

## **GALAPAGOS REPORT 2011-2012**

### **NEW APPROACHES**

#### **A KNOWLEDGE MANAGEMENT PLAN FOR THE GALAPAGOS: AN IMMINENT NEED**

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*The **Galapagos National Park Service** has its headquarters in Puerto Ayora, Santa Cruz Island, Galapagos and is the Ecuadorian governmental institution responsible for the administration and management of the protected areas of Galapagos.*

*The **Governing Council of Galapagos** has its headquarters in Puerto Baquerizo Moreno, San Cristóbal Island, and is the Ecuadorian governmental institution responsible for planning and the administration of the province.*

*The **Charles Darwin Foundation**, an international non-profit organization registered in Belgium, operates the Charles Darwin Research Station in Puerto Ayora, Santa Cruz Island, Galapagos.*

***Galapagos Conservancy**, based in Fairfax, Virginia USA, is the only US non-profit organization focused exclusively on the long-term protection of the Galapagos Archipelago.*



Photograph: Theresa Baldwin

## A knowledge management plan for the Galapagos: An imminent need

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There is a very real need for improved development of, access to, and use of knowledge about the Galapagos Islands. Although Galapagos is one of the most studied places in the world, timely access to even basic information about the archipelago is often difficult. Effective knowledge management underpins effective natural resource management, decision-making, and policy development in support of biodiversity conservation and a sustainable society. Current challenges include lack of standardized archiving and cataloging of existing information, inadequate technology infrastructure, poor data integration (especially between natural and social sciences), lack of access to data/information, and a general disconnect between data/information generators and data/information users.

The primary goal of the Knowledge Management Initiative for Galapagos is to foster a culture that incorporates both knowledge and wisdom as a critical component of decision-making and policy development at all levels of governance and ensures broad engagement and participation of all stakeholders. Developing and facilitating knowledge management for Galapagos will be a collaborative process to ensure engagement of all stakeholders. The Initiative will benefit many constituencies: the Ecuadorian government, managers and political appointees, researchers, Galapagos residents, tourists who visit the Islands, and people around the globe interested in Galapagos even if unable to visit. Engagement and participation by all sectors of the community should produce better informed choices, social capital, and a shared vision for the future of Galapagos.

### The workshop

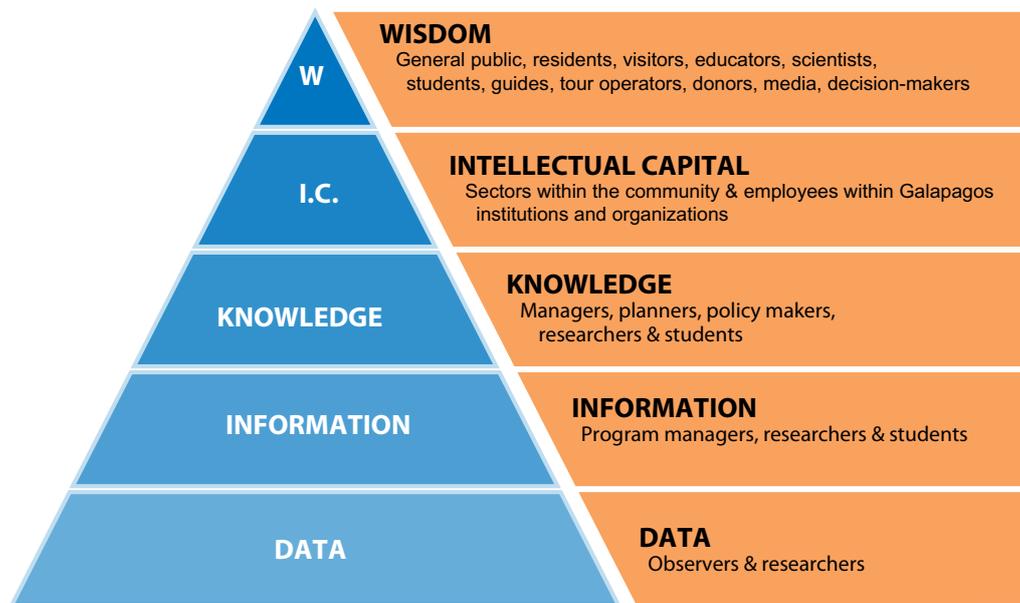
The strategies and general outline for the Knowledge Management Plan were developed at an international workshop, *Strategic Administration and Management of Knowledge for Galapagos*, held in Puerto Ayora, Galapagos, 30 September to 3 October 2011. The workshop was convened by the Governing Council of Galapagos (CGREG), and included key governmental and non-governmental stakeholders as well as experts in knowledge management systems.

Prior to the workshop, a series of interviews were completed with various stakeholders, both in Galapagos and continental Ecuador as well as internationally, to gain a broad sense of the concerns and needs that users and producers of information felt most important when considering knowledge management for Galapagos.

## Knowledge management for Galapagos

Many organizations working in Galapagos are undertaking projects at the data/information level of knowledge management, digitizing historical information, facilitating access to data, and integrating information related to Galapagos' human population. The potential benefits of integrating and sharing knowledge among Galapagos institutions and researchers are becoming increasingly apparent. Additionally, rapidly evolving data capture and dissemination technologies make establishing a highly functional knowledge management system far more feasible than even a few years ago.

The challenge is to facilitate movement upward on the so-called Knowledge Management Pyramid – from the level of raw data to intellectual capital and wisdom – in a manner that incorporates everyone in Galapagos, from observers to users of knowledge (Figure 1). As more of the decision-making and policy development in Galapagos is based on the upper levels of the pyramid, the natural ecosystems of Galapagos will also benefit from this Knowledge Management Initiative. None of the levels are exclusive and both knowledge generators and knowledge seekers can be found at any level.



**Figure 1.** The Knowledge Management Pyramid (at left in blue) shows the foundation of wisdom and the movement from raw data through knowledge to wisdom. **Data** = raw data, field notes, observations, baseline geographic information system (GIS) and remote sensing data, etc.; **Information** = processed data, protocols and methods, trip reports, routine reports, summary statistics and analyses, etc.; **Knowledge** = that used to solve problems – includes plans, technical reports, narrative analyses, and publications, etc.; **Intellectual Capital** = intangible combination of knowledge within an institution or group; and **Wisdom** = ability to identify which knowledge has the potential to become intellectual capital and provide for future growth and capacity. The inverted pyramid (at right in orange) shows the variety of potential beneficiaries at each level.

Three general themes were identified during the workshop as core areas to be covered in the development of knowledge management for Galapagos: biophysical knowledge, socioeconomic knowledge, and legacy knowledge. The Charles Darwin Foundation (CDF) and the Galapagos National Park Service (GNPS) have already begun key initiatives to establish accessible databases in the biophysical area (Figure 2). However, this type of data/information is also spread across the globe, housed in a wide variety of institutions and in the files of individual scientists and others, where much of it is relatively inaccessible.

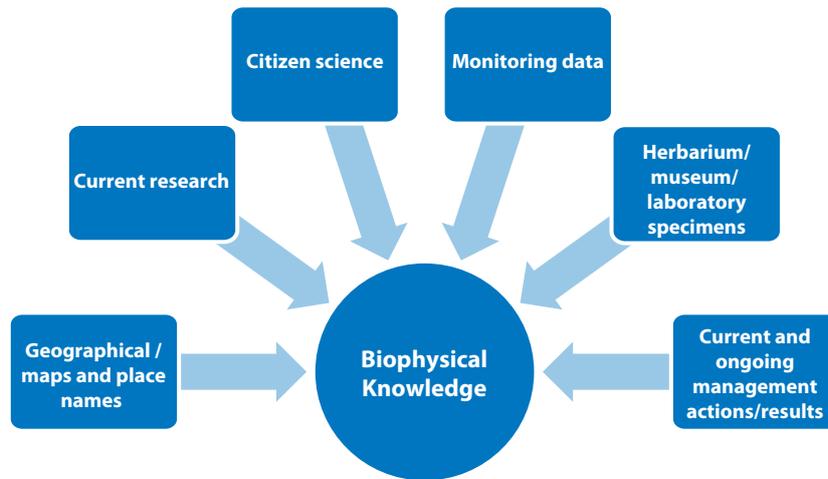
Although numerous governmental organizations as well as non-profits and educational institutions have been involved in collecting socioeconomic data (Figure 3), these data are often less organized and accessible, and sometimes of lower quality, especially when collected

for administrative purposes rather than research and/or adaptive management.

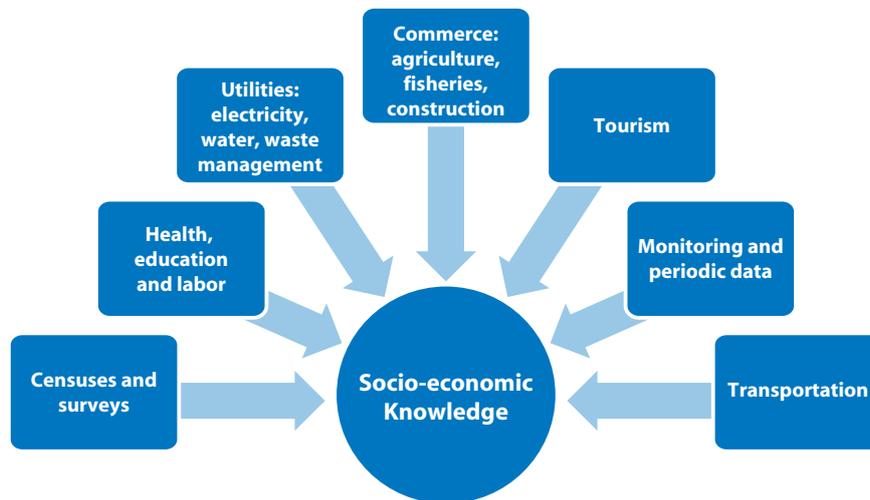
Perhaps the most difficult knowledge to obtain and organize is so-called legacy data (Figure 4). These previously collected data, spread all over the world, are currently often found on decaying paper and in scattered, and outdated computer files. The poor condition of much of this data may require immediate action to save it.

### Vision for knowledge management for Galapagos

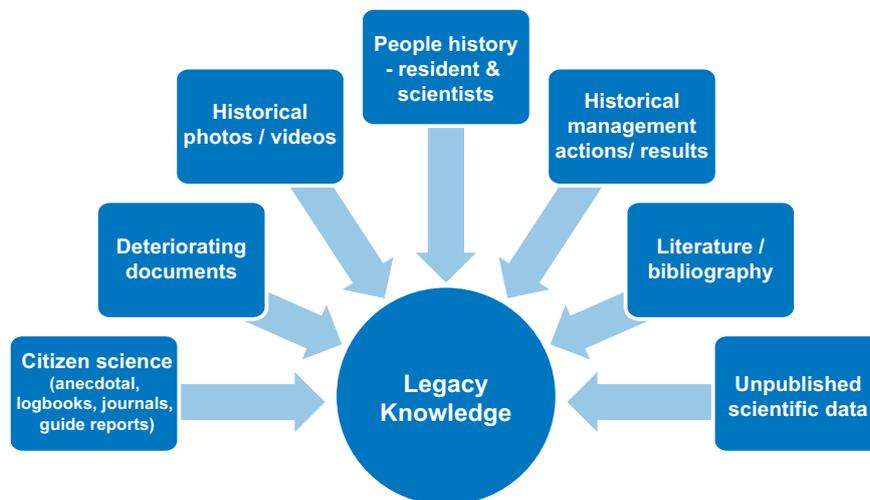
Sustainable development and the quality of life of the human society in Galapagos depends upon the health of the archipelago's natural heritage; maintaining that heritage relies on a capacity for all to quickly access what we collectively know about Galapagos.



**Figure 2.** Some of the components within the biophysical area that should be included in knowledge management for Galapagos.



**Figure 3.** Some of the components within the socioeconomic area that should be included in knowledge management for Galapagos.



**Figure 4.** Some of the components within legacy knowledge that should be included in knowledge management for Galapagos.

Galapagos will have effective knowledge management that involves all sectors of Galapagos society and stakeholders, and links both tacit (“know-how”) and explicit (formal) knowledge to decision-making. In this way, it will enhance the capacity for long-term conservation of the biodiversity and unique ecosystems of Galapagos, and sustainable development of its society.

Knowledge management for Galapagos will provide a platform for open participation of all sectors of Galapagos society as both contributors and users of knowledge, nurturing the development of an informed society that values and cares for its natural and cultural environments, works to prevent and mitigate environmental degradation, and supports and pursues socioeconomic policies that are consistent with the broad goal of conserving the biodiversity and unique ecosystems of Galapagos.

### Goals and objectives of knowledge management for Galapagos

1. Foster a culture that incorporates knowledge/wisdom as a critical component of decision-making and policy development at all levels, and that ensures broad engagement and participation of all stakeholders.
2. Create, share, and use tacit (“know-how”) and explicit (formal) knowledge about Galapagos, enabling adequate response to the needs of the communities for the conservation of ecosystems and sustainable development.
3. Catalyze research in and about Galapagos to attain and strengthen conservation and sustainable development within the archipelago over the medium- and long-term.
4. Provide better and more complete access to knowledge for decision-makers to enable more informed decision-making, policy development, and management, thus improving the outcomes of the political and governance processes.

In addition to the goals, a series of 19 specific objectives were developed; key among them were:

1. Facilitate the use and distribution of knowledge about Galapagos through the establishment of a Knowledge Management System for Galapagos under the leadership of the Governing Council of Galapagos (CGREG – for its initials in Spanish) and through the fostering of a “knowledge culture” in Galapagos.
2. Improve the technological infrastructure in the Galapagos to support the Knowledge Management System and its use by all.
3. Establish and maintain a system of coordination and

cooperation among institutions and communities that generate and use knowledge about Galapagos.

4. Standardize data collection and storage and the production of information, thus establishing a culture of common practices to facilitate reproducible research and effective monitoring practices.
5. Define short-term pilot projects to demonstrate the usefulness and applicability of Knowledge Management for Galapagos [e.g., initial citizen science initiatives, Integrated Indicator System for Galapagos (SIIG for its initials in Spanish), etc.].

### The Plan

The *Plan for the Development and Facilitation of Knowledge Management for Galapagos* establishes a framework for the development of a unified, accessible knowledge management infrastructure for Galapagos that will integrate diverse information resources, such as demographic, economic, and social data about the Galapagos human community, observations on the distribution and abundance of native and migratory species, records of marked plants and animals, records from museum collections (both in the Galapagos and around the world), and other data and information. The plan outlines the establishment of tools, protocols, and networks of institutions and individuals to facilitate the production, sharing, and use of knowledge. As this project proceeds, it will benefit from the experience of organizations that have successfully implemented relevant knowledge management initiatives in other parts of the world and will make use of existing technology and protocols whenever possible.

The development of knowledge management for Galapagos will be carried out over three phases. Due to financial realities, this project must proceed according to the defined phases and be developed in a modular fashion so that while all parts will become integrated, the success of any single component does not depend upon the success of all other components.

**Phase I** will involve simultaneous execution of critical start-up tasks including the necessary audits (technology and knowledge) and needs assessment in Galapagos and beyond (especially in relation to legacy data), the establishment of a project management team, oversight body, and an advisory team network, development of a financial/fundraising plan, and initiation of pilot citizen science projects and an Integrated System of Indicators for Galapagos.

**Phase II** will include the development of an infrastructure plan for the Knowledge Management System, a priority-based modular expansion plan for the construction of the system, the establishment of standards and protocols, an incentive system to create collaboration and cooperation

among institutions, capacity building within institutions, development of the initial database component of the Knowledge Management System, and expansion of the citizen science program.

**Phase III** will be the long-term implementation of the Knowledge Management Initiative and incorporation of knowledge management within the Galapagos culture, with adequate evaluations and feedback for continual improvements.

Outreach to the community will be important throughout all phases and the project management team should work continuously to ensure the public's support of knowledge management.

### **Project supervision and management**

The *Plan for the Development and Facilitation of Knowledge Management for Galapagos* will be carried out by a project management team under the leadership of the Governing Council of Galapagos. The team should include, at a minimum, a project leader, who will be responsible for all non-technical managerial responsibilities, communication, and outreach, and sufficient personnel to cover the following: management of the technical aspects of the Knowledge Management System, GIS/database expertise, web programming, data specialist(s) (data entry, retrieval, and analysis), and technical writing. In addition to the project leader, an ideal team might consist of the following positions:

- System technical director
- GIS/database expert
- Web programmer
- Data specialist (data entry, retrieval, and analysis)
- Technical writer (this could be covered by the data specialist or someone else) – ideally with fundraising experience

Any missing skills could be compensated for by using paid consultants for particular tasks.

The project management team should:

- Be primarily comprised of permanent staff to ensure project continuity
- Have redundancy to accommodate contingencies (e.g., key personnel are sick or traveling, staff attrition and recruitment, etc.)
- Maintain excellent records to permit institutional learning, integrated data management, and continuity of knowledge

- Understand the highly dynamic nature of the workload from start to finish — involves continuous long-term commitment by project managers

As the Knowledge Management System is built, emphasis will be placed on continuous and long-term enhancement of the technical capacity and management skills in the CGREG, GNPS, NGOs, and other institutions in Galapagos.

### **Project evaluation**

Continual project evaluation is critical and will be built into the Knowledge Management Initiative to ensure effective evaluation and feedback from the start of Phase I through development and implementation. Measures of success and methodology for project evaluation will be developed during Phase I and updated when appropriate. Results from regular evaluations should lead to specific actions that improve program operations.

### **Community education, capacity building, and public relations**

Good communications and public involvement are not only critical to the successful completion of this project, they are important components for the long-term value of the project and to ensure that knowledge created in and about Galapagos will serve as the foundation for decision-making and policy development over the long term. During Phase I, a detailed plan will be developed for institutional and community involvement.

### **Financial plan**

A financial plan with a well-developed fundraising strategy and any necessary project proposal(s) will be developed during Phase I. The plan will include start-up funding to cover the initial audits (consultants) and the establishment of the project management team and oversight body. Funding for the Knowledge Management Initiative for Galapagos will require large commitments of financial and in-kind support from the Ecuadorian Government and from private, corporate, and foundation sources worldwide. A long-term financing system should also include some level of funding by institutional users and other beneficiaries of the Knowledge Management System.

### **Conclusion**

Central to the success of the Knowledge Management Initiative is local ownership and a willingness to think broadly about information. The combined thinking of external experts and local stakeholders has evolved since the initial framework was conceived and drafted. Collectively, the language moved from simple data management (systems) to a broader philosophical approach to problem solving that relies on a strong culture of sharing wisdom and experience. This will create



Photograph: Alycia Crall

a dynamic flow of data and experience among institutions and people and will not stop at the mechanical collection of data.

The Knowledge Management Initiative for Galapagos will provide a platform for the incorporation of Galapagos into the national network currently being established by the Ecuadorian Government, "YACHAY – City of Knowledge," the most revolutionary project at a national level. The advantages of this strategy are countless: 1) a strong collaboration with the international scientific community; 2) an innovative way to produce knowledge based on technology of the latest generation; 3) a real presence of national research institutions, and 4) effective access to information.

The Knowledge Management Initiative for Galapagos will require dedication and time of many individuals and organizations. Effective knowledge management should enhance conservation efforts and the development of a sustainable society in Galapagos to such an extent that it will outweigh all costs. Decision-making and policy development for both effective conservation and a sustainable society require open and timely access to the highest quality knowledge available. The execution of the *Plan for the Development and Facilitation of Knowledge Management for Galapagos* will provide just that.

## Acknowledgments

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