

Status, Governance and Development of Gunao Lake: The Little-Known Lake of Dolores, Quezon, Philippines

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Abstract: Anchored on the scarcity of small lake studies in the country, the article explores the little-known small lake of Dolores, Quezon, Philippines—Gunao Lake; its existence virtually unheard of in scholarly literature. Specifically, the study documents the crater lake by delineating the status of the lake using seven basic governance and development parameters. Using data from interviews, site observations, and few existing documents on the lake, the study contends that Gunao Lake is deficient in key management and conservation enablers: the absence of a management council and a Master Development Plan, and the failure to institutionalise tourism, and maintenance activities. Moreover, in placing Gunao Lake on the literature map, this study makes a small step in expanding the governance and development studies on small lakes in the country.

Key words: Development, governance, Gunao Lake, Dolores, Lake, Philippines.

Introduction

Gunao Lake is a small lake located in Dolores, Quezon. It is only about 15-20 kilometres by road away from the seven crater lakes of San Pablo city, as all of them are situated at the foot of Mounts Banahaw-Cristobal Protected Landscape (see Figure 1). Yet, unlike the seven crater lakes which are widely known, Gunao Lake is relatively unknown; its existence is virtually unheard of in scholarly literature and in the country (e.g., the small lake's name is not even registered in Google maps). This obviously suggests the lack of information and formal study on the small lake. One good illustration of the Gunao Lake's "unknownness" is the anecdote about a "banca" (small boat) donation by the Governor of the Province of Quezon to the Municipality of Dolores. The donation raised political eyebrows since critics questioned why would the Provincial Government donate a banca in an upland Municipality like Dolores (which is well known as the gateway town of the majestic Mount Banahaw).

Evidently, the story illustrates the widespread ignorance of Gunao Lake's existence in Dolores.

Beyond Gunao Lake, small lakes in the country suffer from a scarcity of studies since the overwhelming majority of scholarly works on lakes are heavily concentrated on the major lakes (Brillo, 2015a; Guerrero III, 2001, 2005). Specifically, about 80 percent of the scholarly works are studies on major lakes (e.g., Laguna de Bay, Taal Lake, Lanao Lake and Buhi Lake) and only 8.7 percent of small lakes (Brillo, 2015a). This figure shows a severe imbalance in literature, mainly since around 80 percent of existing lakes in the country are small lakes. The concentration of studies on major lakes fosters bias and depicts an incomplete image of the lake resource, and thus, small lakes must be studied to broaden the knowledge base on Philippine lakes. Moreover, the majority of the few existing studies on small lakes are classified under limnology and aquaculture studies which suggest that lack of governance and development studies on them (Brillo, 2015b, 2015c, 2016a, 2016b). This literature

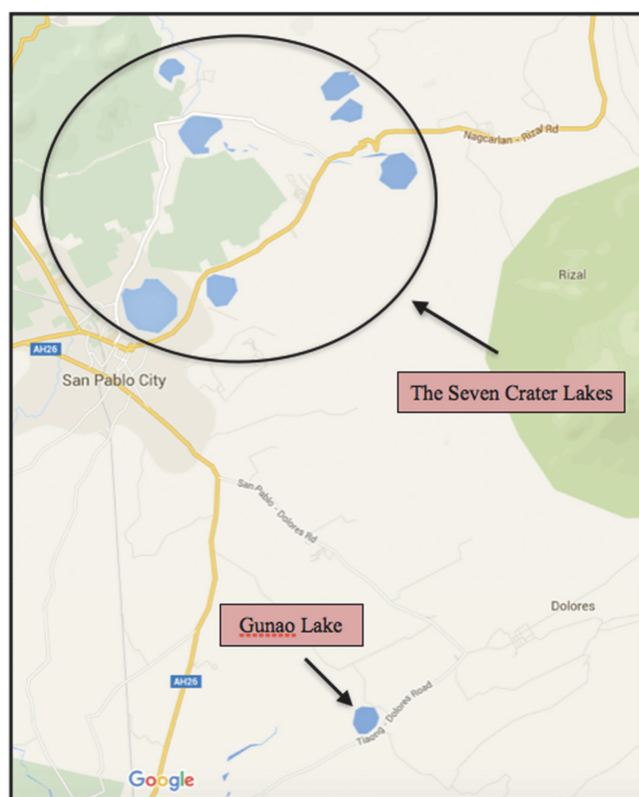


Figure 1: Gunao Lake of Dolores, Quezon and the Seven Crater lakes of San Pablo city, Laguna (Google Maps 2016).

trajectory reveals disparity where small lakes and their governance-development aspects have received little attention.

Thus, to enhance the literature and development deficit, it is vitally important that more research is conducted on the governance and development studies of small lakes in the country. Governance and development studies would accompaniment the limnology and aquaculture studies in sustainably managing small lakes and supplement in improving the conditions of the local communities situated around the small lakes as well as a catalyst for local development. Thus, this article conducts an exploratory assessment of Gunao Lake. The objective of the study is to literally place the little-known small lake on the map of scholarly literature, specifically, in lake governance/development studies, and generally, in water resources studies.

Criteria for Analysis

The study employs a case study design in examining the status of the governance and development of Gunao Lake. It generates data from interviews, site observations, and few existing documents on the lake.

The data are analysed using content analysis approach where they are coded and classified into the following criteria: (1) having a locally organised association or council to administer the water resource; (2) having a management and development plan (MDP) for the lake; (3) regulating fish pens and cages (i.e., enforcing the 10-percent-area-limit rule for aquastructures pursuant to the Fisheries Code of the Philippines or Republic Act (RA) 8550); (4) promoting tourism (i.e., encouraging tourism development pursuant to the Tourism Act of 2009 or RA 9593); and (5) conducting maintenance activities, specifically water quality analysis, clean up operations, and fingerlings seeding/dispersal. These criteria are deemed fundamental in the governance, development and conservation of small lakes in the Philippines (see Brillo, 2015b, 2015c, 2016a, 2016b, 2016c; Brillo et al., 2017a, 2017b).

Results and Discussion

The Status and Administration of Gunao Lake

Gunao Lake is a freshwater crater lake located in Barangay Dagatan and Barangay Bungoy in the Municipality of Dolores, Quezon. The small lake is oval-shaped with a surface area of 22.36 hectares (CENRO, 2014) and has been utilised mainly for aquaculture, specifically Tilapia farming in cages, since the 1980s. Gunao Lake became overcrowded by fish cages in the 1990s and suffered a major fishkill in the mid-1990s (brought about by the natural upwelling or overturning of the lake). In the early 2000s only around 150 fish cages remained in the lake, and in the present, with the most recent fishkill occurring in 2014, there are only a little over 100 fish cages in the lake.

Gunao Lake is under the administration of the Municipal Government of Dolores. The authority of the local government emanates from RA 7160 or the Local Government Code of the Philippines, which gives it jurisdiction over the lake being part of its geographical territory. In particular, the offices of the Municipal Agriculturist, the Municipal Environment and Natural Resources (MENRO), the Municipal Planning Development Coordinator (MPDC) and the Municipal Tourism are collectively charged for the management, development and conservation of the small lake. In principle, these offices propose and execute the plans and programmes, as well as serve as lead agencies in the regulation the water resource. In addition, the Municipal Government has been assisted by the Provincial Government of Quezon through Office of the Provincial Agriculturist and Fisheries Division (PAFD), and the

Department of Environment and Natural Resources (Region IV) through Community Environment and Natural Resources Office (CENRO) (in Pagbilao, Quezon) in the management and conservation of Gunao Lake.

PAFD had provided fishery-related support (particularly, replenishing the lake and supplying the fish farm operators with fingerlings), and the CENRO had provided a preliminary assessment on the small lake (see CENRO, 2014). On the ground, the Municipal Government oversees the small lake via the local Barangay Officials and the Municipal Agriculture and Fisheries Council (MAFC). A Barangay is under the local governments and is the smallest and lowest-level administrative-legislative unit in the country following Local Government Code. MAFC is an advisory body attached to the Municipal Government and tasked with supervising and monitoring agricultural development projects. Although MAFC covers all of the Municipality of Dolores, the council has members from the fish cage operators and fisherfolk which serves as the de facto representatives of Gunao Lake in the absence of an organised Fisheries and Aquatic Resources Management Council (FARMC) in the lake (following the mandate of RA 8550 or the Fisheries Code of the Philippines).

The Governance-Development-Conservation Performance in Gunao Lake

The first criterion refers to whether a lake-based association or council has been created for the administration of the water resource. The Philippine Fisheries Code designates the Municipal FARMC as the principal partner of the local governments in managing, conserving, developing, protecting, utilising and disposing of all fish and fishery/aquatic resources within their respective municipal waters (see RA 8550, Section 16). The law stipulates that a FARMC be organised by the local government in each of its municipal water and be composed of the following: Municipal Planning Development Officer; Chairperson, Agriculture/Fishery Committee of the Municipal Legislature; representative of the Municipal Development Council; representative from the accredited non-government organisation (NGO); representative from the private sector; representative from the Department of Agriculture; and at least seven fisherfolk representatives (e.g., fish farm workers, fish farm operators, as well as representatives from youth and women sector). Specifically, the Municipal FARMC is envisioned to perform the following functions: (1) assist in the preparation of the Municipal Fishery Development Plan; (2) recommend

the enactment of municipal fishery ordinances; (3) assist in the enforcement of fishery laws, rules and regulations in municipal waters; (4) advise the local government on fishery matters; and (5) perform other fishery related functions/activities (see RA 8550, Section 73, 74 and 75).

Despite the established essentiality of having a lake-based association or council for managing the water resource, Gunao Lake has no existing locally organised body at present. This shortcoming was echoed in the CENRO's preliminary assessment of the lake in 2014 (following its Protected Areas, Wildlife and Coastal Zone Management Service [PAWCZMS] targets for Inland Wetland Conservation). CENRO specifically recommended for the creation of a management council that can monitor the activities on Gunao Lake as well as formulates policies and implements programmes relating to the conservation, protection and management of the lake (CENRO, 2014). The lack of a lake-based management council or Municipal FARMC in Gunao Lake is traceable to the non-prioritisation of the lake in the development agenda of the local government. So far, the attention of the Municipal Government is merely confined to the Mount Banahaw area, its main tourist attraction, and has not spilled over to the small lake.

In the absence of a management council or Municipal FARMC, the overseeing of Gunao Lake is handled by MAFC through its 16 fisherfolk members which are composed of fish cages operators and workers from Barangay Dagatan and Barangay Bungoy. By themselves, the fisherfolk members are organised informally and led by a de facto President, who has been their leader since the late-1980s. The absence of a management council or Municipal FARMC, consequently, translates to the weak promotion of interests in the lake, as it denies the existence of a key actor, linkage and forum. Conversely, its establishment would institutionalise the participation of community stakeholders, as it would provide the connecting mechanism and platform for involvement in managing and developing Gunao Lake.

The second criterion refers to whether a master plan has been formulated for the management and development of the lake. The MDA furnishes direction and precipitates programmes, projects and initiatives in the lake, as well as ensures their coherence and consistency. An MDP also provides a blueprint for addressing the utilisation issues of the lake, which usually is the “rivalry” between aquaculture and tourism. The plan can sort out the delicate issue of partitioning the lake—designating the specific areas

(including the extent and arrangement) for aquaculture and tourism which would facilitate the regulation of fish farms and the development of tourism.

Although there is no qualm among the stakeholders on the necessity of a master plan, Gunao Lake still has no MDP. In CENRO's preliminary assessment, the agency has identified the need to have a master plan for the effective governance and conservation of the small lake (CENRO, 2014). So far, the Municipal Government has not taken concrete steps to initiate the formulation of a master plan for the lake. Similar to the absence of a lake-based management council, the lack of an MDP for Gunao Lake is also connected with its non-prioritisation in the development agenda of the local government, being mainly devoted to Mount Banahaw tourism area. To date, tight finance is the usual reason cited for the Municipal Government's lack of action. However, initiating and crafting an MDP is relatively less costly (than the many grandiose projects usually proposed in developing a lake) but its impact is significant to the overall management and conservation of the lake. The formulation of an MDP is more a labor-intensive (rather capital-intensive) activity requiring primarily consultations, meetings, and technical expertise (Brillo, 2017; Brillo et al., 2017a, 2017b). Thus, this makes a compelling argument for a local government, in spite of limited funds, to take action in formulating a basic plan. Without an MDP, the management of Gunao Lake has been done arbitrarily and without clear direction over the years. Because of this, the formulation of the MDP, together with the creation of a management council or Municipal FARMC, can be deemed as the most pressing issue in Gunao Lake.

The third criterion refers to whether the 10-percent-area-limit rule for aquastructures is being complied with in the lake. The over expansion of fish farming in pens and cages is the major cause for many extant problems of the inland water resources— from the proliferation of illegal settlements and structures to deterioration of water quality and eutrophication. In the country, the principal regulatory measure for fish pens and cages is 10-percent-limit rule for aquastructures imposed by the Philippine Fisheries Code which mandates that only 10 percent of the surface area of a lake can be allotted to fish pens and cages.

At present, only 13 fish farmers operate in Gunao Lake which can be divided into two groups: on the northern part of the lake are mostly fish farmers from Barangay Dagatan while on the southern tip is mostly from neighbouring Barangay Bungoy (see Figure 2). All in all, the total number of fish cages in Gunao Lake is



Figure 2: Satellite photo of Gunao Lake (Google Maps 2016).

53 which is only around 5 percent of the surface area of the lake, and well within the 10 percent limit. This remarkable achievement was more a repercussion of converging circumstances, rather than the Municipal Government's deliberate regulatory action in Gunao Lake; such as (a) the occurrence of fishkills in the lake which have resulted in losses among fish farmers; (b) the slow fish growth and inferior fish yield (compared to Tilapia produced in Taal Lake or in the nearby seven crater lakes) which made fish farming less attractive relative to agriculture and crop production; and (c) the lobby of the locals to prevent "outsiders" to operate fish farms in the lake (as the unwritten rule is that only residents of Dolores should be permitted to operate fish farms).

The fourth criterion refers to whether tourism is being promoted/developed in the lake. In small lakes, the Tourism Act of 2009 led to their potential assessment and designation as tourist destinations. Tourism, specifically ecotourism, is seen as a means to augment the livelihood opportunities of the locals, enhance the economic stature of the municipality, and a way to preserve the water resource (LLDA, 2014, 2015). Moreover, tourism has also been promoted as alternative and/or complementary to fish farming in small lakes; particularly, in the light of the many problems associated with the over expansion fish farming.

Despite the potential, tourism has not been established in Gunao Lake. The Municipal Government and its

Tourism Office have not taken actions to organise and develop the small lake into a tourist destination—no tourism-related ordinance was passed, no information about the lake is being disseminated (even in the local government's office website), and no direction signage or marker to inform the public of the lake's existence. The local government's efforts on tourism are currently confined to Barangay Kinabuhayan and Barangay Santa Lucia in Mount Banahaw area, its traditional tourist attractions. So far, the Municipal Government has not taken any effort to link-up Gunao Lake into its ongoing tourism development in Mount Banahaw area. A reason for this is that the local officials have viewed Gunao Lake as separate and have not envisioned that it can complement and enhance the existing tourism in Mount Banahaw.

In the past, exploratory talks were conducted on developing tourism in Gunao Lake and Manlalayes Lake (its dried-out twin lake). In particular, a proposal was made to dredge and revive Manlalayes Lake and to construct a circumferential road. However, the discussions did not go beyond the drawing board, as it fizzled out mainly due to lack of funds. On one hand, the Municipal Government prefers to spend its limited budget on tourism in improving its facilities and services in Mount Banahaw, and on the other hand, the cost of undertaking the dredging of the dead lake and preventing the likelihood of recurrence of siltation (i.e., the cause of its disappearance) was deemed impractical. At the moment, the cementing of the Barangay road from Barangay Putol of San Pablo city to Barangay Putol and Dagatan of Dolores which runs across the twin lakes (northern side of Gunao Lake and western side of Manlalayes Lake) is the only significant tourism-related development in Gunao Lake.

The fifth criterion refers to the maintenance activities. The water quality analysis refers to a periodic evaluation of the lake's water to determine the changes and effects in relation to its utilisations and development activities, and to serve as a guide in its management and conservation. The water quality is usually assessed based on the water classification under the DENR Administrative Order 34 Series of 1990 (DENR 1990), and ideally conducted at least once to four times in a year. In Gunao Lake, the regular assessment of water quality is not being practiced, as even the Municipal Government has no record of its water evaluation. Although in the past, a water quality analysis was conducted when a fishkill occurred in the lake.

The clean up operations refers to regular activities conducted to remove debris and other polluting materials

in the lake and surroundings that might contaminate the water resource and its ecosystem as well as diminish its natural beauty. The rule of thumb is that the more often the clean up activities are carried out the better for the lake. In Gunao Lake, the clean up operations are being done by the local fish cage operators since there is no management council or Municipal FARMC. It is also exercised on "bayanihan" (volunteer labour) basis since the programme has not been institutionalised by the local government. Since the lake has no inflowing or outflowing creeks/streams and has no problem regarding informal settlers, the cleaning operations usually entail removal of leftover materials and bamboo structures from abandoned fish cages.

The fingerling dispersal/seeding refers to the periodic release of fish fries in the lake to improve its productivity and benefit the fisherfolk. Usually, this activity is being launched annually on lakes by the administrative agency in partnership with the Bureau of Fisheries and Aquatic Resources (BFAR) (e.g., see LLDA, 2008, 2012, 2013). In Gunao Lake, fingerling dispersal/seeding has been conducted occasionally by the PAFD upon the request of MAFC or the Office of the Municipal Agriculturalist. The usual practice is to disperse fingerlings in the lake and supply fish fries to the fish farmers.

Conclusion

The assessment delineated the governance and development status of Gunao Lake as well as identified the areas of deficiency and their salient factors. The criteria utilised are the essential enablers of governance, development and conservation of a small lake, and improving on them are crucial if meaningful change is to be gained in Gunao Lake. The findings showed the areas for improvement: organising a management council, formulating an MDP, promoting tourism, and institutionalising maintenance activities. Tying all together, it elucidates the failure of the Municipal Government to take serious action in Gunao Lake. This nonfeasance points to the little interest of the local government on the small lake due mainly to limited funds and failure to integrate its development within the Municipality's centrepiece tourism project in Mount Banahaw area. As mentioned, the tourism funds and efforts of the Municipal Government are primarily dedicated to the improvement of the Mount Banahaw area. As a consequence, Gunao Lake has been perennially placed outside the priority of the administrative agency, and thus, failing to realise the

development potentials of the inland water resource. Conversely, this underscores the local government's commitment as critical to gain grounds in the management, conservation and development of Gunao Lake.

In closing, the article literally placed Gunao Lake on the map of scholarly literature by providing baseline-steering information about the inland water resource; particularly, by illustrating the governance-development circumstances and experiences of a little known small lake in the country. This undertaking is timely and consequential—considering the threatened condition of lakes in the country (see Aralar et al., 2005, 2013; Fernandez, 2011; GNF, 2014) and the now acknowledged abundance (see Lehner and Doll, 2004; Downing et al., 2006; Oertli et al., 2009; Brillo, 2015a) and ecological significance of small lakes (see Kelly et al., 2001; Smith et al., 2002; Scheffer et al., 2006; Hanson et al., 2007; Downing, 2010). Under this context, the study hopes to instigate more studies on Gunao Lake, in particular, and small lakes, in general, as they are numerous in the country (and in the world).

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Calendar of Events

The 4th International Conference on Energy and Environmental Science (ICEES 2020)--Ei Compendex, Scopus

8th to 10th January 2020

Perth, Australia

Website: <http://www.icees.org>

Contact person: Ms. Geely Deng

Organized by: ICEES

19th Athens-Greece International Conference on Agriculture, Biological and Environmental Sciences (AABES-20)

15th to 17th January 2020

Athens, Greece

Website: <http://ffabs.org/conference/241>

Contact person: Kim Torre

Organized by: International Forum on Food, Agriculture and Biological Sciences

11th International Conference on Environmental Science and Development (ICESD 2020) – EI Compendex, Scopus

10th to 12th February 2020

Barcelona, Spain

Website: <http://www.icesd.org/>

Contact person: Ms. Emma Chen

Organized by: ICESD

Barcelona – 21st International Conference on Chemical, Biological and Environmental Sciences (BCBES-20)

11th to 13th February 2020

Barcelona, Spain

Website: <http://cbmsr.org/conference.php?slug=BCBES-20&sid=2&catDid=230>

Contact person: Simmi Cook

Organized by: International Association of Chemical, Biological & Medical Sciences Researchers

3rd International Conference on Sustainable Development

27th February 2020

Pretoria, South Africa

Website: <http://sustainableconference.science/icsd/>

Contact person: Dilshan Gamage

International Conference on Waste Recycling and Management (ICWRM 2020)

13th to 16th March 2020

Amsterdam, Netherlands

Website: <http://icwrn.org/>

Contact person: Ms. Amber Lin

Organized by: ICWRM

GEOLINKS Conference on Environmental Sciences

23rd to 26th March 2020

Plovdiv, Bulgaria

Website: <http://www.geolinks.info>

Contact person: Maria Nikolcheva

Organized by: GEOLINKS Conference on Environmental Sciences

5th Asian Symposium on Water, Sanitation and Hygiene (WASH 2020)

28th and 29th March 2020

Osaka, Japan

Website: <http://intesda.org/water-sanitation-hygiene-symposium/>

Contact person: Michael Sasaoka

Organized by: INTESDA