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## **Urgency of Coastal Resources Management Through Coastal Tourism in Wondama Bay District, West Papua Province, Indonesia**

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## **ABSTRACT**

Wondama Bay coastal region has the potential of coastal resources and some marine biota in this area. Recently, coastal resources in Wondama Bay have been in a decline. The situation is probably related to the ecological pressure of anthropogenic activities. The increasing number of settlements around Wondama Bay reduces the mangrove forest area. The sedimentation rate increased in Wondama Bay which caused a damage to the ecosystems. Reduction of the carrying capacity of Wondama Bay needs to be managed to support the coastal resources such as fish, reef, and shellfish. The report objective is to describe the management of the coastal areas through Wondama Bay District's tourism regarding natural resources management policy. This report shows that the concept of sustainable coastal tourism management focuses on the coastal ecosystem's characteristics. In question, this is managed by considering aspects of environmental parameters, conservation, and the quality of community life. Then they are identified in a comprehensive and integrated manner through community, scientists, and government cooperation, to find management strategies of coastal of Wondama Bay District. The existence of the current coastal natural resources must be maintained so that it sustainably supports coastal tourism.

**Keywords:** Fishery, Sedimentation, Wondama Bay, Coastal Areas, West Papua Province

## **1. INTRODUCTION**

The coastal area has an essential role in supporting human life and the biota that lives around it. Most of the industrial and residential activities are located in coastal areas. Some of the industrial activities often found in coastal areas are the oil processing industry, the building material processing industry, the fertilizer industry, and the shipbuilding and repair industry. Along with the increasing population, forests in coastal areas have been converted into residential areas and agricultural land, resulting in land conversion. Anthropogenic activities and land conversion can reduce coastal areas' carrying capacity for the biota that live in them [1-5]. Likewise, the coastal area of Wondama Bay has changed in the conversion of forests to human settlements and agricultural land. The clearing of land at the top to become a residential area and agricultural land will reduce the land's ability to absorb rainwater due to reduced forest area and the level of vegetation density that is increasingly sparse (**Figures 1 to 9**).

Wondama Bay District is located on the island's bird head's neck and is part of the West Papua Province. This District's area is partly located on the mainland of Papua's island, and the islands and part of them are water areas (Cenderawasih Bay National Park). Geographically, the District is located between 132° 35'- 134° 45' East Longitude and 0° 15'- 3° 25' LS. The geographical location of Wondama Bay District is presented in Figure 1.

Wondama Bay District has an area of land and sea of 1,272,833 ha, more than 50% of its area is in the form of oceans, which is around 777,711 ha Cendrawasih Bay National Park. Wondama Bay District has a land area of approximately  $\pm 4,996 \text{ Km}^2$  and has its capital in Rasei in the South Wasior District. Wondama Bay District consists of 7 districts: Wasior District, North Wasior District, South Wasior District, West Wasior District, Windesi District, Wamesa District, and Rumberpon District.

Wondama Bay District has a topography of coastal areas, lowlands to mountains (**Figures 10 to 19**). The topography of the Wondama Bay District varies from flat to a slope of 40%. There are mainly flat areas around the Wosimi River (Wasior Barat and Wasior Selatan Districts) and a narrow area along the coast. Land elevation is one of the factors considered in the land use process because it will affect the land's ability to support activities on the land and is closely related to nature conservation efforts in general. The District of Teluk Wondama is at an altitude of 0 to 2,000 m above the sea level (asl), with most of the area at an altitude of 100 - 500 m above the sea level. The District's highest place is located at the top of the Wondiboy Mountains, with an altitude of 2,252 m above the sea level. This mountainous plain is a nature reserve that covers about 73,002 ha. This mountainous plain stretches to the north to form a peninsula. Besides, there are several other mountains, namely Mount Waropen with an altitude of 541 m above the sea level and Mount Waisa with an altitude of 957 m asl, which is located in the Wasior area and Mount Wamiaru with an altitude of 865 m asl and Mount Tasubar at 868 m asl in the Windesi area.

Based on its altitude, the Wondama Bay District area can be classified as follows:

- 1) Altitude 0 - 100 m asl; it is a lowland mainly located on the coast in a narrow area
- 2) Altitude 100 - 1,000 m above sea level; this is almost a hilly area found throughout the area
- 3) Altitude above 1,000 m asl; this area is a mountainous plateau such as the Wondiboi Mountains. The topography of the Wondama Bay District varies from flat to 40% slopes. There are mainly flat areas around the Wosimi River (Wasior Barat and Wasior Selatan Districts) and a narrow area along the coast. This topographical condition is one of the main obstacles to developing the Teluk Wondama region because the land that is suitable for development is limited.

Marine resources in Wondama Bay District are potential resources that have not been appropriately managed until now. Apart from having an ocean area that exceeds its land area, the sea conditions in this District are still good, with beautiful panoramas and rich in marine fishery potential. The fisheries sector, especially marine fisheries, is very potential in Wondama Bay District because of its geographical location between Cendrawasih Bay and Bintuni Bay. The location is due to its wide water area and high species diversity. Coastal resources have the economic value which consists of forest animals such as birds, and aquatic animals such as tuna, pelagic, sea cucumber, crab, lobster, coral reef, squids, big clam and shark fin (**Figures 20 through 48**).

One of the most promising natural potentials for Wondama Bay District's future is the Cendrawasih Bay National Park. The panorama of this National Park is excellent for tourism development in this District. Cendrawasih Bay National Park, which is included in the Wondama Bay District, is vast, stretching from the east of the Kwatisore peninsula to the northern part of Rumberpon Island. National Park's coastline is 500 km, and a land area of 68,200 ha consists of 12,400 ha of coastline and 55,800 ha of land on the islands. In the national park area of 1,385,300 ha, there are 80,000 ha where coral reefs are grown. Another tourism potential that can be developed in the future is the Wondiboi Nature Reserve.

The tourism sector is one of the potential sectors to be developed in Wondama Bay District, following the District's long-term development vision.

The diversity of flora and fauna and beautiful, unique, and distinctive natural landscapes, both on land and under the sea, has a potential for the development of marine tourism.

## **2. DEVELOPMENT DIRECTIONS**

### **2. 1. Directions for Development of Tourism Potentials in Wondama Bay District**

In planning the tourism development direction of Wondama Bay District, it is necessary to pay attention to the following aspects:

- A) Adaptation of the Tourism Development Plan with the Zoning of the Cenderawasih Bay National Park. Wondama Bay District's tourism development must be adapted to the Cenderawasih Bay National Park's zoning system to avoid conflicts over spatial use and avoid the impact of environmental damage and degradation of natural resources.
- B) Development of Backward and Outward Linkages. The tourism development of Wondama Bay District must be done spatially to have internal and external linkages. The plan is intended to promote prime areas and encourage other objects (backward) and network with areas outside the Wondama Bay District (forward linkages).
- C) Development of Sustainable Coastal Tourism. In the context of tourism, tourists cannot be limited territorially only, but need to consider the broader context and be supported by the linkages between products (tourism potential/attractions) and build synergy with other regions to build a stronger collective attitude attracting vacation flow. Therefore, there are several strategies from regional aspects that can be established to support tourism development in Wondama Bay District, as presented below.

### **2. 2. Strategy I: Adaptation of the Wondama Bay District Tourism Development Plan with the Cenderawasih Bay National Park Zoning System**

The development of tourism that is more sectorally oriented is one of the characteristics of natural resource management which causes the destruction of natural resources and reduces the environment's quality [6-9]. Apart from the causes above, this fact is also caused by activity actors (stakeholders) who ignore spatial aspects, so that it is not uncommon for spatial conflicts to occur in the use of space and natural resources between sectors. Sector-oriented Development also contributes to development inequality between regions, both between regions and between urban and rural areas functionally. The incompatibility of development between sectors and the inequality of development between regions causes the development of the national park area to be less powerful and effective [9-20].

Cenderawasih Bay National Park (CBNP) is the largest marine national park in Indonesia (1,453,500 ha), located in 2 administrative areas: Nabire District, Papua Province, and Wondama Bay District West, Papua Province. The portion of the area included in the administrative area of Wondama Bay District is wider (69.02%), compared to the part of the area included in the administrative area of Nabire District, which is 30.98% of the area.

This area is a marine conservation area that contains the potential for diversity of flora and fauna and unique marine ecosystems because the potential content makes this area very attractive as a strategic marine tourism object. The CBNP area in its management is divided into several zoning so that various utilization interests can run in harmony with nature.

The zoning system for the Cenderawasih Bay National Park covers both, land and sea areas. Zones covering land and sea areas have special regulations for these two types of environment. The CBNP zoning is divided into six zones: the core zone, the marine protection zone, the tourism zone, the traditional zone, the general zone, and the particular zone [20-30]. The existence of zoning in the national park management system is essential, not only as a reference in determining the motion of management steps and conservation development in TNTC but also as a protection system that will control all activities.

The existence of the Cenderawasih Bay National Park in the administrative area of Wondama Bay District is an advantage from the tourism side because this area is one of the national strategic areas and is an area that has guaranteed protection. However, to avoid conflicts over spatial use, it is necessary to synchronize the spatial tourism planning with the Cenderawasih Bay National Park Area zoning system.

### **2. 3. Strategy II: Developing tourism in Wondama Bay District in an integrated tourism spatial structure**

In general, Wondama Bay District's tourist destinations are still potential attractions because they have not been appropriately managed. Only a small number of tourist destinations can be categorized as a superior attraction. The conditions of the facilities and infrastructure to support tourism activities are still limited and very minimal [25-40]. The existing facilities and infrastructure are still concentrated in Wasior City. However, the flash flood disaster that occurred in 2019 has also impacted the damage to supporting facilities and infrastructure in Wasior City. Optimizing the development of tourism resources and bridge the regional Development in Wondama Bay District, is necessary to formulate an integrated development plan among existing tourist destinations and prioritize leading tourist destinations.

The development strategy needs to be elaborated in the form of the formulation of development plans as follows:

- 1) Development of an integrated tourism development regional structure for Wondama Bay District
- 2) Identification and location determination of service centers at regional tourism levels
- 3) Identification and location determination of facilities and infrastructure support of tourism development.

### **2. 4. Strategy III: Developing an integrated spatial system by establishing a Strategic Tourism Area (STA) with particular development themes**

It is necessary to formulate tourism development spatially to encourage tourism's systematic [16-19] Development in Wondama Bay District. The formation of strategic areas is a practical approach to developing tourism in areas with unique characteristics, such as the Wondama Bay District. The objectives for the establishment of tourism development areas are as follows:

- 1) Developing a variety of tourism products
- 2) Organizing tourist destinations in integrated and mutually supportive development and distribution system

- 3) Distributing the tourist visits evenly with the uniqueness of the tourist destinations of each region. In the context of Wondama Bay District, one can take advantage of leading tourist destinations to attract visitors, especially by packaging attractive attractions and supported by the provision of tourist facilities in the areas visited.

The tourism development model used should be based on the concept of borderless tourism, where tourism development is carried out by reducing dependence to a minimum on the division of administrative boundaries only [41-52]. In this connection, the division of tourism development areas does not depend on village boundaries as administrative boundaries. Administrative boundaries do not affect STA formation because they do not limit tourist destinations. The spatial implication obtained from tourism development is the formation of tourism spaces or tourism areas with certain territorial boundaries and are developed with the character of specific product themes.

This system's development is intended to make it easier to further develop tourism products by being more based on specific themes in each region. The Development of space or the Strategic Tourism Area (STA) with certain product characters is aimed at:

- a) Developing product diversity in a development area to develop several tourism areas that have specific product characteristics or attractions. Diverse attractiveness will provide opportunities for movement or even distribution of the STA being developed;
- b) Organizing several tourist destinations in a mutually supportive relationship between adjacent tourist destinations so that tourists in one tourist destination in an STA can be distributed and provide benefits to surrounding tourist destinations
- c) Tourism development groupings that collect tourist destinations close together and have equal access in one development area. The area is intended to develop an integrated pattern or service system among these tourist destinations.

#### **2. 5. Strategy IV: Development of integrated tourism service facilities in the framework of establishing regional and local scale service centers**

The quality of the tourist service system (facilities and access) along the route of the tourist journey's movement to the destination becomes an exciting experience for tourists, even if it is memorable or not. The travel experience is formed from the quality of the tourist destinations or attractions visited supported by a tourist service system. The tourism experience is the totality of the tourist experience starting from the first trip (area of origin), the area between the destination (tourist destination), experiencing information services, lodging, eating and drinking, souvenirs. Therefore, the development of tourism support facilities must be well planned and integrated to create a totality of quality tourist experiences. As an illustration, the following is a schematic illustration of tourist movements' occurrence [46-57].

The second strategy can be formulated in the service center development plan: Development of tourist facilities at specific locations, especially in the relevant STA, must pay attention to the tourist destination market's character as a tourism subject. The development of service centers is intended to increase existing service facilities' carrying capacity, both in general and specifically for tourism support services [55-68]. In this case, its development focuses on form and upgrade service centers into a specific order, following the capacity being fulfilled. The service center system is based on two aspects, namely potential conditions and

problems that develop in the field and policy directions contained in the Spatial Planning and the Medium-Term Development Plan. Determination of local and regional scale service centers is based on the Spatial Planning of Wondama Bay District and topographical conditions and access that affect the distance and travel time between service centers. Lewoleba, as the capital of Wondama Bay District, is the city with the highest service center. Service centers at each scale have a minimum standard for the types of facilities, especially tourism service facilities that must exist.

## **2. 6. Strategy V: Developing tourism in Wondama Bay District through the development and role of leading tourist destinations as the axis or axis of Development and potential tourist destinations as development nets**

Wondama Bay District's Development shows a map of the distribution of tourists visiting more natural tourist destinations. At the same time, another potential which is also a tourist destination is the potential for cultural and historical tourism. Cultural and historical tourism is only visited at certain events, not every week or holiday. Theoretically, tourist destinations that many tourists visit indeed have an attractive advantage [31-38]. Tourist destinations that have superior attractiveness can be developed into a leading tourist destination as a development axis. The existence of a development axis can trigger the development of other tourist destinations. Meanwhile, tourism destinations that are not yet developed and have potential can synergistically develop through a planning system that is directed towards triggering development. It is undeniable that tourist destinations that only have one attraction tend to be monotonous and will not last long.

It is necessary to formulate a comprehensive development strategy and plan regarding the tourism space structure to accommodate these conditions [44-68]. Within this framework, the strategies and plans developed are the development of the STA node network structure. Domestic tourist visits, especially local tourists, are currently still concentrated in several tourist destinations and areas, for example, the Auri Islands. Based on the concentration of local tourist visits, which are still fixated on several areas, efforts to evenly distribute the flow of tourists to areas of other potential tourist destinations need to be done by the developing traffic nets between the main tourist / main tourist areas and the destinations, tourism and potential tourist areas that are nearby. Within the framework of this concept, it is necessary to develop an area node network structure to distribute tourist visits and develop areas within the STA scope of interrelations in the framework of thematic development and marketing.

## **3. CONCLUSIONS**

Sustainable Coastal Tourism is a tourism development concept that can meet the needs of tourists and tourist destinations today while protecting and encouraging similar opportunities in the future by utilizing the potential of coastal areas that have unique characteristics and abundant natural resources. The objective of coastal tourism management is to improve the quality of life for people who depend on coastal tourism and at the same time ensure the biological diversity and productivity of the coastal tourism ecosystem.

Thus, the objectives of coastal tourism management have several aspects, including management aspects (community development), conservation aspects (protection from



damage), and biodiversity aspects (ensuring biological diversity) of coastal tourism ecosystems. The coastal tourism management program is based on an understanding or hypothesis that changes in the ecosystem that are currently occurring in coastal tourism will reduce the long-term ability of this system to ensure the quality of life of the community and sufficient condition of resources and will also reduce its ability to produce sustainable prosperity. The local government of Wondama Bay District (District and Village) is vital for the management of Coastal Tourism in the area, primarily to protect existing coastal natural resources. The concept of sustainable coastal tourism management focuses on the characteristics of the coastal ecosystem in question, which is managed by taking into account aspects of environmental parameters, conservation, and quality of community life, which are then identified in a comprehensive and integrated manner through community, scientists and government cooperation, to find management strategies.

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## Appendix

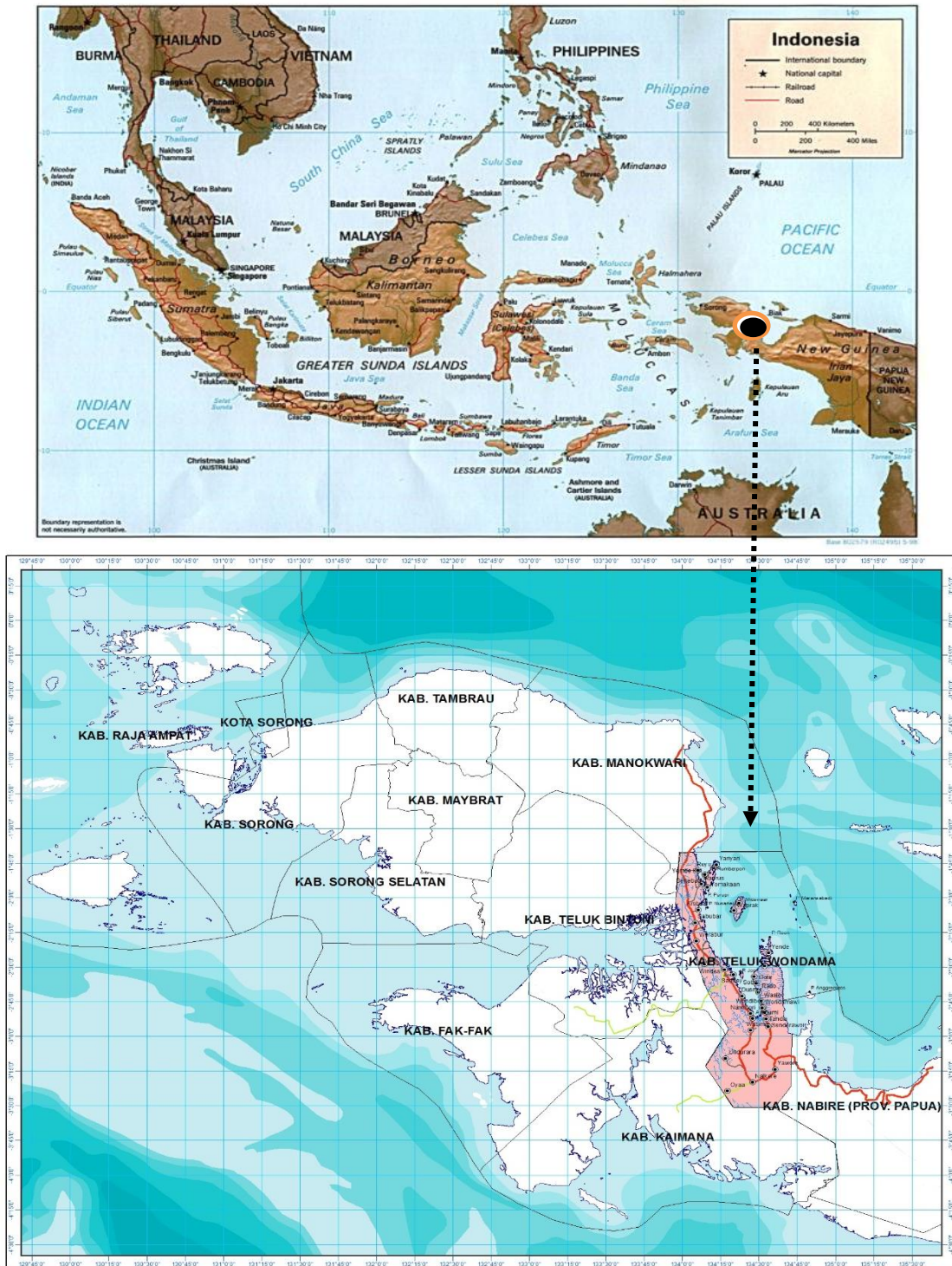


Photo 1. Wondama Bay District in Indonesian Map



**Photo 2**



**Photo 3**





**Photo 4**



**Photo 5**



**Photo 6**



**Photo 7**



**Photo 8**



**Photo 9**



**Photo 10**



**Photo 11**



**Photo 12**



**Photo 13**



**Photo 14**



**Photo 15**



**Photo 16**



**Photo 17**



**Photo 18**



**Photo 19**





**Photo 20**



**Photo 21**



**Photo 22**



**Photo 23**



**Photo 24**



**Photo 25**



**Photo 26**



**Photo 27**



**Photo 28**



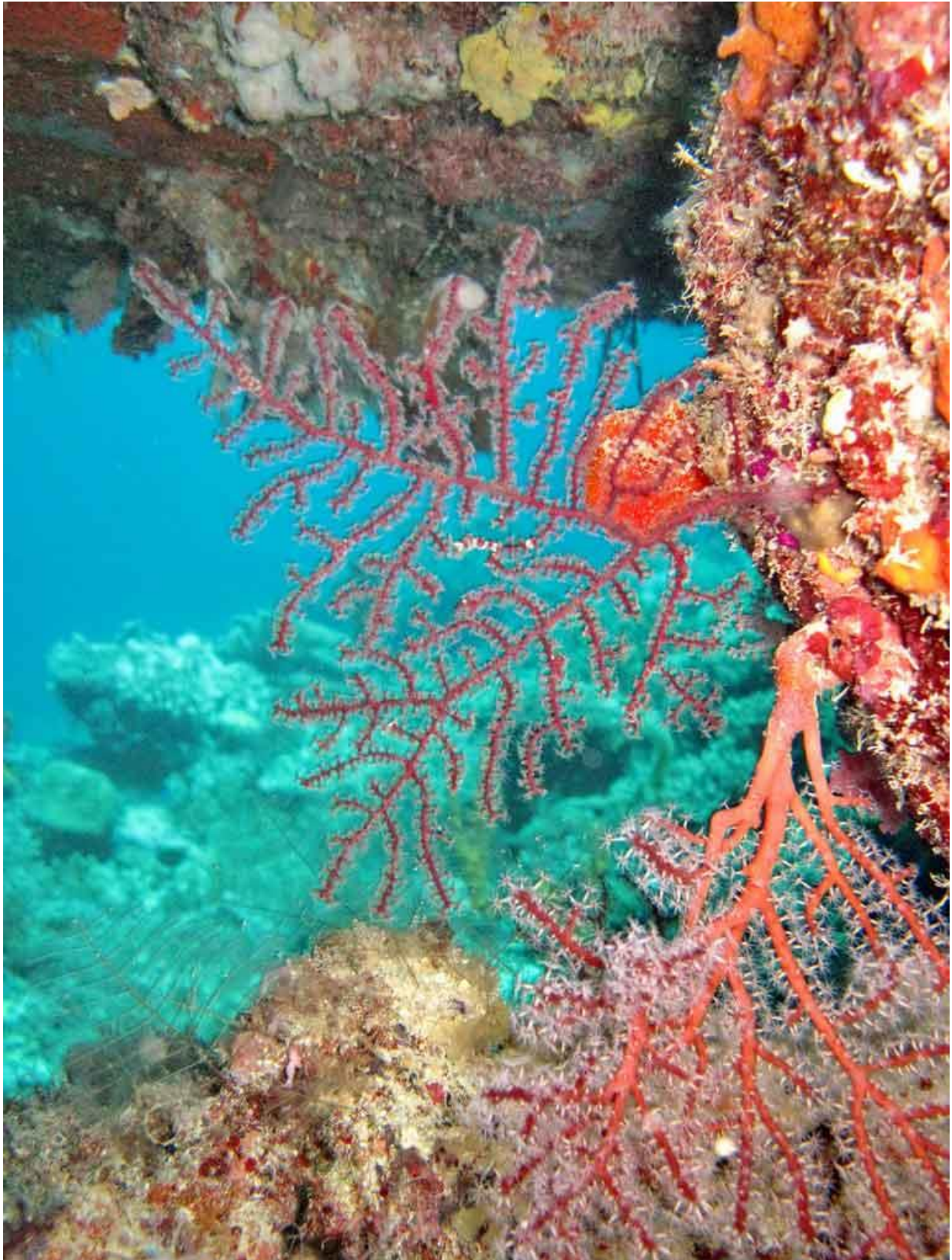
**Photo 29**



**Photo 30**



**Photo 31**



**Photo 32**



**Photo 33**



**Photo 34**





**Photo 35**



**Photo 36**



**Photo 37**



**Photo 38**



**Photo 39**



**Photo 40**



**Photo 41**



**Photo 42**



**Photo 43**



**Photo 44**



**Photo 45**



**Photo 46**



**Photo 47**



**Photo 48**