobi. The seagrass cover in the Wangi-Wangi area is generally higher than Kaledupa and Tomia, seagrass cover at all locations fluctuates throughout the year. (5) turtle habitat; the type of turtle that is in the WNP is, hawksbill eretmochelys and green turtle chelonian mydas while turtle nesting beaches spread on the island of Runduma, Anano, Kentiole, Cowo-cowo and Moromaho. The peak of turtles that rise and lay eggs in WNP occurs in March-May and September-December. (6) Habitat of marine mammals; type of marine mammals (whales and dolphins), monitoring in 2004-2009 by WNPA there are 6 types of whales from a total of 1181 tails that are found, beaked whale, whale pilot, blue whale, whale sperm, bryde's whale and melonhead whale. The most common findings were of the whale 890 whale melonhead, the highest whale population in 2004-2005. There are still 89 species of unidentified whales. (7) coastal bird habitat: monitoring results of coastal / marine birds in WNP 2005-2012 identified 74 species of coastal / marine birds and 14 species (19%) protected status. Wakatobi endemic species are found, the type (gray pelvic chili) which is only found on the island of Hoga, Kaledupa throughout the year of observation, (8) economically important fish; economical fish consists of a type of herbivore that has a high selling value [18].

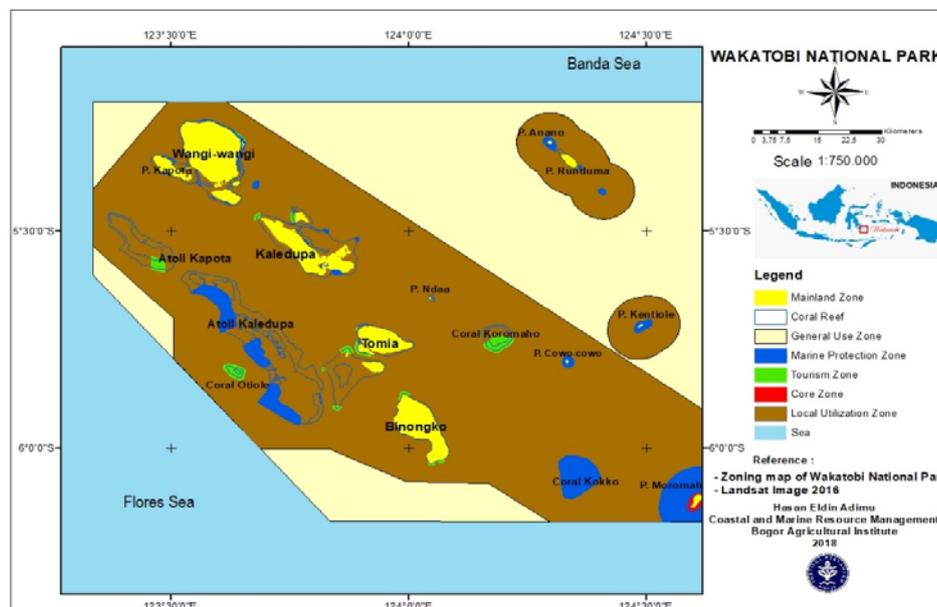
### 3.2. Management of WNP regions

The management of the area is carried out by Wakatobi National Park Authority (WNPA), consisting of three (3) National Park Management Section (SPTNW) SPTNW 1 located at Numana Wangi-Wangi Island, SPTNW II is located in Ambeua Kaledupa Island and SPTNW 3 on Waha Island

Tomia. The basis of management law refers to Law No. 5/1990 on the Conservation of Biological Natural Resources and Ecosystems, which regulates efforts to conserve biological natural resources and their ecosystems through the following activities: a) protection of life support systems, b) preservation of diversity of plant and animal species and their ecosystems c) sustainable use of biological natural resources and their ecosystems.



(a)



(b)

**Figure 2.** (a) Initial zonation of 1999-2006 (before revision) (b) zoning 2007-current (after revision) Source: WNPA (2008).

Management carried out by a zoning system (figure 2) consists of: (1) a core zone of  $\pm 1,300$  ha, (located on the island of Moromaho Island which is considered a pristine area intended for preservation and preservation of biological resources); (2) marine protected zones covering an area of  $\pm 36,450$  ha, (resource protection and functioning as a "bank" for fish and other resources); (3) tourism zones covering  $\pm 6,180$  ha (intended for tourism activities that also function as zones without extractive use); (4) local exploitation zone of  $\pm 804,000$  ha (the most extensive zone devoted to the benefit of Wakatobi's community use) (5) general utilization zone of  $\pm 495,700$  ha (located in deep sea 4 miles from coral or island and intended for interests of developing large-scale pelagic fisheries); and (5) special zone / land area of  $\pm 46,370$  ha (intended for development of community infrastructure and Wakatobi regency government).

Forms of protection and security of the area, WNPA by conducting routine patrol activities, combined patrol and species monitoring, reef check, and resource inventory and coastal ecosystems. Focus on 8 (eight) natural resources targeted for conservation (corals, fish spawning areas, mangroves, seagrass beds, cetaceans, turtles, coastal bird habitats and other marine species). Utilization is only done for the benefit of research, science, education, support cultivation, nature tourism and recreation. Approach to the community is done by counselling, training, environmental campaign, assistance and guidance to the fishermen community in the form of alternative livelihoods as well as the formation of tourist villages.

The issuance of Law No. 29 of 2003 (establishment of Wakatobi District) provides authority in the management and utilization of the area. Based on Law No 23 of 2014 (regional autonomy) utilization activities that can be done in the sea area consists of; business of aquaculture, fishing affairs and fisheries empowerment affairs small (coastal). In addition development activities carried out in coastal areas such as port infrastructure, roads and others. Wakatobi Regency which is the division of Buton Regency, which is located and the same extent with the location and the area of Wakatobi National Park. So that in the waters of Wakatobi there are two status of the area, one as the area of Wakatobi National Park and as the district area [13]. Harmonized legislation related to the management of natural resources and environment in Wakatobi area. Conflicts of interest and authority take place in the tourism licensing function; marine and fisheries; as well as the utilization of WNP zonation [14].

### 3.3. WNP Management Policy

The management of WNP aims is to preserve the source the biological nature and its ecosystem, to fulfill its function as a protection area of life support systems, preservation of the diversity of flora and fauna species, as well as sustainable use of biological resources and ecosystem, to be used for research purposes, development of science, education, support cultivation, nature tourism and recreation.

Management is at the level of central government policy (Ministry of Environment and Forestry) under the Director General of Natural Resources and Ecosystem Conservation, responsible for managing the national park and implemented by the WNP. Based on Law No. 5 of 1990, mentioned that the Park National managed by zoning system, with management system which still refers to regional management policies conservation. But along with the development of regional autonomy, with the formation of Wakatobi Regency, then the system existing management must be synergized with policies that exist in legislation regional autonomy. One of the management models considered appropriate is a collaborative management model [16]. Management of WNP, then the park management program described in the form of activities based on priority scale every 5 (five) years which are elaborated as follows:

#### 1. Natural Resources Conservation and Conservation Program

- The consolidation of the WNP area is implemented in order management effectiveness aimed at obtaining clear legal certainty with structuring and granting boundaries, distribution of management spaces based on the designation function embodied in forms of activities, outer boundaries and zonation, monitoring and evaluation of zoning, and socialization and zoning security.

- The management of biodiversity and ecosystem aims to conserve biological natural resources and their ecosystem according to the purpose of designation and determination of WNP, to be able to fulfill the protection function of buffer system life, preservation and diversity of plant and animal species and their ecosystems, and the sustainable utilization of natural resources and their ecosystem. This will be realized in the form of survey activities (identification and inventory) and monitoring of natural resources, rehabilitation, restocking, marine aquaculture development and wildlife breeding.
  - Protection activities areas are focused on crime prevention and eradication theft or illegal fishing of sea products (illegal fishing).
  - The development of the utilization of environmental services and natural tourism shall be carried out in order to develop the products of environmental services and nature tourism that are capable of generating economic benefits from natural resources within the area to provide business space for communities, local governments and businesses with creating a competitive business climate.
  - Other research activities that examine the potential of fisheries that can be developed as a sustainable livelihood alternative. One of the triggers pressure on the region is the high dependence of the community on natural resources (sea), therefore need to develop research research development of alternative livelihoods sustainable livelihood (alternative sustainable livelihood) that does not interfere with the sustainability of natural resources.
2. Source Management Capacity Development Program Natural Resources and the Environment
- Institutional capacity building of WNPA is implemented in order to establish institutional management steadily supported by human resources qualified based on appropriate qualifications and competencies with management needs.
  - Planning and control of WNP area management implemented with the purpose of management of the area is based and refers to systematic planning based on priority scale supported by the mechanism of control and coaching and accountability.
  - The development of a collaborative management system is implementation of an activity or handling a problem in order to help improve management effectiveness jointly and synergistically by the parties on a basis mutual understanding and mutual agreement prevailing laws and regulations.
  - Development of regulations that support the management is intended as a form of integrating regulation laws on conservation of natural resources and natural resources its ecosystem into the draft local regulations so direction of development and development of Wakatobi Regency always in line with the goal management by encouraging the drafting of local regulations supporting the management, such as the draft law on collaborative management, arrangement of fishing gear, district and district spatial planning entrance fee and tariff for tourism activities within the region, etc.
3. Awareness Program, Increased Participation and Community Empowerment in and around WNP
- Increased public awareness and natural love development intended to further enhance understanding and public awareness of the importance of resource conservation biological nature and its ecosystem.
  - The development of community participation is intended for encouraging the active role of society is increasing in field, so the management becomes more effective and efficient and full support from the community as well all parties.

- Community empowerment is meant to encourage enhancement of potential utilization contained in community, to accelerate the improvement of welfare communities around the region as well as its support for areas in the conservation of natural resources.

Wakatobi Regency which is an expansion of the Regency Buton, which is the same location and width as the location and area WNP area. So in the water area Wakatobi has two regional statuses, one as a region WNP and as a district area. With the condition of the region having two statuses, then there is some things that could be the pressure and threat ie inter-agency policies that are not synergistic, either on the policy order at the center as well as in the regional order. Furthermore, the problem of different perceptions about legislation. These things if not immediately communicated and sought solutions would potentially be a deep conflict management area in Wakatobi area. Therefore to in the future, has become a liability, the WNP must build synergies and work together to create mechanisms collaborative management adaptive to the local situation.

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#### *3.4. Authority of management WNP and district government Wakatobi*

Based on the results of the policy analysis in table 1 it is seen that there is a fundamental difference in the basis of the determination of the area between Wakatobi national park and Wakatobi District that have an impact on policy making. Law No.5 of 1990 (on the conservation of biological natural resources and its ecosystem) focuses on the protection of natural resources, utilization accommodated but sustainably and measurably. While law No. 23 of 2014 (on regional autonomy) and Law no. 29 of 2003 (on the establishment of Bombana District, Wakatobi District, and North Kolaka District) focus on regional development and development. The basis of operational reference of the area between Wakatobi RPTN and Wakatobi RPJMD has not yet been seen the synergistic mechanisms that are developed jointly in the management of the area. If this is not done synergy immediately, will trigger the impact of disharmonic policies that adversely affect the sustainability of regional management. Utilization of zonation-based zones; for supervision in the utilization of natural resources in each zone ie core zone, marine protection zone, tourism zone, local utilization zone, general utilization zone and special zone/land while demography-based Wakatobi District; for economic activities such as capture/empowerment of small-scale fishermen, cultivation, tourism, infrastructure development and inter-island sea transportation services.

**Table 1.** Regional management policies by WNPA and district governments are seen from various aspects.

Objects	Wakatobi National Park	Wakatobi District
Legal basis	<ul style="list-style-type: none"> <li>- Law No.5 of 1990 (on conservation of biological natural resources and its ecosystem)</li> <li>- Determination of Wakatobi Islands and surrounding waters of 1.390.000 Ha as National Park. (SK Menhut RI No. 7651 / Kpts-II / 2002 dated August 19, 2002)</li> <li>- The change of name of Wakatobi Islands National Park (WINP) into Wakatobi National Park (WNP) (Permenhut No. P.29 / Menhut-II / 2006 on Organization and Administration of Technical Implementation Unit of National Park)</li> </ul>	<ul style="list-style-type: none"> <li>- Law No. 23 of 2014 (about change) Law No. 32 of 2004 (on regional autonomy)</li> <li>- Law No. 29 of 2003 (about the establishment of Bombana District, Wakatobi District, and North Kolaka District)</li> </ul>
Basic operational reference region	<ul style="list-style-type: none"> <li>- Regulation of director general of conservation of natural resources and ecosystem (about strategic plan of directorate general of conservation of natural resources and ecosystem year 2015-2019)</li> <li>- Wakatobi National Park Management Plan 1998-2023</li> </ul>	<ul style="list-style-type: none"> <li>- Regional Regulation No. 1 of 2012 (on long-term development plan of the region (RPJPD) of Wakatobi Regency 2005-2025)</li> <li>- Wakatobi District Medium Term Management Plan 2016-2021 is a description of the vision, mission and program of Regent and Vice Regent of Wakatobi period 2017-2021</li> </ul>
Utilization of the area	Research, science, education, cultivation, nature tourism and recreation. zone and special zone / land	Demographic bases; for economic activities such as catching / empowering small-scale fishermen, cultivation, tourism, infrastructure development and inter-island sea transportation services
Natural resource management	Focus on eight important resources Coastal or marine bird habitats (Aves), mangrove ecosystems, turtle nesting beaches, seagrass beds, coral reefs, economically important fish, Spawning Agregation Site (SPAGs) and marine mammal trails (cetacean).	Management of coral reef and mangrove ecosystem as well as other protected resources

Source: interviews, policy documents, and observations

#### 4. Conclusion

Based on the results of a review of policy review of Wakatobi National Park management, it was found that there are two authorities that have a role in formulating the area policy of Wakatobi National Park as the manager of the National Park Office and Wakatobi District government. Such conditions affect the configuration of policy makers that impact on the management of the area.

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