

Additional information

Physical features of the site:

The proposed Ramsar area has a surface of 13500 ha (see attached map). The territory comprises a wide variety of landscape features from mountain to plain and from freshwater marsh to saltwater lagoons and rocky coast.

The main wetland area comprises Lake Butrint, Lake Bufi and the areas of the Vurgu plain in the north (including reed beds) and Vrina-Mursia plain in the south (including a shingle bank and temporary freshwater marsh). This part represents a tectonic graben of the plioquaternary, with descending movements still in progress. Riverbeds are shallow and wide.

Table 2. Physical parameters of Lake Butrint

Total water surface	1600 ha.
Total water volume	$211 \times 10^6 \text{ m}^3$
Greatest depth	21.5 m
Mean depth	11 m
North-south dimension	7.1 km
East-west dimension	3.2 km

Lake Butrint is surrounded by different ranges of mountains and hills: Mile mountain range to the east (845 m), Sotira to the west (240 m) and Stillo to the south (240 m). This higher terrain complements the lower wetland areas by providing environmental corridors and areas where there is less human disturbance for wildlife.

Physical features of the catchment area:

The catchment area of the proposed Ramsar Site is extremely large (information not available for the surface of the catchment area) compared to the surface of the proposed site itself. It is similar to the one of the rivers pouring in the area, i.e., Bistricea, Kalasa and Pavllo.

The upper part of the catchment area of Bistricea and Kalasa is characterized by mountainous terrain, continues further down with hills and ends in Vurgu Plain. Pavllo springs are located in the mountainous part of Greece (very near to the Albanian border). Its catchment area is again mountainous in its upper parts. It goes through a very narrow gorge and it ends in Murrssia plain. The upper part of the catchment area is covered by meadows and mixed forests (Beech, Pine, Oak etc..)

Soils are calcareous in the upper part of the catchment area and it changes in grey brown, with subtypes of pasture grey brown, alluvial and saline silts in the plain of Vurgu and Murrssia.

The population is thought to be between 20-50,000 inhabitants. The main towns in the region are Saranda (pop. est. 20,000) and Delvina (pop. est. 7,000). The main activities are tourism-related services (hotels, restaurants and transport) and agriculture (crop production, livestock raising). Tourism services are focused in Saranda with a maximum of 1,800 beds.

The climate of the area is typical mediterranean, with dry and hot summer, and wet and mild winters. The mean annual temperature is 17.1°C. The average rainfall in Saranda is 1509 mm/year, with an important precipitation period in winter (about 70%).

Ecosystem services

Current land use:

(a) within the Ramsar site:

There are 7 small villages (Blerimasi, Dritasi, Pllaka, Vrina, Mursia, Shen Deli, Xarra) within the proposed Ramsar area and 1 large village (Ksamili). The estimated total population is 7,700 people with more than half based in Ksamili. The principal activities are tourism (hotels and restaurants), agriculture (subsistence farming, crop production, olive tree plantation, orchards, vineyards, and livestock raising), fishing and mussel cultivation. Tourism is the main economic activity.

Agricultural and arboricultural activities, although less intensive than in the past, still remain important sectors of the local economy. Stock raising and grazing (sheep and goats) represent one of the main activities in the Butrint area.

Fishing and mussel cultivation is an important economic activity for the local population. Fishing is applied in the lakes as well as in the littoral. A fish trap is permanently installed in Vivari Channel. This takes about 60% of the annual catch of the whole lake. The catches fluctuate between 570-1100 kg/year. Mussels *Mytilus galloprovincialis* have been exploited since 1968 but their proper cultivation started in 1970 with production arriving to 1000–6000 kg/year and after technological improvements the product increased to a maximum of 50,000 kg in 1990.

(b) in the surroundings/catchment:

The population of surrounding areas is thought to be between 20-50,000 inhabitants according to a World Bank report (Anon 1995). The main town in the region is the port of Saranda (pop. est. 20,000) which acts as a gateway to the area.

The main activities are tourism-related services (hotels, restaurants and transport) and agriculture. Tourism services are focused in Saranda with a maximum of 1,800 beds.

Agriculture (subsistence farming, crop production, livestock rearing and production of olives, citruses, vineyards and vegetables)) occurs in the areas to the north and south of the proposed Ramsar area. The Bistrica River in the north and Pavllo in the south are used for the irrigation of Vurgu plain (north) and Vrina-Mursia plain (south).

Hydrological values:

Butrint plays an important role in flood control and sediment trapping.

Flood control

Lake Butrint and the Pavllo River prevent heavy flooding on their respective upstream areas. Lake Butrint serves as a retention basin for surplus waters from the Vurgu plain and reduces the risks of flooding. Pavllo River, in the southern part of the complex, plays the role of a drainage channel evacuating the surplus waters from the Vrina-Mursia area.

Sediment and nutrient retention

Lake Butrint and Lake Buçi serve as retention basin for sediments and nutrients that are used by wetland vegetation. Different domestic animals and fish use the vegetation as a major food resource. Pavlllo River, by bringing sediments down from the neighboring mountain region, helps in the advancement of the shoreline and the retreat of seawaters. This retreat reduces the influence of seawaters on inland aquifers and helps in the de-salinization of the agricultural area.

Social and cultural values:

Lake Butrint is surrounded by hills and mountains covered by Mediterranean maquis, oak woodland, olive groves and fruit orchards, and is complimented by saltwater and freshwater marshlands. The southern part of Lake Butrint, together with its surrounding historic landscape, was designated as a UNESCO World Heritage Site in December 1999.

The World Heritage Site of Butrint represents the single most important cultural asset of the Saranda region and arguably Albania's only world class cultural asset. The social and cultural values associated with the site are:

- *Butrint is a source of cultural identity and national pride.* A place where one is traditionally taken as a child or as a reward for winning a competition or sporting event; the local radio station is called 'Radio Butrint'.
- *Butrint is a magical place, full of atmosphere.* The unspoiled landscape setting of Butrint possesses a unique combination of archaeology and nature.
- *Butrint is a place of outstanding natural beauty and natural bounty.* A richness of wildlife and flora; the woods of Butrint; the water of Butrint; fresh fish and mussels.
- *Butrint is a site of great archaeological and historical importance.* It is special for the longevity of the history represented in the monuments, as well as the wide variety of cultures represented.
- *Butrint is an important economic resource as a focus for tourism.* It is the primary attraction for visitors to the region and potential gateway to other archaeological and natural sites in southern Albania.
- *Butrint is an educational resource for schools and the general public.* Over 5,000 school children visit the site each year.

The Butrint National Park receives over 20,000 visitors a year and is the most important visitor attraction for the region. The Park directly employs 60 people and indirectly sustains the hotel and restaurant trade in Saranda and Ksamil (est. at 2,000 beds), various Corfu-Saranda ferry services and travel agents in both Corfu and Saranda.

Current recreation and tourism:

The Butrint National Park currently has an annual visitor number of c. 20,000 people. 70% of the visitors come between April and October, though weekend visitors are common

throughout the winter months. Three quarters of the visitors are Nationals with the remaining visiting on day-trips from Corfu or as internationals living and working in Albania.

Currently the focus for visits is the main archaeological area of Buthrotum. Future Park development plans (2001) aim to develop this cultural tourism and encourage greater use of the landscape and wetlands through the development of small-scale boat rides, signed walks and nature tours. Likewise the Park wishes to encourage winter visitors for bird watching and activity-based holidays (bird watching etc). These developments will be implemented in 2002.

Current scientific research and facilities:

Current scientific research is concentrated in the field of archaeology, geomorphology, geophysics, hydrology, botanic and zoology.

Archaeology

The first excavations at Butrint were undertaken by an Italian Archaeological Mission between 1928-1943. The Italian Mission made extensive excavations, conserved many of the monuments that they exposed, created a small museum and archaeological store, left a detailed archive of their work and published monographs and reports. Since World War II, archaeological research at Butrint has been conducted by Albanian archaeologists in collaboration with the Institute of Monuments carrying out a campaign of monument restoration. The results of their excavation work were published in the scientific journal *Illiria*, as well as a number of other journals. Since 1990, the Institute of Archaeology has continued excavations in collaboration with foreign research teams. Recent work has led to the discovery and investigation of a further 30 hectares of Buthrotum, the villa site of Diaporit and the mapping of a further 8 sites within the Butrint National Park. The main thrust of the archaeological research is the settlement and environmental transition of Buthrotum and its hinterland under Roman occupation and in the post-Roman period.

Archive research has led to the rediscovery of the excavation notes, drawings and photographs of the Italian archaeological mission, plus their unpublished manuscripts. A new programme of work will see this material, together with the Communist period material, put on to a GIS system for the Butrint National Park.

Geomorphology

A study on the history of the Holocene sedimentation of the Lake Butrint area was undertaken by a post-graduate from Sheffield University's Geography Department. This study looked at the formation of the Vrina plain and Lake Butrint and led to the discovery that Lake Butrint once formed part of a sea inlet.

Geophysics

Research is underway by a team from the University of East Anglia's School of Environmental Sciences into the recent development of the Vrina plain and the geophysical mapping of the archaeological and natural features, which have been buried by recent sedimentation. This work is also focused on developing geophysical techniques towards 3D modeling.

Hydrology

The Albanian Institute of Hydro-Meteorology since its creation in the 1950s has undertaken hydrological studies. The results of their research programmes are the basis of the hydrological description in this document. Scientific results have been published in monographs, reports and different scientific articles (see bibliography attached).

Botany and Zoology

Studies in the botany and zoology of the area are numerous. They have been conducted mainly by Albanian institutions such as Museum of Natural Sciences, Faculty of Natural Sciences, Institute of Biological Research and Institute of Fishery Research. Studies have been focused on phyto-planktons, zooplankton, mussels, fish, insects, amphibians and reptiles, birds and mammals. Results are published in different scientific papers, reports and University dissertations (see bibliography attached).

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

(a) within the Ramsar site:

The impacts on the ecological character of the area (inside and outside of Ramsar area) are:

Land reclamation and the intensification of agriculture

Land reclamation covered a surface area of more than 3000 ha and was completed in 1959. The wetlands of Vurgu (1000 ha) in the north and Vrina (300 ha) in the south were drained and cleared of associated woodland. The loss of wetlands was accompanied with extinction of certain species.

The new agricultural lands were used for both crop production and grazing. The pressure from overgrazing is still very high. The impact of this activity on the biological richness of the area has also increased. It has critically damaged the terrestrial habitats of the area by impoverishing the plant community and all the biota related with it.

Artificial fires are also a problem and result in the destruction of reed beds in the northern part of Lake Butrint, a habitat of particular importance for many nesting birds.

Hydrological works

As part of the reclamation work the Bistrica River was diverted into the sea and the Vivari Channel was deepened. This has resulted in changes of the physical-chemical parameters of Lake Butrint and a negative influence over the diversity of flora and fauna. Further increases of salinity will bring the reed beds to the north of Lake Butrint towards extinction.

Deforestation

A large surface area of oak woodland was destroyed as part of the reclamation works and through the development of agricultural terraces around the village of Ksamili.

Artificial fires are a new cause of destruction in recent years. Shepherds wanting new growth for grazing usually initiate these. The damage caused includes deterioration of the structure of soil and grassland as well as the loss of woodland. This negative practice damages not only the flora and fauna but also destroys soil nutrients and increases erosion.

Fishing and mussel cultivation

If fishing is developed in a sustainable way it does not have a negative impact on the area. In recent years illegal fishing methods, use of dynamite and poison, have heavily damaged the fishing resources.

It is also likely that mussel cultivation has had a large contribution to the eutrophication of Lake Butrint (see below).

Eutrophication

Butrint is today a mesotrophic lake with eutrophic tendencies. Eutrophication is expressed in dystrophic crises that have been observed especially between 1979-1983, resulting in a decrease of food resources, fish and mussel production. Eutrophication was stimulated by hydrological interventions such as the deviation of the Bistrica and Pavllo rivers and the over development of aquaculture (mussel cultivation). The reduction of fresh water entrances and the introduction of increased mussel production resulted in a lack of diluted oxygen and an increase in the decayed organic matter and sulfobacteria activity.

Uncontrolled development

Uncontrolled development is one of the main causes of habitat destruction and increased human disturbance. Its impact is stronger in the coastal area, particularly Ksamili, where constructions have been built without any legal permission. Proposed plans for the construction of new tourist settlements in ecologically sensitive areas are still a great risk for many species of conservation concern in the Butrint area.

Hunting

Illegal hunting methods (usage of automatic guns, no respect for hunting seasons and hunting bags, hunting of protected species) are a problem of great conservation concern. Hunting disturbance is also another factor having an indirect impact on animals.

Human disturbance

Human disturbance is very high and is a contributing factor to the reduction of biodiversity values. It is expressed through the overall presence of humans in every natural and semi-natural habitat. It has largely increased in the recent years by uncontrolled development (a good example is the abandonment of Ksamili islands by its nesting birds following the construction of a bar on the main island). Illegal methods of fishing and hunting are also a major source of disturbance.

Introduced species

Another negative phenomenon has been the planting of non-native species. For example Agave americana. Its distribution area has now increased because this species, in the presence of overgrazing, wins the competition with native Mediterranean maquis.

Absence of environmental education

Like all the wetlands and protected areas of Albania, the protection of biodiversity is made difficult through the lack of public awareness to environmental issues. Many habitats and species are destroyed due to a lack of knowledge and appreciation of their importance to the overall environmental wellbeing of the area and their importance to future tourism.

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