

Dutch Caribbean Biodiversity Database: The Future of Data Sharing

A big obstacle in nature- policy, management and research is to access existing long-term data in an environment that experiences a high turnover in project funds and personnel. Besides, although there is now decades of observations and recordings, researchers and decision/policy makers have difficulty sifting through the information available to find what they need. The Dutch Caribbean Biodiversity Database (DCBD) was developed to resolve these issues, providing a web-based platform to store and share research and trends. Being able to properly store and access information is important in times of high personnel and funding changes, ensuring information isn't lost during these transitions. New additions to the database, along with updates on current research and monitoring programs are published in DCNA's monthly newsletter, BioNews.

What is the DCBD?

Local and national authorities are obliged to give regular updates on the status and trends of the state of their environments to meet international treaty requirements. A wide variety of biodiversity web-platforms already exist which focus on specific target groups. However, in spite of the wealth of information available, many policy makers find themselves limited by missing target data and

indicators (Geijzendorffer et al, 2016) due to the data being difficult to find or in the wrong format.

The DCBD (www.dcbd.nl) is a central knowledge platform used for policy making, nature management, spatial planning and for the exchange of scientific research. It guarantees long-term data availability in an environment that experiences a high turnover in project funds and personnel. The DCBD allows the user to assess the status of ecosystems, species, threats and pressures, to explore spatial data on biophysical, socio-economic, ecological and topo-graphical properties, to navigate a listing of biodiversity and ecosystem-based information portals and to search in a library for reports, journal articles, documents and raw data.

DCBD Development

The DCBD was created using the co-design method, where the database was specifically created to meet the needs of its stakeholders. The design is meant to maximize utility by providing a centralized location for researchers and policy makers to input and access data. Together with stakeholders from Aruba, Bonaire, Curaçao, Saba, St. Eustatius and St. Maarten the initial prototype was created in 2011 and included maps, encyclopedic functionality, observation functionality and document sharing. Since then, bilateral meetings between

the DCBD maintainers and the various NGO data collectors (e.g. local governments, conservationists and park managers) have provided updated information and data, helped to clarify the data structure and have shared interpretation of the data.

Together with data collectors, indicators were created to highlight changes in the environment's health, biodiversity and pressures for evidence-based policy and measurement needs (Laihonen et al, 2004).. Currently, indicators have been grouped into 20 categories, distinguishing between ecosystems, pressures and species. Along with the indicator graphs, a short narrative is included to explain sudden shifts in trends which helps explain visible trends. Furthermore, Statistics Netherlands provides independent analysis and review of the statistical methods used.

Results

Data collectors expressed an interest in having a secure database to centrally store their data. Based on their preferences, the data is made either fully publicly available, or if sensitive, only the derived indicators are published. DCBD's maintainers and data collectors jointly created tailor-made data entry forms, using software that

the data collectors are familiar with (e.g. Excel), allowing for their independent use of analysis tools and methods. Data entry spreadsheets were designed to minimize data entry errors. For example, ranges and limitations were placed on specific data entry fields to limit incorrect data entries. Additionally, DCNA's Research Communication Liaison provides assistance with follow-up reports, publications and datasets to ensure they are stored in the DCBD.

Impact

The national government has reported using the DCBD status and trends indicators for their obligatory reports to meet requirements from various treaties (ministry of Economic Affairs, 2014; Verweij et al., 2015). Local authorities and management bodies use the DCBD to find information concerning spatial planning and to aid in local nature management and spatial planning. Local businesses, namely dive schools, use the DCBD to report observational data and to find information and marketing material. Lastly, researchers find the DCBD as a crucial source of information which can be used in current research and as inspiration for future studies.

Lessons Learned

In general, the DCBD has been successful due to three main reasons. Firstly, it is actively supported and funded by the national and regional governments. Continual support and maintenance of the database ensures it can evolve to meet the needs of its various stakeholders. Secondly, DCBD simplifies mandatory tasks of local managers and reporters by providing a single location to access clear and useful data. By controlling how the data is entered into the system, errors are reduced, semi-automatic analysis is possible, and reporting needs are facilitated even with a high turnover of staff. Lastly, the DCBD continually evolves to meet the changing needs of the stakeholders and to ensure its functionality is maintained

Looking Towards the Future

The DCBD will continue to play a critical role in how data is obtained, maintained and utilized among all stakeholders. Having a centralized database between each of the six islands can help minimize redundant work and allow researchers to more easily access information. Furthermore, by providing instructive graphs and data to policy makers, a closer link can be made between researchers and decision makers. DCBD provides a robust and evolving solution to meet the demanding requirements for understanding our environment and closing the gap between researchers and policy makers.

The image shows a screenshot of the Dutch Caribbean Biodiversity Database (DCBD) homepage. The page is divided into several sections: a search bar at the top, a 'MAPS' section with a map of the Caribbean islands, a 'MONITORING INDICATORS' section with various icons, and a 'PORTALS' section with links to different portals. Red arrows point from text labels to specific features on the page:

- Search the repository and download resource:** Points to the search bar and a sample resource card for a turtle.
- Interactive maps:** Points to the map section.
- Trends and states:** Points to a sample resource card for a yellow-shouldered parrot, which includes a line graph showing the number of parrots in nests on Bonaire from 1980 to 2000.
- Information portals:** Points to a sample resource card for a yellow bird.

DCBD homepage, highlighting 4 key services: resources, maps, trends and states and portals (www.dcbd.nl) (Verweij et al., 2019)

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