Ramsar Information Sheet

Published on 11 October 2023

Vanuatu

Lake Letes

Designation date	15 September 2023
Site number	2524
Coordinates	14°16'47"S 167°31'46"E
Area	8 248,12 ha

Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

1 - Summary

Summary

Lake Letes is a 1,971 ha freshwater lake in Torba Province, Republic of Vanuatu, on the island of Gaua, where a 40 km wide and 3km high stratovolcano is located. The Lake occupies the caldera of an active volcano and is the largest lake in the Pacific Islands region outside of New Guinea. With a total area of 8,523 ha, the Ramsar Site comprises the entire catchment of the lake, as well as of its outflow, Solomul River (Lusal River), to where it meets the sea. Within the caldera, the catchment comprises mostly of rainforest or secondary closed scrub and has no permanent human residents. River catchment on the outer slopes has been partly modified for agriculture.

Permanent Lake and River are representative wetland types of the Vanuatu Rainforests Ecoregion and Lake Letas is the largest lake in this Ecoregion. The Site contributes to maintaining the biodiversity of the Ecoregion by supporting two freshwater fishes, the gobies (Schismatogobius vanuatuensis and Stiphodon astilbos) found in the Solomul River, which are among the five freshwater fishes that are endemic to Vanuatu. The Solomul River is is a migration corridor for eels who migrate to the lake for refuge in the lake and to distant pelagic spawning areas.

Primary ecosystem services provided by the Site are protein food resources for local people and local eco-tourism businesses (visitors to Siri Waterfalls and Lake Letas). The Site is under customary ownership by local residents, where the indigenous landowners of the Site harvest abundant giant mottled eels (Anguilla marmorata), Pacific long-finned eel (A. megastoma) and prawns from the Lake and eels and other fishes from the rRver. Fish and crustacean have been overharvested and are potentially threatened by introduction of exotic fishes such as Tilapia. Eco-tourism has minimal impacts on the Site but planning for ecologically sustainability growth is needed.

The Site is entirely within a Community Conservation Area (CCA) that is in process to be designated under national legislation. Maintenance of the ecosystem services and ecological character of the Site are supported by a locally developed and adopted management plan, a management committee and enforceable rules for resource use.

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Responsible compiler

Institution/agency: Vanuatu Department of Environmental Protection and Conservation

Postal address:
PMB 9063
George Pompidou Building
Port Vila
Shefa Province
Republic of Vanuatu

National Ramsar Administrative Authority

Institution/agency: Department of Environmental Protection and Conservation - Vanuatu

Postal address:
C/- Ministry of Climate Change Adaptation
PMB 9063
Port Vila
Vanuatu

2.1.2 - Period of collection of data and information used to compile the RIS

From year: 2012

To year: 2017

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish): Lake Letes

Unofficial name (optional): May also be spelt: Lake Letes

2.2 - Site location

2.2.1 - Defining the Site boundaries

b) Digital map/image
<1 file(s) uploaded>

Former maps: 0

Boundaries description

The Site comprises the waters of Lake Letes on the island of Gaua (Santa Maria), Vanuatu, and its entire catchment (equating to the rim of the caldera in which the lake sits), as well as the outflowing Solomul River (7.3 km) and its catchment, to where it meets the sea. It includes a buffer of 100m beyond the catchment edge. The Site boundary coincides exactly with the boundary of the Lake Letes Community Conservation Area, which is in process to be designated under national legislation.

2.2.2 - General location

a) In which large administrative region does the site lie? Torba Province

b) What is the nearest town or population centre? Sola, which is on Vanua Lava Island and lies 45 km due north of the lake; this is where the Torba provincial offices are situated

2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes ○ No ◉

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes ○ No ◉

2.2.4 - Area of the Site

Official area, in hectares (ha): 8248.12

Area, in hectares (ha) as calculated from GIS boundaries: 8217.487

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
WWF Terrestrial Ecoregions	Island group northeast of Australia—Vanuatu Rain Forests.

Other biogeographic regionalisation scheme

Note: no Freshwater Ecoregion has been defined in Vanuatu territory.

3 - Why is the Site important?

3.1 - Ramsar Criteria and their justification

☑ Criterion 1: Representative, rare or unique natural or near-natural wetland types

Other reasons: Lake Letes is a good representative example of a permanent freshwater lake (Ramsar Type O) and Solomul River is a good representative example of a permanent freshwater river (Type M), within the Vanuatu Rainforests Ecoregion. Lake Letes is particularly a good example of a caldera lake within an active volcano system (Mt Garet). It is the largest freshwater lake, not only in the Ecoregion, but also in the entire Pacific Islands region outside of New Guinea.

☑ Criterion 2 : Rare species and threatened ecological communities

Optional text box to provide further information: Whitewood (Endospermum medullosum) is categorized as Vulnerable in the IUCN Red List and found at this Site.

☑ Criterion 7 : Significant and representative fish

Justification: The Site (Solomul River) is important for contributing to the biological diversity of the Vanuatu Rainforests Ecoregion because it supports at least two of the five freshwater fishes that are endemic to Vanuatu: the gobies (Schismatogobius vanuatuensis and Stiphodon astilbos) (Keith et al. 2007, Keith et al. 2010; SPREP 2014). Freshwater diversity in the Solomul River and its three tributaries includes 15 crustacean species (including 5 Macrobrachium shrimps and 4 Caridina species) and 18 fishes species (including the two endemic species to Vanuatu and 3 species of Stiphodon) (Keith et al. 2007). These fish have not been recorded in the lake part of the Site. Freshwater biodiversity in the lake includes freshwater prawns (Atyoides pilipes and Caridina typus) and two eels (Anguilla marmorata and A. megastoma).

☑ Criterion 8 : Fish spawning grounds, etc.

Justification: Lake Letes supports the giant mottled eel (Anguilla marmorata) and the Pacific long-finned eel (A. megastoma) as well as freshwater prawns (Atyoides pilipes and Caridina typus), all of which are harvested at small scale by local landowners (SPREP 2014). Inflow of geothermal waters to the lake is thought to enhance the nutrient levels of the lake and thus enable the eels and prawns to grow to large sizes in the lake (Schabetsberger et al. 2009; SPREP 2014). Local people also harvest eels and crustaceans from the outflow river. The Solomul River is a vital migration corridor for mature individuals of A. marmorata and A. megastoma from Lake Letes to spawning grounds in distant pelagic waters outside Vanuatu territory, some having been satellite tracked for over 800 km to the north-east (Schabetsberger et al. 2009; SPREP 2014). Elvers from the spawning grounds travel to Lake Letes via the same migration pathway, climbing the margins of Siri Waterfall. Lake Letes is considered to support a large population of these eels (Schabetsberger et al. 2009; SPREP 2014) although this has not been systematically assessed.

3.2 - Plant species whose presence relates to the international importance of the site

Phylum	Scientific name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
Plantae								
TRACHEOPHYTA / MAGNOLIOPSIDA	*Endospermum medullosum*	☑	☐	☐	VU	☐		

3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
Fish, Mollusc and Crustacea																	
CHORDATA / ACTINOPTERYGII	*Anguilla marmorata*	☐	☐	☐	☐	☐	☐	☐	☑				LC	☐	☐		Life cycle stage=migration
CHORDATA / ACTINOPTERYGII	*Anguilla megastoma*	☐	☐	☐	☐	☐	☐	☐	☑				DD	☐	☐		Life cycle stage=migration
CHORDATA / ACTINOPTERYGII	*Schismatogobius vanuatuensis*	☐	☐	☐	☐	☐	☐	☑	☐				DD	☐	☐		Endemic Species
CHORDATA / ACTINOPTERYGII	*Stiphodon astilbos*	☐	☐	☐	☐	☐	☐	☑	☐				DD	☐	☐		Endemic Species

1) Percentage of the total biogeographic population at the site

Atyoides pilipes and Anguilla melastoma have not yet been assessed for the IUCN Red List.

3.4 - Ecological communities whose presence relates to the international importance of the site

<no data available>

4 - What is the Site like? (Ecological character description)

4.1 - Ecological character

Lake Letes is located in the caldera of the Gaua Island's stratovolcano. The Mt Garet that lies within this caldera actively emits gases and infrequently erupts at minor scale, but has the potential to erupt catastrophically. The Lake has moreover a constant depth and its nutrient levels are affected by geothermal contributions. If allowed, extensive gardening or logging in the catchment could alter the Lake' water quality and consequently its bio-productivity. The Lake has some submerged aquatic plants and fringing aquatic vegetation, while Pandanus and Barringtonia racemosa trees occur around the edges. Rainforest and scrub communities cover the Lake's catchment, which are being protected within the Conservation Area.

Annual rainfall at the Site is at least 4000 mm and the runoff into the lake and inflow from the geothermal spring water are moreover consistent through the year with slight seasonal variations. The rainfall may vary from the influences of El Nino/ La Nina and climate change. Outflow from the Lake into the Solomul (Lusal) River and to the sea is higher in the wettest months from January to March. Mature eels migrate via this River to the sea and elves migrate from the sea to the Lake by climbing the waterfall. Overharvest is a major threat to these fishes at the Site. Local reports suggest that some waterbirds including grebes breed in the lake. Hunting poses a major threat to these birds.

The Site provides food resources (eels, prawns) to the landowners, but ongoing overharvest of these fishes and introduction of invasive Tilapia may severely reduce their populations. Extraction of timber and other building materials from the catchment forest is now banned inside the Conservation Area. Small-scale eco-tourism ventures operated by local landowners bring visitors to Siri Waterfall and limited canoeing and diving occur in and around the lake. Eels and their migration patterns are also being studied at the Site.

For management purposes, there should be limits set to the current human-induced changes and introduction of exotic fish/animals should not be permitted in the Site. Similarly, eels and prawns harvest could be limited to the near-traditional levels and increase in eco-tourism could be reviewed and limited if necessary. Current conservation rules may help in reducing human disturbances to the soil and vegetation of the Site.

4.2 - What wetland type(s) are in the site?

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Flowing water >> M: Permanent rivers/ streams/ creeks		2		Representative
Fresh water > Lakes and pools >> O: Permanent freshwater lakes		1	1971	Representative
Fresh, saline, brackish or alkaline water > Geothermal >> Zg: Geothermal wetlands		3		Representative

Other non-wetland habitat

Other non-wetland habitats within the site	Area (ha) if known
Rainforest and secondary closed scrub.	

(ECD) Habitat connectivity: The Site comprises the entire river basin of the Solomul River and the Lake is connected to the sea.

4.3 - Biological components

4.3.1 - Plant species

Other noteworthy plant species

Phylum	Scientific name	Position in range / endemism / other
TRACHEOPHYTA/MAGNOLIOPSIDA	*Alphitonia zizyphoides*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Barringtonia racemosa*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Bischofia javanica*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Dysoxylum aneityense*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Ficus subcaudata*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Garuga floribunda*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Gyrocarpus americanus*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Intsia bijuga*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Macaranga tanarius*	
TRACHEOPHYTA/LILIOPSIDA	*Metroxylon warburgii*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Myristica fatua*	
TRACHEOPHYTA/POLYPODIOPSIDA	*Sphaeropteris lunulata lunulata*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Taliparitti tiliaceum*	

Invasive alien plant species

Phylum	Scientific name	Impacts
TRACHEOPHYTA/MAGNOLIOPSIDA	*Merremia peltata*	Actual (major impacts)

4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Pop. size	Period of pop. est.	%occurrence	Position in range /endemism/other
CHORDATA/AVES	*Tachybaptus novaehollandiae leucosternos*				

Invasive alien animal species

Phylum	Scientific name	Impacts
CHORDATA/ACTINOPTERYGII	*Oreochromis niloticus*	Potential

Optional text box to provide further information

Population size of Australasian Grebe ranges from 50 to 100

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
A: Tropical humid climate	Af: Tropical wet (No dry season)

Gaua experiences fluctuations in rainfall that may be attributed to El Nino and La Nina events.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres): 0

a) Maximum elevation above sea level (in metres): 797

- [x] Entire river basin
- [ ] Upper part of river basin
- [ ] Middle part of river basin
- [ ] Lower part of river basin
- [ ] More than one river basin
- [ ] Not in river basin
- [ ] Coastal

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

The Site comprises the Solomul River basin (5000 ha) within the island of Gaua (34,200 ha), situated in the western Pacific Ocean within the Vanuatu archipelago. The surface of the lake is at 418 m above sea level.

4.4.3 - Soil

- [x] Mineral
- [ ] Organic
- [ ] No available information

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes ○ No ◉

Please provide further information on the soil (optional)

Soil throughout the Site is of volcanic origin, of varied ages. On coastal slopes within the Site, the soil supports shifting agriculture.

4.4.4 - Water regime

Water permanence

Presence?	
Usually permanent water present	No change

Source of water that maintains character of the site

Presence?	Predominant water source	
Water inputs from surface water	☑	No change

Water destination

Presence?	
Marine	No change

Stability of water regime

Presence?	
Water levels largely stable	No change

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology:

Geothermal springs contribute a small proportion of the lake's water. Water levels in the lake are more or less constant due to year-round rainfall (annually: more than 4000 mm), possibly supplemented by groundwater in the drier months. There is also a permanent outflow river, which discharge is greater in the wettest month. Discharges measured at the area close to the sea in the river's three tributaries were 18.0, 0.9 and 6.1 cubic metres per second respectively, from the northern to the southern channel. The discharge rates increase during heavy rainfall (Schabetsberger et al. 2013).

4.4.5 - Sediment regime

Significant erosion of sediments occurs on the site ☐

Significant accretion or deposition of sediments occurs on the site ☐

Significant transportation of sediments occurs on or through the site ☐

Sediment regime is highly variable, either seasonally or inter-annually ☐

Sediment regime unknown ☑

Please provide further information on sediment (optional):

The Site's catchment is nearly completely covered by forest/scrub, which trap the sediment loads before the runoff water reaches the Lake.

(ECD) Water turbidity and colour	Lake and river water are clear in some parts and murkier close to hot springs
(ECD) Light - reaching wetland	Oxygen is available at the deepest point of the lake (Schabetsberger et al. 2013).
(ECD) Water temperature	above 26.8 C

4.4.6 - Water pH

Acid (pH<5.5) ☐

Circumneutral (pH: 5.5-7.4) ☐

Alkaline (pH>7.4) ☑

Unknown ☐

Please provide further information on pH (optional):

The pH is alkaline conditions of pH> 7.6

4.4.7 - Water salinity

Fresh (<0.5 g/l) ☑

Mixohaline (brackish)/Mixosaline (0.5-30 g/l) ☐

Euhaline/Eusaline (30-40 g/l) ☐

Hyperhaline/Hypersaline (>40 g/l) ☐

Unknown ☐

(ECD) Dissolved gases in water

Oxygen concentration measured dropped from 7.10 mg/l at 10 m depth to 4.98 mg/l at 15 m depth.

4.4.8 - Dissolved or suspended nutrients in water

Eutrophic ☐

Mesotrophic ☐

Oligotrophic ☐

Dystrophic ☐

Unknown ☑

Please provide further information on dissolved or suspended nutrients (optional):

The Lake is constantly fertilised by inflow of nutrient-rich, warm volcanic springs (Schabetsberger et al. 2013).

(ECD) Water conductivity: 614 µS cm-1 at the surface to 573 µS cm-1 at 30 m

4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the site itself: i) broadly similar (●) ii) significantly different ( )

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Food for humans	Sustenance for humans (e.g., fish, molluscs, grains)	Medium

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Nature observation and nature-based tourism	Medium
Spiritual and inspirational	Contemporary cultural significance, including for arts and creative inspiration, and including existence values	Medium
Scientific and educational	Important knowledge systems, importance for research (scientific reference area or site)	Medium

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganizms, the genes they contain, and the ecosystems of which they form a part	Medium

Within the site: 10-100

Outside the site: 10-100

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes ( ) No (●) Unknown ( )

4.5.2 - Social and cultural values

i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland ☐

ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland ☐

iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples ☐

iv) relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland ☐

<no data available>

4.6 - Ecological processes

<no data available>

5 - How is the Site managed? (Conservation and management)

5.1 - Land tenure and responsibilities (Managers)

5.1.1 - Land tenure/ownership

Other

Category	Within the Ramsar Site	In the surrounding area
Commoners/customary rights	☑	☑

Provide further information on the land tenure / ownership regime (optional):

All land in the Site is under customary ownership, which is recognized by the Government of Vanuatu. Indigenous people of Gaua own most of the land; a few small portions in the outflow area near the coast are owned by immigrants from other islands in Torba Province, who purchased those areas one or two generations ago. The land is owned by individuals or their families, who belong to clans or groups of families under a customary chief. One or more clans may share a common language of which there are six presently spoken on Gaua (5 indigenous, and one spoken by immigrants). The Garet Council of Chiefs is the ultimate decision making body on Gaua. Human population at Gaua is less than 3000 people.

5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site:	As the Site boundary exactly matches that of the Lake Letes Community Conservation Area (CCA), the CCA Management Committee—which is in process to be prescribed under Vanuatu national legislation—has management authority over the Site. The Committee comprises 7 members who broadly represent the landowners and other stakeholders of the CCA and Site; it has authority to monitor and enforce adherence to community-endorsed rules of the CCA. The Secretary of the Management Committee for the Lake Letes Community Conservation Area is Mr Ricky Simeon Mol (Mobile +678 546 1709).
Provide the name and/or title of the person or people with responsibility for the wetland:	Ricky Simeon Mol
Postal address:	c/- Siri Ecotours, Gaua Island, Torba Province, Republic of Vanuatu
E-mail address:	siriecotour@gmail.com

5.2 - Ecological character threats and responses (Management)

5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Annual and perennial non-timber crops	Low impact	Low impact	☑	☑

Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Fishing and harvesting aquatic resources	Medium impact		☑	☐

Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Invasive non-native/ alien species	Medium impact	Medium impact	☑	☑

Geological events

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Volcanoes		High impact	☑	☑

Climate change and severe weather

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Storms and flooding		Low impact	☑	☑

Please describe any other threats (optional):

The most serious impacts on the Site are from the active Mt Garet volcano (a small cone within the caldera, at the Lake's edge). In recent decades, there has been minor eruptions that lead to destruction of forest vegetation on the slopes of its cone. This vegetation has recovered somewhat. The last eruption was in 2013.

Vanuatu experiences 2-3 tropical cyclones each year, some highly destructive, e.g. Cyclone Pam in March 2015 impacting the region from Efate to Tanna. At the Site, cyclones could damage vegetation in the lake catchment and produce heavy floods. However, the exact level of possible impact is not known.

The invasive species, Meremia peltata, is found around the lake and has a medium impact on the Site. It can present a bigger problem if not managed well.

5.2.2 - Legal conservation status

National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Community Conservation Area	Lake Letas Coomunity Conservation Area		whole

5.2.3 - IUCN protected areas categories (2008)

- Ia Strict Nature Reserve ☐
- Ib Wilderness Area: protected area managed mainly for wilderness protection ☐
- II National Park: protected area managed mainly for ecosystem protection and recreation ☐
- III Natural Monument: protected area managed mainly for conservation of specific natural features ☐
- IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention ☐
- V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation ☐
- VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems ☑

5.2.4 - Key conservation measures

Legal protection

Measures	Status
Legal protection	Partially implemented

Habitat

Measures	Status
Catchment management initiatives/controls	Proposed

Species

Measures	Status
Control of invasive alien animals	Proposed

Human Activities

Measures	Status
Harvest controls/poaching enforcement	Proposed

Other:

The Community Conservation Area (CCA) is in process of being officially designated under the Vanuatu's National legislation.

5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site? Yes ○ No ◉

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes ○ No ◉

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

Small scale eco-tourism activities such as guided tours operate in the Site and may expand in the near future. However, they do not have substantial written or signed information on the Site.

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No need identified

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Animal species (please specify)	Proposed

Animal species that are highly proposed for monitoring are the eels and giant prawns in the Lake. Under a geo-hazard program operated by the national Government, the volcanic/seismic activity at Mt Garet is being remotely monitored by Geohazards Section within the Department of Geology and Mines.

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

Keith, P., Lord, C., Marquet, G., Gerbeaux, P. & Kalfatak, D. 2007. List of freshwater species recorded in the rivers of Vanuatu. Unpublished table of records.

Keith, P., Marquet, G., Lord, C., Kalfatak, D. & Vigneux, E. 2010. Vanuatu Freshwater Fish and Crustaceans. Societie Francaise d'Ichthyologie, Paris.

Government of Vanuatu 1999. National Biodiversity Conservation Strategy. Report of the Vanuatu National Biodiversity Strategy & Action Plan Project, 84 pp.

Schabetsberger, R., Drozdowski, G., Rott, E., Lenzenweger, R. and others 2009. Losing the bounty? Investigating species richness in isolated freshwater ecosystems of Oceania. Pac Sci 63: 153−179.

Schabetsberger, R., Økland, F., Aarestrup, K., Kalfatak, D., Sichrowsky, U., Tambets, M., Dall'Olmo, G., Kaiser, R. & Miller, P. 2013. Oceanic migration behaviour of tropical Pacific eels from Vanuatu. Marine Ecology Progress Series Vol. 475: 177–190.

SPREP 2014. Update of Wetland Inventory, Vanuatu, 2014. Secretariat of the Pacific Regional Environment Programme, Apia.

TCSP (1990). Guidelines for the Integration of Tourism Development and Environmental Protection in the South Pacific. Tourism Council of the South Pacific, Suva, Fiji.

Wetlands International 2016. Waterbird Population Estimates, 5th edition. Accessed online at http://wpe.wetlands.org/search on 2 August 2016.

6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)
<no file available>

ii. a detailed Ecological Character Description (ECD) (in a national format)
<no file available>

iii. a description of the site in a national or regional wetland inventory
<no file available>

iv. relevant Article 3.2 reports
<no file available>

v. site management plan
<1 file(s) uploaded>

vi. other published literature
<no file available>

6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:

Lusal River, Gaua Island, Vanuatu (*Eco-Lifelihood Development Associates, 23-12-2016*)

No Tilapia Sign Board, Lake Letas, Gaua Island, Vanuatu (*Eco-Lifelihood Development Associates, 23-12-2016*)

Lake Letas, Gaua Island, Vanuatu (*Eco-Lifelihood Development Associates, 23-12-2016*)

Lake Letes + Siri Waterfall (*Mark Turnbull, 25-06-2021*)

6.1.4 - Designation letter and related data

Designation letter
<1 file(s) uploaded>

Date of Designation: 2023-09-15