

# SHIPWRECKS OF THE GALLIPOLI CAMPAIGN AND PROTECTION OF MARINE BIODIVERSITY

Editor: M. İdil Öz

## **Sustainable diving tourism in Çanakkale and its economical responses**

**Ebru CAYMAZ**

Department of Emergency Aid and Disaster Management, Faculty of Health Sciences,  
Çanakkale Onsekiz Mart University, 17020, Çanakkale, Türkiye

ebru.caymaz@comu.edu.tr

### **Abstract**

In recent years, there has been a significant shift in the expectations of tourists, which also changed the instinct and the desire to explore the unknown and has brought new trends in the tourism sector. Due to the increasing demand for curiosity and interest, the increase in investments in this special area has revealed a new type of tourism titled scuba diving tourism. Scuba diving tourism is a type of tourism that includes promotional, sportive, and educational dives for the purpose of seeing, photographing, and filming the fauna, flora, and archaeological cultural assets of the underwater world, as well as accommodation and hospitality services provided on the shore. Therefore, in addition to its inherent social, psychological, and physiological benefits for divers, scuba diving enhances the sustainable development of coastal society by producing economic benefits while improving marine conservation and environmental awareness. These benefits have attracted the attention of both communities and tourism operators over the years. According to a recent report, there are 967 marine tourism operators in Türkiye; 270 of them belong to underwater operators while 9 of them are located in Çanakkale. Owing to 14 sunken ships during World War (WW) I, the Gallipoli Historic Underwater Park in Çanakkale has become the first underwater park under the theme of WWI. On the other hand, the rising number of recreational dives has also evoked sustainability concerns over the world. Accordingly, this study aims to portray sustainable diving tourism in Çanakkale within the context of wreck diving and its economic responses.

**Keywords:** Çanakkale, Dardanelles, scuba diving, sustainable diving, wreck diving.

### **Introduction**

Being held with the participation of many participants such as national and international high-level representatives, local and foreign guests, press and media organs, Çanakkale hosts the 18 March Martyrs' Commemoration and Gallipoli Naval Victory Ceremonies every year. Anzac Day Commemoration Ceremonies are held in April every year with the participation of several visitors from Australia and New Zealand. High-level accessibility to tourism values such as Troy Museum, Troy Ancient City, and Assos Ancient City; availability of eating, drinking and accommodation alternatives, issues such as access to health services are considered as the strengths of the city.

On the other hand, the diving industry has witnessed visible growth and expansion over the past 50 years. Every year, several diving centres are opened around the world, and an extensive number of new diver candidates receive a diving badge at the end of the training they receive for recreational or professional purposes and join the world diver community. As a unique branch of tourism, scuba diving generates a large amount of revenue and assists local communities while encouraging conservation. Therefore, the diving industry is expected to grow with both research and development (R&D) studies and application areas (GMKA 2021).

Although its interactions between economy and society, environment and industry, governance, and scientific community is a highly complex issue, understanding its interactions is significant in terms of Marine Protected Areas (MPAs), in which dynamics between actors are multifaceted. The rising number of scuba diving activities has encouraged a large sum of investments in various products ranging from diving equipment shops to diving schools, retail to education, and growth in the number of diving charter businesses to recreational dives (Dimmock *et al.* 2013). Similar to all tourism industries, scuba diving tourism predicated its activities on the three well-known pillars of sustainability; environmental, economic, and social since its economic value depends on marine megafauna (Wongthong and Harvey 2014; Haddock-Fraser and Hampton 2012). For instance, being available in 119 countries, whale-watching tourism attracts approximately 13 million tourists annually, which generates over US\$2.1 billion (O'Connor *et al.* 2009). Therefore, prioritizing conservation is a key issue in order to sustain its enormous revenue potential and promote sustainable development (Mota and Frausto 2014; De Groot and Bush 2010). Accordingly, this study examines the development process of sustainable diving tourism in Çanakkale within the context of wreck diving and its economic responses.

### **Socio-Economic Benefits of Diving Tourism**

Among the professional types of diving activities, the part that grows the market and creates the demand is recreational diving activities. The average time for diving training is 1 week. The candidate is supposed to come to the facility where diving training is given and stay during the training. Therefore, diving activities have a direct effect on the length of stay in a region. Besides, people who come for accommodation can also be directed to diving activities. Similarly, the historical, cultural, and natural values of a destination have a complementary effect on diving activities.

Marine megafauna has profound effects on the economic value of tourism. As an instance, being available in 119 countries, whale watching tourism attracts approximately 13 million participants over the year in which over US\$2.1

billion is generated involving income to both operators as well as businesses such as hotels, souvenirs, and restaurants (O'Connor *et al.* 2009).

As another striking instance, the small island states which are located in the Indo-Pacific region are often characterized by a relatively limited variety of economic opportunities (Scheyvens and Momsen 2008). And yet, their tropical locations, diversity of marine life along scenic beauty draw a great deal of attention as a holiday destination. That's how tourism has become a major source of revenue for these island states and progressively occupies an essential position in their economies (Ghina 2003; McElroy 2003).

In the fiscal year of 2009-2010, the total revenues generated by the tourism industry in Palau was estimated at approximately US\$144 million. The contribution of the diving industry was estimated at approximately US\$85 million, which was equal to 39% of the GDP (Anon 2010). The shark diving industry is asserted as being accounted for at least 8% of the GDP while the shark and ray diving industry reaches nearly US\$22.8 million annually in the Canary Islands (Vianna *et al.* 2011). The next session discusses the relationship between sustainability and sustainable development.

### **The Relationship between Sustainability and Sustainable Development**

Emerging as a policy concept in the Brundtland Report, sustainability is fundamentally defined as a “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*” (WCED 1987). The definition of the term raises a fundamental paradox of how economic advancement and progress would be maintained while the environment is being protected. Based upon that fundamental paradox, three pillars of sustainability are presented as environmental protection, economic, and social development (The UN 2002). As the literature on sustainability increases, the link between sustainability and economic development has been criticized by a vast number of scholars (Emas 2015).

When the previous studies in sustainability research are reviewed, directions and achievements especially within the last decade indicate substantial progress. Increasing theoretical and methodological strengths also initiate pioneering approaches in sustainability research in terms of theory, methodology, and implementation (Fondahl and Wilson 2016; Ford and Goldhar 2012; Reid *et al.* 2009). First and foremost, the co-production of knowledge is asserted as a prerequisite in terms of sustainability transformation. ‘Co-production’ is a joint process that entails collaboration between academics and partners such as governments, communities, or businesses. In addition, knowledge co-production includes six dimensions: gathering, integration, interpretation, communication,

dissemination, and application of knowledge, which are better suited to address complex challenges in sustainability governance (Petrov *et al.* 2016).

The discussions related to sustainability are grouped in Costanza and Patten (1995) 's study under three significant questions. As a sustainable system is associated with survival or persistence, the first question asks which system or subsystems persist. The second question is the continuation of the first one: for how long? And the last question is about the right time for the system/subsystem assessment. Sustainability assessment, as a significant process in which the implications of a purposive attempt at sustainability are evaluated, increasingly gains prominence in aiding sustainability (Pope *et al.* 2004). Since the systems possessing improper longevity balance hold potential to become either "brittle" if their parts resist too long not to get adaptive fast enough or "sustainable" enough to last, the longevity of the higher-level system is cut too short (Holling 1992).

Based upon three pillars, sustainable development also entails a threefold process. In order to implement sustainable development, the first step is to ensure a political system that encourages active participation in decision-making. The second step is to develop an economic system, which generates sustained surpluses. The last step is to build a social system, which delivers solutions to tensions resulting from disharmonious development. This process also recognizes human rights based on balanced life conditions in terms of economic, environmental, and social norms (Wydra and Pulzl 2013). However, there is still an urgent need for inter and transdisciplinary studies including new methodologies to assess the outcomes of sustainable development and improve the processes.

Emerging as a relatively new form of environmental governance, the adaptive governance framework is developed to coordinate resource management while coping with the complexity and the uncertainties of environmental change (Folke 2006). In recent years, environmental governance systems have been forced to be adaptive due to uncertainties caused by global environmental change and the risks associated with climate change, as well as different points of view to implement mandatory targets and timetables to deal with greenhouse gas emissions (Brunner and Lynch 2010; Keskitalo *et al.* 2010). Adaptive governance can be described as a type of governance that connects institutions, individuals, agencies, and organizations at multiple organizational levels. In this governance model, key individuals assume the leadership, elicit a vision, and build trust. Accordingly, adaptive governance literature mainly focuses on resilience, environmental governance, and social-ecological systems (Cumming *et al.* 2006). The next session further discusses the concept of sustainable diving tourism.

## **Sustainable Diving Tourism**

The development of the tourism sector has accelerated a significant transformation of infrastructure and facilities. Tourism has emerged alongside scientific exploration and authority involvement. The relationship among industry, research, and government is defined as “a triple helix” by Etzkowitz (2003). According to this model, the collaboration of authorities and universities leads to innovation by means of their innovative roles. As environmental concerns have become part of industrial thinking, sustainable policies are suggested for tourism planning and development (McDonald 2009). Since it is widely perceived as a utilizer of common-pool resources through diverse stakeholders (Viken 2011), the environmental and societal impacts of tourism especially in fragile regions drawn more attention recently.

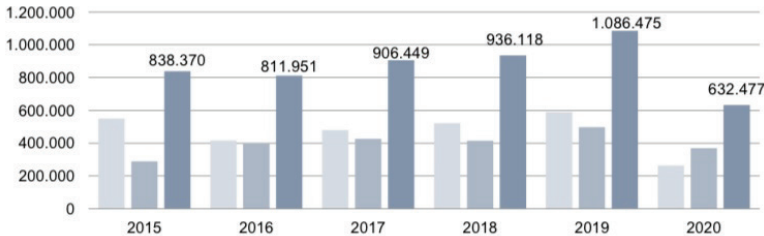
The majority of scuba diving tourism research has concentrated on two aspects primarily. The first one is the environmental aspect; in which the interaction between the underwater environment and scuba divers and its potential ecological impacts are examined (Haddock-Fraser and Hampton 2012; Dimmock and Musa 2015). The second aspect is sustainable development in regard to the environmental perceptions and willingness to contribute to the marine conservation of divers (Hillmer-Pegram 2014). On the other hand, the aforementioned aspects are not sufficient to portray the sustainability process of scuba diving tourism since sustainability research entails mixed methods of examination from various angles including multiple stakeholders by investigating several case studies (Hillmer-Pegram 2014).

Implementing sustainability goals in scuba diving tourism necessitates a number of initiatives ranging from quality service delivery to customers to environmental conservation in which the interactions between environmental, economic, and social systems and their impacts on the industry are studied holistically. In this process, challenges to the scuba diving industry such as rapidly changing technology, heightened environmental pressure from tourism, greater competitiveness within the industry, legislation and governance issues, market diversification, and competition with other industries ought to be examined in detail as well (Jentoft *et al.* 2012; Haddock-Fraser and Hampton 2012; Dimmock *et al.* 2013). The next session discusses wreck diving in Çanakkale.

## Wreck Diving in Çanakkale and Its Economic Responses

The Çanakkale Strait, or Dardanelles with its historical name, is a strait and international waterway that separates the continents of Asia and Europe and connects the Aegean Sea and the Marmara Sea. In 2019, an underwater workshop was held in order to evaluate the underwater potential of the TR22 Level 2 Region, which covers Çanakkale and Balıkesir provinces, and also to determine the short and long-term goals of the region. The advantages and disadvantages of the region were analyzed within the framework of the opinions and suggestions of the participants in the workshop organized with the contributions of the relevant stakeholders under the coordination of the Southern Marmara Development Agency (GMKA 2019). The inclusion of Gallipoli WWI sites to the UNESCO World Heritage Tentative List in 2014 is expected to propel tourism activities in Çanakkale.

Çanakkale is listed among the prominent provinces of Türkiye in terms of the number of visitors it hosts throughout the year and offers various opportunities to entrepreneurs who plan to invest in different types of tourism. Graphic 1 presents the number of people who visited Çanakkale between the dates of 2015-2020.



**Figure 1.** Visitors of Çanakkale Between the Years 2015-2020 (Republic of Türkiye Ministry of Culture and Tourism 2020)

According to a Pre-Feasibility Report prepared for scuba diving investment in Çanakkale (GMKA 2021), there are 967 marine tourism operators in Türkiye; 270 of them belong to underwater operators while 9 of them are located in Çanakkale. The Gallipoli Historical Underwater Park in Çanakkale has become the first underwater park under the theme of WWI owing to 14 sunken ships during WWI. The shipwrecks within the provincial borders of Çanakkale can be divided into three categories from a chronological perspective; ancient shipwrecks, shipwrecks belonging to WWI, and shipwrecks after WWI. Studies on shipwrecks mainly concentrate on WWI while there is a lack of information about ancient shipwrecks (Türkel and Gökdemir 2021).

The pre-Feasibility Report (RTMCT 2021) indicates that proximity to accommodation facilities is considered an important factor to be taken into

attention in determining the investment location. In the same report, it is predicted that the investment site cost will be around \$125,000 and the diving centre building construction cost will be around \$150,000 while the investment is expected to reach the breakeven point in the 22nd year. At this point, it is thought that it will be very important to determine the target audience as divers coming from abroad instead of local divers and to develop the diving centre customer portfolio in cooperation with foreign agencies. Thus, it will be possible to increase the diving centre revenues (GMKA 2021).

It is thought that the most important negative impact of the investment in terms of environmental sustainability would be related to the waste that may arise from diving activities. As a matter of fact, it is seen that environmental problems related to waste come to the forefront when the studies of diving tourism are examined. For instance, within the scope of a research conducted in the Kaş district of Antalya, it is stated that boats are meticulous about waste management, but difficulties are encountered when it comes to tourists (Yarmacı *et al.* 2017). Solid wastes can harm underwater creatures, especially because they descend both on the water's surface and under the water. Besides, similar concerns are discussed within the scope of different studies. Within the scope of another study conducted to evaluate the potential of diving tourism in Çanakkale and to raise awareness about diving tourism, it is stated that activities related to diving tourism may cause some negative effects on marine life, but these negative effects can be prevented by trained people (Mercan *et al.* 2021).

The establishment of the Battles of Gallipoli Historical Zone Administration in 2014 and the launch of the shipwreck diving project in 2017 has revived scuba diving tourism in Çanakkale. Being the best-preserved battle zone, Gallipoli Historic Underwater Park hosts 14 different diving points with 2 natural reefs and 12 battleship wrecks residing in 7 meters to 72 meters. SS Milo, Massena, Saghalién, Maria Delle Vittorie, and Vincenzo Florio wrecks are located close to the surface (7 meters) while Tuzla Web is located at 10 meters, and HMS Louis is at 13 meters. The deeper shipwrecks start with Arıburnu Lighter at 18 meters, H.M.S. Majestic at 23 meters, Helles Barges at 25 meters, Lundy at 27 meters, Arıburnu Barge at 25,8 meters, Küçükkemikli Barges and Mania Web at 30 meters. The deepest ones are Bebek Reef at 44 meters and HMS Triumph at 72 meters.<sup>1</sup>

The SS Milo, which started its voyage as a cargo ship on September 9, 1865, was connected to the British Navy with the outbreak of WWI and sent to Çanakkale in 1915, and was used to transport cargo and soldiers during the expedition. The coastal area where the ANZAC parade ground is located today

---

<sup>1</sup> For more information please check Gallipoli Historical Underwater Park website: <https://www.divinggelibolu.com/homepage>

was used as a harbour in 1915 and a pier called William was built on the beach (Akingüç 2016). Massena, a Senegal Class passenger ship, was built in the 1890s as a pre-dreadnought battleship for the French Navy. She was named after Andrea Massena, one of the key actors of the French Revolution (Simigielski 1985). Located in Ertuğrul Cove, she keeps its form despite the loss of its superstructure. Located in the same Cove, Saghalien was also a Senegal Class passenger ship. She was built in 1879 and used as a rescue vessel for French citizens before the battle in Gallipoli in 1914. Bought and brought by the British Admiralty to Gallipoli in 1915, Vincenzo Florio was built in 1882 in Italy as a passenger/cargo steamship. Another Italian passenger ship, Maria Delle Vittorie means St. Mary of Victories in English. There is still a lack of information about the ship ([www.divingelibolu.com](http://www.divingelibolu.com)).

Previously known as *Diana Vernon* and *Worthing Belle*, the Tuzla Ferry was built in 1885 by Barclay, Curle & Co as a paddle steamer. She was sunk in 1915 by a British warship ([www.paddleducks.co.uk](http://www.paddleducks.co.uk)). Another popular dive spot within Suvla Bay, close to the Büyükkemikli promontory, is the HMS Louis Destroyer. Resting on sandy, flat ground at 40°18.794'N, 26°13.562'E coordinates, the general condition of the shipwreck is bad unfortunately. On the afternoon of 30 October 1915, HMS Louis collided with a tow boat anchored in front of Suvla Bay (Kolay *et al.* 2013). The nearest port is 6.9 nautical miles from Kabatepe Port. The identity of the shipwreck, known as the "water purification ship" for many years, was determined after the source and archive research of the Australians during the Gallipoli Historic Underwater Park Project. The reason why it is considered a water treatment vessel is the four Yarrow brand marine-type steam boilers on it. The extensive destruction of the wreck makes it impossible to definitively explain the final cause of the sinking. Therefore, the official report of the Royal Navy is accepted (Wytykowski *et al.* 2011).

Being the largest pre-dreadnought of the period, HMS Majestic was a Majestic-class battleship of the Royal Navy. Launched on 31 January 1895, the Majestic weighed 16,060 tons. It was 128 meters long, 23 meters wide, and 8.2 meters high. She served in the Channel Fleet until 1904, after which she was assigned to the Atlantic Fleet. When WWI started, she joined the combined navy established for the Battle of Çanakkale. On 27 May 1915, she was sunk by the German submarine U-21 under the command of Otto Hersing (Burt 2013). Currently, she is a highly popular diving spot for international divers.

Lundy was built in 1908 as a trawler for whaling. In 1914, right after the beginning of WWI, she entered under the command of the British Ministry of War and took part in the Battle of Çanakkale in 1915 as a patrol boat. Lundy, which anchored in Suvla Bay in August 1915 when the Battles of Anafartalar was at its height, was exposed to the fire of Turkish coastal artillery while

loading ammunition from the middle part of the port of the British transport ship HM Kalyan on 16 August 1915 (Kolay *et al.* 2013).

Another famous diving spot belongs to a shipwreck sunk after WWI. Owned by Rederi AB company under the name SS Inger between 1932-1955, the cargo ship SS Captain Frangos was used by AB Baltic Lloyd Line Limited between 1955 and 1965 as SS Wanda. The last owner, Greek shipowner Nikolaos Frangos, named the ship after himself and she was used as Panama-flagged between 1965-1968. The SS Captain Frangos, under the command of Captain Panagiotopoulos, set off from Albania, loaded with asphalt, to go to Varna Port in Bulgaria, on February 19, 1968, and collided with a freighter named Dimos at a point between Kilitbahir Village and Havuzlar locality in the Dardanelles. The wreck of the SS Captain Frangos cargo ship is located at 40°07.957'N - 26°21.945'E coordinates and is 2.3 nautical miles from Çanakkale Port. The bow of the ship, which is in a reclined position to the port side, is 41 meters deep, 47 meters below the stern, and 28 meters deep in the belly. The wreck is in generally good condition and its popularity is increasing (Evcen *et al.* 2022).

Being a Swiftsure-class pre-dreadnought in the Royal Navy, HMS Triumph was originally known as Libertad and prepared for Chile but the project was transferred to the United Kingdom. Triumph was launched on January 15, 1903, and weighed 12,370 tons. She was 144.9 meters long, 21.7 meters wide, and 8.3 meters high. She served in the Channel Fleet and the Main Fleet before being appointed to the Mediterranean Fleet in 1909. In 1915, she joined the combined navy formed for the Dardanelles War. On 25 May 1915, she was sunk by the German submarine U-21 commanded by Otto Hersing (Burt 2013). Located at 72 meters, HMS Triumph particularly draws the attention of international technical divers.

The shipwreck inventory in Çanakkale, especially regarding the ancient wrecks and after WWI is open to updating. These wreck diving spots offer potential to place Çanakkale among the best wreck diving locations all around the world. Conclusion and suggestions are given in the next session.

## **Discussion and Conclusion**

In recent years, efforts to bring underwater cultural heritage to tourism in Çanakkale have gained momentum. Being an upper-scale project of the Gallipoli Historical Site Presidency of the Gallipoli Wars, the H.M.S Majestic, Massena and Saghalién Shipwrecks, Helles Barges, Maria Delle Vittorie and Vincenzo Florio Shipwrecks, Ariburnu Lighter, Küçükkemikli Barges, Ariburnu Barge, Lundy, HMS Louis, SS Milo and HMS Triumph wrecks become prominent among the diving spots of the WWI themed Gallipoli Historical

Underwater Park. Besides, other famous wreck diving spots such as Captain Frangos draws significant attention.

In terms of diving tourism, there are studies carried out in the academic field together with research carried out in the public sphere. As an instance, within the scope of a study aiming to create a route for shipwrecks that do not require technical diving, it is seen that four different routes have been proposed for the shipwrecks detected in and around the Dardanelles Strait (Türkel and Gökdemir 2021). It is concluded that the studies carried out in both public and academic fields will contribute to the transformation of Çanakkale into a centre of attraction in terms of diving tourism. Herein, it is evaluated that the factor of proximity to the areas where the shipwrecks are dense can be considered as a reason for preference in terms of choosing the site of establishment. On the other hand, only 9 underwater operators are not sufficient to place Çanakkale among to best wreck diving locations. These investments ought to be planned collaboratively from an inclusive governance perspective.

It is also concluded that there are several measures to be taken which range from environmental governance and engagement in planning to social responsibility, education, and training to enhance sustainability and ensure sustainable development of diving tourism in Çanakkale, Albeit the heterogeneity of issues, sustainable development goals can be achieved once the authorities adopt the adaptive governance framework while conducting their activities.

## References

- Akingüç, G. (2016) Gelibolu Yarımadası'nda Geçmişin İzleri ve İz Bırakanları. İstanbul: NMC Televizyon ve Reklamcılık A.Ş.
- Anon. (2010) Republic of Palau: 2010 Article IV Consultation – Staff report; a public information notice; and a statement by the executive director of the republic of Palau on the executive board discussion. International Monetary Fund, Washington, D.C pp. 24.
- Brunner, R. D., Lynch, A. H. (2010) Adaptive Governance and Climate Change. Boston: American Meteorological Society.
- Burt, R. A. (2013) British Battleships 1889–1904. Barnsley: Seaforth Publishing.
- Costanza, R., Patten, B. C. (1995) Defining and predicting sustainability. *Ecological Economics*, 15(3):193-196.
- Cumming, G. S., Cumming, D. H. M., Redman, C. L. (2006) Scale mismatches in social-ecological systems: causes, consequences, and solutions. *Ecology and Society* 11 (1).

De Groot, J., Bush, S. R. (2010) The potential for dive tourism led entrepreneurial marine protected areas in Curacao. *Marine Policy* 34:1051-1059.

Dimmock, K., Cummins, T., Musa, G. (2013). The business of scuba diving tourism. (eds., Musa, G., Dimmock, K.), *Scuba diving tourism*. Abingdon, Oxon: Routledge, pp. 161-174.

Dimmock, K., Musa, G. (2015) Scuba diving tourism system: A framework for collaborative management and sustainability. *Marine Policy* 54: 52-58.

Directorate of Gallipoli Historic Site Gallipoli Historic Underwater Park website. Diving Points. Available at: <https://www.divinggelibolu.com/homepage> (accessed on 20 August 2023).

Emas, R. (2015) Brief for GSDR 2015. The concept of sustainable development: Definition and defining principles. Florida International University, pp.1-3.

Etzkowitz, H. (2003) Innovation in innovation: the triple helix of university-industry-government relations. *Social Science Information* 42(3): 293–337.

Evcen, A., Özalp, H. B., Çınar, M. E. (2022) Wrecks of Çanakkale Strait and marine biodiversity: Captain Frangos shipwreck and its sponge fauna. The Marmara Sea 2022 Symposium, Istanbul, 8-9 January 2022.

Fondahl, G., Wilson, G. (2016) Northern Sustainabilities: Vulnerability, Resilience, and Prosperity in the Circumpolar World. New York, NY: Springer.

Ford, J. D., Goldhar, C. (2012) Climate change vulnerability and adaptation in resource dependent communities: A case study from West Greenland. *Climate Research*, 54(2): 181–196.

Ghina, F. (2003) Sustainable development in small island developing states: The case of the Maldives. *Environment, Development and Sustainability* 5:139–165.

GMKA (Southern Marmara Development Agency) (2019) Underwater workshop report. Available at: <https://www.gmka.gov.tr/dokumanlar/yayinlar/Su-Alti-Calistay-Raporu.pdf> (accessed 21 August 2023) (in Turkish).

GMKA (Southern Marmara Development Agency) (2021) Canakkale Province professional dive center investment pre-feasibility report. Available at: <https://www.gmka.gov.tr/dokumanlar/yayinlar/canakkale-ili-profesyonel-dalis-merkezi-yatirimi-on-fizibilite-raporu2022.pdf> (accessed 31 August 2023) (in Turkish).

Haddock-Fraser, J., Hampton, M. P. (2012) Multistakeholder values on the sustainability of dive tourism: Case studies of Sipadan and Perhentian islands Malaysia. *Tourism Analysis* 17:27-41.

- Hillmer-Pegram, K. C. (2014) Understanding the resilience of dive tourism to complex change. *Tourism Geographies* 16(4):598-614.
- Holling, C. S. (1992) Cross-scale morphology, geometry and Dynamics of ecosystems. *Ecological Monographs*, 62:447-502.
- Jentoft, S., Pascual-Fernandez, J. J., De la Cruz Modino, R., Gonzalez-Ramallal, M., Chuenpagdee, R. (2012) What stakeholders think about marine protected areas: Case studies from Spain. *Human Ecology* 40(2):185-197.
- Keskitalo, E. C. H., Dannevig, H., Hovelsrud, G. K., West, J. J., Swartlig, A. G. (2010) Adaptive capacity determinants in developed countries: examples from the Nordic countries and Russia. *Regional Environmental Change* 11: 579-592.
- Kolay, S., Taktak, O., Karataş, S., Atabay, M. (2013) Derinlerden Yansımalar. İstanbul: Vehbi Koç Vakfı (in Turkish).
- McDonald, J. R. (2009) Complexity science: an alternative world view for understanding sustainable tourism development. *Journal of Sustainable Tourism* 17(4): 455–471.
- McElroy, J. L. (2003) Tourism development in small islands across the world. *Geografiska Annaler* 85: 231–242.
- Mercan, Ş. O., Sünnetçioğlu, Ş. O. A., Uşak, E. C. (2021). An investigation of the diving tourism potential of Çanakkale Province. *Journal of Social Sciences of Mus Alparslan University* 9(3): 723-734 (in Turkish).
- Mota, L., Frausto, O. (2014) The use of scuba diving tourism for Marine Protected Area management. *International Journal of Social, Education, Economics and Management Engineering* 8(10): 3171-3176.
- O'Connor, S., Campbell, R., Cortez, H., Knowles, T. (2009) Whale watching worldwide: tourism numbers, expenditures and expanding economic benefits. A special report from the International Fund for Animal Welfare. International Fund for Animal Welfare, Yarmouth, pp. 295.
- Paddleducks Forum website. Available at: <https://www.paddleducks.co.uk/smf/index.php> (accessed on 22 August 2023).
- Petrov, N. A., BurnSilver, S., Chapin, F. S., Fondahl, G., Graybill, J., Keil, K., Nilsson, A. E., Riedlsperger, R., Schweitzer, P. (2016) Arctic sustainability research: Toward a new agenda. *Polar Geography*, 39(3): 165-178.
- Pope, J., Annandale, D., Morrison-Saunders, A. (2004) Conceptualising sustainability assessment. *Environmental Impact Assessment Review* 24(6): 595-616.

Reid, H., Alam, M., Berger, R., Cannon, T., Huq, S., Milligan, A. (2009) Community-based adaptation to climate change: An overview. *Participatory Learning and Action*, 60(1): 11–33.

RTMCT (Republic of Türkiye Ministry of Culture and Tourism) (2021) Accommodation statistics. Available at: <https://yigm.ktb.gov.tr/TR-201120/konaklama-istatistikleri.html> (accessed 20 August 2023) (in Turkish).

Smigielski, A. (1985) France- Conway's All the World's Fighting Ships 1906–1921. (eds., Gardiner, R. Gray, R.). Annapolis: Naval Institute Press. pp. 190–220.

Scheyvens, R., Momsen, J. H. (2008) Tourism and poverty reduction: Issues for small island states. *Tourism Geographies* 10:22–41.

The UN (2002) Report of the world summit on sustainable development (A/CONF.199/20). United Nations, New York.

Türkel, İ. Ş., Gökdemir, S. (2021) Determination of diving routes of shipwrecks in the Dardanelles Strait and its surroundings within the scope of diving tourism. *Journal of Qualitative Tourist Guiding Research* 2(1): 44-74 (in Turkish).

Vianna, G. M. S., Meekan, M. G., Pannell, D. J., Marsh, S. P., Meeuwig, J. J. (2011) Socio-economic value and community benefits from shark-diving tourism in Palau: a sustainable use of reef shark populations. *Biological Conservation* 145: 267-277.

Viken, A. (2011) Tourism, research, and governance on Svalbard: A symbiotic relationship. *Polar Record*, 47(243): 335-347.

Wongthong, P., Harvey, N. (2014) Integrated coastal management and sustainable tourism: A case study of the reef-based SCUBA dive industry from Thailand. *Ocean and Coastal Management* 95: 138-146.

WCED (World Commission on Environment and Development) (1987) Our common future (The Brundtland Report). Oxford University Press, Oxford.

Wydra, D., Pülzl, H. (2013) Sustainability governance in democracies. *International Journal of Social Ecology and Sustainable Development* 4(1): 86-107.

Wytykowski, P., Nykiel, P., Zajder, R. (2011) Report of the Expedition Gallipoli 2011. The First Polish Diving Expedition Gallipoli 2011.

Yarmacı, N., Keleş, M. Ç., Ergil, B. (2017) Current status of underwater tourism, problems and suggestions for the development: a case study of Kaş. *Journal of Current Tourism Research* 1: 66-87.