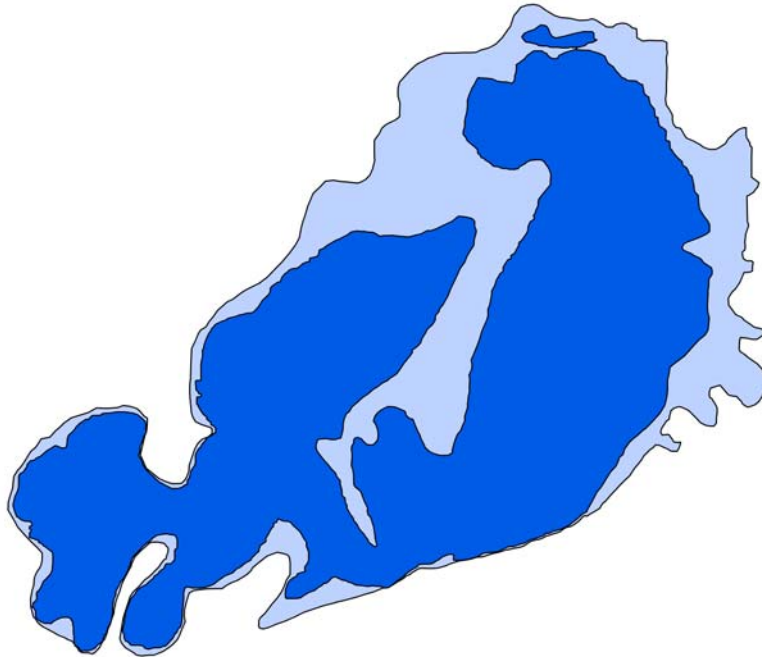


**Report on the proposal for downsizing
the Kolleru Wildlife Sanctuary
(+5 to +3 feet contour)**



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CONTENTS

Executive Summary	1
1 Preface.....	10
2 Operational strategy of the committee.....	12
3 The Kolleru Lake setting	15
3.1 Historical perspective.....	16
3.2 The catchment and geomorphology of the basin	16
3.3 Demography.....	20
3.4 Socio-economic set-up and livelihood changes of the area	22
3.5 Ecological set-up.....	26
4 Land use changes and associated threats to the Kolleru ecosystem	40
4.1 Land use changes at Kolleru on government initiative.....	40
4.2 Encroachments and associated issues	49
4.3 Water diversion and water pollution.....	50
4.4 Other threats.....	57
4.5 Recap of major drivers for the land use changes	60
4.6 Ecological impacts of changing environment.....	63
5 Kolleru lake - conservation and management history.....	71
6 Legal issues related to the sanctuary notification	76
6.1 Legal history of Kolleru Sanctuary.....	76
6.2 The process of making part of Kolleru a PA under the WLP Act.....	80
6.3 2001: Jaganath vs. Union of India applicability on agriculturists....	85
6.4 April 2002: Boundary correction of Kolleru: Formal recognition..villages	85
6.5 August 2002: Designation of Kolleru as Ramsar Site	86
6.6 July 2006: Permission for traditional fishing	87
6.7 2006: Letter of Collector, Krishna and Advocates' Committee Report	87
6.8 April 2007: Review meeting of Kolleru lake post demolition.....	88
6.9 September 2007: Permission for Freshwater Aquaculture ..	88
6.10 Ramsar Site: extent and national obligations.....	89
6.11 2010: The coming of Wetland Regulations, 2010	90
6.12 Some legal concerns and legal implications of the findings in the field	95
7 Operation Kolleru	102
7.1 Demolition of aqua farms and unauthorized constructions	102
7.2 Compensation and R & R Policy issues	108
7.3 Post operation Kolleru and media coverage	109
7.4 Government's commitment to restore and protect the lake	111
7.5 Review of post operation alternative livelihood programmes	113
7.6 Potential alternative sources of livelihood.....	116
8 Field consultations and exploring issues.....	122
8.1 Representations - salient points	122
8.2 Merits and demerits of the demand for resizing	129
9 Recommendations.....	140
9.1 Contours and boundaries.....	140
9.2 Ecological / biological	141
9.3 Pollution management	142
9.4 Catchment area treatment	143
9.5 Hydrological	143
9.6 Administrative.....	145

9.7	Legal	145
9.8	R&R actions.....	146
9.9	General.....	149
9.10	Concluding remarks	149
10	Acknowledgement	151
11	References / Bibliography*	153
11.1	Court documents, letters etc.....	159
11.2	Minutes of meetings.....	159
11.3	News papers / TV.....	159
11.4	Representations with specific information*	160
12	Appendices.....	161

EXECUTIVE SUMMARY

Kolleru, the largest fresh water lake in India, falls in the West Godavari and Krishna districts of the state of Andhra Pradesh. The catchment of the lake extends up to 6121 km², of which 4763 km² comprise of upland, and 1358 km² deltaic. The high lands of the Eastern Ghats and northern plains in the Krishna basin and the southern plains of Godavari basin form its catchment. The lake is, in effect, two large conjoined elliptical sub basins, of which the larger one runs on its long axis from North to South. The two major islands in the lake, located at 1 to 2 m above Mean Sea Level (MSL), are Kolletikota and Gudivakalanka. The lake Kolleru debouches in to the Bay of Bengal through the meandering channel called Upputeru, which is about 65 km long. The channel is under strong tidal influence and turns brackish especially towards its downstream stretch.

In 1999, 308 km² of the Lake falling below +5 feet above MSL contour line was declared as Kolleru Wildlife Sanctuary (KWS). Even after the declaration, ecologically not-so-benign activities and encroachments continued unabated in the area. Regularizing the possession of land, aquaculture and related activities in the area became a matter of local public concern and political agenda. During the last state assembly election reduction of the sanctuary boundary to +3 feet from +5 feet contour and distributing the land thus released to public became a popular election promise. Consequently, on 4th September 2008, the Andhra Pradesh Legislature unanimously passed a resolution *“to request the National Board of Wildlife, Govt of India and the ‘Central Empowered Committee’ to recommend for reducing the boundary of Kolleru Wildlife Sanctuary from +5 feet contour to +3 feet contour to mitigate the problems of the farmers”*.

Realizing the ecological, legal, socio-economic and livelihood related implications of the resolution, the Ministry of Environment and Forest (MoEF), Government of India (GoI) constituted this committee to look into the issue. The major terms of reference of the committee were as follows.

- Study the issue in greater detail both from the perspective of the protection of livelihood of the local fishers and farming community and the conservation and

protection of the wetland of Kolleru and recommend to the government on the merits and demerits of the proposal of the Andhra Pradesh assembly for reduction of the Wildlife Sanctuary from the contour 5 to contour 3.

- Tour extensively in the area and interact with the stakeholders including public representatives of the area and study the issue from a holistic view keeping the interest of both the local people and environment.
- Look into the matter of paying compensation to the private landowners who are losing their lands in the Wildlife Sanctuary.
- Get a quick scientific survey of the entire area done through satellite mapping to get an actual picture of the status of the lake and the alignment of the contour lines.

The committee started working on the above lines in June 2010. It realized the need for looking at the matter from a broader perspective taking into account the ecological services of the lake. In its first meeting at Hyderabad on 2nd June 2010 at Aranya Bhavan the committee decided to i) consolidate information available on Kolleru, ii) interact with the line departments of Andhra Pradesh such as forest, fisheries, revenue and irrigation departments, iii) examine relevant satellite images, contour maps and boundary maps from different agencies, iv) interact with other stakeholders; fishers, local residents, aquaculture groups, farmers, conservationists and peoples' representatives, v) conduct mandal level meetings with the stake holders and undertake field visits, and vi) consolidate all the information and prepare the report for submission to the MoEF, GoI. Since a large quantum of data and related information is to be examined on Kolleru to develop a realistic perspective of the issues, the committee required more time than that was initially given by the MoEF.

The necessary data or information were collected from district administration, forest, revenue and fisheries departments, DRDA, APPCB as well as published and grey literature. Field visits were undertaken from 20 to 25 September 2010, in and around the lake Kolleru interacting with various field officials from government departments, the public and the leaders to understand their views and perceptions. Later the committee met a couple of times at SACON (Coimbatore) and APSRAC (Hyderabad), going through the drafts and finalized the report.

Kolleru lake system represents one of the largest and oldest natural lacustrine systems in the country. The lake receives water from several sources, of which the streams Budameru, Tammileru (East and West branches), Ramileru, Gunderu and Bulusuvagu are natural and foremost in terms of water input.

Like all wetlands, the lake lacks definite boundary and has an irregular shoreline. In fact, the lake's boundary varies depending upon the seasonal inflows and outflows, as is the case of all inland wetlands. The Lake could extend to an area falling below +10 feet contour with a water-spread over 901 km² during monsoon. It could recede down in summer to at +3 feet contours with water spread of about 135 km² or lower at times.

The lake Kolleru and its surroundings have 148 rural settlements (50 in the lake-bed and 98 in the belt area). Primary occupation of people in the bed villages is fishing; agriculture being the second option. People in the belt villages have agriculture as primary occupation, followed by fishery related activities. Major crop raised here is rice, cultivated twice in a year. Kolleru also supports duckary, earlier an important means of livelihood for the locals. Capture fishery was also an important means of livelihood for large proportion of the people residing in the area. Fishery in the area, during the last couple of decades had shifted to a more capital intensive corporate venture.

The comparatively shallow Kolleru lake ecosystem offers excellent habitats for a variety of resident and migratory avian species. Several endangered or threatened species are also seen here. The Kolleru Lake is also an Important Bird Area. Avifauna of the area include a variety of waterfowl including ducks, teals, storks, egrets, herons, ibises, bitterns, cormorants, and a number of waders. More than 200 species of birds have been reported from the lake and its environs. Around 100 species of birds reported from the lake are migratory birds coming from different parts of Eurasia (Palearctic region). These species depend largely on the wetland to meet their resource requirements.

Other fauna in and around the lake include various species of invertebrates, fishes, amphibians, reptiles, and mammals. About 63 species of fishes belonging to 29

families have been recorded from the lake. Of these, 44 are freshwater species. The natural species composition of fishes seems to have considerably changed for various reasons. Recently air breathing fish such as *Anabas testudineus*, *Anabas oligolepis*, *Heteropneustes fossilis* and *Clarias batrachus* are reported more frequently from the lake, perhaps for the low dissolved oxygen due to high organic pollution load in the water.

Besides offering critical habitats to several globally important faunal and floral groups, the lake offers many important ecological services some of which are discussed elsewhere in this report. Considering that the lake functions as a flood-moderating reservoir between the Krishna and Godavari deltas and that it supports several vulnerable species and a variety of resident and migratory birds, the Kolleru wetland was declared as a Wildlife Sanctuary, a RAMSAR site and also as an Important Bird Area (IBA). **However, of late, indiscriminate exploitation of the Kolleru area has evidently resulted in depletion of many of the ecological goods and services conventionally derived from it leading to unwanted flooding and other negative consequences.** Anthropogenic pressures such as cultivation in the lake bed, lavish use of fertilizers and pesticides, large-scale encroachment of lake bed for aqua farms, fishpond discharges, domestic wastes and sewage from three municipalities, and discharge of industrial effluents and agricultural run-off carrying inorganic nutrients have vitally affected and altered the ecological character of the wetland.

During the last couple of decades, the changing socio-economic and political milieu of the state in general and the region in particular brought enormous alteration to the lake area and consequent strains on this wetland ecosystem. Land use changes associated with aquaculture, industrial development, contemporary agriculture practices, and roads and bunds in the wetland area fragments the entire wetland and restrain its natural hydrologic regime and ecological cycles. Studies using remote sensing and GIS show striking increase in the land under aquaculture. The lucrative business of aquaculture made far reaching consequence on the habitual land use in the lake area. Encroachments in to the wildlife sanctuary and conversion of rice paddies to aquaculture farms has become commonplace in the wetland. Encroachments in

Kolleru Wildlife Sanctuary between 1999 and 2005 for aquaculture farms are also reported.

It was reported that increased aquaculture activity helped the proxy cultivators than the genuine owner farmers. However, there are no (documentary evidences) records to this effect as the lease agreements are mostly verbal understandings, without written agreements, made in the presence of village elders and at times in village temples before the deity.

Eutrophication and changes in flora and fauna has happened in Kolleru. Almost 60% decline of apple snail is reported, certain species of fish have either become rare or disappeared from the lake due to the inland aquaculture, and some of the birds have disappeared from the area. Submersion of paddy fields in the belt villages of Kolleru have become frequent and wider, and farmers in belt villages, beyond +5 contour levels, are being badly affected due to the submersion of crops because of the floods aggravated with the proliferation of fish tanks with high rise bunds below and above +5 contour by infringing on to the natural drainage regime.

As a result of judicial interventions, in 2006 “Operation Kolleru” was undertaken, to demolish illegal fish farms in the sanctuary area. Nevertheless, there are several reports that the fish tanks were formed afresh and are in operation. Floods have continued for various reasons acting in concert. The “Operation Kolleru” an act undertaken upon judicial interventions, lasted 55 days, in three phases starting from 16 February 2006 and completing on 13 June 2006. As reported, 1776 large tanks were destroyed and 89.08 lakh cubic meters of earth forming the tank bunds were removed. The operation had notable socio-economic and ecological impacts.

Kolleru Wildlife Sanctuary was declared vide GO Ms No 120 dated 4-10-1999, covering a part of the lake falling below +5 feet contour. However, appropriate compensation for loss of land was not made and Resettlement and Rehabilitation (R & R) issues were not satisfactorily addressed. Neither alternative sources of livelihood were developed nor was any socioeconomic development through community participation attempted. No attempt to disseminate correct message about the sanctuary and its socio-economic and environmental implications is known to have

been made. No attempt is also known to have been made to conduct a proper survey of the whole area focusing on its wetland / ecological characteristics, depth profile and re-confirmation of the so-called contours. Thirty-eight villages falling in five mandals were listed in the preliminary notification, but in all, 74 villages in 9 mandals were notified in the final notification. The reasons for these variations were left ambiguous and not justified in the final notification. Several issues related to the sanctuary notification remains to be addressed and settled.

The committee made extensive tour of the area and interacted with the stakeholders. The public meetings were very interactive; however, the committee while sitting through the whole proceedings developed a gut feeling that almost all of them appeared as stage managed by the leaders advocating a particular view point; reduce the boundary of the sanctuary. **It was felt that alternative view points were censored and not allowed to be brought up to the committee.**

During the public meetings and the journey through the villages 2269 representations were received. Overwhelming majority supported reduction of the area of the wildlife sanctuary, to bring down its boundary from +5 feet contour line to +3 feet contour line. The committee examined various arguments for and against reduction put forth before it. Some of the arguments essentially focused on the livelihood issues and economic development of the area, while some rare voices raised wider issues such as ecological services, habitats for a large number of endangered and threatened wild species, water storage, ground water recharge and so on. The representations largely points to the hype created for reducing the sanctuary area and to a large extent the lack of correct information reaching to the stakeholders.

Although human beings are highly dependent on ecosystem services, sufficient ecological understanding of the same is still wanting. In the case of Kolleru, information on these aspects is practically absent. As of now, the ecosystem services are generally taken for granted as free of cost and hence remain invisible to market forces. A change is urgently required in this outlook. A change is required to adequately value these veiled but vital services and to make provisions for payment for these ecological services (PES).

Managing ecosystems addressing human needs involves several trade-offs that require detailed understanding of the biophysical magnitude of the changes in ecological services resulting from human actions and the impacts of these changes on human welfare. It is felt that before considering any further changes in the KWS or the Ramsar area, it is prudent to understand the characteristic ecological underpinnings of the area, and to integrate the knowledge in the socio-economic context to develop better policies and management strategies that will help balancing the aspirations of the local inhabitants and the larger conservation needs.

An ecosystem like Kolleru has to be considered as a natural, renewable resource generating infrastructural asset. It is wise to invest in preservation of this common wealth bestowed on us by nature. The nation and people from the mainstream has to support the locals for helping in maintaining the ecosystem with all its conservation and ecosystem values; payment for ecological services (PES). **The local public needs to be rewarded or benefited from the conservation of local resources.** The nation and the people from the mainstream should be made to pay for the invisible / intangible ecosystem services / benefits, essentially invisible to the market forces and this should accrue visibly to the benefit of the local inhabitants.

Looking at the issues confronting the KWS, the local inhabitants and the lake ecosystem we conclude that reduction of the wildlife sanctuary area would worsen the situation in Kolleru. In due course of time most of the lakebed is likely to be converted into fish tanks. Floods will remain incessant. The ecological setup of the area will degrade and wildlife will certainly suffer and many species will become locally extinct.

It is apparent that contours would have lost its expected sanctity because of anthropogenic interferences, excavations and siltation. **The floods happening in the area are largely due to unscientific human interventions interfering with the hydrological regimes and flow pattern.**

The boundary has to be fixed and standardized after scientific consideration of the ecological characteristics, and environmental flows to ensure the ecosystem sustainability of the area. Issues to be considered seriously while re-fixing the

boundary are i) critical water level from hydrological point of view, ii) ecological requirement including habitat and breeding requirement for migratory and resident species both during monsoon and non monsoon seasons, iii) ensuring the minimum level of water required especially during the lean and winter months, iv) functioning of the water body as a flood barrier and v) traditional agricultural / fishery practices.

The area need to be mapped in full based on ecological and conservational aspects and the area that is relatively undisturbed and frequented by the birds need to be demarcated. That area will remain impermissible to all activities, called core area, and shall be declared as a “**Critical Wildlife Habitat**”. Till such a survey is conducted the area within +3 feet contour must be untouchable and inviolable. Beyond this area a stretch skirting this core area will be demarcated as buffer area or conservation area, where environmentally benign activities will be permitted and will be managed by a co-management group, as cited in the Wildlife Protection Act. Till the survey mentioned above is done, the area falling between +3 and +5 feet contour will be considered as buffer area, under the full control of the forest department. It may be noted that as per the Wetlands (Conservations and Management) Rules 2010 all Ramsar sites are fully protected.

Execute appropriate R& R policy for all affected people within the contour +3 feet to +5 feet. People below 3 feet contour, holding zirayithi pattas, may be relocated paying appropriate compensation, as is legally mandatory, for the land holding coupled with a package for livelihood losses. The D-form patta holders also need to be offered a package for livelihood and involve them in the management of the lake to obviate the possible conflicts. Compensation may be considered as in certain precedent situations done by the Irrigation Department in Andhra Pradesh.

Under the Wildlife (Protection) Act, 1972, the state government can declare an area as Wildlife Sanctuary. However, upon issuing the final notification, all authority vests with the central government who has to seek approval of NBWL and its standing committee to make any changes in the notification. In the instant case where Supreme Court has already passed final orders, orders from the Supreme Court also have to be obtained. Hence the state governments should be careful, in future, to follow the provisions of the Act meticulously while declaring sanctuaries, especially those

clauses dealing with determining and settling the rights of people. If the genuine rights are denied, that nullifies the purpose of declaring an area as protected, because of several socio-economic, cultural, and legal complications and repercussions that would rise from antagonizing the local public who otherwise could have been patronized to be at least apathetic towards the protected area if not the custodians of its ecological resources and values. **The conflicts in Kolleru has turned out to be this grave largely due to the failure on the part of the concerned authorities in addressing relevant socio-economic and legal issues arising from the declaration of the sanctuary in time.**

Reduction of the present sanctuary area is not a viable solution for the socio-economic and ecological issues confronting the Lake Kolleru. A detailed survey of the lake Kolleru is to be conducted to delineate boundary based on ecological characteristics at the earliest. **However, pending the detailed survey by a technically competent agency, no change in the status of the area under the KWS should be permitted, including operation of the fish farms within the existing boundary of the sanctuary.**

The lake Kolleru serves several ecological services and that needs to be preserved for posterity. As noted above, it is a valuable infrastructure asset bestowed on us. The state needs to take active measures to conserve the same; it is always wise to invest public money on conserving a public resource and in providing for appropriate means to ensure confidence of the public and their participation in the endeavor. Striking a balance between environmental concerns and livelihood issues is a challenge, which the managers and policy makers essentially are required to address.