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MARINE MAMMALS IN NAVAL OPERATIONS

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Abstract: *This paper aims to provide an overview how to employ marine mammals in naval operations and also to identify possibilities of involving mammals in support of the Romanian Naval Forces. The article uses domain observation and comparative analysis of how to employ marine mammals in the actions of modern fleets. For this purpose, we set out to identify the possibilities of using mammals for military scopes. Also, we will provide historical aspects of involving mammals in military activities in the Black Sea. In addition, we will offer relevant implications and perspectives regarding the use of marine mammals by the Romanian Naval Forces. The novelty of this article comes from the motivation to bring to the attention of Romanian Naval Forces the approach of employing mammals and developing research in the underwater domain based on training marine mammals. The present article is addressed especially to the master students and the personnel of the Naval Forces, and also to those who contribute to the implementation of feasible ideas at the level of the Romanian Naval Forces and intend to develop the underwater domain in order to discourage actions of a potential adversary.*

Keywords: *marine mammals; military mammals; military dolphins; naval operations; Black Sea.*

Introduction

In this approach, we intend to highlight certain aspects regarding how to employ marine mammals in naval operations and also to identify possible solutions of involving mammals in support of the Romanian Naval Forces.

The idea of our article is related to the fact that security at sea has grown as a european strategic issue over the last decade. International reliance on maritime trade, the threats posed at sea by state actors in Black Sea and also the resurgence of state-on-state naval rivalry in Black Sea has conducted to the security awareness of maritime network, including ports, harbours and critical national infrastructure. The threats to this network have also grown and evolved. They now include the potential use of improvised explosive devices and naval mines to block access to ports and to attack critical national infrastructure or to target ships at sea. One such counter is the use of marine mammals for military scopes.

An objective we have proposed is to raise the awareness of master students and the personnel of the Naval Forces, and also those who contribute to the implementation of feasible ideas at the level of the Romanian Naval Forces. Also, we intend to highlight the importance of developing the underwater domain in order to discourage actions of a potential adversary, the importance to have ambiticious projects and last but not the least to continue the tradition of training marine mammals for naval operations.

Using marine mammals for military scopes

Marine mammals can be used in a variety of situations[1] such as inspect underwater pipelines and other objects by swimming along the pipes and marking the leaks where they are cracked. They can also can be used for research work and carry devices that measure water parameters and other data at different depths.

In accordance with the U.S. Navy Marine Mammal Program, mammals can be trained in order to identify and signal enemy sea mines, to detect and mark the location of sea mines

[1] Revista Marina Română, volumul nr. 57, 1998, p. 17.

floating off the bottom, to mark the location of mines on the sea floor or buried in sediment and also to swiftly identify safe corridors for the initial landing of troops ashore. Also, marine mammals can be used such as defense unit for harbor installations and ships against unauthorized human swimmers. In addition, mammals can be used to locate and attach recovery hardware to underwater objects such as practice mines and last but not least for attack missions against people or ships.

In the Russian press[2], more precisely the daily Izvestia was mentioned that the Pentagon has been defending its nuclear submarines with the help of dolphins and sea lions in the Kitsap nearby Washington region since 2010. Moreover, the director of the Murmansk Institute of Marine Biology, Ghenadi Matimov has declared that with the help of American sea lions, mines are placed on installations, the bottom of the enemy sea is filmed and radiation is recorded.

Central Intelligence Agency(CIA) reported in 1978[3], that Soviets could train marine mammals to be used in military operational system such as diver assistance and equipment recovery in the Black Sea. Also, mammals could be trained for more sophisticated tasks such as placement of packages on ships and ship protection and for other areas than Black Sea.

All in all, the marine mammals can be used in a variety of modes such as spy on the adversary's sea line of communication, as detector for improvised explosive devices and naval mines, as diver assistance and equipment recovery.

Historical Aspects of involving military marine mammals in the Black Sea region

Romanian Program

The idea of Romanian program had started from the issue of recovering lost torpedos and antisubmarine missile during the live fire exercises. When the torpedoes are operated they require precautionary measures and if it is possible their recovery, due to the high price of manufacturing.

The divers's services have been and are still used to search for and recover lost objects from the bottom of the sea. In such operations, divers are subjected to high operational effort due to their natural biological limits, determined by the working under pressure, the diving speed to that depth, as well as the working time for the search.

The origins of the program date back to 1970[4], when the Black sea dolphins were studied and trained for the benefit of Romanian fleet. In order to implement this program, it was set up a laboratory, as a subunit, support ship arranged and equipped for capturing dolphins.

The main objective of the laboratory was to know and to identify the biological potential of the Black Sea, especially dolphins of the species Delphinus delphis.

The project started by studying and establishing methods for atraumatic capture of dolphins and specifying the elements of efficient organization for capturing. Once the dolphins were captured, they were deployed in Mangalia harbour improvised pool in order to start the training.

At the same time, the aim was to improve the capture methods, to carry out studies in order to optimize the conditions of controlled adaptation, to know and systematically monitor the hydrological and climatic factors of Mangalia port and harbor, as well as to carry out survival experiments of mammals to determine resistance at new living conditions.

The idea behind this objective was to verify the ability of dolphins to adapt to seawater conditions in harbors or ports, and improving their natural resilience, preventing critical

[2] https://www.bzi.ro/rusia-foloseste-din-nou-delfini-pentru-a-si-apara-bazele-militare-149149, accessed on 09.02.2021.

[3] https://www.cia.gov/readingroom/docs/DOC_0000969804.pdf, accessed on 09.02.2021.

[4] Dan Leahu, Maria Grosu, *O viață dedicată mării și Marinei*, Naval Academy ,,Mircea cel Bătrân" Publishing House, Constanța, 2013, p. 273.

situations through timely interventions or arrangements were guarantees to substantiate the concept of use dolphins for military purposes.

The methodology[5] applied in the training of dolphins aimed in particular at the formation of specimens trained to signal the presence of combat divers or of mechanical-electrical devices for moving underwater the elements of combat divers.

The Diving Center was set up in 1980, in addition to the main objective of scientific research on human penetration underwater, takes over, the side of applied research for experimentation and application of procedures and methods of using dolphins for execution, separate or in cooperation with divers, missions for the Navy.

The Diving Center, due to the lack of optimal conditions for carrying out the task of training dolphins for military purposes, based on the collaboration relationship, established a partnership with the Dolphinarium from Constanţa. The partnership consisted of the obligation of the Diving Center to capture dolphins and for the Dolphinarium, in order to train for the fun program for spectators, and it, in turn, undertook to host the marine animals of the Diving Center and ensure optimal conditions for their training in military purposes.

In the process of our research, one of the instructors at the Diving Center who trained the well-known dolphin George, practically the smartest dolphin of the Romanian program, has related a lot of aspects about the training session. Every day the dolphin George needed constantly affection like a child. The performances notably could be to identify sound-emitting and silent objects, to respond to simple commands and also to trust the dolphin. The instructor mentioned that he was on charge of the George dolphin for about one year.

In accordance with the instructor's testimony, when the program was moving to the next level of operating in natural environment, the program had died. Actually, after the Revolution from december 1989, the Naval Forces lost its interest for the program. After 1990, the dolphins had displayed their immense talents at Dolphinarium from Constanța.

The dolphin training laboratory operated within the Diving Center until 1990.

Russian Program

In accordance with Central Intelligence Agency (CIA) report from 1978[6], the Soviets marine mammal program has started in the summer of 1965. All the stations for marine mammals were located in Black Sea. In the beginning soviets experienced numerous problems related to winter open sea enclosures. After the collapse of the Soviet Union almost all animals with a leading trainer and the unique equipment were shipped to Iran[7].

The Russian newspaper, Komsomolskaya Pravda, wrote that Iran has bought the dolphins from Ukrain on the cheap.

In accordance with Stutton[8], analyst who specializes in submarines and sub-surface systems, Russian Black Sea Fleet marine mammals unit is located at Kazachya Bukhta near Sevastopol, actually it was main marine establishment during the Cold War. The unit is still active after the annexation of Crimea in 2014 and currently is known to use dolphins. It may also use seals.

The Russian Navy deployed marine mammals in Syria during September-December 2018 according with satelitary image. Marine mammals were positioned inside the harbour as sentries to defence units. The most likely the animals were shipped from Black Sea training stations.

In conclusion, Romania is one of the pioneers country who started studying mammals intelligence and how to use marine mammals for military purposes.

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[5] Marian Moşneagu, *Destine sub marele pavoaz. Viceamiralul inginer Grigore Marteş – 100 de ani de la naştere*, Universității Naționale de Apărare „Carol I" Publishing House, București, 2014, p. 50.

[6] https://www.cia.gov/readingroom/docs/DOC_0000969804.pdf, accessed on 09.02.2021.

[7] http://news.bbc.co.uk/2/hi/middle_east/670551.stm, accessed on 24.02.2021.

[8] http://www.hisutton.com/Russian-Navy-Base-in-Tartus-Syria.html, accessed on 25.02.2021.

Nowadays, Russia has proved the efficiency of military marine mammals program during the recent naval operations.

Arguments for and against using mammals in military scopes

From ancient times human beings have tried to control and dominate the animals in order to increase their military capabilities. Using marine military mammals in various activities aiming to exploit their potential in an ostile environment represent an other challenge for humans.

Marine mammals[9] can perform operational tasks which are well beyond even a trained combat diver's capabilities. Marine mammals can dive to 300 m, stay for several minutes, make repeated dives and ascend quickly without experiencing decompression problems. Diver's ability to localize auditory signals is poor in water[10]; in murky water his vision is restricted severely. By contrast, some marine mammals which use sonar, both active and passive, can locate both sound-emitting and silent objects.

The use of marine mammals is a real gain due to the fact that they can be used regardless of hydro-meteorological conditions.

Marine mammals can be trained for operational purposes. Marine mammals can carry objects, tools and lines from the surface to divers and between submerged divers. The abilities of mammals could be refined to place instrument packages on moving and on stationary targets.

For marine mammals used in military scopes, food is usually associated with training or performances, leading to detection of improvised explosive devices and naval mines.

Sea enclosures to hold animals in captivity and then training in their natural environment can be associated with the hibrid term of captivity. Most captive marine mammals should receive health veterinary care, introducing regular vitamin and mineral pills in their ration of fish. Other sea enclosures should be used only for medical reasons.

The benefits of having sea enclosures can be exploited by Naval Forces to offer unique services. There are a growing number of public display facilities internationally, that allow tourists to swim with captive dolphins. One such interactions is so-called Dolphin-Assisted Therapy[11], usually directed by health service professional, where touching and swimming with dolphins is used as a means to motivate or reward a disabled child or adult.

Methods of capturing cetacean are extremely traumatizing, invasive, stressful and potentially lethal[12]. The process of chasing and net encirclement of dolphins can decline recovery of dolphin populations and even cause death of entangled animal.

In the past, everyone was glad that the Dolphinarium dolphins came from the Black Sea, now they are disappointed that they were brought from China[13]. Here it proves that the Romanians agreed to fish for mammals and run them for the delight of the public. In this sense, we can opt for the variant of mammals from captivity that have multiplied in captivity and thus no longer violate the agreement from 1996[14].

The annual mortality rates of marine mammals has not pertinent information showing us the difference between the rate in captivity and rate in the wild. On the one side in the wild the mammals can face many threats than in captivity because of human exploitation and even pollution. On the other hand in captivity they should experience vastly improved survivorship profiles when exposed to modern veterinary care and safety from natural and human-caused hazards. In conclusion the hybrid captivity would provide mammals the chance of interacting

[9] Revista Marina Română, volumul nr. 56, 1998, p. 22.
[10] M. Degeratu, P. Aron, S. Ioniță, *Manualul Scafandrului*, Per Omnes Artes Publishing House, Bucharest, 1999, p.100.
[11] *The case against Marine Mammals in captivity*, The Human Society of the United States and the World Society for the protection of animals, 2009, p. 25.
[12] *Ibidem*, p. 5.
[13] https://www.mediafax.ro/life-inedit/trei-delfini-din-china-au-fost-adusi-la-delfinariul-din-constanta-6208091, accessed on 24.02.2021.
[14] https://lege5.ro/Gratuit/ge3dsmbs/acordul-privind-conservarea-cetaceelor-din-marea-neagra-marea-mediterana-si-din-zona-contigua-a-atlanticului-din-24111996, accessed on 24.02.2021.

with natural environment, however , even though for short time very benefic for development of survivorship profile.

In terms of training mammals, they could be teach wearing devices in such a mode to keep animals from eating harmfull objects. This is necessary for trainers to have more control over the animals, after training or missions they could be rewarded with food. The opponents could highlight also arguments over how mammals are stressed to wear muzzles and deprive mammals of interacting with the environment.

The use of marine mammals also has disadvantages such as: the risk of them not returning to trainers, both during missions and training. Marine mammals could contact diseases and the risk of them being killed, or injured by other marine mammals of the same species, which protect their territory.

Another concern of critics could be how mammals are to be deployed in area of operation and how they are transported there. They claim that animals become stressed because their environment changes. The tentative program could be limited only for teritorial waters or to any area of water over which Romania has jurisdiction. The main idea of the program is to discourage actions of a potential adversary in Black Sea something simillary used for the term „fleet in being".

Regarding the efficiency, undoubtely marine mammals are over the technological systems, because marine mammals perform in their natural environment[15] and dolphins have much better sonar compared to the cutting edge technologies.

In what regard financial aspects, using marine mammals for military scopes could be cheaper than having submarines and other sophisticated remotely operated vehicles which are very expensive and needs a lot of costs for maintenance. Actually, marine mammals are undetect technologies with minimum risks for humans operators and also it could achieve great performances. Despite, the costs of US marine mammals program is higher because of roughly 200 mammals which are in program and they intend to sent sea mammals on long trips accompanied by handlers and a portable veterinary clinic with staff, Romania program could trained only for regional scope and having all the facilities in the naval base.

Perspectives regarding the use of marine mammals by the Romanian Naval Forces

In accordance with the article, Romania's Naval Forces at crossroads[16], more than ever, the implementation of the concept critical thinking highlighted the Romanian military potential under the current force structure, identifying the lack of modern ships and modern equipments.

In the process of elaboration of the article, we have expressed our intend to add value to the improvement of Naval Forces and to highlight the importance of continuing tradition to train marine mammals for military scopes.

Why is project marine mammals important? The project is important due to the efficiency of mammals in identifying improvised explosive devices, on moving and on stationary targets and also for lower costs than having operational submarines or sophisticated remotely operated vehicles.

As a result, maybe it is time to have more ambitious and more efficient projects.

The Romanian decision makers should direct their attention to revigorate the Diving Center's research department in order to bring back international reputation in the underwater domain through conducting marine mammals researches.

First of all, as in the case of the submarine, Naval Forces should continue the tradition to train marine mammals.

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[15] Lucian Valeriu Scipanov, *The use of marine mammals in the underwater warfare*, International Scientific Conference Strategies XXI, București, 2015, p.6.

[16] George Vișan, *Romania's Naval Forces at crossroads*, Romania Energy Center, 2017, p. 22.

The Diving Center should set up a veterinary department to provide the necesary health veterinary care and to run the program of training marine mammals. This department could be developed by a political decision in the medium term into a real veterinary hospital which could bring important capital to the benefit of the Navy.

Romanian Naval Forces should cooperate with the Dolphinarium from Constanţa in order to specialize their personnel or even hire trainer caretakers of the Dolphinarium.

In the next phase of project, sea training and transition to hybrid captivity, improvised sea enclosures should provide the necessary facilities nearby seaside, avoiding port infrastructure where poor quality of water and pollution could affect the survival of the mammals[17]. Then should start controlled sea training, to identify improvised packages on ships and naval mines.

In the third phase of project, development and tourist attraction, building the necessary infrastructure should be established based on political decision between involved ministries and actually tourist attraction fund in the long term.

The benefits of having sea enclosures can be exploited by Naval Forces to offer unique services, such as Dolphin-Assisted Therapy[18], usually directed by health service professional.

Also, the Romanian Naval Forces should set up or maybe to enlarge the public relations bureau. The impact of such bureau could have international echos and at the same time to discourage possible adversary.

In terms of legislative aspects, the Romanian Naval Forces must respect the agreement on the conservation of cetaceans in the Black Sea, the Mediterranean and the Atlantic Ocean from 24.11.1996[19]. Moreover, the project should stimulate the breeding of captivity animals and also, the transition from hybrid captivity to their freedom. Marine mammals retired could regain their freedom if they wanted to.

For the project, Romanian decision makers could attract USA, our security strategic partner, to cooperate with us in such a way to determine them to get more involved in the project. Marine mammals are not as restricted as warships under the Montreaux Convention in Black Sea. Therefore, it would be a great opportunity for US to use their marine mammals in Black Sea as much as they want. The Naval Forces may initiate such a program under the guidance of Naval Research and Development Center from San Diego which is the most experienced in the world.

In conclusion, the project could be viable with more active implications of navy personnel, could support naval operations and could offer unique services to the Romanian Naval Forces.

Conclusions

In conclusion, the use of marine mammals in naval operations is a great advantage for those states that have developed such programs. Marine mammals could be used in a variety of modes such as spy on the potential adversary's sea line of communication, as detector for improvised explosive devices and naval mines, as diver assistance and equipment recovery.

Romania is one of the pioneer countries who started studying mammals intelligence and how to use marine mammals for military purposes.

Among the advantages of the program, marine mammals can be used regardless of hydro-meteorological conditions, can stay under water for a long time, can dive at great depths and get to the difficult points inaccessible to humans. It is not necessary to have a support ships

[17] Dan Leahu, Maria Grosu, *O viață dedicată mării și Marinei*, Naval Academy „Mircea cel Bătrân" Publishing House, Constanța, 2013, p. 274.

[18] *The case against Marine Mammals in captivity*, The Human Society of the United States and the World Society for the protection of animals, 2009, p.25.

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with under pressure cylinder, diving suits and maybe the most important fact that the human being is not exposed to diving risks.

The project is important due to the efficiency of mammals in identifying improvised explosive devices, on moving and on stationary targets and also for lower costs than having operational submarines or sophisticated remotely operated vehicles.

The project should stimulate the breeding of captivity animals and also, the transition from hybrid captivity to their freedom.

Romanian Naval Forces and US Navy should cooperate in order to implement and develop a military marine mammals program in Black Sea region. Therefore, it would be a great opportunity for US to use their marine mammals in Black Sea as much as they want. The Naval Forces may initiate such a program under the guidance of Naval Research and Development Center which is the most experienced in the world.

Nowadays, more than ever, Romanian Naval Forces should have developed unique services and capabilities in order to count when the conflict occur.

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