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INFLUENCE OF THE SARS-COV-2 CORONAVIRUS PANDEMIC ON THE DYNAMICS OF TOURISM IN SELECTED NATIONAL PARKS IN POLAND

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ABSTRACT: The SARS-CoV-2 pandemic that began in 2020 hit the tourist services sector very hard. This article aims to determine the impact of the coronavirus pandemic and its consequences on the tourism dynamics in nine Polish national parks. The statistical (descriptive) analysis method was used based on data collection regarding the number of tickets sold in parks in 2019 and 2020. Studies have shown that despite health concerns and several restrictions, the number of tourists in all parks, expressed in ticket sales in 2020, only decreased by 0.06%. Polish national parks, which are less popular, recorded increases in visitors by up to 66%, while in gardens with usually high attendance, there were decreases, especially during the spring lockdown. The obtained analyses allow the development of tourist mobility patterns in unique situations.

KEYWORDS: tourism dynamics, coronavirus, SARS-CoV-2, COVID-19, national parks

Introduction

Protected areas, including national parks, are tourist destinations that attract different groups of visitors. Granting an area status as a national park is an act of ennoblement, as its outstanding qualities are distinguished by experts, which is then confirmed by a legal decision. Consequently, however, this increases tourist traffic (Stasiak, 2007).

According to research by Balmford et al. (2015), protected areas occupy one-eighth of the Earth's surface and register over 8 billion visits a year, generating around USD 600 billion yearly in direct expenditure and around USD 250 billion indirectly. The intensive development of tourism in recent years – statistics from 2009 record 882 million international arrivals (UNWTO, 2011), and in 2019 as many as 1.481 billion (an increase of 67.9%) (UNWTO, 2021) – has contributed to the rise in visits to protected areas and financial revenues.

Poland's most incredible natural attractions include its national parks (Liszewski, 2009; Kruczek, 2017). According to the Nature Conservation Act (2004) a national park is: "an area distinguished by a special natural, scientific, social, cultural and educational values, with an area of not less than 1000 hectares, where all nature and landscape values are protected". They are created "in order to preserve biodiversity, resources, products and components of inanimate nature and landscape values, to restore the proper state of resources and natural components, and to restore disturbed natural habitats, plant habitats, animal habitats or fungal habitats" (Act, 2004).

So far, 23 national parks have been established in Poland, covering 1% of the country's total area. The number of tourist visitors shows an upward trend (Figure 1). In 2009, these places were visited by 10.69 million people, and ten years later, by 14.15 million (an increase of 32.4%). The most famous national parks are Tatra National Park (3.95 million tourists per year), Karkonosze National Park (2.16 million per year) and Wolin National Park (1.5 million per year). By contrast, the least popular are Narew National Park (12,800), Drawno National Park (20,300) and Tuchola Forest National Park (35,300) (Table 1). Statistical Poland published data regarding the number of tourists (GUS, 2010; GUS, 2011; GUS, 2012; GUS, 2013; GUS, 2014; GUS, 2015; GUS, 2016; GUS, 2017; GUS, 2018; GUS, 2019; GUS, 2020a) are only approximate and include all tourists visiting national parks in Poland, including those buying entrance tickets. The varied methodology, as far as data collection for 2019 is concerned, caused the difference in totals in Tables 1 and 2.

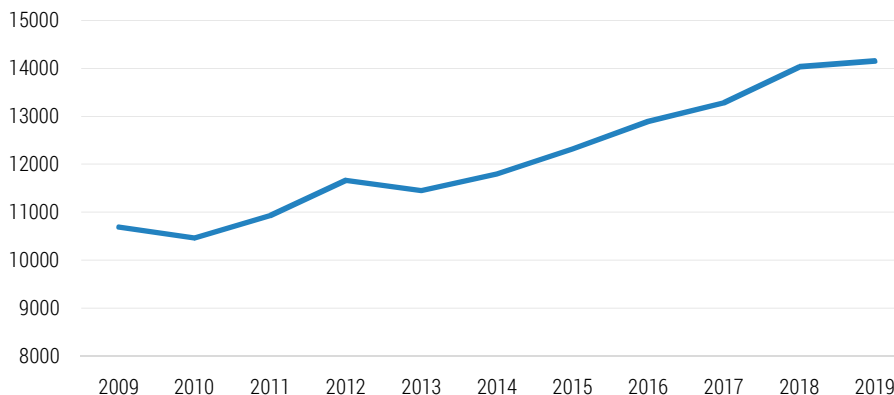


Figure 1. Number of tourists visiting Polish national parks in 2009–19 [in thousands]

Source: author's work based on GUS (2010; 2011; 2012; 2013; 2014; 2015; 2016; 2017; 2018; 2019; 2020a).

In 2020, an unprecedented phenomenon occurred – a new strain of coronavirus (SARS-CoV-2) began to spread globally, causing a frequently dramatic respiratory disease (COVID-19). When the disease was diagnosed in 113 countries around the world, the World Health Organisation (WHO) declared a pandemic on March 11, 2020. By April, measures to reduce the spread of the virus were affecting 81% of the global workforce (ILO Monitor, 2020). Tourism is one of the sectors of the economy most sensitive to crises of various types – as confirmed by the spread of COVID-19 (Bahar & Çelik İlal, 2020; Khalid et al., 2021; Zhang et al., 2021). People safety, natural disasters, and epidemics are among the most critical factors in decisions to travel (Aydin et al., 2021; Sönmez & Graefe, 1998; Reisinger & Mavondo, 2005; Korstanje, 2011). According to the World Tourism Organization, between 2020 and 2019, the quantity of international tourism fell by 74%, with about 1.1 billion arrivals reaching the level in the late 80s. The collapse of tourism in 2020 caused financial losses of about 1.3 trillion US\$ (Richter, 2022). The coronavirus pandemic (SARS-CoV-2) and the failure of tourism in this period have led to a significant crisis in many countries. A spectacular example of the impact of the pandemic on a country is the fall of Sri Lanka. In this country, the income from tourism provided 12-14% of GDP, so it became bankrupt with a severe economic, political and social crisis (Góralczyk, 2022).

Similarly, in Poland, as in the world, the pandemic caused the collapse of tourism. After the record, tourist traffic in 2019 (35.67 million) decreased by 49.9% in 2020 to 17.88 million (GUS, 2020b; 2021). The decrease in foreign trips amounted to 59.4%, probably due to the fear of infection with the virus and restrictions aimed at limiting its spread.

However, as the pandemic progressed, the sense of panic among Poles decreased, and the virus became part of a “new normal” (Kalinowski & Wyduba, 2020). People accustomed to the situation began to undertake ordinary activities – including tourism implemented mainly in the country (82% of respondents who planned to travel) (Polska Organizacja Turystyczna, 2020). It is in line with the forecasts contained in the documents of the European Commission (2020).

Research objectives and methods

The research aims to determine the impact of the SARS-CoV-2 pandemic and its consequences on tourism dynamics in selected national parks. In this study, the hypothesis was made that national parks in Poland recorded a decrease in tourist numbers as a result of the coronavirus pandemic. Measuring the number of tourists to a given destination, and in this case, to a national park, is not easy (De Cantis et al., 2015). Therefore, in the study, the author decided to use direct data on sales of admission tickets to parks, museums belonging to individual gardens, nature trails, etc., in 2019 (before the pandemic) and 2020 (the year in which the pandemic began).

To obtain ticket sales data, letters were emailed to national parks requesting data showing tourist traffic in their area, broken down by month in 2019–20. Most of the national parks replied, but only nine parks fully met the required criteria.

Statistical analyses (mainly descriptive due to the lack of large datasets and a frequent lack of data homogeneity) were carried out for those nine national parks. They are Babia Góra National Park National Park, Białowieża National Park, Biebrza National Park, Gorce National Park, Tuchola Forest National Park, Stołowe Mountains National Park, Pieniny National Park, Świętokrzyski National Park, Tatra National Park.

Table 1. Number of tourists in Polish national parks in thousands in 2009-2019

National park	Year										
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Babiogórski	52	54	75	63.0	81.0	76.0	81.0	114.0	83.3	107.0	150.0
Białowiecki	82.3	170	133.8	120.6	119.0	120.0	132.9	163.4	248.7	156.1	173.5
Biebrzański	32	31	27.2	32.5	28.0	32.0	38.5	41.0	46.7	54.0	83.0
Bieszczadzki	273	280	330	297.0	332.0	355.0	388.0	487.0	513.0	589.0	572.0
Bory Tucholskie	60	60	60	60.0	33.0	33.0	33.0	34.5	31.8	37.1	35.3
Drawieński	23	22.2	48	25.5	19.0	18.0	22.0	16.0	13.0	20.5	20.3
Gorczański	60	60	65	70.0	70.0	80.0	80.0	80.0	90.0	90.0	90.0
Gór Stołowych	354	319	335	350.0	347.0	367.0	480.0	286.0	515.0	1063.0	907.0
Kampinoski	1000	1000	1000	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0
Karkonoski	2000	2000	2000	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2160.0
Magurski	50	50	45	40.0	50.0	40.0	40.0	50.0	50.0	50.0	50.0
Narwiański	8.6	12.5	10	12.0	15.0	15.3	15.0	20.0	19.0	12.0	12.8
Ojcowski	400	400	400	400.0	400.0	400.0	400.0	428.0	430.0	430.0	440.0
Pieniński	756	603	710	770.0	734.0	719.0	815.0	931.0	898.0	985.0	982.0
Poleski	15.4	24.3	23.7	28.1	28.0	28.0	41.0	44.0	49.0	73.0	135.5
Roztoczański	120	100	100	120.0	120.0	120.0	134.0	186.7	203.4	243.4	238.2
Słowiński	275.4	311.4	317.1	312.4	308.5	304.0	318.9	323.4	317.2	320.6	334.5
Świętokrzyski	210.5	145	193.4	162.0	148.4	135.0	132.0	144.0	144.0	149.0	120.0
Tatrzański	2078.7	2002	2234	2947.0	2764.0	3091.6	3309.5	3683.1	3779.2	3970.3	3947.4
Ujście Warty	20	10	20	56.9	53.8	50.6	52.4	43.2	34.4	45.3	58.4
Wielkopolski	1200	1200	1200	1200.0	1200.0	1200.0	1200.0	1200.0	1200.0	1000.0	1000.0
Wigierski	120	110	110	110.0	110.0	115.0	110.0	125.0	125.0	140.0	140.0
Woliński	1500	1500	1500	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0
Total	10691	10464.4	10937	11677.0	11460.7	11799.5	12323.2	12900.2	13290.6	14035.4	14149.7

Source: author's work based on GUS (2010; 2011; 2012; 2013; 2014; 2015; 2016; 2017; 2018; 2019; 2020a).

Table 2. Number of tourists in the analysed national parks in thousand

Month	Babia Góra National Park		Białowieża National Park		Biebrza National Park		Gorce National Park		Tuchola Forest National Park		
	Change in % month-on-month		Change in % month-on-month		Change in % month-on-month		Change in % month-on-month		Change in % month-on-month		
	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	
January	1791	829	4901	7598	622	2447	2447	293.4	15	47	213.3
February	8268	10128	7981	8210	2446	2384	2384	-2.5	8	38	375.0
March	13529	13688	6337	1742	3495	1060	1060	-69.7	33	15	-54.5
April	8268	10128	15371	330	4923	1516	1516	-69.2	1364	34	-91.3
May	13529	13688	42812	9660	8990	6727	6727	-25.2	6779	484	43.2
June	22553	33942	35393	25294	11406	12013	12013	5.3	7133	882	-15.3
July	27528	33642	45081	53747	7660	13740	13740	79.4	11399	807	75.8
August	16999	22298	59101	60267	10329	15948	15948	54.4	18646	1165	50.5
September	14902	9262	25552	26816	49	8359	8359	54.0	12760	585	48.7
October	2471	9825	19134	11182	1312	2112	2112	61.0	14942	187	-37.4
November	179	825	7229	2739	1095	1339	1339	22.3	1571	41	-21.2
December	108041	133793	5442	1839	329	341	341	3.6	11	11	0.0
Total	108041	133793	274334	209424	58036	67986	67986	17.1	74594	4474	24.6

Month	Stołowe Mountains National Park			Pieniny National Park			Świętokrzyski National Park			Tatra National Park in		
	2019		2020		Change in % month-on-month		2019		2020		Change in % month-on-month	
	Year	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	
January	18953	0	12926	8553	12926	51.1	108285	228980	111.5			
February	94260	24497	13495	13922	13495	-3.1	203931	233605	14.6			
March	18953	0	5418	8879	5418	-39.0	141079	50401	-64.3			
April	94260	24497	9251	28110	9251	-67.1	11651	0	-100.0			
May	80487	52322	28111	92542	28111	-69.6	51969	23598	-54.6			
June	107396	121100	78191	134983	78191	-42.1	38484	21659	-43.7			
July	125078	135083	229112	211663	229112	8.2	30862	41938	35.9			
August	48721	64805	264361	270834	264361	-2.4	41435	54133	30.6			
September	34113	30762	111178	105096	111178	5.8	19787	21848	10.4			
October	7598	605	33480	64578	33480	-48.2	22709	10166	-55.2			
November	516606	429174	20699	23010	20699	-10.0	0	3114	54.4			
December	516606	429174	15260	14346	15260	6.4	118319	58368	-50.7			
Total	516606	429174	821482	976516	821482	-15.9	216897	176518	-18.6			
							3758131	3261895	-13.2			

Source: author's work based on data from national parks.

The SARS-CoV-2 pandemic in Poland

The first case of COVID-19 was detected in Poland on March 3, 2020, and the highest number of daily new infections in 2020 was recorded in November, at 27,875.

In connection with the SARS-CoV-2 pandemic, the Polish government took several measures to reduce the spread of the disease in 2020. Among other things, the following was introduced:

- a state of epidemic threat was announced, and then after a few days (from March 20), a state of the epidemic: 12.03–31.12,
- suspension of classes in schools, above grades 3: 11.03–26.06, 23.10–31.12,
- rest of classes in schools, grades 1–3: 11.03–25.05, 9.11–31.12,
- restrictions on catering and entertainment activities: 12.03–3.05, 23.10–31.12,
- restrictions on the operation of shopping malls: 12.03–3.05, 23.10–27.11, 28.12–31.12,
- closure of Polish borders to air and rail traffic, 15.03–20.04,
- obligation to cover nose and mouth inside buildings: 16.03–31.12,
- obligation to cover nose and mouth in open spaces: 16.03–18.05,
- restrictions on movement: 25.03–20.04,
- closure of forests, parks, beaches, etc.: 01.04–20.04,
- limitation on the operation of nurseries and kindergartens: 12.03–6.05,
- closure of beauty and hairdressing salons: 14.03–18.05,
- limitations on the operation of cultural institutions, i.e. cinemas, theatres, operas, swimming pools, fitness clubs, parks: 13.03–6.06, 23.10–31.12 (Koronawirus informacje, 2021; Koronawirus u nas, 2021; Medicover, 2021).

Besides the general restrictions listed above, the most critical limits for tourism in the course of the SARS-CoV-2 coronavirus pandemic in Poland were those on domestic and foreign tourism, the need to perform tests when crossing the border, and the introduction of a tourist voucher in 2020 whose aim was to re-invigorate the internal tourism market when the epidemic situation was under control. All these activities meant that tourist traffic was utterly different in the pandemic year than in previous years. Tourist targets and the perception of tourist attractiveness also changed. Isolated, peripheral places with low population densities began to be considered exceptionally safe and attractive for tourism. Other changes in the labour market and education system, i.e. the transition to remote working and learning, resulted in a temporary – perhaps even irreversible – reorientation in Poland's population distribution. Indeed, the SARS-CoV-2 coronavirus pandemic has

affected all sectors of the economy – including the tourism market, which has been subjected to numerous restrictions and challenges.

Tourism in the researched national parks: a comparative analysis

The transformations in the tourist seasons of 2019 and 2020 that were seen in the research period are presented alphabetically by the park. They are preceded by a short description of the park, showing its most essential values from the perspective of tourist statistics.

Babia Góra National Park is located in the Lesser Poland Voivodeship in southern Poland. It occupies the north and south of the Babia Góra massif. It covers 33.92 km². In 2009–19, it was visited by 52,000 per year (in 2009) up to 150,000 (2019), placing it among the national parks of average popularity. Regarding the number of tourist visitors, it is 13th out of the 23 national parks in Poland (Table 1).

Based on the data on ticket sales in 2019 and 2020 provided by the Babia Góra National Park management, there are changes in tourist traffic dynamics during this period. The highest tourist attendance was recorded in the summer months (July and August): 22,553 and 27,528 visitors in 2019, and 33,942 and 33,642 in 2020. From May to October 2020, there was an increase in the number of tourists compared to the same month in 2019 of between 1.2% (in June) and 50.5% (in July). From the whole of 2020, the highest increase over 2019 figures was in November, at 297.6% (Figure 2). It should be noted, however, that this high increase may result from the low starting base in 2019, with only 2,471 people (Table 2). There is a notable decrease in tourist numbers in April (-53.7%), which should be associated with the fact that the restrictions aimed at limiting the spread of the coronavirus included a decision to close forests, parks and beaches from April 1 to April 20, 2020. Significant decreases were also recorded during the autumn peak of new cases in October, at -37.8% (Figure 2). However, this did not change the fact that in 2020 ticket sales increased to 133,793 from 108,041 (in 2019), i.e. by 23.8% (Table 2).

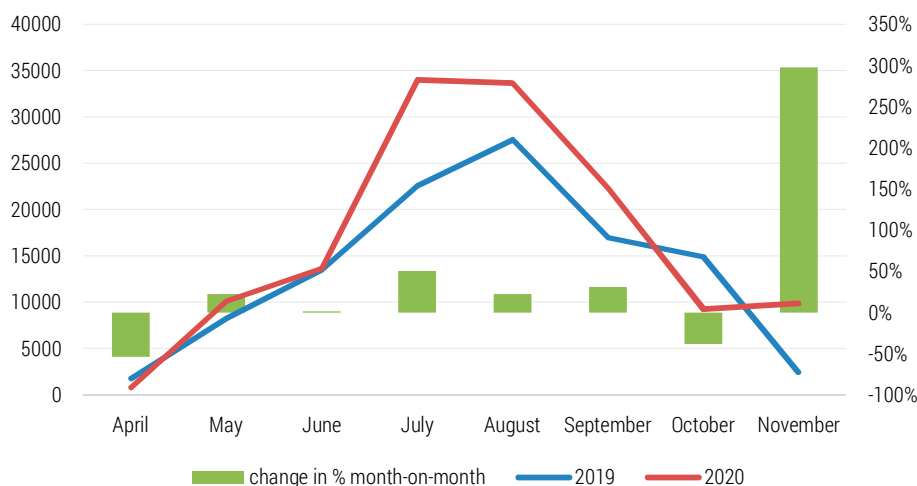


Figure 2. Tourist numbers in Babia Góra National Park in 2019 and 2020 and the increase/decrease [in %] in visitor numbers in a given month compared to the corresponding month of the previous year

Source: author's work based on data from national parks.

Białowieża National Park is located in central-eastern Poland, in the Podlaskie Voivodeship, where it occupies the central part of the Białowieża Primeval Forest. It began operating in 1921 with the establishment of a unit called "Rezerwat", which was then transformed into a national park in 1932. It covers about 105.2 km², one-sixth of the Polish part of the Białowieża Primeval Forest. This area protects the best-preserved part of the primeval forest, the last natural ancient woodland in the European lowlands and is characterised by great diversity. The park is the only Polish natural feature on the UNESCO World Heritage List. From 2009–19, it was visited by 82,300 people (2009) and 248,700 (2017). Regarding the number of tourist visitors in 2019, it is 12th out of the 23 national parks in Poland (Table 1).

The 2019 and 2020 ticket sales data provided by the management of the Białowieża National Park show changes in tourist traffic dynamics. Tourist attendance was highest in August in both years – in 2019, it was 59,101, and in 2020 60,267 (Table 2). Tourist attendance was lowest in the winter months – from November to March. In the pre-pandemic year (2019), the number of tourists ranged from 4,901 in January to 7,981 in February. By contrast, in 2020, the period of low attendance extended to April when, due to numerous pandemic restrictions, it amounted to only 330 people (Table 2).

An increase in tourist traffic over 2019 was noticeable in January and February of 2020 when Poland's pandemic had not started. In the first month

of the year, the number of tourists increased by 55%, which can be associated with the distribution of public holidays and school winter breaks (which differ between voivodeships and fall in January and February). The park was also visited more during school holidays and in September, when the increase ranged from 2% in August to 19.2% in July (Figure 3). For seven months of 2020, compared to the corresponding months of 2019, ticket sales decreased between -28.5% (in June) and -97.9% in April (Figure 3). For the entire year 2020, total ticket sales fell -23.7% from the 2019 total of 274,334 to 209,424 (Table 2).

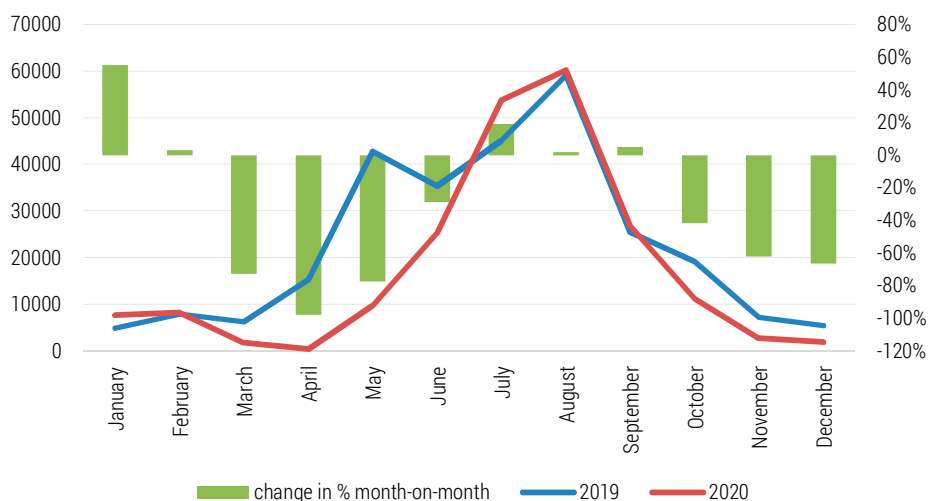


Figure 3. Tourist numbers in Białowieża National Park in 2019 and 2020 and the increase/decrease [in %] in visitor numbers in a given month compared to the corresponding month of the previous year

Source: author's work based on data from national parks.

Biebrza National Park is located in north-eastern Poland, in the Podlaskie Voivodeship. It covers the Biebrza Basin and neighbouring areas. It is the largest national park in Poland and one of the largest in Europe, covering approximately 592 km². The park's most valuable asset is the heavily meandering Biebrza River, which has created the largest complex of peat bogs in Poland in its valley. According to data from Statistics Poland (GUS), in 2009–19, visitor numbers ranged from 27,200 people (in 2011) up to 83,000 (2019). Regarding tourist visitors, in 2019, it was 18th out of the 23 national parks in Poland (Table 2).

The ticket sales data for 2019 and 2020 collected by the Biebrza National Park management show changes in tourist attendance in the two analysed

years. From May to October, tourist traffic grows, peaking in the summer months – in June of 2019, with 11,406 tickets sold, and in August of 2020, with 15,948 tickets sold. The dynamics of tourist traffic changes in 2020 relative to 2019 show a decrease in tourist numbers from February (-2.5%) to May (-25.2%), with maximum drops of approximately -70% in March and April. In the remaining months, there were increases, the greatest of which was in January, before the pandemic began, at almost 300%; this was influenced by the low base figure in 2019 (4,901 tickets sold) and the distribution of national holidays and school holidays (Table 2). In the second half of 2020, ticket sales increased by 3.6% in December and nearly 80% in July (Figure 4). The total number of tickets sold in 2020 increased by 17.1% over 2019, from 58,036 to 67,986.

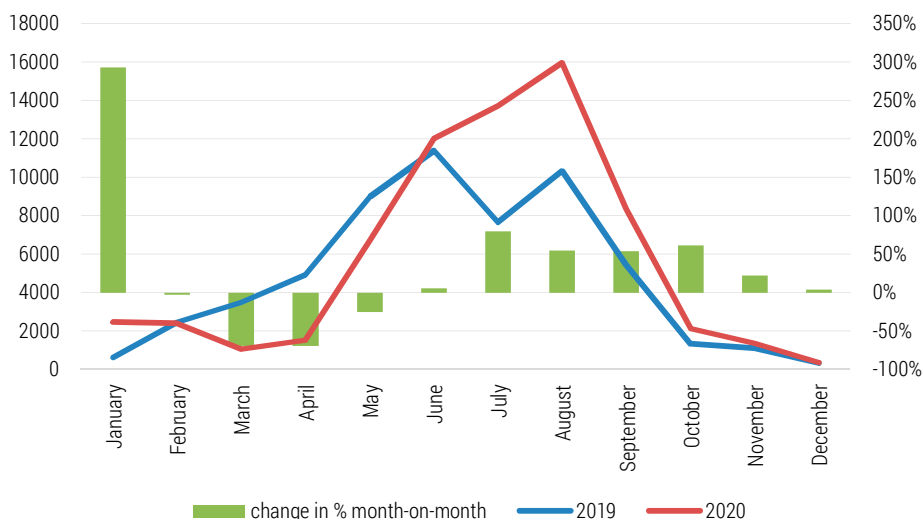


Figure 4. Tourist numbers in Biebrza National Park in 2019 and 2020 and the increase/decrease [in %] in visitor numbers in a given month compared to the corresponding month of the previous year

Source: author's work based on data from national parks.

Gorce National Park is located in southern Poland, and its protection covers the central Gorce range, including the Turbacz and Gorce ranges. The area's most incredible natural wealth is the Carpathian Forest. According to Statistics Poland (GUS) data for 2009–19 (Table 1), the number of tourists increased steadily from 60,000 in 2009 to 90,000 in 2019. Regarding tourist visitors, in 2019, it was 17th out of the 23 national parks in Poland (Table 1).

The park management records tickets sold and free entries (e.g. the Big Family Card) to some areas of the park from mid-April to November. According to the data collected (Table 2; Figure 5), tourist traffic here peaks in August, when 18,646 entries were registered for 2019 (i.e. about 25% of total annual traffic) and 28,807 for 2020 (approx. 23.3% of yearly traffic) (Table 2). Tourists increased over the previous year for almost the entire study period. The growth dynamics range from 34.8% for September to over 386% for November. The only month with a decrease in visitor numbers was October (-32.2%) when there was an autumn peak in SARS-CoV-2 cases in Poland. The collected data confirm an overall increase in tourist numbers of 66% (Table 2). For comparison: data from eco-counter tourist meters at five locations in the park (1 in Suhora; 2 in Szałasisko glade; 2 in Turbaczyk) confirm a 68.8% increase in tourist number (data obtained from park management).

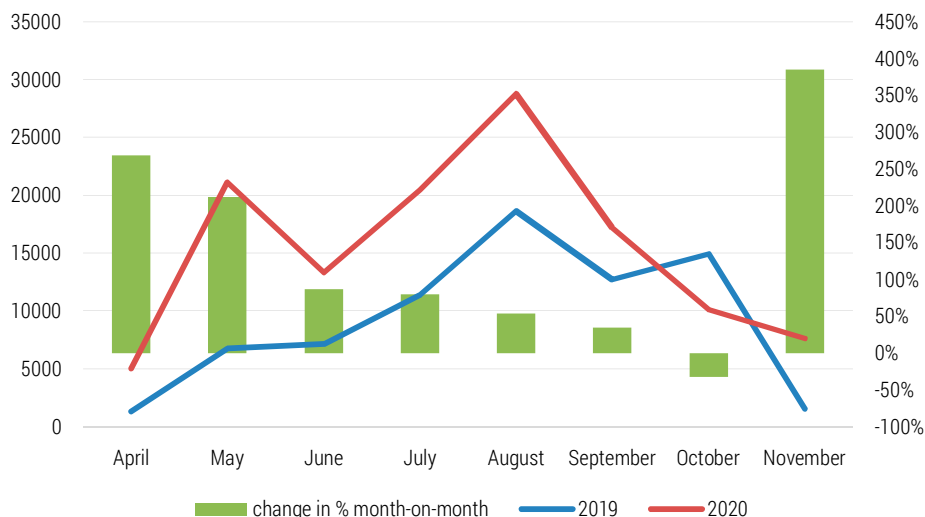


Figure 5. Tourist numbers in Gorce National Park in 2019 and 2020 and the increase/decrease [in %] in visitor numbers in a given month compared to the corresponding month of the previous year

Source: author's work based on data from national parks.

Tuchola Forest National Park is located in the Pomeranian Voivodeship. The protection here mainly covers forest communities, which cover about 83% of its area. These are primarily new and dry forests with numerous species of lichens and marsh habitats. There are 11 lakes (PNBT, 2021) in the park. According to data from Statistics Poland (GUS), in 2009–19, visitor numbers ranged from 31,800 (in 2017) up to 60,000 (2009–12). In 2019, it was one of the three parks least visited by tourists (Table 1).

The tourist season in the Tuchola Forest National Park lasts from April to October (Figure. 6), peaking in August when 1,165 tickets were sold in 2019 and 1,753 in 2020. By contrast, in the off-season, ticket sales drop below 55 – in December, for example, it is only 11 (Table 2). Due to the marginal sale of access during the cold season, changes in the tourist traffic dynamics only slightly affect tourist numbers. During the seven-month tourist season here, there was an increase in tourist traffic over 2019 in five months – ranging from 37.4% (October) to 75.8% (August). There were drops in April (-91.3%) due to lockdown and in June (-15.3%) (Figure 6) when other destinations are suspected of having been more attractive. Total ticket sales in 2020 increased by 24.6% over the previous year.

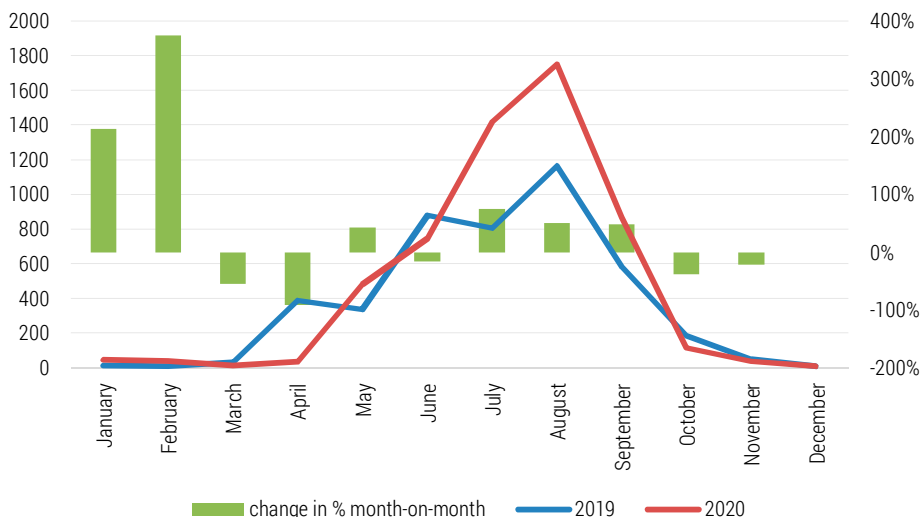


Figure 6. Tourist numbers in Tuchola Forest National Park in 2019 and 2020 and the increase/decrease [in %] in visitor numbers in a given month compared to the corresponding month of the previous year

Source: author’s work based on data from national parks.

Park admissions certified by a ticket purchase constitute about 10–20% of entries to the park in 2020. The park’s management estimates tourist numbers based on car numbers in nearby parking lots, the number of people staying in nearby holiday resorts, etc. These observations show that in 2019 the park was visited by 35,250 people, and a year later, by 28,910, a decrease of approximately -18% (information obtained from park management).

Stołowe Mountains National Park is located in south-western Poland, in the Central Sudetes, at the Polish–Czech border. In an area of 63.4 km², protection covers the only fault-block mountains in Poland. From 2009–19, this park was visited by 286,000 people in 2016 and over 1 million in 2018 (Table 1). The number of tourists, which has been about 1 million *per annum* in recent years, makes this national park one of the most visited in Poland. The ticketing period runs from April to November. In the analysed years, tourist traffic was highest in the summer holiday period, peaking in August, when the park was visited by about 125,000 people in 2019 and approximately 135,000 a year later (Table 2). The tourist traffic dynamics show a decrease in tourist numbers from April (-100%, when the parks were closed and sold no tickets) to June (-35%). Then, the number of tourists in 2020 over 2019 increased, and this trend continued until September (a rise of 33%). In October, however, there was a drop of -9.8% in ticket sales, which deepened in November to -92%. In 2020, there was a decrease in ticket sales of approximately 87,000, i.e. -16.9% (Figure 7).

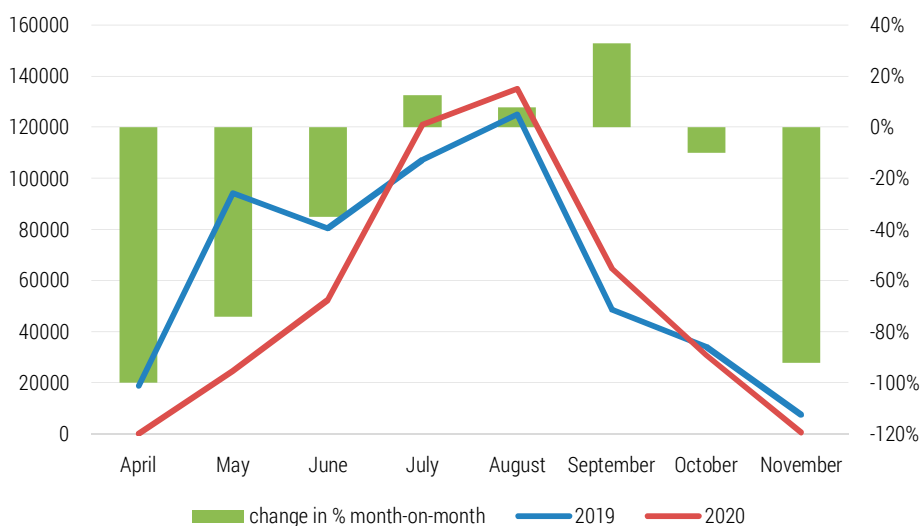


Figure 7. Tourist numbers in Stołowe Mountains National Park in 2019 and 2020 and the increase/decrease [in %] in visitor numbers in a given month compared to the corresponding month of the previous year

Source: author's work based on data from national parks.

Pieniny National Park is located in southern Poland, and its protection covers the most valuable areas of the Pieniny in terms of landscape and nature. The uniqueness of its local natural values led to the park being established in 1932 as the first in Poland. According to Statistics Poland (GUS) data

for 2009–19, Pieniny park was visited by between 603,000 people a year (2010) and 985,000 (2018), which makes it one of the most visited areas of this type in Poland (Table 1). The tourist season in the park lasts from April to November, with traffic peaking in August at about 271,000 visitors in 2019 and 264,000 in 2020. During the 2020 tourist season, tourist numbers dropped – during the six tourist-season months, the drops were most significant in spring (April -67.1%; May -69.6%) and October (-48.2%), which was related to the restrictions introduced and the autumn wave of infections. From July to September, the variation in tourist traffic amounted to a few percent increase in numbers in July and September and a slight decrease in August (-2.4%). Outside the tourist season, the variation between 2020 and 2019 is generally tiny, high only in January (51.1%). This is due to the low base in 2019 when national holidays and winter breaks landed that year (Figure 8). Based on the attendance presented by the park management, the total number of tourists in the pandemic year fell by about 155,000 compared to the previous year – a drop of -15.9% (Table 2).

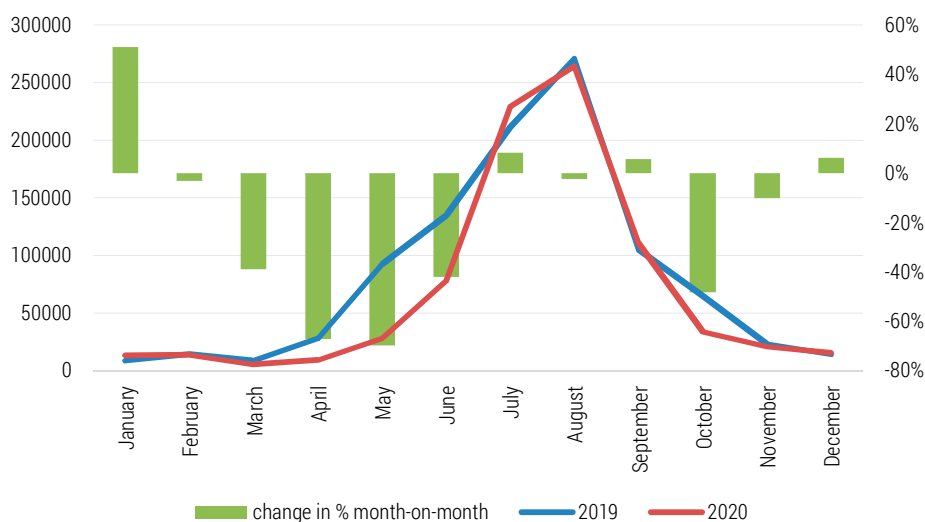


Figure 8. Tourist numbers in Pieniny National Park in 2019 and 2020 and the increase/decrease [in %] in visitor numbers in a given month compared to the corresponding month of the previous year

Source: author's work based on data from national parks.

Świętokrzyski National Park is located in the central part of the Świętokrzyskie Mountains, where 76.26 km² of the oldest mountains in Poland is protected. Forests cover 95% of the area, and 38% are under strict protection (ŚPN, 2021). According to data from Statistics Poland (GUS), for

the period 2009–19, park visitor numbers ranged from 120,000 (2019) up to 210,000 (2009), meaning that it was one of the few national parks in Poland to see a downward trend in numbers of visiting tourists (Table 1). The entire ticketing period in the park extends from April to October. In 2019, tourist numbers were most significant in May, at fewer than 52,000, while the second most considerable number of visitors was recorded in August at about 41,500. In 2020, tourist visits to the park peaked in August at approximately 54,000 (Table 2; Figure 9). The tourist traffic dynamics for 2020 relative to 2019 show a decrease from April (-100%) to June (-43.7%). This is due to the restrictions introduced and the collapse of the market for school trips, for which the Świętokrzyskie Mountains are a popular destination. This is followed by an increase from July (35.9%) to September (10.4%), followed by a further decline associated with the autumn pandemic wave (-55.2%) (Figure 9). Entrance ticket sales to the Świętokrzyski National Park decreased by -18.9% in 2020 relative to 2019 (Table 2).

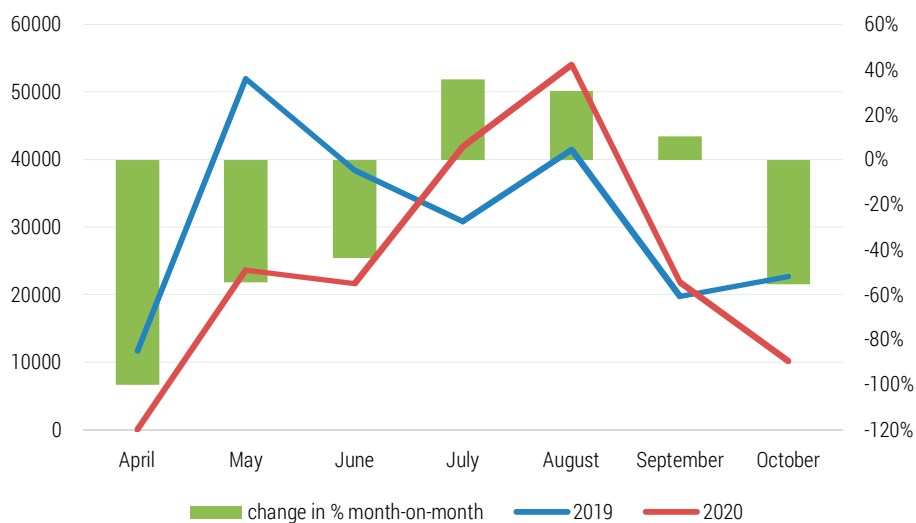


Figure 9. Tourist numbers in Świętokrzyski National Park in 2019 and 2020 and the increase/decrease [in %] in visitor numbers in a given month compared to the corresponding month of the previous year

Source: author's work based on data from national parks.

Tatra National Park is located in southern Poland. It protects the only mountains in Poland with a high-mountain topography. The uniqueness of the Tatra Mountains makes it the most visited national park in Poland. According to data from Statistics Poland (GUS) for 2009–19, this park was visited by between about 2 million tourists (2009 and 2010) and as many as

4 million (2019) (Table 1). The number of tourists shows a constant upward trend, which – it should be emphasised – poses a threat to this valuable part of Poland that covers an area of only 211.6 km². There are two tourism peaks in the Tatra National Park. The winter peak is in February, at about 204,000 visitors in 2019 and about 234,000 in 2020. The summer peak, meanwhile, is in August, at about 882,000 in 2019 and 791,000 in 2020 (Table 2; Figure 10). The dynamics of variation in tourist traffic in the park in 2020 compared to 2019 show an increase in tourist numbers in the first two months of the year when the pandemic had not yet begun. As the pandemic spread, there was a drop from March to August, with the most significant reduction being in April, at -99.1%. Then, starting from September, the decline in tourist numbers increased month by month (Figure 10). The sale of admission tickets in 2020 over 2019 reflects a decrease in tourist numbers of almost 500,000, i.e. -13.2% (Table 2).

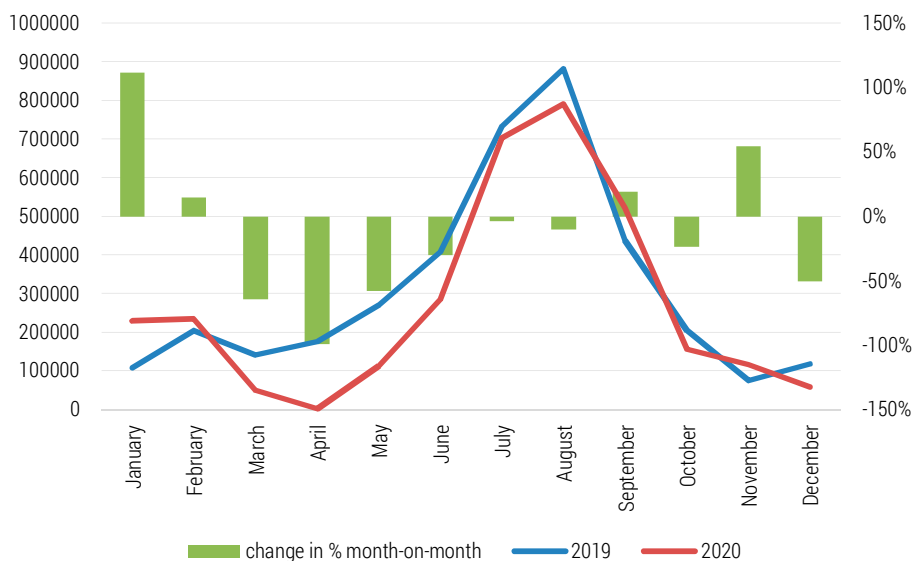


Figure 10. Tourist numbers in Tatra National Park in 2019 and 2020 and the increase/decrease [in %] in visitor numbers in a given month compared to the corresponding month of the previous year

Source: author's work based on data from national parks.

The sale of admission tickets to the researched national parks in 2020 shows high dynamics relative to 2019. In January and February, ticket sales rose, including an increase of over 100% in January. Then, from March (the beginning of the pandemic) to June, there were drops, which were greatest in

April (-92.8%). From July to the end of the year, the dynamics of tourist traffic was approximately a sine wave: after a month with an increase in ticket sales, there was a drop (Figure 11). Total ticket sales decreased from 3,758,131 to 3,261,895, i.e. by -13.2%.

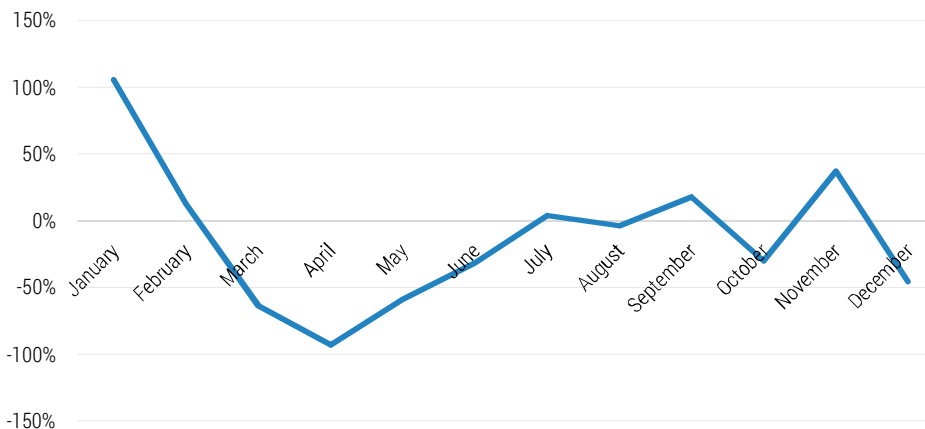


Figure 11. Change in the number of tourists in the surveyed national parks in the corresponding months of 2019 and 2020

Source: author's work based on data from national parks.

Results

The analysis based on ticket sales data, provided by the management of nine national parks, in connection with the epidemiological situation and the introduced restrictions, allowed us to achieve the following results:

- tourist traffic measured by the sale of admission tickets decreased -13.2% in 2020 compared to 2019,
- the introduction of severe restrictions in the spring and health concerns caused a drop in tourist traffic from March to June when ticket sales fell between -31.1% (in June) and -92.8% (in April),
- April was the month with the most significant drop in tourist traffic (-92.8%) when restrictions introduced by the government prohibited even access to parks and forests,
- during the summer holidays (July, August), the sale of tickets to national parks in 2019 remained close to 2019 levels; the 2.6 million tickets sold in this period in the pandemic year represent a decrease of -0.06% or 1,438 tickets,

- the autumn wave of the SARS-CoV-2 pandemic caused a decline in tourist traffic in October, and ticket sales decreased by on average -30.1%,
- health concerns and the absence of the popular Christmas and New Year trips (restrictions in the hotel industry) resulted in a -45.1% drop in tourist traffic in December,
- in January 2020, i.e. a month before the pandemic, a significant increase (105.9%) in the number of tourists was recorded, which is due to how public holidays and school winter breaks fell at that time,
- for fear of contracting SARS CoV-2, tourists were more strongly attracted to national parks that are otherwise less popular: Babia Góra National Park (+23.8%), Biebrza National Park (+17.1%), Gorce National Park (+66%) and Tuchola Forest National Park (+24.6%),
- in the otherwise most famous national parks, ticket sales fell in 2020: Tatra National Park (-13.2%), Pieniny National Park (-15.9%), Stołowe Mountains National Park (-16.9%), Białowieża National Park (-23.7%) and Świętokrzyski National Park (-18.6%),
- only the Pieniny and Tatra National Parks did not record an August increase in tourist numbers in 2020 over 2019 numbers; all the others saw an increase, which may result from the introduced restrictions on leaving Poland, as well as from the desire to redeem a tourist voucher during the holidays,
- tourist traffic in the studied parks peaked in August, except in Babia Góra National Park, which peaked in July.

Conclusions and discussion

The conducted research allowed us to verify the research hypothesis, which assumed that national parks in Poland decreased tourist numbers due to the coronavirus pandemic. The hypothesis was partially confirmed, only for the most popular national parks. They recorded declines in the number of tourists, while the less popular ones recorded increases.

In Poland, after the period of strict restrictions- no entry to forests and parks, there were significant increases in the number of tourists, which is confirmed by the research. As a result, in 2020, the total decrease in the number of visits (as observed in relation to sold entry tickets) to the parks was only 0,06%. The situation occurred accordingly in other parts of the world (Irerri, 2022).

The consequence of crises, including pandemics, is a decrease in demand for less crucial activities, especially travel and tourism (Senbeto & Hon, 2020). In the face of the pandemic, tourists tend to isolate themselves, avoid crowds and turn to alternative forms of tourism (Ulemma et al., 2021). They

choose places in the country of residence, avoiding crossing the border and long journeys (Dragomir et al., 2021). Consequently, local and regional destinations, especially those close to major cities, should notice an increase in visits. Moreover, this is when tourists are more interested in nature tourism with an increasingly popular model of sustainable tourism, which can be successfully achieved in Polish national parks. They tend to stay away from mass tourism.

Undoubtedly the pandemic period has noticeably affected the dynamics of tourist traffic in the studied parks. Global tourism has also changed its structure (Brouder, 2020; Hall et al., 2020). The change in travel patterns (e.g. decline in long-distance flights, personal means of transport) and the reopening of tourism after the pandemic is an opportunity for sustainable tourism (Lama & Rai., 2021; Purcell et al., 2021), regional, rural or health tourism (Wang et al., 2021), which can be successfully implemented in Polish national parks.

During the research, several restrictions were encountered, mainly from individual national parks' specificity. Not all parks sell entrance tickets in their area; in those where sales are carried out, it is not often conducted throughout the year but is only limited to the tourist season. Limitations resulting from data availability resulted in the analysis being carried out for 9 out of 23 national parks in Poland. Despite the rules, the research allows to development of patterns of mobility of tourists in Poland in exceptional situations. The influence of the SARS-CoV-2 coronavirus pandemic on the dynamics of tourism is a highly complex issue that has changed and will continue to change modern tourism.

This interesting scientific topic is intended by the author to be continued in future studies in relation using to more advanced, big data information on population traffic.

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