

Security aspects of rafting trips along the Dunajec River Gorge

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Abstract— Physical activity in mountainous areas can take on very different forms of tourism and sports. Usually, the most popular forms of tourist transport are discussed and analyzed in the literature on the subject - hiking, skiing, cycling. Rafting is less popular, because there are no rivers in the mountains on which there would be convenient, safe and appropriately developed areas. It should be borne in mind that on a mountain river there are large changes in the dynamics of water flow, numerous rock steps, stony obstacles, as well as the possibility of a sudden change in weather, which is why the risk of an accident during rafting is greater than on rivers in lowland areas. In Poland, the exception on a national scale is the Dunajec River Gorge in the Pieniny Mountains. Tourist traffic in this area, due to the extremely charming Dunajec Gorge, is large and constantly growing. It is also influenced by river conditions related to numerous bends, rapids and variable dynamics of the current. The above advantages encourage conducting numerous organized or individual rafting trips. Being on a floating unit and the resulting risk of drowning obliges the organizers to take numerous preventive measures. The monopoly in the field of organized raft trips belongs to the Polish Association of Pieniny Rafters and their counterpart on the Slovak side. The aim of the study, based on knowledge of the specifics of the Dunajec River Gorge and the threats, was to verify the methods of securing raft trips required by legal acts and the procedures of the organizers in relation to their implementation.

Keywords— organization of rafting trips, rafting participants, safety, threats

I. INTRODUCTION

The Dunajec River Gorge is an attractive area due to its fast, variable current caused by the irregular, rocky bottom, natural obstacles to kayaking, pontoons, and especially rafts. The changing terrain in which the river is located causes high water flow speed in many places, sudden changes in depth, location of the current, water aeration, intensified by the frequent weather changes specific to the mountainous area. The whole is a unique tourist attraction, as a result of which in 2022, the Dunajec River Gorge rafting was placed on the Representative List of Intangible Cultural Heritage of UNESCO (www.dzieje.pl/).

Rafting down the Dunajec River Gorge is one of the biggest attractions in the region, and even in Poland. The route runs along the Polish-Slovak border, among mountain peaks such as Sokolica and Trzy Korony. The most common form is rafting, where the rafters are both helmsmen and guides, telling not only about the natural values of the place, but also about its tradition and history (www.splyw-pieninski.pl).

Rafting down the Dunajec River Gorge is a tradition that has been going on for over two hundred years and attracts tourists from all over the world. The prototype of today's rafting was the transport of logs by local peasants, which was called flis, or



river transport. www.dzieje.pl/dziedzictwo-kulturowe/tradycje-flisackie-na-dunajcu-na-krajowej-listie). - niematerialnego-dziedzictwa. The first tourist rafting trips down the Dunajec River Gorge took place in 1831, and their forerunner was Józef Szalay, also considered the creator of the Szczawnica Spa. (www.pl.wikipedia.org/wiki/J%C3%B3zef_Szalay). Rafting trips down the Dunajec River Gorge were organized from Sromowce Niżne and Czerwony Klasztor. The complex tourist attraction consisted of land transport by horse-drawn carriages, climbing to the summit of Trzy Korony, descending through the Szopczański Gorge to Sromowce Niżne and rafting to Szczawnica. Cannons were mounted on the boats, from which shots were fired every now and then, which echoed loudly. In 1934, in order to avoid conflict and disputes among raftsmen over tourists coming to the spa in Szczawnica, the Polish Association of Pieniny Rafters was established (www.szewczyktravel.pl/splyw-dunajcem/).

Rafters more often say boat, passengers - raft, and according to the Inland Navigation Act it is "integrated floating set". The first raftsmen's boats were called dugout canoes, because they were hollowed out of a poplar trunk, then connected into two, three and more stable fours. Today, raftsmen's boats are built of spruce planks, connected with ropes. After each rafting trip, the raft is dismantled and transported in parts by cars to the place of re-launch. The raft has three rows of benches for 12 passengers, operated by two raftsmen (the "master" at the front, the "helper" at the back), steering the set with 3-meter spruce poles, called "sprinklers". The front of the raft is covered with spruce branches, which, in addition to their decorative value, also act as a breakwater. Each raft has its own number. The raft consists of 5 boats that provide high transverse stability of the unit, and in the event of a puncture in one or even two elements, it can still float and does not sink. It is about 2.2 m wide at the back, 1.8 m at the front and 6 m long, weighing about 500 kg. There are 230-250 rafts, and they are operated by 500 to 550 raftsmen. (www.dzieje.pl/dziedzictwo-kulturowe/tradycje-flisackie-na-dunajcu-na-krajowej-liscie-niematerialnego-dziedzicji).

The technical condition of the raft is always checked by a committee before and during the season. In spring, a control trip is also carried out, during which the route is checked for safety and patency. This is done by representatives of the Inland Navigation Office in Wrocław. On this basis, they issue a permit for special transport for each navigation season. The permit specifies the requirements for safety when organizing the trip, equipment and marking of rafts. An integral part of the permit is an annex specifying the numbers of raft sets approved for the trip by the committee.

Rafters, or raft steersmen, are highlanders from five Pieniny towns who are journeymen or masters supported by assistants. During the rafting they are dressed in white shirts, embroidered waistcoats and hats, ordinary trousers and sturdy shoes. They wear traditional trousers with parzenice and kierpce only on special occasions (www.flisacy.com.pl).

Rafting on the Dunajec River starts in Sromowce Wyżne or Niżne. The route is 14 to 23 km long and ends in Szczawnica

or Krościenko. (www.szczawnica.com/splyw-przelomem-dunajca-ze-sromowiec-do-szczawnicy.html).

The maximum depth of the current reaches 12 m - these are short, but very treacherous and dangerous sections, but there are also places where the water is 0.5 m. The average speed of the current is 10 km/h, and the maximum, at the highest water level in several sections, can reach even 30 km/h. There are also parts where the current is so lazy that without the raftsmen pushing the rafts with poles against the bottom, they do not move, and with the opposite wind they flow against the current. The time of the trip is from 2.15 to 2.45 hours. At exceptionally low river levels, the current is accelerated by a larger water passage on the dam in Czorsztyn (www.poland-active.com/de/Galeria/nasze-wycieczki-de,kcb/splyw-dunajcem,cfg).

Large seasonal fluctuations in water level and low temperature from 6.5 to 14 °C in summer are natural features of the river. In addition, the surrounding mountain ranges usually make access to the shore difficult and the edges are significantly overgrown and the riverbed is shaded. The attractiveness of the Dunajec River Gorge on the one hand provides great opportunities for active recreation and tourism through participation in rafting, on the other hand, earning money for the local people organizing rafting trips.

During the Dunajec River Gorge rafting, potential hazards related to the season and weather may occur. They are carried out from the beginning of April to the end of October, which is why participation in them takes place at different times of the year - from the beginning of spring to autumn, when periods of heavy rainfall and unfavourable weather may occur. In variable, bad weather, the air temperature is usually low, which causes participants in rafting who are too lightly dressed to quickly cool down, and the strong, changing current, rocky, irregular bottom and obstacles limit maintaining balance, and in the case of falling overboard, difficulties in reaching and exiting the shore, increasing the risk of suction, pressing, hitting. The rapid change in the river's characteristics after heavy rainfall and the increased water level additionally cause its turbidity and aeration, which in the case of falling overboard makes visibility and swimming difficult, and therefore aid and self-rescue difficult. For this reason, four levels of safety have been introduced, depending on the water level - at the highest, there must be two masters on the raft. According to the regulations, the rafting is stopped when the water level exceeds 250 cm (www.flisacy.pl/dla-turystow).

The aim of the study, based on the knowledge of the specifics of the Dunajec River Gorge and the threats, was to verify the methods of securing raft trips by the organizers, taking into account compliance with applicable legal acts, training and professional competence of raftsmen, equipment used and its equipment, and rescue security. As a result of the analysis of source and visual materials of the above problems, the actual state of securing raft trips on the Dunajec River Gorge was determined.

II. MATERIAL AND METHODS

The research material consisted of participants of raft trips on the Dunajec River Gorge, i.e. organizers of the trips, helmsmen of the rafts, so-called raftsmen, and passengers of the trips, where the legal conditions for organizing and conducting the trips, the role of the organizer of the trips in terms of providing infrastructure for safe conducting of the trips, professional competences of the helmsmen of the trips, organization of rescue security of the trips, and the social cross-section of the passengers of the trips in the aspect of the potential risk of accidents in the water were examined. For this purpose, websites, literature on the subject, archival materials, bulletins and compact studies, as well as legal acts in the field of safety in water areas were examined.

The study in the period from 1.10.2024 to 1.12.2024 also included 83 photographs posted on publicly available websites on the Internet from rafting trips, qualifying those where at least 1 raft was visible in a side or partially side position, allowing researchers to analyze the content in terms of the features studied. Each time, analyzing one raft, 850 participants were counted. The age and clothing of the passengers were assessed subjectively using the estimation method, qualifying them into 4 groups. The number of passengers, life jackets, and rescue equipment on board the rafts was determined based on the count.

The source material analysis method and the visual analysis method were used. The source material analysis method was used to query the literature and source materials in order to compare and contrast the known market offers, relations in the field of rafting rafts and their equipment, equipment, number and competence of the rafting crew, rescue security on the route in order to find their common or different properties. This method was also used to analyze acts, regulations, orders, training programs, and the organization of events organized in the aquatic environment (Korzeniowski 2013).

The visual analysis method was used to characterize the participants of the rafting trip and to assess the equipment of the rafts and the provision of rescue equipment for the participants during the rafting trip. This was done based on the advertising materials of the rafting trip and reports from the rafting trip in terms of content analysis regarding details related to the participants on the raft during the rafting trip, such as: number of participants, age groups, clothing, securing life jackets, and equipment of the rafts with rescue equipment. The advantage of the visual analysis method was the possibility of assessing momentary photographic recordings, while its disadvantage was a certain subjectivity resulting from the selection of photos and limitations related to the shot, where the image of the examined content could be partially invisible. The visualization analysis method took into account the ethics of the research, as tourists and raftsmen on the rafts were observed, but only aspects related to the safety of the rafting trip were assessed (Gillian 2024). Hermeneutic analysis and interpretation formed the basis for searching for limitations in effective and safe functioning of rafting services on the Dunajec River Gorge.

III. RESULTS

1. Analysis of legal acts in the field of safety of rafting on the Dunajec River Gorge

In the Polish legal system, in the field of safety of rafting on the Dunajec River Gorge, the relevant fragments of announcements, acts, regulations and orders should be taken into account, these are:

- 1) Announcement of the Marshal of the Sejm of the Republic of Poland of 20 February 2024 on the announcement of the consolidated text of the Act on Inland Navigation (Journal of Laws 2024, item 395), in which the Act on Inland Navigation of 21 December 2000 constitutes an annex, where it is stated, among other things: that the Act regulates matters related to the practice of navigation on inland waters recognized as navigable under the provisions of the Water Law, hereinafter referred to as "inland waterways". The Act provides a definition of a ship as a floating device with or without mechanical propulsion, intended for or used on inland waterways. The provisions of the Act on the regulation of the movement of ships on inland waters other than inland waterways are also provided. It is noted that for structures adapted for floating that are not ships, only the provisions on traffic safety, equipment, signaling and communication apply. The group of structures adapted for floating includes rafts classified as integrated floating materials, these are in particular coupled rafts, raft boats or barrels (www.sip.lex.pl/akty-prawne/dzu-dziennik-ustaw/zegluga-srodladowa).
- 2) The Act of 18 August 2011 on the safety of persons present in water areas, which regulates the obligations of the organizer and participant present in water areas. Among other things, it is stated that:
 - persons staying in water areas are obliged to exercise due diligence to protect their own life and health and that of other persons, and in particular:
 - familiarize yourself with the rules for using a given area, facility or device and comply with them,
 - comply with mandatory and prohibitory signs placed by entities authorized to perform water rescue,
 - familiarize yourself with and adapt your activity plans to your skills and current weather conditions,
 - use of equipment appropriate to the type of activity undertaken, technically efficient and in accordance with its intended use and the rules of use,
 - immediately inform the appropriate entities authorized to perform water rescue about an accident or missing person and about other extraordinary events that may affect the safety of people.
 - It is prohibited to operate a ship or other floating object other than a motor vehicle by a person under the influence of alcohol or a similarly acting substance (www.isap.sejm.gov.pl/).
- 3) Regulation of the Minister of Infrastructure of 28 April 2003 on navigation regulations on inland waterways,

which states that consolidated floating materials should be directed by a person with appropriate qualifications confirmed by a document issued in accordance with applicable regulations.

Special transports may only take place on the basis of a permit issued at the request of the shipowner by the director of the office competent for the place of departure of the journey. special transport, a permit is issued for multiple rafting trips of sets (coupled rafting boats) on the Dunajec River on the section from km 167+500 m Sromowce Wyżne to km 148+950 m Krościenko nad Dunajcem, where it is stated that:

- number of passengers: up to 12 people in the period from April 1 to October 31,
 - the permit specifies the requirements regarding safety when organizing the rafting trip, equipment and marking of rafts, including life jackets in a number corresponding to the number of people on the coupled raftsmen's boat ,
 - the minimum crew composition for consolidated floating materials is determined, at the request of the shipowner, by the director of the inland navigation office, taking into account the system of their operation (www.isap.sejm.gov.pl/isap.nsf/).
- 4) Order No. 1/2021 of the Director of the Inland Navigation Office in Wrocław of May 25, 2021, on detailed conditions for the safety of ship traffic and berthing , which states, among other things:
- during the movement of coupled rafting boats on the Dunajec River, the distance between them cannot be less than 20 m,
 - during the movement of vessels on the Dunajec River, coupled rafting boats have priority over other vessels,
 - the ship's crew and other persons performing work on the vessel should be equipped with work and protective clothing and personal protective equipment appropriate to the work performed.
- 5) It is prohibited to sail:
- after exceeding the limit values of the water gauges WWŻ (Great Navigable Water - the maximum level on specific water gauges), at which navigation is still safe. This means that vessels are able to move along the designated navigable route and it is visible to the steerer, floating objects are not exposed to the influence of excessive centrifugal force in bends, they are able to overcome the force of the water current upstream, they fit under bridges and between their pillars, etc.),
 - down the waterway after crossing the water level limit - specified in Annex No. 2 to the Ordinance from the mouth of the Raba River to the mouth of the Dunajec River 580 cm at the Popędzinka water gauge , 138.1 km (www.edzienniki.duw.pl/).

2. Assessment of professional qualifications of raftsmen

The Polish Association of Polish Rafters conducts activities in the field of professional training of raftsmen, in which safety

aspects play a leading role, shaping high skills and physical fitness of raftsmen, which makes this process long-term, lasting many years. Being a raftsman begins with the initial recruitment, which is of a clan and family nature and concerns only men aged 18 to 30, registered for at least 10 years in the following towns: Szczawnica, Krościenko nad Dunajcem, Czorsztyn, Sromowce Niżne or Sromowce Wyżne . A candidate for a raftsman should first complete a special course and then complete a 3-year internship, initially as an assistant with two experienced raftsmen, and then with one - a master raftsman. After the internship, the candidate for a raftsman passes a theoretical exam on safety, boat construction, regulations, region, fauna and flora and a practical one confirming the skills of pushing off and landing on shore, steering, serving passengers, using lifelines and swimming. He also completes a first aid course. The examination committee consists of representatives of the board of the Polish Association of Pieniny Rafters, the Office of Inland Navigation and the Pieniny National Park. The candidacy for a raftsman and taking the raftsman exam cannot last longer than 6 years. (www.splywdunajcem.info/flisacy.html).

Three years of practice and passed exams give the qualifications of a journeyman, who can now sail with another journeyman or master. After another three years, one can take the master's exam. The master's exam is a personal choice of the raftsman. After another two years of practice, the master obtains the qualifications for training, which means that in order to train others, he must have experience of at least eight years.

A candidate for a raftsman was also required to obtain a sailing license - a carrier, excluding the management of ferries, and with an extension to the so-called integrated floating materials , authorizing the transport of people through the Dunajec River gorge. The requirements for raftsmen to have a sailing license resulted from the provisions of the Act of December 21, 2000 on inland navigation. The Act of July 7, 2023 amending the Act on inland navigation and the Act on working time on inland navigation vessels (Journal of Laws of 2023, item 1588) specified the positions held and the authorizations to manage integrated floating materials, which include raftsmen's rafts (www.aplikuj.pl/porady-dla-pracownikow/2912/flisak-praca-zarobki-doswiadczenie-zatrudnienie-przyszlosc). The deck area of rafts used for rafting down the Dunajec River Gorge is approximately 18 m² , which is why it is required to have at least the EU inland navigation seaman's qualification certificate, which entitles, among other things, to manage integrated floating materials with the product of length and width not exceeding 20 m² . inland navigation seaman's certificate it is necessary to have 3 months of experience in sailing on inland navigation vessels, or a certificate of completion of a school providing education in the profession of inland navigation technician, or a diploma of completion of higher education in inland navigation specialization.

3. Rafting Safety Assessment

Rafters more often say boat, passengers - raft, and according

to the Inland Navigation Act it is a consolidated floating material. The first raftsmen's boats were called dugout canoes, because they were hollowed out of a poplar trunk, then connected into two, three and more stable fours. Today, raftsmen's boats are built of spruce planks, connected with ropes. After each rafting trip, the raft is dismantled and transported in parts by cars to the place of re-launch. The raft has three rows of benches for 12 passengers, operated by two raftsmen at the front, the "master", and at the back, the "helper", who control the set using 3 m spruce poles, called "sprinklers". The front of the raft is covered with spruce branches, which, in addition to their decorative value, also act as a breakwater. Each raft has its own number. The raft consists of 5 boats that provide high transverse stability of the unit, and in the event of a puncture in one or even two elements, it can still float and does not sink. The raft is about 6 m long and 2.2 m wide at the back and 1.8 m wide at the front, and weighs about 500 kg. The technical condition of the raft is always checked by a commission before and during the season. (www.splywdunajcem.info/flisacy.html). Participants of the rafting trips are not required to receive life jackets, they can voluntarily and free of charge obtain them for the duration of the rafting trip in Sromowce at the service point or directly from the raftsmen.

The use of life jackets and other safety aspects related to the stay on the raft of various social groups during the rafting trip down the Dunajec River Gorge were examined based on the analysis of photographic materials, as presented in Table 1.

TABLE 1. CHARACTERISTICS OF THE PARTICIPANTS OF THE RAFTING TRIP AND THE EQUIPMENT OF THE RAFTS WITH RESCUE EQUIPMENT IN % [NUMBER OF PHOTOGRAPHS=83, NUMBER OF PASSENGERS=850]

Categories	Age		Number passengers on a raft		Outfit passengers		Vests lifesaving		Equipment rescue	
	N	%	N	%	N	%	N	%	N	%
1	62	7.3	9	1.1	13	1.5	85	100.0		0
2	12	15.9	1	13.6	23	27.5	0	0.0		100.0
3	37	44.6	6	85.3	27	32.4	0	0.0		0.0
4	28	33.3	0	0.0	20	24.9	0	0.0		0.0
Together	85	100.0	8	100.0	85	100.0	85	100.0	8	100.0

Legend

Age: 1: children, 2: youth, 3: adults, 4: seniors

Number of passengers on raft: 1: up to 10, 2: 11, 3: 12, 4: over 12

Passenger clothing: 1: none, 2: light summer, 3: autumn, 4: rainproof

Passenger life jackets: 1: none on board, 2: on board, 3: partially on participants, 4: on participants

Lifesaving equipment on board: 1: none, 2: throwing device, 3: life buoy, 4: other.

Based on the analysis of the visualizations, it was found that the vast majority of the participants in the rafting trips were adults and seniors (total 77.5%), most often dressed in autumn

or rain gear (total 59.6%), of whom the vast majority (85.3%) were twelve on board the raft. No life jackets were visible in any of the photos, while all the rafts had sleeve darts on the bow.

4. Assessment of rescue security for rafting trips

Rafting trips are provided by the raftsmen themselves, as well as on an ad hoc basis, on call water rescuers, firefighters of the Specialist Water and Diving Rescue Groups, GOPR rescuers, border guard soldiers. Specialized rescue training for these groups takes place on fast-flowing waters in Wietrznice on the Dunajec River or on the fairway in Kraków (www.gov.pl › attachment PDF).

As standard, the training program for operations on fast-flowing waters includes simulated rescue operations on artificial whitewater kayaking tracks and in natural conditions on watercourses, cascades, rapids, as well as in storm channels and particularly dangerous artificial water thresholds. This element of rescuer education, combined with training in medical, high-altitude and helicopter rescue, allows for the creation of a group of specialists prepared to conduct comprehensive and advanced operations in the field of providing assistance on fast-flowing waters from land, water and air. (www.wopr gliwice.pl/centralne-szkolenie-na-wodach-szybkoplynacych-i-powodziowych-maj-2024) . The topics covered in the training program are presented in Table 2.

TABLE 2. SPECIALIST TRAINING PROGRAM FOR FAST-FLOWING WATERS FOR RESCUE SERVICES PROVIDING RAFTING

LP	Course topics	Number of hours		
		Theory	Practice	Together
1	Hydrology	2	1	3
2	Safety of rescue operations	1	0	1
3	Rescue equipment	2	5	7
4	Rescue techniques	3	12	15
5	Water crossings	1	3	4
6	First aid	1	1	2
7	Organization of rescue operations	1	5	6
8	Together	0	28	38

Thanks to participation in training, raftsmen and rescue services can effectively perform numerous actions and secure water areas during rafting. These can be direct rescue interventions, carried out by raftsmen, temporarily preventing the effects of an accident in the water. In other situations, when these forces are insufficient, it is possible to call for help from water rescuers, firefighters from the water and diving groups of the State Fire Service, the Volunteer Fire Department, the Water Police, Border Guard soldiers or GOPR rescuers. Thanks to the multi-directional preventive actions of the organizers and rescue services, rafting is considered safe. However, there have been several tragedies in history. The biggest are: 1960 r. — cause: overloaded raft, lack of life jackets — result of 18 victims of the school trip, June 3, 2003 — capsizing of the raft, cause — overloading of the raft (16 students), inappropriate use of the raft for transporting people, no life jackets, drunk crew 2.33 per mille — result — 1 fatality ([www.orzeczenia.warszawa.so.gov.pl/content/\\$N/1545050000_00603_II_C_000273_2010_Uz_2013-04-23_001](http://www.orzeczenia.warszawa.so.gov.pl/content/$N/1545050000_00603_II_C_000273_2010_Uz_2013-04-23_001)), www.tvp.info/42640234/wypadek-podczas-splywu-przelomem-dunajca-nie-zyje-, May 15, 2019, - cause:

inattention and falling of the raftsmen from the boat, no life jackets – result: 1 fatality (www.polsatnews.pl/wiadomosc/2019-05-15/wypadek-na-splywie-przelomem-dunajca-flisakreanimowany/ , www.gazetakrakowska.pl/wypadek-podczas-splywu-dunajcem-flisacy-nie-pomagali-turystom-wideo/ar/622245).

IV. DISCUSSION

The organizer of the rafting trips on the Dunajec River Gorge is the Polish Association of Pieniny Rafters. The association's tasks include direct and proper service of the rafting trips by raftsmen, supervision of the floating fleet, keeping a register of boat sets, ensuring an appropriate number of boats, compliance with the regulations in force in the border zone, cooperation with the PPN Directorate, the Regional Water Management Board in Krakow and the Inland Navigation Office. As part of its organizational tasks, the association provides, among others, an appropriate material base, i.e. it takes care of the initial and final port, obtains water-legal permits, organizes training and exams for rafting patents and first aid.

According to the provisions of the statute, each regular member of the association (rafter and raftsmen master) is obliged to comply with the provisions, regulations and resolutions contained therein. Each raftsmen wishing to transport people must have a sailing license, previously an inland navigation carrier, and from 2023 an inland navigation sailor's certificate. On the basis of the Trip Regulations, the Association establishes the rules for serving tourists and specifies the scope of rights and obligations of the organizer and those serving the trip. The provisions of these regulations include provisions concerning, among others, the training of raftsmen and the procedure for obtaining the necessary authorizations, regulations regarding floating fleet, requirements for raftsmen's ports, rules of traffic order during the trip and the rights and obligations of passengers (www.decyzje.uokik.gov.pl/bp/dec_prez.nsf/.pdf).

According to the regulations, the rafting is carried out on integrated floating materials (rafts), and each raftsmen is obliged to have his own set of boats with a plate with the name and surname of the owner and a regional costume. From the moment of accepting passengers onto the raft, the raftsmen is responsible for their safe transport from the beginning to the end of the rafting and is obliged to inform passengers about their behavior during the rafting. The proper organization of the rafting related to the service of tourists is in turn the task of the Rafting Office, which includes, among others: supervision over strict compliance with the conditions specified in the permits and applicable regulations. In addition, its tasks include supervision over the proper performance of obligations resulting from the Rafting Regulations, regulation of traffic on the rafting and ensuring the proper maintenance of passenger piers (www.flisacy.com.pl).

When assessing the safe conduct of rafting trips along the Dunajec River Gorge, it is necessary to first verify the legal acts on the subject matter. The basic legal act is the Announcement

of the Marshal of the Sejm of the Republic of Poland of 20 February 2024 on the announcement of the uniform text of the Act on Inland Navigation, to which the Act on Inland Navigation of 21 December 2000 is an annex. It specifies the definition of a raft classified as integrated floating materials, where it is defined as a structure adapted for floating that is not a ship, but with an obligation to apply regulations on traffic safety, equipment, signalling and communication (ww.sip.lex.pl/akty-prawne/dzu-dziennik-ustaw/zegluga-srodladowa).

The consequence of the above act, updated in the Notice, is the Regulation of the Minister of Infrastructure of 28 April 2003 on the regulations for navigation on inland waterways, where it is written that consolidated floating materials should be directed by a person with appropriate qualifications, based on the permit of the inland navigation office, on which there should be no more than 12 passengers, equipped with life jackets equal to the number of people on board (www.isap.sejm.gov.pl/isap.nsf/). The confirmation of the above guidelines is another Regulation of the Minister of Transport, Construction and Maritime Economy of 8 November 2013 on safety during water tourism. Based on the above legal acts, the Director of Inland Navigation in Wrocław issued Order No. 1/2021 of the Director of the Inland Navigation Office in Wrocław of May 25, 2021 on detailed conditions for the safety of ship traffic and berthing, where he clearly specified the conditions for rafting trips along the Dunajec River gorge (www.edzienniki.duw.pl/). Taking into account the above legal regulations, it seems that they clearly specify the conditions for organizing and conducting rafting trips along the Dunajec River gorge, especially in terms of safety.

Based on the above legal regulations and a long tradition dating back 200 years, raftsmen associated with the Polish Association of Pieniny Rafters conduct raft trips along the extremely attractive landscape of the Dunajec River gorge, promoting the beauty of the landscape and nature (www.wikipedia.org/wiki/Polskie_Stowarzyszenie_Flisakow_Pieninskih_na_Rzece_Dunajec_w_Sromowcach). These raftsmen are characterized by high professional qualifications, because the association, respecting the applicable legal acts, has introduced many regulations in this area. A candidate for a raftsmen, after the initial recruitment, first completes a special course and then does a 3-year internship, initially as an assistant with two older, experienced raftsmen, and then with one - his master raftsmen, after which he can take the raftsmen exam, and after another 3 years of practice - for a master. After two years of practice, a master raftsmen obtains the qualifications to train others. (www.splywdunajcem.info/flisacy.html). The raftsmen exam is combined with the exam for the carrier's sailing license, conducted jointly with the Inland Navigation Office, and from 2023 for the inland navigation seaman. Until 2023, raftsmen obtained the inland navigation carrier's sailing license, excluding ferry management, and with an extension to the so-called integrated floating materials. (www.aplikuj.pl/porady-dla-pracownikow/2912/flisak-praca-zarobki-doswiadczenie-zatrudnienie-przyszlosc). Currently, according to the definition, the inland navigation carrier's sailing license is inadequate,

therefore inappropriate, because entitles to hold the position of a skipper of a ferry that does not move freely or a skipper of a transport boat without mechanical propulsion. The EU certificate of qualification of a seaman in inland navigation entitles to manage integrated floating materials. In general, many years of comprehensive training and practice lasting from 3 to 8 years provide a guarantee of effective and safe management of rafts with tourists through the Dunajec River Gorge.

Another aspect related to the safety of rafting is the equipment and its equipment and the dominant social cross-section of the passengers. The rafts used are subject to technical acceptance, are solidly made of wood, wide, have a small draft, so up to 12 passengers can stay safely in them during the rafting without major problems, even on rapid and rough sections of the river. An additional aspect of effective and safe navigation is a two-person crew. Despite the above, the organizers of the rafting are obliged to equip the rafts with life jackets, which they do not do. Based on the association's regulations, a passenger of the rafting can take a lifesaving device (life jacket) from the raftsmen, while other information provides that the vest can be taken free of charge at the customer service point. As a result of this voluntary nature and probably lack of awareness, passengers do not take them or put them on, although the regulations state that a combined water set should have as many individual rescue means as there are people on board, and people who cannot swim should have them on and properly fastened. Representatives of the Polish Association of Pieniny Rafters probably assumed that they provide the possibility of having a life jacket, but as a voluntary option, while considering that the solid construction of the rafts, usually favourable hydro-meteorological conditions and the competence of the raftsmen sufficiently ensure safety. At the same time, they state that there are four water levels in the Dunajec when rafting can take place, and at the highest, only masters have the right to rafting with tourists. It can be assumed here that less experienced, i.e. journeymen, apprentices in difficult conditions, could not cope with the challenges, and thus pose a threat to themselves and the travellers. Despite this, there is no mention of the obligation to wear life jackets on rafts. In the previously analysed legal acts it was written that the organisers are obliged to ensure safety by equipping the integrated floating materials with the necessary rescue equipment, and that persons who cannot swim should be required to wear life jackets. It should be borne in mind that the raftsmen serving the rafting are not able to determine the swimming skills of the passengers. They should also take into account the social cross-section of the passengers and the hydrological and climatic conditions. Based on our own research, it was found that the overwhelming majority of participants in the rafting were adults and seniors (total 77.5%), most often wearing autumn or raincoat (total 59.6%), of whom the overwhelming majority (85.3%) were twelve on board the raft, operated by two raftsmen, who had at their disposal one sleeve rafting line, located on the bow of the coupled floating set. No person was equipped with a life jacket. It can be assumed that in a moment of danger these passengers will need

support and emergency help, however, the effective actions of two raftsmen dressed in regional costumes, with one sleeve life jacket, from the deck of the raft seem doubtful. Therefore, all passengers on rafts should be required to wear life jackets. The raftsmen should also have life jackets, but their wearing, as in sailing, should result from the principles of so-called good sea practice. In general, it can be assumed that the organizers comply with the regulations related to the quality of coupled water sets, the number of passengers, their arrangement and service, but they do not respect the need to use life jackets. The exception to the provision of life-saving equipment on rafts are sleeve life jackets, located in the front part of the set.

The safety and security of tourists during the rafting trips are complemented by institutions with rescue services operating in the studied area. These are entities of water rescue, mountain rescue, police, fire brigade, as well as the raftsmen themselves, who regularly undergo specialist training on fast-flowing waters in the field of rescue.

In general, the organization and management of the Dunajec River Gorge raft trips should be highly assessed in terms of respecting legal regulations, the role of the Polish Association of Pieniny Rafters, the professional qualifications of the raftsmen and their related competences. There are also no reservations about the quality of the floating equipment used, but it should be clearly stated that the participants of the trips are not required to wear life jackets.

V. CONCLUSIONS

- 1) The organizers of rafting trips on the Dunajec River Gorge are bound by the legal acts in the form of acts, regulations and orders that seem to be unambiguously interpreted and sufficient for the safe organization of rafting trips.
- 2) The procedures developed by the organizer and the state administration regarding the multi-stage training and professional qualifications of rafters to effectively and safely perform the functions of an assistant, rafter or master should be highly appreciated.
- 3) The safety of the raft passengers is the direct responsibility of the rafting leaders, who can count on immediate rescue assistance from appropriately trained representatives of the Police, Fire Department, Border Guard, Water Rescue and Mountain Rescue.
- 4) The parameters and construction of the rafts, due to their high stability and buoyancy, create a sense of safety, but the participants of the rafting trip should be equipped with life jackets as a mandatory, not optional, measure.
- 5) The clients of the rafting trips are equally people of both sexes, with the dominance of adults, sitting in designated places, equipped with autumn or rain clothing. The organizer, not knowing the swimming skills, fitness, health, etc. of these people, while taking into account age, clothing that restricts swimming, should oblige them to remain on a combined floating material with fastened life jackets during the rafting trip.

- 6) It is recommended that state administration bodies conduct increased education on the applicable legal acts and on the effects of disregarding them, especially concerning the lack of equipping combined floating materials with life jackets, intended both for passengers and raft steersmen.

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