



The First World War in the Mar Piccolo of Taranto: First case of warfare ecology?



Carmela Caroppo*, Giuseppe Portacci

National Research Council, Institute for Coastal Marine Environment, Unit of the Talassografico "Attilio Cerruti", Via Roma, 3 - 74123 Taranto, Italy

ARTICLE INFO

Article history:

Received 29 June 2017

Received in revised form

20 September 2017

Accepted 23 September 2017

Available online 7 October 2017

Keywords:

Shellfish farming management

Environmental disaster

Cratering

Communication

Policy

Ionian Sea

ABSTRACT

Since 1883, the Mar Piccolo of Taranto (Ionian Sea, Mediterranean) has played a dual role as privileged area for shellfish farming and strategic military port. In the early 1900, the basin already showed some serious environmental and production management deficiencies, stressed by the First World War. This historical research, based on the collection of direct, indirect and iconographic sources, provided socio-economic information about Taranto from 1883 to 1926 and unprecedented data on the most probable catastrophic effects (the sinking of a dreadnought) on the marine environment during the First World War. Moreover, the study demonstrated that the holistic approach followed by the Marine Biology Laboratory's Inspector (Attilio Cerruti) for the management of shellfish farming could be assimilated to current 'warfare ecology'. He had to face disastrous effects on the environment jeopardising ancient farming activities. He therefore carried out actions to reduce, mitigate, and prevent warfare effects. The analysis of original documents showed that the strategies (scientific studies, application and propagation of best practices; economic evaluation of productions; communication with military and civil authorities and shellfish farmers) adopted by Cerruti ensured shellfish farming survival and its recovery in the post war period. Moreover, Cerruti's warfare ecology approach could be a useful example for the solution of current management and conservation problems related to goods and services of valuable ecosystems highly impacted by human activities (not limited to warfare), such as those affecting the Mar Piccolo of Taranto.

© 2017 Elsevier Ltd. All rights reserved.

1. Introduction

Historical ecological knowledge is fundamental not only to learn about the dynamic nature of ecosystems, but also to have a reference frame in order to assess modern patterns and processes (Swetnam et al., 1999). Moreover, historical ecology is closely related to conservation biology and restoration ecology (Lotze et al., 2006; Szabó, 2015). In recent years, historical data have often been used to solve questions related to marine resources management, and in particular to fisheries management (e.g. Pauly and Zeller, 2016). However, according to Schwerdtner Máñez et al. (2014), no historical approach has yet been extensively used in order to tackle other different aspects. In particular, historical knowledge about the effects of past catastrophic events on the marine ecosystem's goods and services is even more limited. Among these events, warfare is undoubtedly the most harmful.

Although the term 'warfare ecology' was coined only very recently by Machlis and Hanson (2008), back in the 1930s, along with the birth of ecosystem ecology, empirical studies were initiated aimed to study relations between the natural environment and warfare. Warfare ecology today is still in its infancy. It comprises different disciplines – i.e. military history, ecology, political science, and military planning – which need to be integrated in a holistic approach. Warfare ecology aims to "improve ecological knowledge and inform policy", but, what is more important, its purpose is to "reduce, mitigate or prevent the environmental consequences of warfare", Machlis and Hanson (2008). The United Nations Environment Program (UNEP) has proposed different types of post-conflict environmental assessment to respond to various needs and policy processes. The goal of these assessments is to ensure that natural resource management becomes the appropriate tool to overcome any post-conflict socioeconomic crisis (Jensen, 2012).

Some locations, such as the Mar Piccolo of Taranto (MP) (Northern Ionian Sea, Mediterranean), are particularly exposed to

* Corresponding author.

E-mail address: carmela.caroppo@iamc.cnr.it (C. Caroppo).

repeated military damage, because of their strategic position. In the past, this ecosystem was strongly impacted by warfare and, more recently, by strategic industries. Taranto may be considered a case of first generation MIDAs (Maritime Industrial Development Areas) (Vallega, 2005), since its economy is based on the processing of raw materials and energy sources. Indeed, in addition to the Italian Navy Base, the most important steel production plant in Europe (ILVA), an oil refinery, two thermoelectric power plants, three waste incinerators, and a commercial port are all located here. Since 1998, Taranto has been a Site of National Interest (SIN, Legge n. 426, 1998) listed under the “National Environmental Remediation and Restoration Projects”, for its high pollution levels, comparable with the most contaminated sites in the world (INES-EPER, 2006).

Since the end of the 18th century, the MP has also been an important site for shellfish farming (‘mollusk industry’, Mazzarelli, 1913), whose fame exceeded the national borders (Orton, 1937; Pottier, 1902). Until today, the catastrophic events that affected the MP have heavily impacted on the goods and services of the basin, including shellfish farming. As an example, in 2011, mussel culture in the First Inlet of the MP was banned following detection of PCBs and dioxins in the mussels (ASL TA, 2011).

The Mar Piccolo, one of the most studied coastal areas in Italy, is a Long-Term Ecosystem Research site (LTER_EU_IT_095) (Pugnetti et al., 2013). Recently, several biological, chemical, physical, and geological studies have been conducted to identify anthropogenic stress sources, their impact, and any environmental remediation solutions (Cardellicchio et al., 2016 and references herein). Further studies have been carried out since 2014, in order to implement urgent environmental recovery actions of Taranto SIN (<http://www.commissariobonificataranto.it>). However, no historical reconstruction has yet been performed of past events that have shaped and/or continue to affect the ecosystem structure and function, as well as of their ecological and socioeconomic consequences on the MP. Furthermore, the few data about environmental damage caused by the First World War refer only to the land (Bausinger and Preuß, 2005; Bausinger et al., 2008; Meerschman et al., 2011), while no information is available about the marine environment.

The goal of this research was to evaluate whether the approach for ‘mollusk industry’ management in the MP during the First World War could be considered an *ante litteram* case of warfare ecology. In particular, the aims of this study were to analyse: i) socioeconomic and environmental information collected from direct and indirect historical sources (scientific papers, technical reports, newspapers, and interviews); ii) the catastrophic events related to the explosion, sinking and recovery of the dreadnought *Leonardo da Vinci* and its negative effects on the environment; iii) scientific research carried out mainly by Attilio Cerruti, the Royal Inspector for the ‘mollusk industry’ in the MP; iv) post-war actions by Cerruti, interpreted according to an *ex-post* approach, *sensu* UNEP’s post-conflict environmental assessment.

2. Material and methods

2.1. Study area

The Mar Piccolo (Long. 17° 13′ – 17° 19′ E; Lat. 40° 28′ – 40° 30′ N) (Fig. 1a) is a shallow, nearly enclosed estuary of 21 km² consisting of two basins (First Inlet and Second Inlet) separated by an intruding promontory (Fig. 1b). These basins have maximum depths of 13 and 10 m, respectively. The watershed is drained through a number of small tributary rivers and 34 freshwater springs (*citri*) (Cerruti, 1938). The two basins are connected to the larger semi-enclosed bay of the Mar Grande through an artificial navigation channel (12 m) and a small natural inlet. The Mar Grande opens into the Gulf of Taranto and the Northern Ionian Sea.

According to Lo Giudice (1913), who carried out studies at the beginning of the 20th century, the MP’s environmental quality was good, except for the areas closer to the city and to aquaculture facilities. According to research by this author, also biodiversity in the basin was high. The seabed was largely covered by marine macroalgae and seagrass, with many species of invertebrates (tunicates, molluscs, crustaceans, echinoderms, annelids, cnidarians, sponges) and finfish living in its waters. Planktonic communities consisted of typical shallow coastal water species (‘phaoplankton’ *sensu* Lo Bianco, 1910). Moreover, *Aurelia aurita* (Linnaeus), a hitherto uncommon jellyfish in the Mediterranean, used to grow to very high concentrations (up to 1000 individuals) in the Second Inlet.

Nowadays, chemical pollution problems affect MP’s sediments (Buccolieri et al., 2006; Cardellicchio et al., 2007) and the biological communities have been severely affected by anthropogenic impact (Matarrese et al., 2004). However, in the 2000–2006 period, following the closure of most urban wastewater pipes draining into the MP (Caroppo et al., 2012), water quality seemed to have improved. Some benthic species, indicators of good environmental status (e.g. phanerogames) reappeared in the MP (Petrocelli et al., 2009). Also, within phytoplankton communities, pico- and nano-sized organisms (typical of oligotrophic systems) began to prevail, differently from the past, when micro-sized specimens used to make up the most conspicuous component of autotrophic assemblages (Caroppo et al., 2016; Karuza et al., 2016).

The MP was heavily used for intensive shellfish farming. At the beginning of the 20th century, shellfish farming was carried out in 38 Areas limited by military infrastructures (Fig. 1c) and managed by a private company, *Società dei mari* (Mazzarelli, 1913). Since 1915 there was also an Experimental Field (Area 28) for scientific purposes.

2.2. Methodological approach and data collection

Most environmental and production data about the MP during the 1883–1926 period have been acquired from numerous documents by Attilio Cerruti kept in the “Taranto State Archives, Office of the Ministry of Heritage and Cultural Activities of the Italian Government”. Other data, obtained from direct, indirect and iconographic sources, were collected from: i) Historical Archive of Taranto Municipality; ii) Meteorological and Geophysical Observatory “L. Ferrajolo”; iii) Historical Archive of the Diocesan Library “G. Capecepatro”; iv) Historical Archive of the Navy Arsenal; v) Library of the Institute for Coastal Marine Environment; vi) Public Library “Pietro Acclavio”. Moreover, the Database Network (<http://www.internetculturale.it/opencms/opencms/it/>) was also consulted. In Appendix A the web references of some Italian documents/books are reported. In order to standardise our research and interpret data according to warfare ecology tenets, all biological, production, social and economic information was entered into a database and organised into pre-war, war, and post-war periods (data not shown). In addition, post-war strategies for shellfish farming recovery in the MP implemented by Cerruti were compared to the modern approach of UNEP’s post-conflict environmental assessment (Jensen, 2012).

To calculate purchasing power during the considered historical period, economic data originally expressed in Italian Lira (₤) have been converted into Euro (€) using the Tables of the Italian National Institute for Statistics (ISTAT, 1861–1921).

3. Impacts of the First World War by key determinants

3.1. Preparation of war (1883–1915)

The Royal Arsenal construction in 1883 along the southern

Download English Version:

<https://daneshyari.com/en/article/5473801>

Download Persian Version:

<https://daneshyari.com/article/5473801>

[Daneshyari.com](https://daneshyari.com)