



Increase of tourist traffic on Spitsbergen: An environmental challenge or chance for progress in the region?

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Abstract: The Arctic region is under considerable pressure from the rapidly growing global tourism industry. The goal of this article is to present the current state of tourism in Spitsbergen, including the results of empirical research about the type of tourists and their preferences in organizing a trip, *i.e.* motivation, choice of attractions, *etc.* The survey in Longyearbyen town was conducted in 2018 and 2019 during two summer and two winter trips. As a result, a total of $n=214$ questionnaires were collected, presenting interesting insights into tourists' profiles and their motivation in coming to the island. Based on the results, the Arctic tourism sector is characterized by seasonality, which significantly affects the distribution of tourist arrivals throughout the year. During the last 15 years, Spitsbergen island noticed the greatest boom in tourism linked to the development of transport infrastructure (new ports and airports) and accommodation (hotels). From one side, the tourism industry contributes significantly to employment in Longyearbyen, still from the other side, it burdens the local community and challenges their lives due to increased pollution of air, water and ground. The increased tourism also poses serious threats to the natural environment, which is already under pressure due to global warming resulting in melting Arctic glaciers and increased sea level. Therefore, it is crucial to implement new regulations to control and manage the development of tourism while protecting nature and its residents.

Keywords: Arctic, Svalbard, polar tourism, environmental impact, economic development.



Introduction

The increase in the pace of global tourism development that originated at the turn of the 19th and 20th centuries, also affected the polar regions. The definition of “Arctic tourism” was used for the first time in literature by Hall and Johnston (1995), who tried to characterize polar tourism in both the Arctic and the Antarctic, including defining its geographic scope (Bystrowska and Dolnicki 2017). The definitions of the Arctic are plentiful, contested and in constant change (AMAP 1998; Müller 2013; Barre *et al.* 2016). For the purpose of the article, tourism in the Arctic is defined in relation to the geographic boundaries provided by the Arctic human development report (AHDR 2004), which includes Alaska, northern Canada, Greenland, the Faroe Islands, Iceland, northern Fennoscandia and northern Russia. Beyond its geographical scope, it is common that Arctic tourism is characterized as remote and difficult to access and as occurring in fragile natural and cultural environments (Müller 2011).

Among the Arctic region, the Svalbard region has become more and more popular, although its popularity started long before the development of the modern tourism concept. In fact, Svalbard was popular since XIX century, when the islands became the destination for Arctic explorers. Some of the most famous expeditions in the North before 1850s were focused mainly on scientific goals (Riffenburgh 1993; Viken 2011), where the tourism aspect was marginal. Although the first “explorers of the Arctic” focused on gaining knowledge, they were the first tourists in the region. Their research raised the interest of the public in this unknown territory (Riffenburgh 1993; Drivenes *et al.* 2007; Anderson 2010). It was also the first time the idea of organized tourism developed (Urry 1990) – meaning planned, organized and paid trips. Following this trend, the first private yachts arrived on Svalbard in the 1850s, while in the 1870s the first cruise ships from Europe started operating (Viken 2011). The first passenger ships arrived on Spitsbergen in 1870, while the first hotel opened its doors to tourists in 1890 in Longyearbyen (Baldacchino 2006) and Ny-Ålesund in the 1930s. As a next step, the first travel agency was established in the same settlement in 1897. The systematic increase in the number of tourists in the Spitsbergen area has been recorded more or less since the late 1950s. However, the II World War and strict environmental regime limited the tourists' statistics. From the 1980s, many transformations have been observed, especially regarding Longyearbyen becoming a potential tourist destination (Czubalski 2001; Gyimóthy and Mykletun 2004; Baldacchino 2006; Maciejowski 2007; Stewart *et al.* 2005). The crucial factors for the development of modern tourism included the opening of regular flights by Norwegian airlines, political changes and commercialization of modern tourism (Viken 2011).

Nowadays, the global interest in this area is greater than ever (Hall and Saarinen 2010; Bystrowska and Dolnicki 2017). As a result, at the moment, the primary source of income in the Spitsbergen area became travel-related services.

Additionally, the large and naturally diverse Spitsbergen region is rich in open landscapes, glaciers, rare plants and animals. In the currently available literature, this region is only analyzed from the perspective of the potential of qualified tourism, which due to its high risks can also be classified as extreme tourism (Stasiak 2013). This can be explained by an increased number of tourists who desire to visit the areas rarely explored by other humans. In this case, the vast Arctic land, somewhere free of any traces of human activity, may seem to be the last truly wild areas in the world (Martin and Tyler 1995). The above described development of the current tourism situation contributes to far-reaching changes in the nature protection programs, analyzed by a growing number of scientists (Viken and Jørgensen 1997; Stewart *et al.* 2005; Snyder 2007; Bystrowska and Dolnicki 2017). Nonetheless, it is widely agreed that tourism activity has been increasing steadily over the past decades (Hall and Saarinen 2010; Johnston 2011). What is commonly agreed upon is that the economic value of tourism increases in line with an increasing number of tourist. However, the hard-to-measure environmental and socio-cultural ripple effects also increase (Barre *et al.* 2016). Over time the number of scientific studies concerning this region has also increased. However, it should be emphasized that most of them were undertaken by natural scientists, not by social scientists. This is especially true in the domain of tourism, which has been neglected (Chen 2020).

The main aim of the article was to initially investigate the current state and structure of tourist traffic in the Isfjorden and Billefjorden areas (Redchenko *et al.* 2010). Presenting the increase of arriving tourists, by air and sea, and verifying their profile was an indirect goal of the research. Furthermore, the following research problems were identified: (i) where the arriving tourists are coming from and what were their motives behind choosing this particular travel destination, including the level of awareness of the posed threats to the natural environment connected to exploring the area and how to avoid the damages, (ii) what are the threats to the polar regions from the development of tourism, and (iii) what are the perspectives of tourism development in the studied area, including responsible tourism management.

Research area and its tourism attractiveness

The Svalbard Archipelago is the northernmost part of the European Arctic. It covers an archipelago of several islands with a total area of 62,924 km². It is surrounded from the north by a circumpolar arctic basin, from the east by the Barents Sea and from the west by the Greenland Sea (Dolnicki and Gawor 2012). Administratively, this archipelago together with the Bear Island, is an autonomous territory of Svalbard managed by the Norwegians.

The landscape of Svalbard is characterized by its duality. The western part of the archipelago is dominated by rocky mountains with a postglacial relief

(the rocks folded in the Paleozoic Era) with wide glacial valleys in between, *i.e.* Adventdalen, Reindalen. Along the coasts, however, there are vast, flat coastal terraces surrounding deeply cut fjords (including Isfjorden, Billefjorden), while the center and east coast (cold East Spitsbergen currents) is dominated by strongly glaciated mountain ranges with high ice cliffs (Maciejowski 2007; Karczewski and Stanowski 2013). An important aspect is the varied geological structure of Spitsbergen, which substrate was folded in the Paleozoic Era and transformed in Caledonian orogeny (Troc 1996; Jaskólski and Pawłowski 2017).

Spitsbergen is the largest island in the archipelago and the area of the most intensive human activity (Jaskólski and Pawłowski 2017). The settlement of Spitsbergen (Longyearbyen, Barentsburg and Ny-Ålesund) focuses on the west coast warmed by the nearby flowing warm Gulf Stream (Jaskólski and Pawłowski 2017). Longyearbyen is the administrative center and forms the seat of the governor of Svalbard, along with two neighbourhoods around the city (Nybyen, Bjørndalen). The settlement is situated at latitude 78°13'N and longitude 15°33'E above the Adventfjorden, which is a branch of Isfjorden, the widest fjord in Svalbard. Longyearbyen stretches longitudinally between the Platåberget and Gruvefjellet plateaus. Unlike many Arctic areas of human settlement, Svalbard's population is non-indigenous but cosmopolitan and transient. What is more, over 20% of the Longyearbyen population originates from more than 40 different nations other than Norway (Kristiansen 2014; Saville 2019).

Tourism infrastructure concentrates in cities and smaller settlements which provide transport infrastructure, accommodation and different tourism activities (Mika 2012). Tourist resources offer potential values, *i.e.* objectively promoting the attributes of the natural and social environment (Kowalczyk 2000; Kaczmarek *et al.* 2002). In this respect, the tourist potential (Fig. 1) of the Svalbard archipelago should be positively assessed as presented in the study conducted by Bystrowska and Dolnicki (2017). It should also be noted that the attractiveness of this region is mainly built by natural attractions (Fig. 1), which are the elements of natural environment (Lemelin and Johnston 2008). The crucial role here is played by the topography. The richness of the geological formations of Spitsbergen significantly affects the development of geotourism, especially the forms of relief, glaciological objects and dynamic processes taking place in the marginal zone of glaciers, *e.g.* calving of glaciers.

Tourism in Svalbard

During the last 15 years, the biggest boom in tourism was noticed on the island. In 2015, the tourists accounted for approximately 66% of overall visitors, while businessmen (6%) and participants of scientific conferences and courses (28%) were a definite minority (Statistics Norway 2020). Additionally, the number of cruise tourists is growing in Svalbard, who reach their destination by

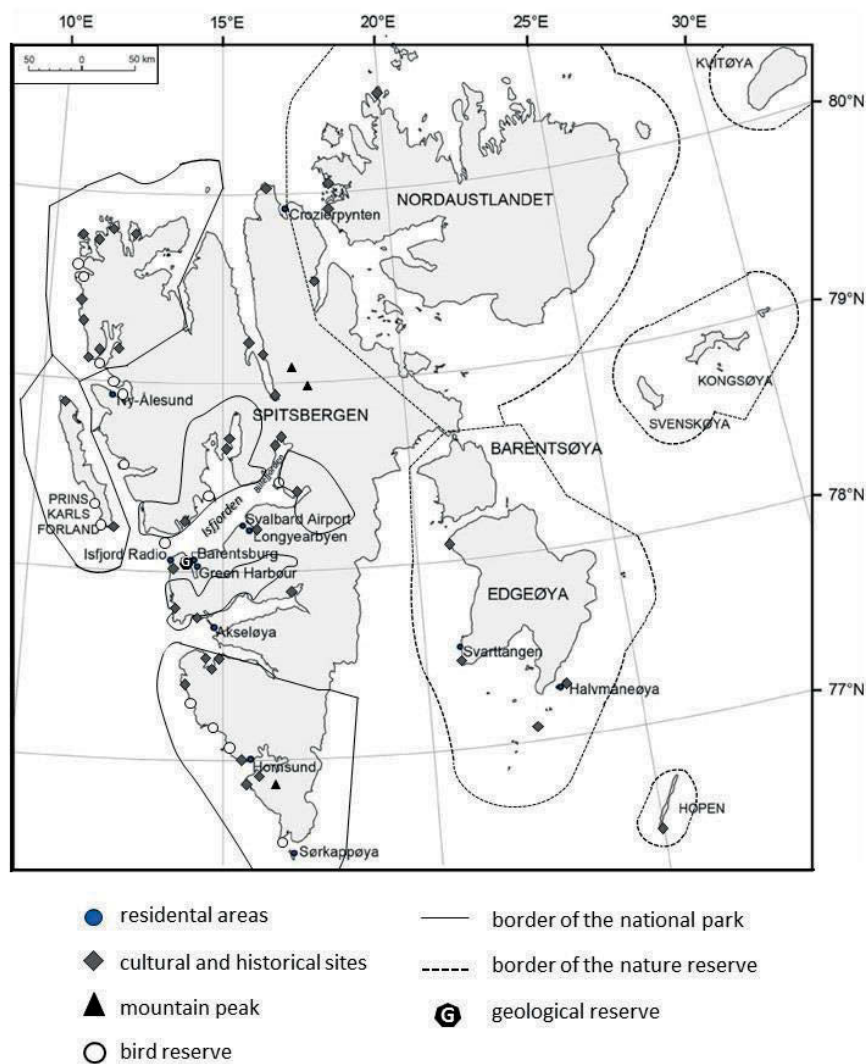


Fig. 1. Tourist attractions of Svalbard, based on Maciejowski (2007) and Nordli *et al.* (2014).

air or sea. It is becoming impossible to estimate how many airline passengers are simply tourists, but the presented air traffic graph (Fig. 2) suggests their constant growth. It is worth mentioning that in the last decade the number of passengers increased by almost 80,000.

The tourists arriving in Longyearbyen by the sea most often use cruise ships or private yachts (Fig. 3). During the last seven years, there was a noticeable increase in visitors coming from the sea to Svalbard (2012 $n=1934$; 2019 $n=5526$).

The total number of passengers on board of various ships also increased in recent years, from *ca.* 55,000 in 2012 to *ca.* 88,000 in 2019, with the highest

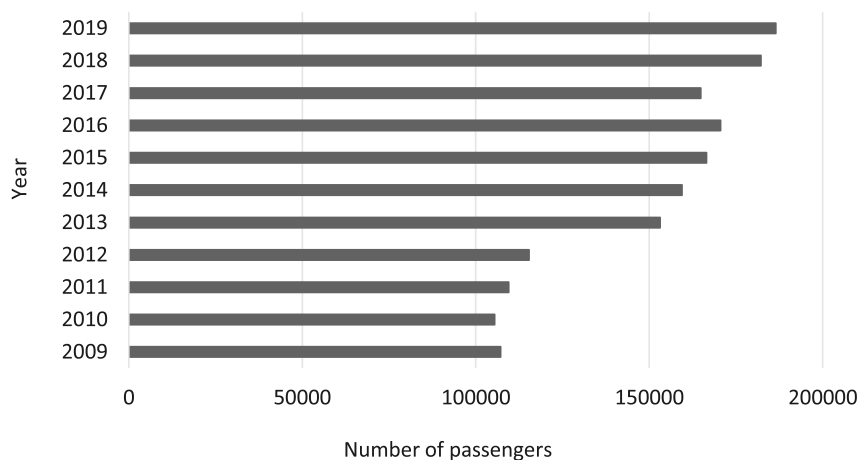


Fig. 2. The number of Svalbard air passengers, from domestic and international flights, based on data from Statistics Norway (2020).

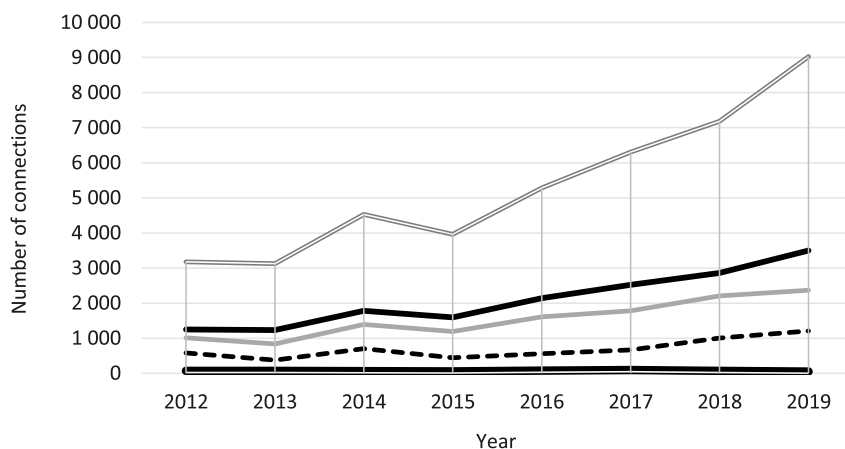


Fig. 3. The number of boats in Svalbard; black line – excursion boats (sail charter engine), grey – local boat, double line – total number of tourism connections, dotted line – tourist cruise trip, based on Statistics Port of Longyearbyen 2012–2019.

numbers ($n=96,498$) recorded in 2018. Many tourists coming to Svalbard by plane also take part in several-day cruises around the archipelago or one-day cruises to the cities of Pyramiden or Barentsburg. The number of tourists participating in such cruises grew from 16,000 in 2012 to 46,000 in 2019 (Fig. 4). However, it should be stressed that the Arctic expedition cruise sector ensures that all expedition cruises are carried out with the utmost consideration for the vulnerable, natural environment, local cultures and cultural heritage (Association of Arctic Expedition Cruise Operators AECO 2016; Geitz 2004; Linde *et al.* 2017)

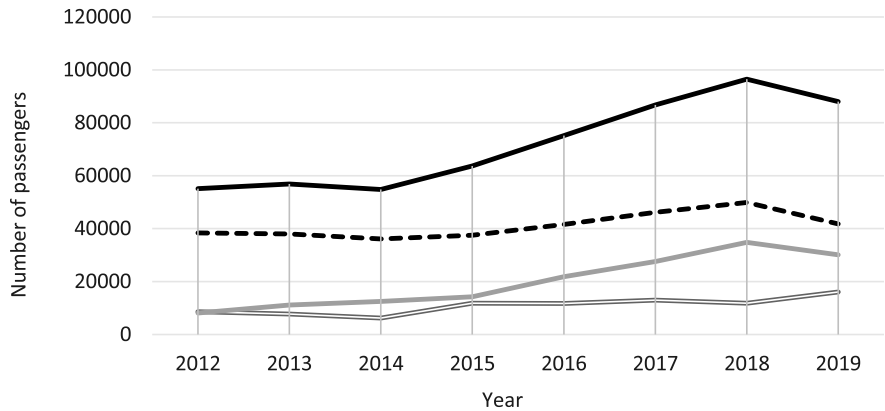


Fig. 4. The number of Svalbard passengers on boats; dotted line – excursion boats, double line – tourist cruise trip, grey – local boat, black line – total number of tourism connections, based on Statistics Port of Longyearbyen 2012–2019.

The Svalbard 2016 report (Statistics Norway 2016a) showed that since 2015 tourism has been a leading development sector and one in four inhabitants of Svalbard is employed in the tourism industry. Moreover, in 2015 enterprises connected with tourism and cultural industries in Longyearbyen, Svea and Ny-Ålesund have significantly grown their businesses (Statistics Norway 2016b). It is not surprising that the number of available accommodation and catering companies has also been increasing year by year. At the moment, there are 9 hotel facilities, 6 wilderness cabins, 5 guest house, 1 apartment and 1 camping site in Svalbard, but there is definitely room for more (Fig. 5). As expected, the number of facilities offering overnight stays is growing, which is an important factor creating new elements of tourism development.

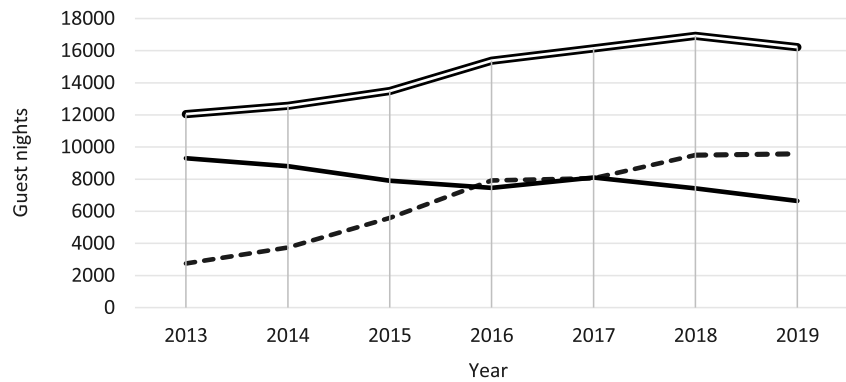


Fig. 5. Guest nights in Svalbard hotels; two lines – total, dotted line – foreign, black line – Norway, based on data from Statistic Norway, Accommodation 2020.

It appears that geographic isolation and a challenging climate, which once precluded tourist visits, are now the very factors attracting them (Stewart *et al.* 2005). Due to the constantly increasing number of visitors, there are offered many forms of tourists' recreational activities in Svalbard. For example, there is a wide selection of organized tours by companies like Hurtigurten Svalbard and Visit Svalbard, like glacier crossings, ice cave tours, snowmobile safaris, kayak tours and dog-sledding. According to the received data, snowmobile tours, hiking and dog-sledding or ice cave tours are some of the most popular attractions among tourists (Statistics Norway 2016a). Still, the strong seasonality of tourism in Svalbard is one of the biggest issues of modern tourism (Butler 1994; Jolliffe and Farnsworth 2003; Borzyszkowski 2014). It is affecting all elements of the tourism market, both on the demand and supply side. As explained by Goeldner and Ritchie (2003), seasonality cannot be eliminated in tourism. Its impact can only be limited. Svalbard is also characterized by a high spring and summer season and a low season in autumn and winter. It should be noted that the accessibility of particular places depends, among other factors, on climate, weather conditions and the length of tourism season, possibilities of using different means of transport.

Due to the existence of areas untouched by man, there is a huge pressure to preserve the natural environment through active protection programs. As a result, 27 protected areas were established, covering a total of 39,500 km² which covers 63% of the land (Kovacs 2005). Since Spitsbergen is so protective of its nature, organized tourism dominates over individual trips. The local tourist offices often organize several-days-long bird watching trekking in the surrounding mountains. The trekking routes usually run very close to national parks borders in inaccessible areas for random visitors, which makes them an attractive tourist destination. Besides, nature offers a very long and highly fragmented coastline, including fjords, skerries, rocky beaches, as well as diversified fauna of the Arctic seas, which encourages tourists to take boat trips around the archipelago, *i.e.* offered by Nordstjernen, Billefjorden or Polar Girl, Explorer (Kovacs 2005). Among other forms of active tourism in the Isfjorden area, the dog sled rides or snowmobile rides, organized during the polar nights season, drive the biggest attention.

In addition to the unique nature of the polar environment, the archipelago offers interesting industrial heritage sites. Many abandoned mines are located in the close vicinity of the capital city of Longyearbyen (Fig. 1). These sites present an exciting tourism potential and are classified as cultural heritage (Svalbard Environmental Protection Act 2001). Their pointwise location poses an attractive alternative to classic tourist trips focused on exploring the Arctic nature (Jaskólski and Pawłowski 2017). Other key elements of tourist exploration are the oldest ruins of houses, graves and inscriptions left by the Western European whalers in XVII and XVIII centuries (Kaltenborn 1998). Additional attractions, apart from natural values, are “ghost estates”, meaning former mining

settlements, nowadays completely abandoned (except for the “caretakers” who live there), like the Russian city of Pyramiden, located by Billefjord, abandoned in 1998 (Czubalski 2001). The capital of Longyearbyen also includes many cultural and entertainment facilities, such as museums, the gallery of maps and paintings, the governor’s office, church or the Norwegian Polar Institute (Norsk Polarinstitutt). Every year the city also hosts many events, like the Sun Festival Week, Dark Season Blues Festival and Svalbard Ski Marathon, which gather many visitors (Visit Svalbard 2020).

Environmental impact of tourism

Tourism is an industry based on knowledge from a variety of fields: geography, natural sciences, history and disciplines related to business (Viken 2011). Therefore industrial symbiosis should be chosen as an alternative path, an approach related to the ecological economy and the fact that modern industry is constrained to take environmental precautions (McDonald 2009). This new approach refers to the principles of sustainable tourism development, which calls for good management of natural and socio-cultural resources. However, sustainable tourism is challenged by its dependence on tourist attractions and avoiding their demise (Saarinen 2006). Therefore, the role of tourism in developing local areas is to offer opportunities and limit the risks resulting from globalization and climate change.

As mentioned above, tourism in Svalbard emerged in the XIX century in the wake of the scientific exploration of the Arctic. As Arctic tourism continues to grow, the travel industry is taking steps to contribute to the knowledge-based tourism management in Svalbard. However, the growing numbers of tourists are leaving a worrisome footprint on Svalbard’s fragile environment. The Norwegian Institute for Nature Research (NINA) proposes stricter regulation of tourism in the Arctic archipelago. Tourist visits to Svalbard have increased sharply, the numbers of overnight visitors have doubled over the last decade (Fig. 5), and higher cruise traffic (Fig. 4) poses a specific challenge. Cruise passengers overwhelm the main port in Longyearbyen with thousands of visitors running around with limited time to see the sights. While the number of arriving cruise vessels has dropped in recent years, they are much bigger and carry more passengers than before (Newsinenglish 2020).

Tourism in Svalbard has developed in recent years on both supply and demand side. This trend will most likely continue this way which poses significant consequences. From one side, the tourism industry contributes significantly to employment in Longyearbyen. Still, it burdens the local community and challenges their lives due to increased pollution of air, water and ground (Chen *et al.* 2020). As for the positive aspect, the total economic contribution generated by cruise tourism in Svalbard in 2018 was estimated to

reach 12 million USD (Visit Svalbard & AECO 2019). However, the drawbacks of developing tourism in the area seem to diminish the benefits. At the moment, the primary pollution comes from coal-fired power stations and transportation by airplane, helicopter, boats, cars and snowmobiles, but the growing number of tourists will undoubtedly generate greater air contamination, street noise and traffic (Statistic Norway 2014). In terms of water pollution, the current discharges to water bodies on Svalbard are mainly from untreated sewerage system and already contain high amounts of phosphorus, which annual discharge is 1.2 tons and nitrogen which annual discharge is 9 tons per year. It is crucial to reduce these levels despite the growing tourist activity in the region, because they cause ocean acidification leading to dead zones, toxin production and altered plant and animal species diversity (Ngatia *et al.* 2019). Last but not least, an average household in Longyearbyen generates *ca.* 216 kg of waste per year, which is maintained at such a low level by connecting food waste disposers directly to the sewage system. Although this contributes to lowering household waste, it increases the load of organic material discharged to the fjord (Granberg *et al.* 2017).

In addition, global warming impacts the Arctic environment. Over the past 50 years, the melting Arctic glaciers have raised the sea level by more than 2 cm. More than half of this increase occurred between 2005 and 2015 (Box *et al.* 2018). Increasingly warmer summer periods result in glaciers shrinking faster and faster, including those located in the area of Isfjorden and Billefjorden (Małecki 2019). The impact of climate change is felt more intensely in communities that are dependent on natural resources. Since small glaciers surround the main settlements of Svalbard, their melting has a huge impact on the local environment. This way, the growing number of touristic activities organized outdoors can undoubtedly pose a threat to sensitive nature (Regjeringen.no 2020). Therefore, it is essential to implement well-thought-out regulations that would not simply limit the growing number of tourists in the area but instead manage its development more reasonably while preserving the natural resources for future generations.

Materials and methods

The Svalbard tourism industry is seasonal with significantly fewer visitors in the autumn and winter. Tourist interest definitely predominates in the spring and summer seasons. The above statement was formed by the author while conducting the survey in Longyearbyen in 2018 and 2019 during the summer and winter seasons. The research was conducted during four expeditions: the first one lasted for 7 days in February 2018, the second – for 10 days between July and August of 2018, the third – for 7 days in February 2019 and the last, fourth one – again 10 days but this time between August and September 2019.

As a result, 214 correctly filled questionnaires were collected from individuals organizing their trips in the area during both summer (n=151 questionnaires) and winter (n=63). Although the sample is not statistically representative, it can be considered as a case study presenting substantive diversity of the type of tourists visiting Spitsbergen. For the confidence level of 0.95, the statistical error is 1.1%. The study includes statistical data received from various sources, like the Director of Tourism Department "Visit Svalbard", the local government of Longyearbyen, the Governorate of Svalbard or local logistic companies Henningsen Transport & Guiding and Aurora Explorer.

Before field work started, the possibility of conducting surveys was confirmed with selected stakeholders, *i.e.* "Visit Svalbard" tourist information staff, hotel receptionists and ship crew. During her stay in Spitsbergen, the author conducted research with tourists in two stages: summer and winter. The collecting opinions from respondents took place at the tourist information center, in 3 hotels and 2 hostels. Guests were asked to fill in the questionnaires while they were waiting to "check in". Additionally, some forms were filled in during the one day cruise to Pyramiden. The winter survey only involved tourists in Longyearbyen. The questionnaires, as in the summer period were delivered to hotels, hostels and tourist information center. They (Appendix 1) consisted of sixteen questions, thirteen of them were closed-ended and three open-ended and shared in printed form, so it was important to be factual, short and easy to complete. In closed-ended questions appeared multiple-choice questions concerning types of organized trips by tourist offices in which respondents participated. The open-end questions allowed respondents to freely express their opinions, without the limitations *inter alia* on the Spitsbergen's promotion as an attractive tourist destination or factors that have a positive or negative influence on tourism development in Spitsbergen.

The undertaken activities contribute to shaping appropriate tourist offers in the area, including determining the variants of tourist products – the strategic dimension of managing the development of tourism.

Results and interpretation

It is particularly important in conducting tourism research to focus on patterns describing tourists' behavior and demand. These patterns include such aspects as motivation, demographic data and number of tourists in tourist destinations (Steward *et al.* 2005). The undertaken research criteria, including the type of tourist and their preferences during the trips (motivation, choice of attractions, *etc.*), are essential for both future tourist' offer preparations and conscious management of tourism development in the areas of Isfjorden and Billefjorden. The collected results show that the attractions with the highest popularity are usually located in inaccessible areas, with limited reach to most

tourists. Therefore, it is worth considering to create alternative solutions, beneficial both to trip organizers and mass tourists. This study, conducted locally on the archipelago of Svalbard, was designed as a cross-sectional case study, with the main purpose of determining the tourists' profile and their preferences in terms of organized trips, including the length of stay, selection of tourists' attractions. Before the research work was started, the author reviewed the existing data on the quality of polar tourism experiences (Kaltenborn 1998; Mason and Leggi 1999; Stewart *et al.* 2005; Viken 2011). The review included widely understood tourists' impressions, expectations, and knowledge before and after the visit.

The inflow of tourists in both the summer and winter seasons includes the same nationalities and age groups. The respondents were dominated by Poles (n=45), Austrians (n=25), Norwegians (n=23), English (n=16), Germans (n=15), Chinese (n=10), Czechs (n=9), as well as residents of South Korea, South Africa Israel, France or Denmark. It should be noted that no differences were found between the preferences of Polish and foreign tourists. Therefore, the following analysis does not distinguish between any nationalities.

The tendency shown by the respondents to take trips during the year (Fig. 6) is quite visible and compatible with general trends in tourism (Kowalczyk 2000; Nordin 2005). Short-term trips are becoming the most popular and, therefore, most frequent. The respondents also plan longer trips – over 7 days long, but they are less frequent. The summary also shows that tourists choosing shorter trips are dominating over those selecting longer stays.

In order to define the type of tourists and prepare an offer for them, it is important to know where they look for inspiration and information about the place of future rest. As a result of the research, allowing for two possible answers, respondents most often indicated that they look for sources of

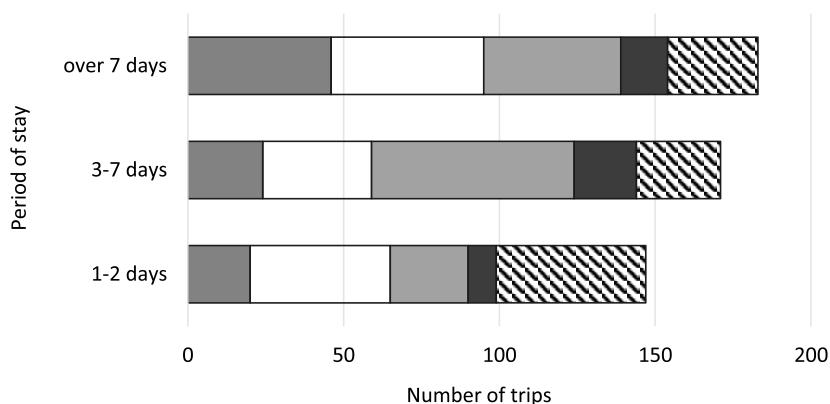


Fig. 6. The number of tourist trips conducted in one year; dark grey – 1 time, white – 2 times, light grey – 3 times, black – 4 times, stripes – 5 times.

inspiration in the media ($n=109$), among family members and friends ($n=95$), or from the Web ($n=48$). The main search criteria for a holiday destination included the attractiveness of the area (unusual landscape, climate conditions) and attractive cultural facilities nearby (museums, monuments). However, the trip to the seventy-eighth parallel ($78^{\circ}13'N$) was not just another stop but a dream-come-true for some of the respondents (37%, $n=80$). For 24% of the respondents, it was a spontaneous decision ("why not!"), while 21% ($n=44$) of respondents indicated a different motive, *i.e.* work-related, scientific, sentimental trips.

While looking for the answers to what tourism in Spitsbergen looks like and consequently trying to define how to manage it, it was necessary to analyze the promotion channels and the media which influenced the knowledge of the place among tourists before their arrival. The results showed that 71% of the respondents did not see the promotion of Spitsbergen as a potential tourist attraction, while the others mentioned such media as the university, BBC news, various nature programs, Horsund Polar Station, a climbing book about Spitsbergen, *etc.*

According to the gathered sources, the main reason for traveling to the Arctic is its natural resources (Lemelin and Johnston 2008). The historical outline and cultural tourism related to human activity in these areas are also important. For the purpose of further analysis, the division of Arctic tourists' motivations was taken into account (UNEP 2007). Based on this document, 5 types of tourists can be distinguished: (i) mass tourists, interested in sightseeing pleasant surroundings, using convenient transportation and accommodation, (ii) sports and hunting tourists, (iii) eco-tourists seeking to observe wild animals in their natural habitats and experiencing the beauty and solitude of natural areas, (iv) adventure-seeking tourists, and (v) culture and heritage tourists, wanting to learn about the life and traditions of indigenous people.

The above presented division allows for direct reference and assigning respondents' answers to particular groups. Most of the respondents fall into types (iii), (iv) and (v). More than 68% ($n=114$) of them responded positively to the idea of organizing individual trips during their stay in nearby Isfjorden and Billefjorden areas. Still, over 73% ($n=156$) of respondents chose the offers of organized group trips. The details about the group activities divided into summer and winter seasons are presented in Table 1. Additionally, a multiple-choice option was introduced in the questionnaire for better accuracy.

Among the most attractive choices for the respondents were cruising in search of whales and trips to the abandoned city of Pyramiden, by boat in summer or snowmobile in winter. The differentiation occurs among activities that depend on weather conditions, *i.e.* due to the presence of snow cover, ice floe, *etc.* One of the last questions was an open-ended question, where respondents had to indicate the factors that influence the development of tourism in Spitsbergen. The provided answers can be divided into four specific groups (Table 2), where

Table 1.

Types of organized trips organized by tourist offices – respondent's choice.

Choice	Summer tourists (n=151)			Winter tourists (n=63)		
	1st	2nd	3rd	1st	2nd	3rd
Cruises in search of whales	60	10	3	16	0	0
Sightseeing on snowmobiles	8	17	4	16	8	0
Dog sled tour	8	6	14	11	18	4
Trip to Pyramiden	27	28	16	8	11	5
Dirdwatching (ornithological tourism)	11	21	9	2	2	2
I don't know	34	6	5	12	0	0

the first one refers to the location and geographical profile that attracts human curiosity. The natural aspect, often indicated as the most important, can also be included here. The respondents also appreciated the accommodation and accessibility, which are convenient considering the geographical location (Longyearbyen 78°13'N). One of the key factors mentioned by the respondents is the climate change, which is a promising factor for further developments of tourism management in the area.

Among the factors that have a positive impact on tourism, the author separated those which positively affect tourism development in the studied area from the negative ones. The negative factors mentioned by tourists include high

Table 2.

Factors that have a positive influence on tourism development in Spitsbergen.

Localization and nature	Climate
– attractiveness of the local nature (wildness, polar bears, glaciers, northern lights, etc.) – making remote nature accessible while still preserving it – far away location from civilization, no mass tourism, close to North Pole – adventure and adrenaline	– growing awareness and interest in climate change topic – greater pressure from environmentalists – promotion of sustainable tourism idea
Accommodation and accessibility	Culture and heritage
– internationality (staff service) – direct flights – accommodation in the city – high standards of hotels – good transportation – port for boats	– attractions which are not found in other tourist destinations (dog sled tours, sightseeing on snowmobiles) – local cuisine (reindeer burger, seal burger) – culture heritage (museums, churches)

prices of accommodation and local transport, lack of direct flights especially outside of Europe, the need to use travel agencies and hire local guides. The weather conditions, *i.e.* rain, wind and low temperatures, are also burdensome for tourists, limiting and sometimes even preventing the flexibility of tourist activities.

One should also take into account the occurrence of the polar day and night, which are fueling the specific seasonality resulting in lack of accommodation during high season. The summer season is also characterized by multiple cruise ships which can accommodate several thousand people on board. The respondents also drew attention to the natural danger of polar bear attack, obeying the rule not to leave the city without firearms. One of the most frequently cited negative effects of tourism development is the growing climate change and man-caused pollution.

One of the additional research questions concerned the characteristics of the reception area and its visitors. It was noted that the study area of Isfjorden and Billefjorden allows practicing both mass tourism, *i.e.* sea cruises, wildlife observations, cultural and historical sightseeing, and qualified tourism, *i.e.* mountain climbing, speleology and sailing. As it results from the cited statistical data and the analyzes of the pilot studies, the number of tourists visiting Spitsbergen from both groups is increasing annually.

Today, the tourism industry is an important basis for settlement and business activity. Moreover, focusing on more year-round offerings may boost the importance of this business. The pristine and austere nature of the Arctic area makes it extremely attractive for modern tourists and targets Svalbard as a top tourist destination.

The values of the natural environment play a unique role, which was emphasized by the respondents in the questionnaires. Tourists are also more aware that their presence poses some risks for the natural environment and are keen to preserve it. Maher and Meade (2008) identified in their research that the main reasons for tourists visiting the Arctic were flora and fauna in general (especially polar bears and whales) as well as glaciers. Considering those elements, the most attractive are Svalbard, West Greenland, but also Canadian Arctic and Russian Arctic in the Barents Sea (Bystrowska and Dolnicki 2017).

Usually, the greater tourism traffic is observed in the regions which are relatively less attractive but are better accessible. Accessibility of particular places in the Arctic depends, among others, on climatic and weather conditions, as well as the length of tourism season, possibilities of using different means of transport, comfort and safety. The tourism traffic is intensified in the summer (Stewart *et al.* 2010). In Arctic cities, especially important is transport infrastructure. Good road connections are identified only in Scandinavia and Yukon in Canada (Fay and Karlsdóttir 2010).

The presence of ports is important considering the significant role of cruises in generating tourism traffic. It is estimated that melting sea ice would contribute

to the development of Arctic cruise tourism (Dawson *et al.* 2007). According to the data of Automatic Identification System (AIS 2020), ports like Norway with Svalbard, Iceland, Faroe Islands, Greenland, Alaska, Russia served at least five passengers or pleasure vessel. The cruise tourism in the Spitsbergen region is growing rapidly, which shows statistical data presented in this article (Figs 2 and 3). In fact, since 2014, there has been a continuous increase in the number of ships and travelers. However, many local ports, especially in Greenland and Canada, are not able to serve increasing traffic and bigger ships. Another crucial element of transport infrastructure in the Arctic are airports. The relation to tourism traffic is noticeable, for instance currently most tourists arrive in Greenland, Iceland by air (Fay and Karlsdóttir 2010). Relatively well-developed airport networks in the Arctic have Norway, Sweden, Finland and Alaska. Svalbard has at the moment three passenger airports and two heliports. In the last decade the number of passengers in the Longyearbyen airport increased by almost 80 thousand (Fig. 2). These data may prove that it is a convenient hub for visiting the archipelago. Summing up, the region accessibility and transport infrastructure are still under development, what was pointed out by many respondents during research. Despite this, the hard-to-reach Svalbard is therefore more unique and unavailable to everyone. This conclusion is supported by the growing trend in tourism to “escape” from the mundane world, looking for something completely different from everyday life. Still, one should ask what will happen to the local tourism if there are no more glaciers or nature? Will the Spitsbergen area remain equally attractive to tourists?

Another important issue was to verify the threats to the region and its residents resulting from the growing development of tourism. As it is strictly dependent on the natural environment, all the irreversible damages it causes to nature also affect its growth. The studied area *ca.* 78°N is particularly exposed to environmental threats, which sources and causes are located outside its borders. This is especially true regarding the climate change and pollution of long geographic scope. On the other hand, the natural environment is also exposed to local sources of pollution and threats, which are primarily related to industry, transport, social change and tourism. When pointing to the pollution resulting from the development of tourism, the various types should be enumerated, including the degradation of the land surface, the environmental burden due to the consumption of a huge amount of energy, water pollution through acidification, toxin residue, death zones, increased waste production like; illegal landfills and contamination of the earth or damage to the animal world, *i.e.* illegal hunting, toxic poisoning. Moreover, according to respondents, the glaciers are one of the most characteristic landscape features of the Spitsbergen, and the values of the untransformed natural environment were mostly considered a source of inspiration for most tourists' trips. However, the results from the presented study indicate unanimously that their range is decreasing from year to year.

Nevertheless, tourism can also help to spread knowledge of the vulnerable environment and environmental challenges. Chen (2015) attempted to explore tourism stakeholders' attitudes toward the practices of sustainability in the Arctic. His research finds that among the three groups of stakeholders studied, tourists exhibit the strongest interest in sustainable tourism development in the Arctic region. Similar conclusions were obtained in the research results where one of key factors mentioned by the respondents (Table 1) which have positive influence on tourism development in Spitsbergen is growing awareness and taking care of the environment. The third aspect concerned the perspectives of tourism development in the studied area (responsible tourism management).

The Arctic tourism is often based on nature, therefore, appears tourism codes of conduct within the context of the Arctic Environmental Protection Strategy (Kaján 2014). The Arctic Observation Systems (AOS) contribute to the planning, implementation, monitoring and evaluation of environmental change and responsible social and economic development in the Arctic. At the same time, members of the International Polar Tourism Research Network recognized that the role of tourism in the development and implementation of AOS had been overlooked (Barre *et al.* 2016). In the literature, patterns and strategies can be found, like the climate change response strategy for Alaska (National Park Service 2014; Barre *et al.* 2016). This strategy expects tourists to penetrate deeper into parks, looking for increasingly scarce attractions (designated zones under the regulation). The Svalbard archipelago implements numerous monitoring processes and projects that contribute to our understanding of the linkages between environmental change (safety and protection) and tourism dynamics (data about tourist numbers, tourism activities, cruise ships, *etc.*) (Viken 2011). A good example comes from Sweden and Finland, which both have a long history of scientific monitoring of Arctic areas. Nevertheless, when it comes to monitoring tourism impact in these countries by analyzing accommodation statistics, employment in tourism, it is often of low quality (Barre *et al.* 2016). The situation is completely different in Spitsbergen in presented statistic data analyzes.

Conclusion

The last years of human activity in Svalbard create perfect conditions for the development of tourism in the area. Additionally, numerous tourist attractions are an incredible magnet for the crowd of amateurs craving eccentric forms of free-time activities. Due to climate change and its uniqueness, the Spitsbergen area remains under special protection guaranteed by the international law, which naturally limits the tourists' penetration. New guidelines for the development of tourism in Svalbard were prepared in 2020 (Regjeringen.no 2020). Additionally, the government of Norway will impose stricter requirements on the tourism industry in Svalbard. This way, the authorities want both to increase the number

of aware tourists choosing Svalbard as a tourist destination based on its unique offer, but still obeying the regulations to protect its nature and support local businesses.

It is also crucial for the tourist products to be of high quality, therefore, the local authorities are planning to introduce new requirements for the certification of tourist guides (Regjeringen.no 2020). Some measures were already taken, like the introduction of the annual certified Arctic Nature Guide Program by UNIS (<https://en.uit.no/startside>) and numerous courses organized by the local tourist information center, Visit Svalbard. It is noted that the tourism industry must be subject to a form of control to monitor the results of taking organized groups of tourists around by snow scooters, to force tourism operators to take responsibility for the adverse effects of their activities. The tourism industry contributes significantly to employment in Longyearbyen, but also burdens the local community which is another challenge on its own.

Hopefully, with ongoing research, detailed analyzes and necessary controls, it will become easier to manage tourism in Spitsbergen and control the changes which it stimulates. One is for certain – all of the involved parties, namely the government, tourists and local business, should strive to create an ideal situation where the development of tourism supports sustainable businesses, promotes environmental education and protects the environment for future generations.

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