MARine Litter in Europe Seas: Social AwarenessS and CO-Responsibility

DELMVERABLE 6.8–
MARLISCO MARINE LITTER DATABASE

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Deliverable 6.8 – MARLISCO Marine Litter Database
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This report provides a description of the process of developing the MARLISCO Marine Litter Database, an interactive database designed to collate the marine litter data gathered by partners during the clean-ups organised for awareness-raising purposes over the duration of the project. The Database is available on MARLISCO’s website via http://www.marlisco.eu/marine-litter-database.en.html.

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1 EXECUTIVE SUMMARY

The “MARLISCO Marine Litter Database”, is the MARLISCO Project ‘MARine Litter in Europe Seas: Social Awareness and CO-Responsibility’ deliverable 6.8, an additional deliverable added at the end of the project as a means of further disseminating project products and activities. It is an interactive database, developed to collate all the litter data that partners have captured during the project as a result of the clean-up activities initiated to raise awareness about the marine litter issue. The database has been developed with an interactive map interface that allows the user to pinpoint the clean-up locations. The database also allows users to interrogate the data to get information on specific types of waste or specific locations.
2 INTRODUCTION AND BACKGROUND

MARLISCO ‘MARine Litter in Europe Seas: Social Awareness and CO-Responsibility’, is an FP-7 funded project that aims to develop and evaluate an approach that can be used to address the problems associated with marine litter and that can be applied more widely to other societal challenges. Considering that marine litter is a key threat to marine habitats, species and ecosystem services, MARLISCO aims to achieve substantial benefits through better integration among researchers, stakeholders and society, ensuring a holistic approach to the issue towards a collective vision for the sustainable management of marine litter across all European seas.

One way of achieving this goal was a series of national awareness activities organised by all national partners, across the 15 countries that participate in MARLISCO. These activities varied greatly and ranged from art competitions, to presentations at schools, to participation at key events and conferences. One very popular awareness-raising activity was clean-ups of a specific stretch of beach, of an area near a waterway or of the seabed. Several of the partners who participated and/or organised clean-up activities, with schools, local community groups or volunteers, also used some type of protocol to help them measure and record the amount of litter collected. Therefore, P12 proposed to develop a database that would bring all the data together and would become an additional project deliverable.

Data have a very important role to play in addressing the issue of marine litter, since they allow us to understand which are the main types of litter found in specific beaches/countries/locations and how these may vary according to the season or other factors. This information allows the identification of the main sources of marine litter and thus the implementation of better and more targeted solutions to address litter from these sources. At the moment, the data that are collected by various organisations, including several project partners, are held remotely and are underutilised. By developing a database that would bring all the available data together in an interactive format, and which would allow users to interrogate the data to identify trends, MARLISCO has developed a very valuable tool. It is envisaged that this marine litter database will continue to be populated with data even after the end of the project and will thus become a very sustainable project deliverable.
3 METHOD

The first step in developing the MARLISCO Marine Litter Database involved the definition of the database requirements and the identification of a suitable subcontractor for its development. Once a suitable subcontractor, with experience in developing such tools, was selected, various options for the input of data were discussed, including allowing individual contributors to create login information that would allow them to input data. However, in the end it was decided that anyone wishing to contribute marine litter clean-up information should forward it to P12, who would then input the data into the database. This would allow for the quality control of the data, and that would increase the scientific validity of the data.

The database requirements were as follow:

- A web-based application that can be embedded on any site. This would allow the development and update of the database independently of MARLISCO’s website, thus even after the end of the project, the website can continue to be updated and will remain an important sustainability element of the project.
- A back-end system that would allow the input of data. It was decided to base this system on the Ocean Conservancy data form for two reasons: (1) most of MARLISCO’s partners use this form for recording marine litter data during their clean-ups, and (2) this is the form that is provided in the Educational Pack (Work Package 6 deliverable) for teachers and students to use during their clean-up activities. Figure 1 shows a part of the back-end system where clean-up data from several sites have been added (the Ocean Conservancy Clean-up Form can be found here http://www.oceanconservancy.org/our-work/international-coastal-cleanup/data-form.pdf).
- The geo-location of the clean-up data. Figure 2 demonstrates how each clean-up site can be geo-located on a map, through the input of coordinates in the back-end system (latitude and longitude). This in turn allows the display of this location on an interactive map on the front-end view of the database.

Figure 1 View of the back-end system of the MARLISCO Marine Litter Database, where the user can input clean-up data.
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Marine Litter Database

Creating a new Cleanup

Figure 2 Creating a new clean-up asks the user to provide the coordinates of the site so that the data can be displayed on the interactive map (front-end).

The above technical requirements involve mostly the back-end (data input) part of the database. However, it was important that the front-end (user interface) of the database would be as attractive and user-friendly as possible. Figure 3 shows a snapshot of the homepage of the MARLISCO Marine Litter Database. The top part of the Homepage includes an interactive map with pins showing the location of clean-ups that make up the database. The users can zoom in and out of the map and click on specific points, where they can get information for that specific clean-up. Right below the map, there is a section where users can apply filters to the data, thus viewing only those clean-up sites of interest. Data can be filtered based on location (at country and area level) and/or on dates. Once filters are applied, the users can see a list of the filtered results, together with some key data: number of items and weight of marine litter collected.

For each of these filtered results, the users then have the option to click on ‘Details’ to see more detailed information from that specific clean-up. This opens a separate page (see Figure 4), which includes a more detailed map of the location, the detailed recorded data (numbers of each marine litter item collected, number of volunteers involved, type of clean-up (land, seabed, floating), distance cleaned etc.), as well as a photo gallery from that specific location/clean-up, where available. This page also allows users to download a CSV file with all the data.

The database also allows users to view marine litter trends (Figure 5), as follows:

- Trend of the number of a specific marine litter items (e.g. cigarette butts) for a specific country (e.g. Cyprus) for all the years that data exist within the database. This is particularly useful for detecting whether the implementation of specific practices/policies etc. for reducing a particular marine litter item in a specific country has had an impact on the numbers of that item, and in general to see how trends in marine litter items vary year on year.
- Ratio/ percentage of marine litter items collected in a specific country within a particular year. This is important for reporting marine litter trends year on year, and having a general overview of how marine litter composition might change.
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- Ratio/ percentage of marine litter data items collected during a specific clean-up. A dropdown menu, containing a list of all the recorded clean-ups, allows users to view a graphical representation of the data from that specific clean-up.

Concurrently to the definition of requirements and development of the database, P12 asked MARLISCO partners to share their clean-up data for inclusion in the database. Only two partners responded to this request, and thus the database includes some data from clean-ups taking place in Slovenia and Italy. Additionally, data from the simultaneous clean-ups organised by P12 and the RotaractMED clubs, in Euro-Mediterranean countries (including Egypt and Lebanon) on 1st May 2015, will also be included as soon as they are received. The database is available via: http://www.marlisco.eu/marine-litter-database.en.html
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Figure 3 The Marine Litter Database Homepage.
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Figure 4 View of the details available to the user for each of the clean-up sites.
Figure 5 The database also allows users to view marine litter trends.
4 CONCLUSION

The interaction between science and society has been a very important part of the MARLISCO project, and the project has tried all along the way to find the most suitable means of translating scientific findings into information that key target groups and stakeholders can understand and integrate into their activities. The MARLISCO Marine Litter Database contributes to this effort by taking marine litter data, resulting primarily from the participation of volunteers in clean-up activities (i.e. the promotion of co-responsibility), and hosting it together in one location. The database offers the opportunity to the users to view the data in a variety of formats (e.g. raw data downloaded as a CSV file for further user manipulation, or trends resulting from a specific clean-up or for a specific marine litter item), thus more technical data can be ‘translated’ into easy-to-understand trends. As such, the database also offers an additional tool that can be used by educators around Europe to raise awareness about the marine litter issue.

Despite the fact that the project is coming to an end, many partners will continue their marine litter awareness-raising activities, including the organisation and implementation of clean-up events. Therefore, it is envisaged that the MARLISCO Marine Litter Database will continue to be updated in the years to come, thus greatly contributing to the sustainability of the project products.