

**THE USE OF WARMIA AND MAZURY BEACHES  
BY YOUNG WOMEN FOR RECREATIONAL  
AND HEALTH PURPOSES**

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**A b s t r a c t**

The aim of the study was to collect information regarding the opinions and attitudes of young women towards the use of beaches for recreational and health purposes. The study was conducted in 2011 during obligatory P.E. classes at the University of Warmia and Mazury in Olsztyn and involved a group of 298 first-year female students aged 19–20. The study was carried out with a diagnostic survey method with the use of an anonymous questionnaire. The survey revealed that beaches in Warmia and Mazury are widely available and easily accessible for women residing in this region, yet the respondents did not appear to show an interest in going there. Despite the availability of beaches, over half of the respondents did not report frequenting them. The main reason for not spending leisure time on beaches in Warmia and Mazury is their poor standard and the students' unwillingness. The majority of the women who reported going to the beach sought consumption and entertainment rather than recreational and health oriented activities.

**REKREACYJNO-ZDROWOTNE ZACHOWANIA MŁODYCH KOBIET  
NA PRZYKŁADZIE PLAŻ WARMIŃSKO-MAZURSKICH**

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Słowa kluczowe: studentki I roku, plaże na Warmii i Mazurach, wykorzystanie.

### Abstrakt

Celem badań przeprowadzonych wśród młodych kobiet była diagnoza opinii i postaw na temat wykorzystania przez nie plaż na Warmii i Mazurach w celach rekreacyjno-zdrowotnych. Badania przeprowadzono w 2011 r. podczas obowiązkowych zajęć wychowania fizycznego na Uniwersytecie Warmińsko-Mazurskim w Olsztynie i objęto nimi 298 studentek I roku w wieku 19–20 lat. Zastosowano metodę sondażu diagnostycznego z wykorzystaniem anonimowego kwestionariusza ankiety. Stwierdzono dużą łatwość dostępu do plaż kobiet żyjących na Warmii i Mazurach. Plaże cieszyły się jednak małym zainteresowaniem studentek. Ponad połowa kobiet w wieku 19–20 lat nie uczęszczała na nie wcale. Brak spędzania czasu wolnego na plażach warmińsko-mazurskich był spowodowany głównie brakiem chęci ze strony ankietowanych oraz niskim standardem wyposażenia infrastruktury tych miejsc. Większość kobiet odwiedzających plaże nastawiona była bardziej na styl konsumpcyjno-rozrywkowy niż rekreacyjno-zdrowotny w postaci wypoczynku aktywnego na świeżym powietrzu.

## Introduction

Warmia and Mazury is among the most beautiful regions of Poland and due to its uniqueness is likely to become an extremely attractive recreational destination for foreign tourists. A recent ranking for the New Seven Wonders of the Natural World staged by the Swiss Foundation New Seven Wonders is a good indicator of this. The landmarks appointed by this organization as potential candidates for the New Seven Wonders of the Natural World included the Amazon (the biggest river in the world), the Halong Bay in Vietnam (featuring thousands of limestone karsts and isles), the Falls of Iguazu on the Brazilian-Argentinian border, the volcanic isle of Jeju off the southern coast of South Korea, the National Park Komodo in Indonesia, Puerto Princessa in the Philippines (the longest underground river in the world), and the Table Mountain in the Republic of South Africa. Noteworthily, only 28 out of 440 landmarks submitted for the competition from all over the world qualified for the final, including Polish Mazury which, what is more, qualified to the final 14 (2011 edition of the New Seven Wonders of the Natural World).

The region's uniqueness results from its geographic location (north-eastern part of Poland, partial access to the Vistula Lagoon) and diversity which includes a large number of basins and ancient forests. It should be mentioned that the region of Warmia and Mazury is often referred to as The Great Masurian Lakes District or "The Land of a Thousand Lakes". This is because there are nearly 1100 lakes and over 3000 bodies of water in this region, which provides excellent conditions for the development of water recreation. According to the data collected by the Sanitary and Epidemiological Station in Olsztyn in 2010, there are nearly 214 beaches in Warmia and Mazury: 208 neighboring lakes and 6 on the Vistula Lagoon.

Recent findings revealed a lack of literature concerning the use of lake beaches for recreational and health purposes by the residents of Warmia and

Mazury, as well as a lack of monographs concerning their needs for a whole range of beach recreation. Very little research has adequately addressed the management of beaches and related recreational areas (MICALLEF and WILLIAMS 2002). Therefore, a survey which reveals the attitudes of young women towards the ways of spending their leisure time at Warmia and Mazury beaches deserves attention.

The aim of the survey that involved 1<sup>st</sup> year female students enrolled at the University of Warmia and Mazury in Olsztyn (UWM) was to diagnose their attitudes towards the use of beaches in Warmia and Mazury for recreational and health purposes. Raising the question of beach popularity in our region and determining the key factors which influence it can be a source of very valuable information for beach managers as well as associated industries. Identifying the current social needs and emerging trends in the lifestyles of potential beachgoers in given environment will facilitate the development of beach recreation in Warmia and Mazury. To accomplish this aim, respondents were asked to answer the following questions:

1. Do you have easy access to beaches in your place of permanent residence?
2. How and how often do you use beaches in your place of permanent residence?
3. What do you think of the standard of the beaches in Warmia and Mazury?
4. Do you go to the beach for health, consumption or entertainment purposes?

## **Materials and Methods**

The survey was conducted in 2011 during obligatory PE classes at the UWM in Olsztyn and involved 298 1<sup>st</sup> year female students aged 19–20. Students of Polish universities and other tertiary institutions are required to complete a minimum of two semesters (60 hr) of P.E. lessons of their choice e.g., swimming, martial arts, tennis etc. All participants willingly agreed to participate in the study, after being informed about the aims of the experiment. The research was carried out in compliance with the Declaration of Helsinki and prior consent from the bioethical Committee of the UWM. All women from randomly selected groups of students took part in the survey. As the respondents were all residents of Warmia and Mazury, the cohort should be recognized as homogenous and appropriate for this kind of survey. A detailed analysis of the cohort is given in Table 1.

Table 1

## Characteristics of the cohort surveyed

Place of permanent residence											
Village		cities below 20,000 population		cities between 20 and 50,000 population		cities between 50 and 100,000 population		cities over 100,000 population		total	
<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
82	27.52	133	44.63	55	18.46	11	3.69	17	5.7	298	100
Mother's Education											
Primary		secondary		university		total					
<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
32	10.74	159	53.36	107	35.91	298		298		100	
Father's Education											
Primary		secondary		university		total					
<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
30	10.07	156	52.35	112	37.58	298		298		100	
Monthly Cost of Living											
<PLN 1000		PLN 1000–1500		PLN 1500–2000		PLN 2000 <		total			
<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
182	61.07	105	35.23	11	3.69	0	0	298		298	100

Explanations: *N* – number of responses, % – percentage share

Table 1 reveals that the highest percentage of women (44.63%) were residents of cities with a population below 20,000 population, a considerable percentage (27.52%) were village residents, whilst the lowest percentage (3.69%) resided in cities between 50,000 and 100,000 in population. The majority of the students' mothers and fathers had completed their secondary (high school) education (53.36% and 52.35% respectively), with a slightly lower percentage having a university degree (35.91 and 37.58% respectively), and the lowest percentage of parents having only a primary education (10.74 and 10.07% respectively). As regards to the monthly budget, the majority of the women under survey (61.07%) had below PLN 1000 per month, a considerably lower percentage (35.23%) had between PLN 1000–1500, and none of the women had over PLN 2000 per month.

A diagnostic survey method with the use of anonymous questionnaire was applied in the survey. Students taking part in the research were instructed how to fill in the questionnaire and given sufficient time to do so. Moreover, it was examined whether the number of women involved in the survey was sufficient and thus, whether the cohort could be recognized as representative. The following formula was applied to perform this task (1):

$$n = \frac{\mu_{\alpha}^2}{4d^2}, \quad (1)$$

where:

$d$  – the maximum (acceptable) error of estimation,

$\mu_{\alpha}$  – the value from the normal distribution table  $N(0.1)$  at the acceptable confidence coefficient  $1 - \alpha$ . It was assumed that for the accepted confidence coefficient  $1 - \alpha = 0.90$  ( $\mu_{\alpha} = 1.64$ ) the average estimation error doesn't exceed 5% (KREFFT and CHOSZCZ 2000, NOWAK 2002). Formula (1) made it possible to calculate that the minimum number women who ought to be surveyed was 269 and therefore lower than the number of people involved in the experiment (298). Thus, the sample was found to be representative for the population of UWM female students and appropriate for such kind of survey. The survey results were processed statistically using Statistica Pl software (STANISZ 2008).

## Results

Table 2 and Table 3 present opinions on the accessibility and use of the beaches in Warmia and Mazury.

Table 2

Distance to the Beach

Place of permanent residence									
Below 1 km		between 1 and 2.5 kms		between 2.5 and 5 kms		between 5 and 10 kms		total	
<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
48	16.11	106	35.57	107	35.91	37	12.42	298	100
Beach type									
Municipal or guarded beach		wild beach		private beach		no beach		total	
<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
147	49.33	130	43.62	0	0.00	21	7.05	298	100

Explanations as in Table 1

The largest number of beaches are located only a short distance from the place of residence: 1–2.5 km (35.57%) and 2.5–5 km (35.91%), yet a considerable percentage of respondents live within 1 km of a beach (16.11%) or between 5 and 10 km away (12.42%). Municipal and wild beaches accounted for a similar percentage (49.33 and 43.62% respectively). A low percentage of women reported the lack of beaches in their place of residence and nobody reported private beaches in the region under survey (Table 2).

Table 3

The use of beaches by the Olsztyn UWM women students

Use of beaches									
I use them		I do not use them				total			
<i>N</i>	%	<i>N</i>	%		<i>N</i>	%			
141	47.32	157	52.68		298	100			
Frequency of use									
> 5 times a year		6–15 times a year		16–30 times a year		30 < times a year		total	
<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
83	58.86	58	41.14	0	0.00	0	0.00	141	100

Explanations as in Table 1

Over half of the students surveyed (52.68%) did not frequent Warmia and Mazury beaches. From the group of women who went to beaches, 58.86% went there fewer than 5 times a year and the rest (41.14%) between 6 and 15 times a year. Nobody went to the beach more than 16 times a year (Table 3).

Table 4 and Table 5 present the female students; reasons behind going or not going to beaches, and their evaluation of the standard of Warmia and Mazury beaches.

Table 4

Reasons for using or not using beaches in Warmia and Mazury

I use because:	<i>N</i>	%
I can swim	32	11.68
I sunbathe	82	29.93
I paddle a kayak or ride a water bicycle	7	2.55
Take a motor boat trip	31	11.31
Ride a jet ski	0	0.00
I have a meal	31	11.31
I drink alcohol	30	10.95
I dance at the disco	23	8.39
I have a nice time	38	13.87
Total	274	100
I do not use because:	<i>N</i>	%
Water is dirty	19	9.36
I cannot swim	7	3.45
Infrastructure is poor	27	13.30
It is too far	38	18.72
I do not want	33	16.26
I prefer aqua parks	28	13.79
Water is cold	25	12.32
Weather is bad	26	12.81
Total	203	100

Explanations as in Table 1

Table 5  
Scoring and detailed evaluation of the standard of beaches in Warmia and Mazury

Point Scoring Evaluation of the Standard of Beaches		
Scale	<i>N</i>	%
1	27	9.06
2	32	10.74
3	64	21.48
4	71	23.83
5	73	24.50
6	29	9.73
7	2	0.67
8	0	0
9	0	0
10	0	0
Total	298	100
Detailed Evaluation of the Standard of Beaches		
Evaluation Criteria	<i>N</i>	%
It is clean	164	12.34
It is dirty	136	10.23
Dirty water	108	8.13
Clean water	116	8.73
Water recreation equipment unavailable	168	12.64
Water recreation equipment available	66	4.97
Slide unavailable	73	5.49
Slide available	7	0.53
Cafeteria available	87	6.55
Cafeteria unavailable	10	0.75
Bar available	89	6.7
Bar unavailable	68	5.12
Sporting fields available	2	0.15
Sporting fields unavailable	14	1.05
Disco available	44	3.31
Disco unavailable	98	7.37
Changing room available	16	1.2
Changing room unavailable	63	4.74
Total*	1329	100

Explanations: *N* – umber of responses, % – percentage share, \* – respondents could indicate more than one facility

The main determinants for frequenting beaches in the Warmia and Mazury region include sunbathing (29.93%), having fun (13.87%), the opportunity to swim (11.68%), dancing at the disco (10.95%) and drinking alcohol (8.39%). The reasons behind not spending leisure time at beaches include too long of a distance (18.72%), unwillingness (16.26%), preferring aqua parks (13.79%), cold and dirty water (12.32 and 9.36% respectively), a poor infrastructure (13.30%), and bad weather (12.81%) – Table 4.

To allow for a comprehensive evaluation of the standard of Warmia and Mazury beaches, the respondents awarded the beaches with points on a scale of

1–10 (1 being the lowest standard) in addition to giving a detailed (descriptive) evaluation. The point scoring evaluation method revealed that the overwhelming majority of the students' assessment of beach standard ranged from 3 to 5 points (21.48, 23.83, and 24.50% respectively). None of the students awarded the beaches with top points (8–10). As regards the detailed (descriptive) evaluation, the responses of surveyed women varied, including their opinion of what the beaches lack/offer. A similar percentage of female students indicated that beaches are clean/dirty (12.34 and 10.23% respectively), the water is clean/dirty (8.73 and 8.13% respectively), there are/are not any bars (6.7 and 5.12% respectively). Other responses were more varied, with a relatively high percentage of respondents indicating the unavailability of water equipment (12.64%), discos (7.37%), and cafeterias (6.55%), with a considerably lower percentage of stating that beaches lacked changing rooms (4.74%) and sports fields/courts (1.05%).

## Discussion

As the region of Warmia and Mazury is strongly affected by high unemployment, maximizing the use of beaches may constitute a critical economic factor, which can contribute to economic recovery. This task should be given much importance as it corresponds with the primary assumptions of tourism, which are that beaches should be fully exploited to manage people's leisure time (ARIZA et al. 2008). The beaches off the coast of Spain, Australia, Greece, Egypt, Lebanon, Croatia and the United States of America prove how much can be done in this respect (de DIOS 2012). In Spain, for example, tourism accounted for 11.4% of its GDP in 2003, and the so called "sun and sand model" predominates in the Spanish tourism industry (AGUILÓ et al. 2005). For that reason, beaches should be considered one of the main national assets and their potential exploited for recreational purposes (BRETON et al. 1996). This would provide an opportunity to improve the quality of life of the region's inhabitants.

Beach management should be based on a specially designed plans the directives of which aim to help exploit the potential of coastal areas for recreational purposes (e.g. by the correct arrangement of sunbeds and umbrellas) (BRETON et al. 1996). Otherwise, stagnation in the development of beaches in Warmia and Mazury will persist (PRIESTLEY and MUNDET 1998). Their adaptation to the individual needs of potential users should be supported by the municipalities whose duties would include preparing special "recovery programmes" financed from EU funds and government subsidies. Moreover, the programmes should consider the future commercialization of beaches,



including access fees paid for environmental protection, when the tax-exemption period necessary to develop investments is over. In countries where beach tourism is well developed, beach managers pay special fees depending on the number of tourists (beds) visiting the tourist centre. The rates are determined according to the Environmental Management Systems, and exemplary rates for the beaches in Valencia (Spanish Mediterranean coast) are about €700 per square metre (YEPES 2004). Well-prepared and well-managed beaches be of great socio-economic value; by attracting a large number of tourists they improve the local people's quality of life and offer other economic advantages (DE DIOS 2012).

According to MICALLEF et al. (2002), effective beach management may result in:

- increased beach use (HOUSTON 1996),
- lower maintenance/restoration costs related to beach management (COOPER et al. 1996),
- improved coastal defence (HOLMES and BAVERSTOCK 1996),
- increased conservation value,
- high multiplier effect on the socio-economic structure of the beach locality (NELSON and WILLIAMS 1997).

Pursuant to a new approach, beaches should be considered as a multi-dimensional system based on the interactive cooperation of their natural, socio-economic and administrative components (BIRD 1996, JAMES 2000). If beaches are regarded as coastal environmental units, their management should be integrated into a broader framework, such as the Integrated Coastal Zone Management (ICZM). Recent recommendations for the ICZM include the adaptation of the ecosystem management approach that can and should be adapted to beach management. The proper implementation of ecosystem management should be based on ten specific principles (GRUMBINE 1994), including: data collection, monitoring, adaptive management, interagency cooperation, organizational change, humans embedded in nature, and the establishment of values. In order to successfully implement this approach, there is a need to support applied research on this subject matter (UNDERWOOD 1995).

According to SIMM et al. (1995, p. 147), beach management is the “the process of managing a beach, whether by monitoring, simple intervention, recycling, recharge, the construction and maintenance of beach control structures or by some combination of these techniques, in a way that reflects an acceptable compromise in the light of available finance, between the various coastal defence, nature conservation, public amenity and industrial objectives”.

Another crucial factor for the system of management to consider are the needs of potential customers seeking a wide-range of services offered by beaches and recreational centers (BRETON et al. 1996). The primary needs of tourists enjoying their leisure time on beaches include pro-health activities, entertainment and consumption. Each of these needs may generate income for recreational centres with beaches. Therefore, the survey results of our research should be considered a valuable comparative material for other observations in this field throughout the world. The respondents' answers reveal a number of characteristic trends in their attitudes, views, and needs which can be applied in practice.

The geographic location of the permanent place of residence determines the use of beaches by the surveyed women only in the case of those living 5–10 kilometers from the nearest beach. However, the majority of study subjects resided less than 5 kilometers away. A survey conducted by DUTTON (2001) revealed that nearly 40% of human population live at a distance of up to 100 kilometers from the shore and that this can be considered an attractive distance for tourist business which involves beaches. Ironically enough, nearly 19% of the respondents, none of whom live further than 10 km from the beach, stated that the distance (too far) was a factor negatively influencing their beach attendance. Such discrepancies in the answers lead to the assumption that the analyzed students were simple “looking for excuses” rather than identifying a legitimate problem.

Another interesting fact that seems to contradict the research subjects' opinion is the aspect of water cleanliness. According to the Report on the Condition of the Natural Environment in the Warmia and Mazury voivodeship in 2010, the ecological and chemical condition of lake water in this region was found to be good with the exception of the Vistula Lagoon (SMOTER et al. 2011). This would indicate that the students' answers regarding this factor were not true and should be interpreted rather as the lack of interest in this manner of spending leisure time.

A serious concern arises from the fact that fewer than 11% of the respondents confirmed their swimming skills, and hardly anybody reported other forms of physical activity that can be done at the beach (only a small number of women reported using kayaks and water bicycles). Thus, it seems that 19–20 year old women spending their leisure time at the beach are not interested in physical activity (a health aspect) but enjoy entertainment and consumption aspects such as sunbathing, drinking alcohol, eating, and dancing at the disco, many of which can have detrimental effect on health.

A considerable percentage of respondents preferred aqua parks to beaches, which might be explained by bad weather, cold water or a poor infrastructure of the beaches in Warmia and Mazury (the primary reasons indicated).

The climate typical of this region of Poland is a crucial factor reducing the attractiveness of beaches. Owing to a short summer period (June – September) and frequent weather changes, tourists opt for aqua parks and spas offered by hotels and recreational centers.

The majority of respondents gave a low ranking of the standard of beaches. The responses of the detailed evaluation varied greatly but were far from promising. This should serve as motivation for beach management to improve their standards, and attract more people.

## Conclusion

The survey revealed good accessibility to beaches in the Warmia and Mazury region which however, did not increase their attractiveness. Despite the easy access to beaches, over half of the surveyed women did not frequent them and those who did, didn't do so often. The primary reasons for not spending leisure time at Warmia and Mazury beaches included unwillingness and a low standard of their infrastructure. The majority of respondents who reported going to beaches sought consumption and entertainment as opposed to outdoor physical activity.

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## References

- AGULÓ E., ALEGRE J., SARD M. 2005. *The persistence of the sun and sand tourism model*. *Tourism Manage.*, 26: 219–231.
- ARIZA E., JIMÉNEZ J.A., SARDA R. 2008. *A critical assessment of Beach management on the Calatal coast*. *Ocean. Coast. Manage.*, 51: 141–160.
- BIRD E.C.F. 1996. *Beach Management*. Chichester, UK, Wiley, 281.
- BRETON F., CLAPÉS L., MARCUÉS A., PRIESTLEY G.K. 1996. *The recreational use of beaches and consequences for the development of new trends in management: the case of the beaches of the Metropolitan Region of Barcelona (Catalonia, Spain)*. *Ocean. Coast. Manage.*, 32: 153–180.
- COOPER N.J., KING D.M., HOOKE J.M. 1996. *Collaborative research studies at Elmer Beach, West Sussex, UK*. [In:] *Partnership in coastal zone management*. Eds. J. Taussik, J. Mitchel. Samara Publishing Ltd., Cardigan., pp. 369–376.
- X3DE DIOS A.P., SALVAT M.C., GARRIDO E.M., SANCHEZ-CABEZA J.A. 2012. *Environmental quality of Sitges (Catalonia, NE Spain) beaches during the bathing season*. *Ocean. Coast. Manage.*, 55: 128–134.
- DUTTON I.M. 2001. *Coast to coast*. UNESCO Paris.
- GRUMBINE R.E. 1994. *What is ecosystem management?* *Conserv. Biol.*, 8(1): 27–38.
- HOLMES C.W., BEVERSTOCK P. 1996. *The Beach Management Plan for Lancing and Shoreham*. [In:] *Partnership in coastal zone management*. Eds. J. Taussik, J. Mitchel. Samara Publishing Ltd., Cardigan., pp. 361–376.

- HOUSTON R. 1996. *International tourism and US beaches*. [In:] *The CERCular*. Ed. L.Z. Hales. Newsletter of the Coastal Engineering Research Centre, USA., CERC-96-2: 1–3.
- JAMES R.J. 2000. *From beaches to beach environments: linking the ecology, human-use and management of beaches in Australia*. *Ocean. Coast. Manage.*, 43: 495–514.
- KREFT R, CHOSZCZ D. 2000. *Statystyka. Zagadnienia wybrane*. Wydawnictwo Wszechnicy Mazurskiej, Olecko.
- MICALLEF A., WILLIAMS A.T. 2002. *Theoretical strategy considerations for beach management*. *Ocean. Coast. Manage.*, 45: 261–275.
- NELSON C., WILLIAMS A.T. 1997. *Bathing water and health implication*. [In:] *Water pollution IV, modeling, measuring and prediction*. Eds. R. Rajar, C.A. Brebbia. Glamorgan Heritage Coast, UK, Computational Mechanics Publications., pp. 175–183.
- NOWAK E. 2002. *Zarys metod ekonometrii*. PWN, Warsaw.
- PRIESTLEY G., MUNDET L.I. 1998. *The post stagnationphase of the resort cycle*. *Ann. Tourism. Res.*, 25: 85–111.
- New seven wonders <http://fakty.interia.pl/galerie/swiat/siedem-nowych-cudow-wiata/>, access: 07.06.2012 r.
- SIMM J.D., BEEACH N.W., JOHN S. 1995. *A manual for beach management*. [In:] *Proceedings of Conference on Coastal Management; 95-Putting Policy into Practice.*, UK: Institution of Civil Engineers., Bournemouth, pp. 143–162.
- SMOTER K., WRÓBLEWSKA H., KONIECKA H., et al. 2011. *Monitoring jezior*. [In:] *Raport o stanie środowiska województwa warmińsko-mazurskiego w 2010 roku*. Ed. D. Budzyńska. Wyd. EDYCJA, Wojewódzki Inspektorat Ochrony Środowiska w Olsztynie, Olsztyn, pp. 22–45.
- UNDERWOOD A.J. 1995. *Ecological research and (and research into) environmental management*. *Ecol. Appl.*, 5(1): 232–247.
- STANISZ A. 2008. *Practical course in statistics with STATISTICA PL using examples from medicine*. StatSoftPolska, Cracow.
- YEPES V. 2004. *La gestion de las playas bashndose en normas de calidad y medioambiente*. II Congreso Internacional de Ingenieria Civil, Territorio y MedioAmbiente. Santiago de Compostela.