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THE INFLUENCE OF PROTECTED AREAS ON MILITARY TRAINING AREAS IN TERMS OF SUSTAINABLE DEVELOPMENT

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Abstract. Protecting natural resources, for example through a functioning of environmentally protected areas at present is actually connected with eco-development concept, which helps to avoid some mistakes and socio-economical wastes. Creating and functioning of protected areas must be correlated with the development of the neighboring areas, in such a way that it would not be a threat for natural environment. Such neighboring areas are for example military training areas, which partly conserve the environment, as rich nature reserves, including protected areas are located on the majority of them. Therefore, the aim of the article is to examine the connection of protected areas on active military training areas. The article contains the diagnosis of military training areas in connection with protected areas and evaluation of the role of military training areas in nature conservation. The activity of the army on training areas, in view of current intensity and form of activities, should be regarded as not detrimental for nature.

Keywords: protected areas, military training areas, sustainable development

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JEL Classification: Q26, Q01

1. Introduction – sustainable development and protected areas

We begin to appreciate the natural environment when it is seriously endangered and the level of degradation becomes a barrier for further economic and social development, at the same time leading to the worsening of the quality of life of a human being. The protection of the existing and newly created protected areas, whose main objective is nature conservation, is an opportunity to stop this negative situation Nature conservation by, for example functioning of protected areas, is currently strongly connected with the concept of sustainable development, which contributes to minimization and avoiding mistakes as well as socio-economic losses (Zielińska 2009, p. 108).

The notion of sustainable development is stipulated by the Environmental Protection Law (Journal of Laws Environmental Protection) in section 3 subsection 50, where sustainable development is understood as such a social and economic development, where political, economic and social activities are integrated with maintaining environmental balance and stability of basic natural processes, in order to guarantee the possibility to satisfy the basic needs of particular communities and citizens both of the present and future generations. The concept of sustainable development, directly as the first one, indicates the necessity of integral approach to the economic, human and environmental capital. The sectoral approach, that is a separate approach to particular

capitals, damages the process of development as such (Kryk & Zielińska 2007, p. 102).

Protected areas encompass the following forms, as stipulated by the Act on Environment Protection: nature reserves, national parks, landscape parks, protected landscape areas and Nature 2000 areas (Journal of Laws Act on Environment Protection). These areas are particularly predisposed to effective and successful implementation of the concept of sustainable development (Zielińska 2011, p. 87).

The creation and functioning of protected areas must be correlated with the development of adjacent/ neighboring areas, so that they do not pose any danger for natural environment (Zielińska 2009; 2014). Military training areas should be regarded as such areas, as they partially protect the environment, as rich natural resources cover considerable parts of their areas, including protected areas. Therefore, the aim of the article will be to diagnose the connection of the location of protected areas on active military training areas in Poland.

Thus, the article presents:

- the role of military training areas in view of nature conservation,
- protected areas in military training areas in Poland.

The method of normative material analysis regarding protected areas and military training areas was applied in the article.

2. Military training areas vs nature protection

The general public usually considers military training areas as a devastated moonscape. This opinion is widespread especially among those who have never been to a military area, or who lack the necessary information. People are often convinced that operations in the military areas cause large-scale contamination by chemical or radioactive combat substances, fuels, destruction of vegetation and soil, killing animals or disturbance by excessive noise. These negative factors, if they do occur, usually affect only small areas within the military areas which are intensively used for training. Much larger areas of military districts, however, serve only as a buffer zone for the intensively used parts and military operations are almost never carried out here, or only irregularly and very rarely. Such extensive buffer zones are needed primarily for safety reasons. They often serve as important refuge for endangered species and communities. Human activities with negative impact on the natural environment, such as over-intensive agriculture and forestry, construction, industry and recreation, are excluded in the long term from the areas of active military operations. Moreover, the regular disruption of land cover during military operations supports the maintenance of several habitats of community interest (it often replaces the natural function of wind on drift sands). Military areas are isolated from the surrounding landscape for decades. Its biological value is several times greater than of the surrounding countryside (Klimová & Šíbl 2009, p.28).

Global defense spending is \$US 1753 billion annually or approximately 2.5% of the world GDP. Significant time and resources is spent in training 28 million defense personnel worldwide. Much of this training on land takes place within specifically designated military training areas (MTAs). Globally, the size of the military training areas estate is likely to be very large, but just how large is unknown. Our preliminary analyses has identified that military training areas cover at least 1% of the Earth's surface. This figure is believed to be closer to 5–6% as no verifiable data exist for the majority of Africa, South America and Asia. Military training areas occur in all major global ecosystems and have the potential to increase the global protected area network by at least 25%. Military training areas therefore have an important complementary role to play in global conservation. However, public policy makers, the scientific community, government agencies, and nongovernmental organizations have largely ignored military training areas as a conservation resource. We propose four key policy changes to recognize the potential major contribution to conservation that military training areas can play:

- 1) better document the environmental values of military training areas,
- 2) develop integrated military training areas land management models,

- 3) increase dedicated financial resources for the land management of military training areas, and
- 4) strengthened global leadership to manage military training areas as an environmental resource (Zentelis & Lindenmayer 2015).
- 5) Given that they host such important natural heritage, it is not surprising that considerable portions of the military estates in the EU scientifically qualify for inclusion in the Natura 2000 network, and have indeed been proposed (for examples: in the Netherlands 50% of the total military estate have been included into Natura 2000, in Belgium 70% was included, 45% of Danish military areas has been included into Natura 2000). The armed forces are already important stakeholders in Natura 2000 by the very fact that military areas have been proposed for the network, but they are also potential partners. Natura 2000 has much to gain from a partnership with the military owners and managers of pSCI (Areas of Community Importance) and SPAs (Special Protection Areas). Natura 2000 is by no means intended to be a system of totally closed reserves, and multi-functional use (including military activities) of the areas is one of the essential characteristics of the network (Kustrová, p.61).

Although some military training areas are degraded as a result of high-intensity training activities and exercises, many remain in relatively good ecological condition. Fort Carson, Colorado, in the United States is an example of a military training areas that is heavily used but supports high quality natural prairie (Herring 2004). Military training areas can maintain high habitat value because they are not subject to pressures like logging, land clearing, agriculture, and urbanization which are degrading the formal reserve systems of many nations (Mascia & Pailler 2011). This is, in part, because they contain unexploded ordnance (Havlick 2011). Thus, for ecosystems already in reserve systems but at risk of degradation, similar ecosystems within military training areas may play an „insurance” role by maintaining the values and biodiversity of those environments.

Both active and abandoned military areas have – recently begun to be perceived as areas with high species diversity, hosting many protected and endangered species. Biologists have gradually discovered that they serve as refuges for organisms which are rare or vanishing from the countryside (Reif *et al.* 2011). Research shows that these sites are of the same, and for some taxa even of greater importance than reserves with similar types of habitats (Cizek *et al.* submitted). Areas influenced by military activities are of key importance especially to organisms requiring disturbed and early successional stages, sites which have practically disappeared from the landscape in the past decades (Marhoul & Zámečník).

The current location, extent, and environmental values of military training areas are poorly understood. Preliminary analysis indicates that due to their sheer size, distribution, and coverage of an array of ecosystems, military training areas have the potential to make a significant formal contribution to biodiversity conservation, being recognized as a global biodiversity resource in their own right (Zentelis & Lindenmayer 2015).

3. Protected areas on selected military training areas in Poland

In many cases, closed areas such as military training areas, are located within the limits of protected areas. The access to these areas is formally forbidden for the civilians, they are off-limits to the public, which significantly reduces their usage. These limitations contribute to maintaining rich habitats also as a result of a specific usage of these area by the army.

Military units, as other economic entities, are subject to the Environmental Protection Law and Nature Conservation. On military training areas exist such forms of nature protection as: natural reserves, Nature 2000 areas and some rarest plant and animal species in Poland. The high natural values of military training areas might be proved by the fact, that many Nature 2000 areas are located there - on 10 MTA's there are as many as 19.(Military training areas-eldorado...).

Table 1. The biggest active military training areas in Poland

MTA	Location	Status	Description
Biedrusko	north from Poznań, between Biedrusko and Chludowo	active	Land forces training area, used mainly by Stefan Czarnecki Land Forces Training Center as tank training area.
Czarne	north and south-west from the Town of Czarne	active	Tank training area.
Drawsko Pomorskie	south from the town Drawsko Pomorskie	active	Land Forces Training Center, equipped state- of-the- art training area for land and air forces, often used for NATO exercises.
Jagodne	in the woods of Łuków, North –west from the town of Łuków	active	Land training area, academic training area of Polish Air Force Academy.
Lipa	North-west from the village of Lipa	active temporarily	Land forces training area.
Nadarzyce	north-west from the village of Nadarzyce	active	Air forces training area (the biggest in Europe), equipped with bomb working site. Former air port and planes in its neighbourhood are used as targets. In the past together with training areas in Borne Sulinowo and Okonek it created a complex of training areas of Russian Army North Group
Nowa Dęba	east from the town Nowa Dęba	active	Land forces training area.
Orzysz	south-east from the Town of Orzysz	active	Managed by the Unit of Training Areas of Land Forces Orzysz with its headquarters in Bemowo Piskie.
Radomyśl nad Sanem	at the River San, near the mouth of the river to Wisła	active temporarily	Training area used for river crossing exercises and for building pontoon bridges.
Strzepcz	south from the town of Lębork, between the villages Strzepcz and Osiek	active temporarily	Academic training area of Polish Naval Academy.
Ślubowo	between towns Mława and Chorzele	active temporarily	Training area of Air Force Institute of Technology.
Toruń	south from the town of Toruń	active temporarily	Training area for artillery exercises, one of the oldest on Poland and in the world.
Ustka-Wicko Morskie	at the coast, between Jarosławiec and Ustka	active	Air Forces training area, also anti-aircraft forces and Polish Navy.
Wędrzyn	south east from Sulęcín	active	Land forces training area, equipped for example with tank training site and special forces working site
Zielonka	North east from Warszawa	active temporarily	Used less intensively although the area is still used by the Military Institute of Armament Technology
Żagań-Świętoszów	south and south east from Żagań	active	Center of Military Training, joined areas of Żagań and Świętoszów, the base for the MTAs is also the former post-German training area in Pstrąż.

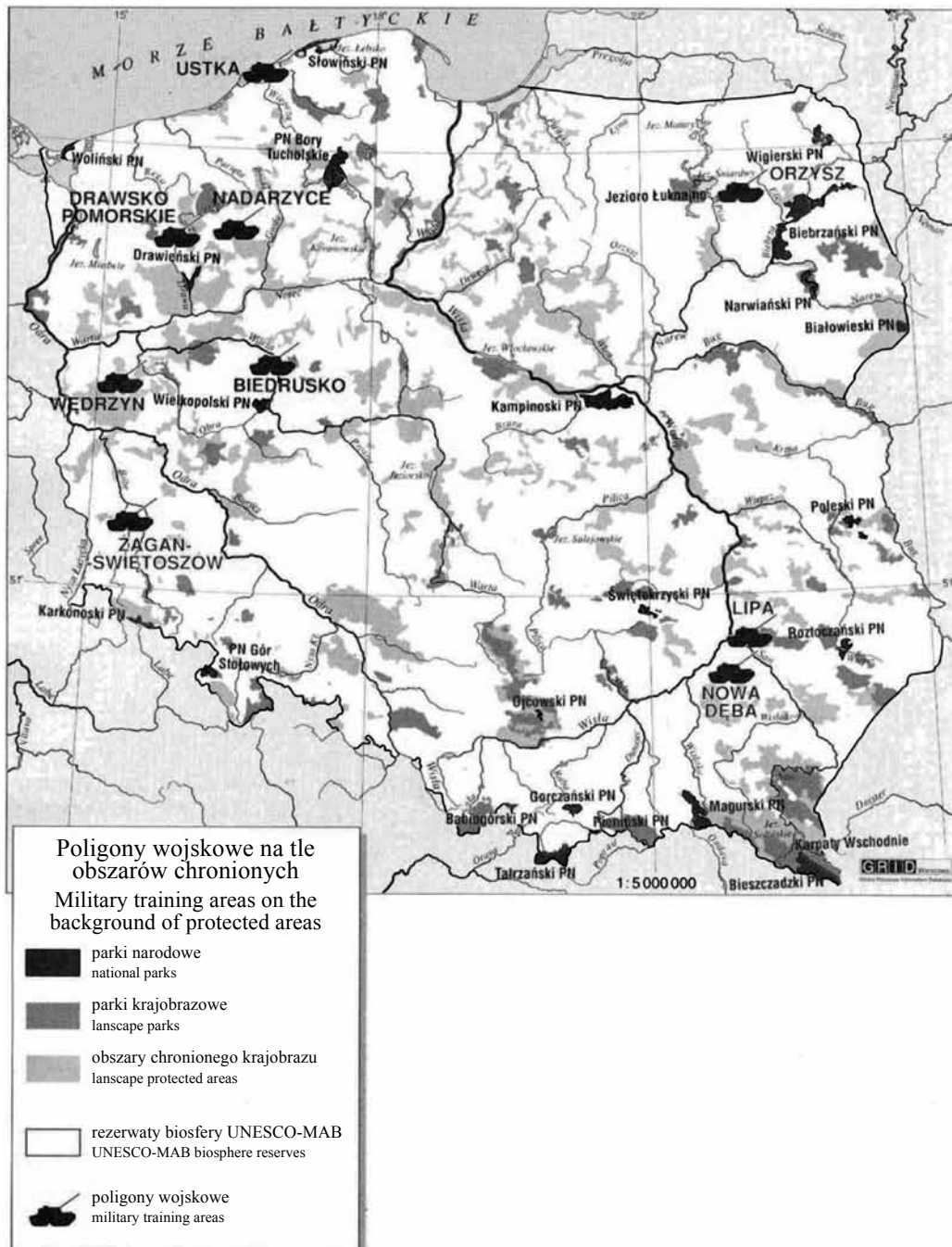
Source: Politowski 2015, p. 38

The facilities called closed areas in the woodlands are connected with the existence of military units or training areas thereon. (Cieszewska, Adamczyk *et al.* 2011, p. 62). Woodlands, which are often under legal protection in selected nature conservation forms, are located on military training areas.

The most common nature resource located in military training areas are dry heathlands. Military training areas usually foster the preservation of such heathlands. It is often the case, that huge heathlands, having the area of even a few thousand hectares, arise and exist on military training areas as a consequence of the activity happening thereon. Different forms of military activity, such as ploughing heathlands in order to clean the area after the exercise, is beneficial for the nature and such activity does not have to damage the habitat. At the same time, as a result of military activity for example the trees are removed. (Pawlaczyk 2002, p. 237).

Protected areas rich in natural values exist on many military training areas (map 1). The most important military training areas will be described below in terms of nature protection.

Map 1. Military training areas in connection with protected areas



Source: Maintenance of arms and....

In military facilities, in Międzyrzecz Fortification Region, there is the biggest European overwintering area of bats. Every year over 30,000 bats spend winter there. They come from half of Europe. And in the richest Polish caves their number does exceed 2,000 at the most. (Military training areas-eldorado...).

On the other hand in Jagodne military training area it is possible to meet many species of animals: a moose, a roe deer, a deer, a boar, a wolf, a marten. There are lesser spotted eagles and white-tailed eagles, in the forests surrounding the military training area two nests were located. An osprey, a very rare in our part of the country, has been observed in this area in the recent years. All birds come to the military training area to pray. The most common bird for the area is the European nightjar. It is estimated that in the forests of Łuków exists at least 1% of the Polish population of the bird, and on the training area several couples have their nests. (Military train-

ing areas-eldorado...). On the area Nature 2000 Jezioro Lubie and Dolina Drawy there are vast heathlands on Military Training Area in Drawsko Pomorskie, which are maintained as result of conducted military activity. Despite intensive military exercise, including NATO forces, the heathlands appear to be a convenient biotope for a wolf, and the training area permanently hosts a herd of European bison. (Pawlaczyk 2002; Training Center Army Drawsko...). In Biedrusko, there is a Protected Landscape Area Biedrusko, which is almost totally located on the area of MTA "Biedrusko". The area is characterized by extensive open spaces, where are numerous bushes of different kind. One should note here: the orchis, the Dianthus superbus, the Iris sibirica, the Trollius europaeus and the Ononis spinosa. The area was included into Nature 2000, as a special area of habitat protection, there is also a nature reserve "Grogulec", which protects well maintained poor fen. (<http://ebiedrusko.pl/>; <http://lopuchowko.poznan.lasy.gov.pl/>).

Yet area, the MTA Orzysz encompasses the military training area Orzysz and its surroundings located to the east from Lake Śniardwy. A very characteristic landscape element of MTA Orzysz are vast, open glades with sandy grasslands and heathlands, which arise as a result of military activity. Additionally, the military training area is a valuable bird sanctuary. The existence 11 bird species were identified and it is one of the most valuable staging place of the black grouse in Poland and one of the most important nesting areas of the little crane. (Szymkiewicz & Mellin 2009). The Rembertów MTA is located within the limits of Lasy Rembertowsko-Okuniewskie, growing in the east part of Warsaw Valley. The natural peculiarity of this area are fields of open sands (Dune Szwalnicka) and the mosaic of plants connected with natural process of consolidation of inland dunes. A very interesting element of former working areas of armored forces are dry heathlands with dominating common heather. Keeping the lines of fire, using the training areas by armored units, fires have hindered the succession processes and have maintained impermanent non-forest vegetation (Regional Directorate of environment protection in Warsaw).

The MTA Ustka-Wicko Morskie is a well-known sea training area located at the Protected Landscape Area „Pas Pobrzeża na zachód od Ustki”. The area was created in order to protect a part of the Baltic Sea shore with existing there characteristic plant communities of beaches, dunes and cliffs as well as peaty planes along with Lake Wick at the back of them and for the preservation of the unique landscapes of Middle Pomerania. (The Polish Military Aviation; <http://rzeszow.rdos.gov.pl/>).

On military training areas Żagań-Świętoszów there are vast heathlands and birch woods and alder carr in wet depressions. At the training area in Żagań exists a complex of dry heathlands having the area of app. 600 hectares, which is located within the working areas of the MTA. The heath patches are separated by the MTA roads, sometimes by woods. The army cuts down and mows the newly growing trees on a large area. Whereas, during the period of common heath bloom the space of open training area is used by bee-keepers. (Pawlaczyk 2002, p. 238). At the training area in Nowa Dęba, in Puszcza Sandomierska, there are heathlands used at different intensity for military training. In places used intensively by the army, there are vast areas without plant cover (missile crates, tank roads, burnt areas, quicksand) (Pawlaczyk 2002, p. 238). A few animal species exists there as well, such as: the wolf, the European fire-bellied toad, the Eurasian blue tit (Regional Directorate of environment protection in Rzeszów).

On the area Nature 2000 „Czerwony Bór” a smaller patches of dry heathlands exist, located at the military training area. The heath cover is maintained at the level of 75-90 %. However, in Nature 2000 and natural reserve “Diabelskie Pustacie” there are vast heathlands, which exist also at the MTA. These areas are largely protected actively by cutting down trees and mowing, as a result of which their surface is preserved and the process of overgrowing posing a danger to heathlands regards only separate patches. (Pawlaczyk 2002, p. 235).

The last one from the described MTA is the training are in Wędrzyno, where at the working site exists a rich complex of dry heathlands and grassland.

4. Conclusions

The most important fact is, that on the areas of protected areas there is a concentration of many functions (environmental, social and economic), which in turn lead to arising socio-economic conflicts concerning the functioning of these areas, and this problem also concerns military training areas.

Army activity at the military training areas, at the current intensity and form of conducted activity, need to be recognized as beneficial for the nature. Army training makes the working areas of MTA inaccessible for the civilians, industry and other form of interference. That, in turn, provides sufficient level of nature protection on military training areas and fosters the development of many protected species.

It must be noted that the importance of military training areas in terms of nature protection and maintaining biodiversity in Poland and other European countries is beyond doubt. Many important habitats for the European Union community, especially those which require such protection, as heathlands and different types of meadows are mostly represented in Poland on military areas and have been included into protected areas as Nature 2000 areas, natural reserves and protected landscape areas. The management of training areas should be adjusted in view of the particular activity conducted by military units on those areas. The fate of these priceless habitats, particularly achieving a good level of their protection, is largely dependant on the change of usage of the land, the change of military training needs and in the case of liquidation of military training areas on the active management of those areas. Paradoxically, some of the disturbance that occurs during military activities can be beneficial for conservation. Pioneer communities of fauna and flora depend upon disturbance; in nature this can be soil erosion, wildfire, flooding etc., to which certain species are adapted. In the absence of disturbance, such communities evolve into other habitats through the process of natural succession. Bombing, shelling, prescribed burning for training purposes and armoured vehicle manoeuvres can mimic these natural disturbances and create pioneer communities, or maintain them against natural succession. Thus bare sand and soil, uncommon habitats which rapidly evolve through succession but host a range of rare plants and invertebrates, are constantly created in military areas used for such exercises (Gazenbeek 2005).

While the primary purpose of military training areas will always be military training, their large area, global distribution and representativeness, means they are likely to have significant environmental and conservation values. Indeed, if managed appropriately, military training areas have the potential to augment the global terrestrial protected area network by a conservatively estimated further 4 percent beyond the existing ~12% of the earth's land surface (Zentelis & Lindenmayer 2015).

Military units, which manage the training areas, should be aware that the protected areas are not only disturbances in functioning of those training areas but also the functioning of those training areas gives a chance to preserve unique natural resources. A thorough research concerning the ecological importance of military training areas has not been conducted yet.

No other areas except the core zones of the national parks and reserves are nowadays so rich on environmental values like the military polygons with a unique charm (Seidl & Chromý 2010).

References

- Cieszewska, A.; Adamczyk, J.; Giedych, R.; Waldykowski, P. 2011. The concept of the development of tourist infrastructure in the Forest zone of Promotional-guide methodical. The School of Life Sciences, Warsaw: p. 62.
- Cizek, O.; Vrba, P.; Benes, J.; Hrazsky, Z.; Koptik, J.; Kucera, T.; Marhoul, P.; Zamecnik, J.; Konvicka M. (submitted), Conservation potential of abandoned military areas matches that of established reserves, Plants and butterflies in the Czech Republic, PLoS ONE.
- Gazenbeek, A. 2005. *LIFE, Natura 2000 and the military*, Office for Official Publications of the European Communities, Luxemburg.
- Havlick, D.G. 2011. Disarming nature: converting military lands to wildlife refuges, *Geogr. Rev.*, 101(2): 183-200.
- Herring, H. 2004. Room to maneuver, *Nat. Conserv.* 54(4): 1-11. Available on the Internet: <http://ebiedrusko.pl/> (25 September 2015)

<http://lopuchowko.poznan.lasy.gov.pl/> (20 September 2015)

Journal of Laws Environmental Protection of the Republic of Poland 2008 no. 25, Item 150.

Journal of Laws Act on Environment Protection of the Republic of Poland 2009 No. 151, Item 1220

Klimová, K.; Šíbl, J. 2009. Tajomný svet pieskových dún vo vojenskom obvode Záhorie, *Štátna ochrana prírody SR*, Banská Bystrica: p. 28.

Kryk, B.; Zielińska, A. 2007. The Role of Human Capital in Education for Sustainable Development: The Case of Poland, *Transformations in Business & Economics* 12(6): 100-113.

Kustrová, M. Military training areas - places with high nature conservation value', pp.59-66, Available on the Internet: http://unob.cz/eam/Documents/Archiv/EaM_2_2013/Kustrov%C3%A11.pdf (1 September 2015).

Maintenance of arms and military equipment and the protection of the environment. Working Papers.

Marhoul, P.; Zámečník, J. Abandoned military areas, *Abandoned military areas*, pp. 111-113, Available on the Internet: http://muzeum-hk.cz/files/jaroslav_zamecnik/introduction.pdf (5 September 2015).

Mascia, M.B.; Pailler, S. 2011, Protected area downgrading, downsizing, and degazettement (PADDD) and its conservation implications, *Conserv. Lett.* 4(1): 9-20.

Military training areas-eldorado rare species, Available on the Internet: <http://naukawpolsce.pap.pl/> (31 January 2015)

Pawlaczyk, P 2012, 4030 Dry heaths (Calluno-Genistion, Pohlio-Callunion, Calluno-Arctostaphylion), *Environmental Monitoring Library*: pp. 230-246.

Politowski, B. 2015. *Traverse the conglomerate. Armed Poland* 1: 38.

Regional Directorate of environment protection in Rzeszów, Available on the Internet: <http://rzeszow.rdos.gov.pl/> (25 September 2015)

Regional Directorate of environment protection in Warsaw, Available on the Internet: <http://warszawa.rdos.gov.pl> (10 September 2015)

Reif, J.; Marhoul, P.; Čížek, O.; Konvička, M. 2011. Abandoned military training areas are an overlooked refuge for at-risk open habitat bird species, *Biodiversity Conservation* 20: 3645–3662.

Seidl, T.; Chromý, P. 2010. Environmental conservation in military training areas-source of spatial conflicts?, *EUROPA XXI*, vol. 21: 103-115.

Szymkiewicz, M.; Mellin, M. 2009. Area Proving ground Orzysz, *The Natura 2000 areas in Warmian-Masurian Voivodeship*, pp. 75-78.

The Polish Military Aviation, <http://polot.net> (25 September 2015 r.)

Training Center Army Drawsko-environmental protection, Available on the Internet: <http://cswldrawsko.wp.mil.pl/> (7 September 2015)

Zentelis, R.; Lindenmayer, D. 2015. Bombing for Biodiversity-Enhancing Conservation Values of Military Training Areas, *Conservation Letters* 8(4): 299-305.

Zielińska, A. 2009. Abilities of running an economic activity on protected areas, *Economics and Sociology* 2(2): 108-113.

Zielińska, A. 2011. Applying multidimensional comparative analysis for the assessment of the concept realization of sustainable development for the protected areas, *Economics and Sociology* 4(1): 87-96.

Zielińska, A. 2014. Analysis of Sustainable Management Forms on Protected Areas, *Economics and Sociology* 7(1):. 183-192. DOI: 10.14254/2071-789X.2014/7-1/16