

CHAPTER II

PERFORMANCE AUDIT

FORESTS AND ENVIRONMENT DEPARTMENT

Conservation of Wetlands

Executive summary

Wetland is an area where water is the primary factor controlling the environment and associated plant and animal life. It includes areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, areas of marine water the depth of which at low tide does not exceed six meters. Wetlands are habitat to aquatic flora and fauna, support all forms of life, mitigate floods, recharge ground water and provide buffer shorelines against erosion.

Ministry of Forests and Environment (MoEF) launched (1985-86) National Wetland Conservation Programme (NWCP). Gujarat State has eight Wetlands of national importance viz., Nal Sarovar, Thol Lake, Khijadiya Lake, Wadhvana Lake, Great Rann of Kachchh (GRK), Little Rann of Kachchh (LRK), Pariej Lake and Nani Kakrad under NWCP. Nal Sarovar is a Ramsar Site. There are also 19 other wetlands not identified but deserved to be wetlands of national importance as per the report of the Gujarat State Biodiversity Board, Gandhinagar.

The performance audit (PA) covers the period from April 2010 to March 2015 and includes examination of records of eight wetlands of national importance, four out of 19 other Wetlands and one wetland of Porbandar Bird Sanctuary. In the light of facts which emerged out of this performance audit, there are certain areas of concern suggesting that some scope for improvement in conservation activities for wetlands and implementation and monitoring of issues relating to wetlands remains, as indicated below.

The Department has not formed “State Wetland Conservation Authority” as envisaged in NWCP Guidelines. There was no policy framed by the Department for wetlands other than those identified as having national importance. Further, 19 other wetlands were identified having deserved to be declared as of national importance and two wetlands having high ecological value deserved to be important wetlands, were not declared as important wetlands by the Department or conserved accordingly.

State Government did not provide adequate funds in the budget estimate for conservation activities. The Government mainly relied upon funds released by the GoI and short release of fund could not be met from the State fund. Though some activities were carried out under other state

schemes, conservation activities of wetlands of national importance in the State remained inadequate. The Management Action Plans were either prepared with break in period or not prepared fully.

The other deficiencies noticed were:

- The baseline data of migratory birds which are essential to determine the causes of changes of population sizes *etc.*, have not been maintained in the eight wetlands of national importance.
- The Birds Rescue Centre (BRC) was not set up at wetlands of LRK, GRK and Pariej. BRCs set up at Nal Sarovar and Thol wetlands do not have required facilities.
- The water retention work at Khijadiya and removal of weeds at Nal Sarovar was inadequate.
- Conservation of the two important wetlands LRK and GRK was not done.
- Proper Water level required for wetland was not maintained at Wadhvana Lake due to release of water by the Irrigation Department for irrigation.
- The poaching at Nal Sarovar and Wadhvana Lake was also not controlled.

Inadequate monitoring over the conservation of wetlands both at the Department level as well as Steering Committee level was observed. Out of 10 half yearly meetings as envisaged, Steering Committee met only six times during 2010-15 for review of activities of conservation of wetlands.

2.1 Introduction

A wetland is an area where water is the primary factor controlling the environment and the associated plant and animal life. It represents land transitional between terrestrial and aquatic eco-systems where the water table is usually at or near the surface or the land is covered by shallow water. It includes areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, areas of marine water the depth of which at low tide does not exceed six meters.¹

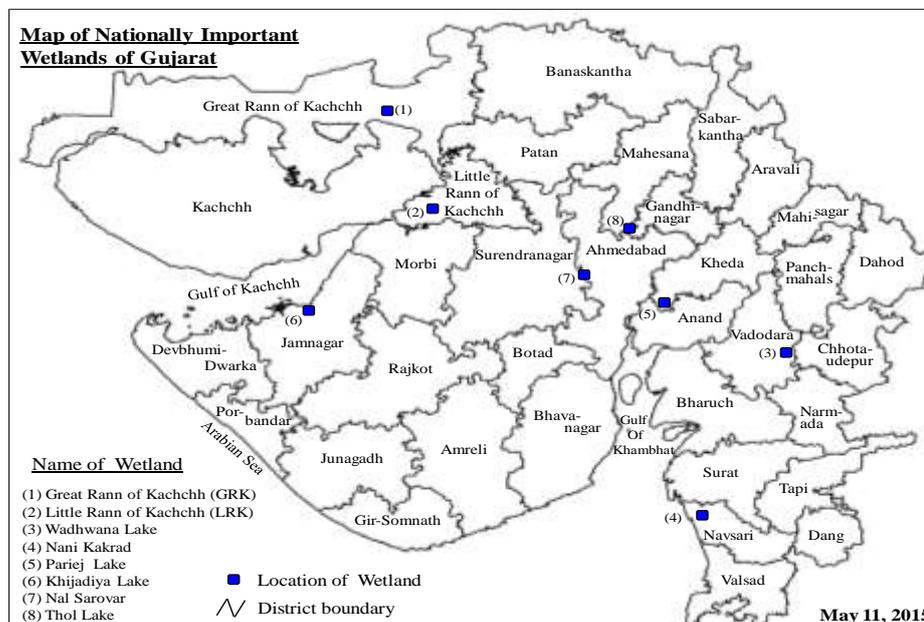
Wetlands are among the most productive eco systems. They directly or indirectly support millions of people. They are habitat to aquatic flora and fauna and support all forms of life. They filter sediments and nutrients from surface water, purify water and mitigate floods. They maintain stream flow, recharge ground water and provide drinking water. They control rate of runoff in urban area, provide buffer shorelines against erosion. They stabilise local

¹ As defined in Ramsar Convention of Wetlands, 1971. Ramsar is an international treaty providing framework for national action and international cooperation for the conservation and wise use of wetlands and connected biodiversity. 150 countries including India are signatories to it.

climate and an important centre for tourism and recreation. As these are being one of the crucial natural resources, their fast depletion is a cause of concern among scientists, planners, economists, policy makers *etc.*, all over the world. Thus, a holistic view and proper conservation of wetlands is necessary in terms of its causal linkages with other natural entities, human needs and its own attributes.

As per the National Wetland Inventory² prepared (May 2010) by the Space Application Centre, Ahmedabad, there are 23,891 wetlands in Gujarat. Total wetland area in the state was 34.75 lakh Hectares (ha). The Ministry of Environment, Forests and Climate Change (MoEF&CC), Government of India (GoI) launched (1985-86) a Centrally Sponsored Scheme (CSS) called National Wetland Conservation Programme (NWCP). There are eight wetlands (**Figure 1**) in Gujarat which have been identified as wetlands of national importance³ under NWCP, of which one *viz.*, Nal Sarovar is a Ramsar Site. There are 19 other important wetlands in Gujarat as indicated in the **Appendix II** which deserve to be declared as wetlands of national importance.

Figure 1: Map of Wetlands of National Importance in Gujarat



2.2 Organisational Set up

Conservation of wetlands in Gujarat is carried out by the Forests and Environment Department (F&ED) headed by Additional Chief Secretary (ACS). ACS is assisted by Principal Chief Conservator of Forests (PCCF) & Head of Forests Force (HoFF), PCCF (Wild Life), Chief Conservator of Forests and Conservator of Forests. Deputy Conservator of Forests (DCFs)

² Ministry of Forests and Environment launched National Wetland Inventory and Assessment (NWIA) in May 2010 in collaboration with Space Application Centre, Ahmedabad and Bhaskaracharya Institute for Space Applications and Geo-informatics, Gandhinagar.

³ As per criteria laid down in NWCP guidelines for identification of wetlands a site should contain representative, rare and unique wetland type or support minimum prescribed water birds, fish or should be an important source of food and water.

and Range Forest Officers at district level are responsible for execution of conservation works at the wetlands.

Government of Gujarat (GoG) constituted (June 2005) a Steering Committee for monitoring conservation works at wetlands of national importance. ACS, F&ED was to act as the Chairman and PCCF (Wild Life) as Member Secretary. There were 15 Members from different State Departments as well as Central Government, individual experts, NGOs. A proposal for constitution of a State Wetland Conservation Authority (SWCA) for conservation of wetlands was submitted (May 2014) by the PCCF (Wild life) to F&ED. However, the SWCA has not been constituted (September 2015).

2.3 Audit Objectives

Audit undertook this performance audit to get assurance that:

- Adequate policy and institutional framework was in place for conservation of important wetlands in the State;
- Planning including preparation of Management Action Plans (MAPs), was made for conservation of all important wetlands;
- Adequate funds were provided for conservation of wetlands;
- Adequate efforts were made for retention of water at wetlands, maintenance of proper water level, removal of weeds, maintenance of eco friendly environment, generation of baseline data regarding migratory birds, medical facilities for injured at wetlands;
- There was an effective control mechanism for preventing poaching of birds; and
- Supervision and monitoring of programme implementation was effective.

2.4 Audit scope and Methodology

The performance audit (PA) covers the period from April 2009 to March 2015. Audit conducted test check of records maintained by the office of ACS, Forests and Environment Department, PCCF (Wild Life) and DCFs, having jurisdiction over Vadodara, Kachchh, Jamnagar, Rajkot, Nadiad, Nal Sarovar (Sanand), Navsari and Porbandar. Audit sample covered eight wetlands of national importance and four⁴ out of 19 other wetlands and one wetland Porbandar Bird Sanctuary⁵.

An Entry conference was held on 18 June 2014 with Principal Chief Conservator of Forests (Wild Life) in which the scope, methodology and audit objectives were explained. Exit Conference was held with ACS on 4 June 2015 wherein audit findings were discussed. The Government

⁴ The four other wetlands are selected as it falls under the selected eight forest divisions viz., (1) Aji dam in Rajkot, (2) Bhaskarpura dam in Surendranagar District, (3) Muli in Surendranagar District and (4) Ajwa dam in Vadodara district.

⁵ It was declared as bird sanctuary in November 1988 by Government of Gujarat. The sanctuary has features of wetland, i.e., unique water dwellings surrounded by trees and plants.

furnished (September 2015) replies to audit findings. The views expressed by them have been considered while finalising this report.

2.5 Audit Criteria

The activities relating to conservation of wetlands were evaluated with reference to the provisions made under the following Acts/ Regulations:

- Indian Forest Act, 1927;
- Forest (Conservation) Act, 1980;
- Wild Life (Protection) Act, 1972;
- Wetlands (Conservation and Management) Rules, 2010; and
- Guidelines issued by MoEF&CC for National Wetlands Conservation Programme.

2.6 Audit Findings

The audit findings are discussed in the succeeding paragraphs. These findings have been grouped under the following heads:

- Policy and Institutional framework;
- Planning and Fund Management;
- Conservation of wetlands, and
- Monitoring and Supervision

2.7 Policy and Institutional framework

Under Rule 6(2) of the Wetlands (Conservation and Management) Rules, 2010 the State Government shall prepare within a period of one year from the commencement of these Rules, “Brief Documents” identifying and classifying the wetlands within their respective territories in accordance with the specified criteria and submit the same to the Central Wetlands Regulatory Authority for regulation of the wetlands under the Rules. The Government as the custodian of wetlands in the State is responsible for framing State specific policies/ guidelines/ goals for conservation, management and development of wetlands. The instances noticed during PA relating to non-framing of policies/ guidelines are as under:

2.7.1 Policy for unidentified Wetlands

The MoEF&CC had identified (2004) eight wetlands in Gujarat of national importance as shown in **Table 1** below:

Table 1: Wetlands of National Importance in Gujarat

Sl. No.	Name of the wetland	Area (Sq. km)	Status
1	Great Rann of Kachchh (GRK), District Kachchh	7,000.00	Sanctuary
2	Little Rann of Kachchh (LRK), District Kachchh	4,953.00	Wild Ass Sanctuary
3	Nal Sarovar, Sanand	120.82	Bird Sanctuary
4	Khijadiya Lake, Jamnagar	15.60	Bird sanctuary
5	Nani Kakrad, District Navsari	15.00	Fresh Water pond
6	Pariej Lake, District Nadiad	7.54	Irrigation reservoir
7	Thol Lake, District Mehsana	7.00	Bird Sanctuary
8	Wadhvana Lake, District Vadodara	5.79	Irrigation reservoir
Total		12,124.7	

(Source: Information collected from the F&E Department and National Wetland Inventory)

We observed that the State Government had not framed policy or guidelines for wetlands other than those identified as having national importance. The Department had not taken action for carrying out survey, research as deserving or conservation of wetlands other than those identified as having national importance as was envisaged in Wetlands (Conservation and Management) Rules, 2010. Thus, conservation was restricted to wetlands of national importance only.

Government stated (September 2015) that policy for identified wetlands was already available. For other wetlands which are used for drinking water supply or irrigation, they are maintained by the concerned State Departments. It was further stated that the proposal for State Wetlands Conservation Authority was under process and once the Authority was formed, policy regarding survey, conservation, research on unidentified wetlands would be taken up with a legal support. Moreover, due care for protection of birds and conservation of unidentified wetlands was taken by the Department and also by the concerned Departments *like* Irrigation Department, Water Resources Department, Municipal Corporation, Nagarpalikas, Gram Panchayats *etc.*

Fact remains that Government had not offered comments on lack of policy for unidentified wetlands. Further, the Department did not take action for identification and conservation of other important wetlands. We also observed that due to non-coordination among other Departments important wetland could not be conserved as discussed in paragraph 2.9.3.1.

2.7.2 Identification of national wetlands

Gujarat Biodiversity Board, Gandhinagar is established in June 2006 under Section 22 of the Gujarat Biodiversity Act, 2002. The Board is working for conservation of biodiversity in the State. The Board had undertaken survey on wetlands and as per study report (August 2012) 19 other wetlands were deserved for wetlands of national conservation significance as indicated in the **Appendix II** in Gujarat. These wetlands deserve to be declared of national importance as per their study report but have not been done so till date (July 2015) by the Department.

2.7.3 Identification of important wetlands

In addition to 19 wetlands as mentioned above, there are two other wetlands *namely* Gosabara near Porbandar Birds Sanctuary and Bhaskarpura Lake, an adjoining area to Nal Sarovar Lake falling in Surendranagar District having high ecological value. These two wetlands are important wetlands but were not taken up for conservation by the Department as discussed below:

- There is a satellite wetland Gosabara near Porbandar Birds Sanctuary. The Gujarat Biodiversity Board had conducted a study (January 2014) on wetland and recorded 1,92,053 birds at wetland. We observed that a study was also made (March 2015) by an Organization GIZ, Germany⁶ on Gosabara wetland. Considering the importance of the wetland, a Memorandum of Understanding (MoU) was entered (July 2015) between F&ED and GIZ, Germany for development of management plan, documentation for Ramsar site, information sheet and capacity building and the process of declaring it as Ramsar Site was in progress (September 2015). However, this wetland was not declared as important wetland by the Department or conserved (September 2015).
- Bhaskarpura Lake (Bhaskar Marshland) is an adjoining area to Nal Sarovar Lake falling in Surendranagar District. It is an important habitat of birds and deserved for wetland of national conservation significance as per a study report on wetland prepared (August 2012) by Gujarat Biodiversity Board (GBB). However, this part has not been identified as wetland (September 2015).

Government stated (September 2015) that survey of important wetlands was carried out by the Gujarat Ecological Education and Research (GEER) Foundation (in association with GBB) and the Department was aware of importance of both wetlands. It was further stated that the Department is already working on important wetlands identified as wetlands of national importance and also working on other wetlands of importance like Gosabara. The survey of the other important unidentified wetlands in the State is being carried out by GEER Foundation.

Conclusion and recommendations

The Department had not constituted “State Wetland Conservation Authority” as envisaged in NWCP Guidelines. Also, there was no policy framed for unidentified wetlands by the Department. Further, 19 other wetlands were identified having deserved to be declared as of national importance and two wetlands having high ecological value deserved to be important wetlands, were not declared as important wetlands by the Department or conserved accordingly.

- **Government needs to establish State Wetland Conservation Authority in a time bound manner and prioritise the framing of policy/**

⁶ Gesellschaft Fur Internationale Zu sammenarbat (GIZ) is an international organization owned by German Federal Government and working across more than 130 countries including India for last 50 years towards climate change mitigation and adaptation, sustainable infrastructure, forest development *etc.*

guidelines for conservation of wetlands other than those having been identified of national importance.

- **Government needs to take urgent steps for declaration of 19 wetlands identified by the Gujarat Biodiversity Board, Gandhinagar as important wetlands and taking up of conservation activities of these important wetlands.**

2.8 Planning and Fund Management

2.8.1 Planning

For effective conservation of Wetland, a long term planning is essential. We observed deficiencies in conservation of Wetlands due to inadequacy in preparation of Management Action Plan (MAP) and Annual Plan of Operation (APO), inadequate conservation activities and co-ordination with other Departments. The observations are discussed in detail in the succeeding paragraphs.

2.8.1.1 Management Action Plan (MAP)

After identification of Wetlands under the programme, the State/ Union Territories (UT) are required to submit MAP in a prescribed format for period covering 3-5 years to be co-terminus with the plan period. The works proposed in APO should be in accordance with MAP. The approved MAP and APO form the basis for release of funds by GoI.

We observed that the MAPs for three out of eight wetlands of national importance were prepared and had the approval of MoEF&CC during 2010-15 but these plans were prepared with breaks in periods and MAPs in five wetlands of national importance were not prepared as shown in **Table 2** below:

Table 2: Position of preparation of MAP for wetlands

Name of wetland	Status of MAP
GRK	Not prepared for any year during 2010-15
LRK	Not prepared for any year during 2010-15
Nani Kakrad	Not prepared for any year during 2010-15
Pariej Lake	Not prepared for any year during 2010-15
Wadhvana Lake	Not prepared for any year during 2010-15
Nal Sarovar	Prepared with broken period 2012-13 and 2013-14
Khijadiya Lake	Prepared with broken period 2011-12, 2012-13 and 2013-14
Thol Lake	Prepared with broken period 2012-13 and 2013-14

(Source: Information collected from the Forests and Environment Department)

Similarly, during the year 2010-15, in three wetlands *i.e.*, LRK, GRK and Nani Kakrad out of eight wetlands of national importance APOs were not prepared. In case of remaining five wetlands, APOs were prepared as per the details shown in the **Table 3** below:

Table 3: Position of preparation of APO for wetlands

Name of wetland	Status of APO
GRK	Not prepared for all the years during 2010-15
LRK	Not prepared for all the years during 2010-15
Nani Kakrad	Not prepared for all the years during 2010-15
Pariej Lake	Prepared for all the years during 2010-15
Wadhvana Lake	Prepared for all the years during 2010-15
Khijadiya Lake	Prepared for all the years during 2010-15
Nal Sarovar	Prepared for all the years during 2010-15
Thol Lake	Prepared for all the years during 2010-15

(Source: Information collected from the Forests and Environment Department)

The mandates under NWCP guidelines are (i) the manner in which the interventions proposed in the MAP would improve the socio-economic status, (ii) the interface with research institutes and the extent to which research findings were made use of, (iii) management activities proposed with physical and financial targets, (iv) the system involved in the decision making process while finalising the MAPs, (v) the monitoring mechanism at local and State level and (vi) summary of the outcome of the State's Steering Committee and the manner in which the outcomes were adopted to resolve critical issues.

We observed that the MAPs prepared in respect of wetlands shown in **Table 2** above did not factor in above aspects though it was mandatory under NWCP guidelines.

Government stated (September 2015) that preparation of MAP of Wadhvana Lake was under progress. MAP for Nani Kakrad was not prepared due to local issues related to land. For LRK and GRK, sanctuaries are managed as per the Management Plan (under Integrated Development of Wild Life Habitat (IDWH)). However, the Government did not offer any comments regarding MAP not prepared for broken period for Nal Sarovar, Thol and Khijadiya.

Reply of Government is not convincing as preparation of MAP includes planning which would help the Department to carry out better conservation of wetland. Wadhvana wetland is going to be nominated as Ramsar site and thus, the Department should have a long term planning for its conservation. Further, wetland conservation requires special efforts towards improvement in water regime and conservation of water fowls whereas sanctuary management is aimed at wild life conservation within sanctuary. Thus, activities to be undertaken under both programmes should be clearly worked out and planning should have been done accordingly.

Recommendation

- **Government may ensure timely preparation of plan of action for conservation of wetlands by preparing MAPs and APOs.**

2.8.2 Fund Management

The GoG being the custodian of the land is responsible for conservation and management of wetlands. NWCP was launched by MoEF&CC with an objective of laying down policy guidelines for conservation and management

of wetlands, undertaking intensive conservation measures in priority wetlands, monitoring implementation of the programme and preparation of inventory of wetlands in the country.

2.8.2.1 Fund management for identified wetlands

MoEF&CC provided 100 *per cent* financial assistance to the States under the NWCP up to 2012-13. Under NWCP, the State was entitled to get funds for conservation of wetland and related research works. After identification of wetlands, the state was required to submit long-term comprehensive Management Action Plans (MAPs) for a period of three to five years for approval of MoEF&CC. After approval of MAPs, the funds were released annually to the State as per Annual Plan of Operation (APOs). NWCP was merged with another programme and renamed as National Plan for Conservation of Aquatic Eco-Systems (NPCA) launched in January 2013 for implementation in XII plan with funding pattern 70:30 cost sharing effective from 2013-14. Funds released by Government of India (GoI) for conservation of Wetlands during 2009-14 are shown in **Table 4** below:

Table 4: Funds sanctioned and released by GoI

(₹ in lakh)

Year	Funds proposed	Funds sanctioned	Funds released	Short release	Funds utilised
2009-10	488.43	100.86	74.87	25.99	74.73
2010-11	335.53	45.81	34.98	10.83	34.66
2011-12	402.56	119.90	100.00	19.90	96.10
2012-13	601.38	111.56	111.56	Nil	111.56
2013-14	438.35	Nil	Nil	Nil	Nil
2014-15	468.20	Nil	Nil	Nil	Nil
Total		378.13	321.41	56.72	317.02

(Source: Information collected from the F&E Department)

Wetland wise fund released by GoI under NWCP is shown in **Appendix III**. During 2009-10 to 2014-15 an expenditure of ₹ 9.46 crore was incurred from State schemes on Divisional office, communication and building, wild life and preservation, management and development of Sanctuary on four wetlands- Nal Sarovar (₹ 7.90 crore), Thol (₹ 0.86 crore), Khijadiya (₹ 0.59 crore) and Pariej (₹ 0.11 crore). Further, expenditure of ₹ 11.19 crore was incurred from funds released under Integrated Development of Wild Life Habitat (IDWH) for conservation of wild life in sanctuaries viz., Nal Sarovar, Thol, Khijadiya, LRK and GRK.

During 2009-14, there was shortfall in release of funds by GoI as indicated in **Table 4** above. We observed that:

- There was shortfall in sanction as well as release of funds by GoI. Thus, the GoG could have provided adequate funds from State schemes to ensure that conservation activities as proposed were taken up.
- From 2013-14, under the new scheme NPCA (January 2013), the GoI share was reduced to 70 *per cent* and release was subjected to conditions that State has to make provision for its share of 30 *per cent* in the budget

and communicate to MoEF&CC for its commitment to make budget provision for State share. However, for the year 2013-14, the State Government did not make any provision for 30 *per cent* State share in budget but provided for ₹ 1.50 crore considering 100 *per cent* CSS funding. The PCCF submitted (October 2013) to the MoEF&CC the action plan for the year 2013-14 for ₹ 440.33 lakh for five wetlands⁷ (Central share: ₹ 386.61 lakh and State share: ₹ 54.72 lakh). As a result, GoI did not release funds under the scheme during 2013-14. It was also observed that though the Department had made provision of ₹ 260 lakh (central share 70 *per cent*: ₹ 200 lakh and State share 30 *per cent*: ₹ 60 lakh) for the year 2014-15 under NPCA, neither GoI nor State Government released any fund.

Government stated (September 2015) that for 2013-14, the policy of change in share ratio was received late after the completion of the third quarter by the Government, hence budget provision could not be made. It was further stated that the preservation and conservation activities in wetlands were carried out from other schemes like IDWH.

However, we observed that Department had incurred expenditure on divisional office, communication and building, wild life and preservation, management and development of Sanctuaries and not on preservation and conservation of wetlands.

2.8.2.2 Fund management for other important wetlands

MoEF&CC released the funds for wetlands of national importance only. For other important wetlands, there was no provision made in the State budget. Thus, the conservation was restricted to wetlands of national importance only and other important wetlands surveyed by Gujarat Biodiversity Board remained un-conserved and left to the risk of deterioration, degradation and loss of character.

Government stated (September 2015) that once State Wetlands Management Authority was formed, conservation of other important wetlands would be taken up. The Government added that identification and survey of other important unidentified wetlands in the State is being carried out by GEER foundation.

The fact remains that though as per Rule 6(2) of the Wetlands (Conservation and Management) Rules 2010, the Department was required to prepare “Brief Documents” identifying and classifying the wetland within one year from commencement of the Rules and submit the same to the Central Wetlands Regulatory Authority, this was not done as of March 2015. The work relating to identification of other wetlands was still in progress (September 2015).

⁷ 1. Khijadiya, 2. Pariej, 3. Nal Sarovar, 4. Thol and 5. Wadhvana.

Conclusion and recommendation

Government is the owner of the wetlands in the State, however, adequate State funds were not provided in the budget estimate for conservation activities. The Government mainly relied upon funds released by the GoI and short release of fund could not be met from the State fund, though some activities were carried out under other state schemes. Thereby, conservation activities of wetlands of national importance in the State remained inadequate. Further, for unidentified wetlands, State Government did not provide any funds.

- **Government may make adequate budget provision for conservation of wetlands.**

2.9 Wetland Specific Findings

There are eight wetlands of national importance in Gujarat. Conservation of wetlands was to be carried out as per approved APO. The conservation activities were carried out as per approved APO at wetlands of Nal Sarovar, Thol, Khijadiya, Pariej, Wadhvana and Nani Kakrad. The conservation activities carried out at these wetlands by the Government during 2010-15 are stated below:

- Hydrological measures and watershed managements: Catchment area treatment, gully plugging, water harvesting structure, desilting operations, improvement of satellite water bodies;
- Restoration, habitat improvement measures and Bio diversity conservation: removal of excessive weeds, conversion of weeds into compost, raising of suitable tree species on shore land and island, maintenance of birds rescue centre, saras conservation, enriching fish varieties and quantity, birds census, promotion of medicinal plants *etc.*;
- Protection and Monitoring, Surveillance Measures: Maintenance of old cairns, maintenance of watch tower, patrolling of boats;
- Supplementary and Alternative Livelihoods, Awareness creation: Organisation of cattle camps training for animal husbandry & promotion of stall feeding and warmiculture, development of community fish ponds and farmers shibir for minimization of the impact of agricultural runoff/ insecticides/ fungicides in the wetlands area, *etc.*;
- Monitoring Evaluation & Research: Distribution of kits of improved variety of seeds and bio fertilizers and horticultural sapling, impact assessment through concurrent and terminal evaluation, assessment of current resources utilisation and its impact; and
- Ecotourism works, Public awareness and Socio economic Development: Nature education camps, preparation of publicity materials, maintenance of nature trail, training of nature tourist guide from the local people, repairing of peripheral roads.

Further, audit findings relating to conservation activities of wetlands are discussed in the succeeding paragraphs.

2.9.1 Nal Sarovar and Thol Lake

Nal Sarovar is important Bird sanctuary wetland spread over in 120.82 sq km area. Nal Sarovar was declared as Ramsar site in September 2012. Thol Lake is situated in Mehsana district at Thol village and spread over in Seven sq km. DCF, Nal Sarovar Bird Sanctuary, Sanand has jurisdiction over Nal Sarovar and Thol Wetlands for conservation. These wetlands attracted different species of birds from all over the world ranging from 1,05,156 to 1,85,149 and 13,055 to 51,225 birds respectively during 2010-15 as shown in **Table 5** below.

Table 5: Birds visiting Nal Sarovar and Thol during 2010-15

Year	2010-11		2012-13		2014-15	
	Nal Sarovar	Thol	Nal Sarovar	Thol	Nal Sarovar	Thol
Total Birds visited the wetland	1,31,306	31,380	1,85,149	51,255	1,05,156	13,055
No. of birds falling under endangered category	7,726	3,756	3,087	596	3,402	5,843
No. of birds falling under nearly threatened category	8,691	15,485	17,599	20,751	NA	NA

(Source: Information collected from the F&E Department)

The birds census for the year 2011-12 and 2013-14 was not conducted by the Department. The visitors inflow to watch the birds at Nal Sarovar and Thol Lake ranged from 40,890 to 82,316 and 30,188 to 81,035 respectively during 2010-15.

Both wetlands are wild life sanctuaries and there is another Centrally Sponsored Scheme (CSS) *namely* Integrated Development of Wild Life Habitat (IDWH) for conservation of wild life in the sanctuary area. However, the deficiencies relating to conservation activities noticed during the period of PA are discussed in the succeeding paragraphs:

2.9.1.1 Baseline data of migratory birds

Migratory birds cross political boundaries during their flights and therefore co-ordinated efforts for their conservation by various countries are indispensable. Thus, birds ringing project for migratory birds is essential to generate data on their migratory pattern and flyways, seasonal movements, biometrics, moult, longevity, weight changes *etc.*, and frame a strategy for conservation of these birds.

Approximately over 10 million water birds come to India during winter. Of these, 75 *per cent* frequent the coastal wetlands of India specifically Gujarat, Tamilnadu and Andhra Pradesh. The movements of migratory birds through East Coast have been well documented by regular ringing studies at Chilika Lake, Gulf of Mannar, Point Calimere, Kalivellie and Kanyakumari. In West coast, the movement of migratory birds has not been monitored intensively except monitoring of birds at Bharatpur, Harike Lake and Pong Dam and short term birds ringing was done only at Khijadiya Lake, Chhari-Dhund and Gulf of Kachchh.

Nal Sarovar and Thol are the temporary shelter of migratory birds coming from Siberia, Central Asia, Europe, Canada and USA. Every year birds including birds declared as “Endangered” and “Nearly Threatened” category (Under Wild Life Protection Act, 1972) visit these wetlands as shown in **Table 5** above.

We observed (May-August 2014) that the Department did not maintain baseline data of birds related to the bird life and movements, population parameters *such as* their breeding zone, migratory pattern and flyways, seasonal movement *etc.* This data was essential to determine the causes of changes of population sizes. A birds ringing project titled “Population and Movement of Migratory Water birds and Passerines through Nal Sarovar (Ramsar Site) and Thol Bird Sanctuary” was proposed (September 2013) by DCF, Nal Sarovar Birds Sanctuary to the Department. The project was proposed to be carried out through Bombay Natural History Society (BNHS), a premier Wild Life research and conservation organisation. However, the Government did not take any action even after a lapse of 18 months to approve the proposal. Thus, vital baseline data on migratory birds could not be generated.

Government stated (September 2015) that the bird census/ estimation including migratory birds was done regularly and the data were available. It was also stated that very high level of infrastructure and technical skills are required for such a study and only professional agencies *like* BNHS had such infrastructure. The matter was already in communication with BNHS.

2.9.1.2 Medical facilities for birds

Protection of flora and fauna is the main function of the Forest Department. Thus, at wetlands which are the temporary/ permanent shelter of the thousands of migratory/ local birds, quick medical facilities needed to be made available for proper care of the injured/ physically disabled or sick birds/ animals.

We observed that Birds Rescue Centre (BRC) was set up at Nal Sarovar and Thol wetlands without facilities of Veterinary Doctors, equipments and medicines. Therefore, injured birds at these wetlands were treated by taking injured birds to Government Veterinary Doctors in nearest Taluka centre. Further, the Department has not maintained the records and details of injured birds found at these wetlands, type of treatment provided and final outcome of the treatment.

As both wetlands were sanctuaries, the conservation of wild animals was carried out under IDWH. However, there was no planning to co-ordinate or cover the activities under both the CSS *i.e.*, NWCP and IDWH and take up conservation (including providing medical treatment) of wild animals with that of birds. This indicated inadequate efforts of the Department for protection of injured/ disabled/ sick birds.

While DCFs accepted (May 2014 and September 2015) the requirement of veterinary doctors, the Government stated (September 2015) that there was no need for creating permanent financial liability for Government as Non-

Government Organisations (NGOs) and Government Veterinary Hospitals were taking care of each and every injured bird at Taluka places.

2.9.1.3 Poaching at wetland

Protection and preservation of wildlife is the prime responsibility of the Forest Department. For an effective surveillance, night patrolling staff should have been adequately equipped with modern surveillance technology tools such as Night Vision Binoculars *etc.*

We observed (May 2014) that division was not adequately equipped for curbing poaching at Nal Sarovar as discussed below:

- The poachers install trapping nets in the night for catching birds. Night Patrolling team of DCF, Nal Sarovar caught 6,559 nets installed by poachers during the period 2010-15. This showed that poaching could not be adequately controlled.
- There were 18 cases of poaching, trapping or killing of birds and animals reported at Nal Sarovar during 2010-15 in which 39 nets, 180 birds (dead and live) were caught by the Department.
- There was no use of night vision binoculars and other modern technology surveillance equipments. MoEF&CC sanctioned (December 2013) the proposal of DCF for purchase of two Night Vision binoculars (estimated cost ₹ two lakh each) in APO 2013-14. For procurement of binoculars, the dealer demanded the permission of the Ministry of Defence. Instead of taking up the matter with the Defence Authorities, DCF, Nal Sarovar purchased ordinary Binoculars, High Range Telescope and Sporting scope at the cost of ₹ 1.40 lakh. Thus, instead of a night vision binocular, a prime requirement for patrolling during night, purchase of ordinary binoculars has led to inadequate surveillance.

The Government stated (September 2015) that the staff was doing their best to curb poaching of birds. In their efforts, they have recovered a large number of nets installed for poaching of birds. It was further stated that there was no end of modern technology which would go on changing. The best method would be to involve the local people.

However, audit is of the view that Nal Sarovar is spread over a vast area of 120.82 sq km and resources in terms of manpower and finance were limited. Therefore, surveillance through manual efforts may not be adequate and the Department may explore/ study the use of modern technology to curb the poaching at wetlands.

2.9.1.4 Removal of weeds in wetland

Excessive weeds are detrimental to wetlands as micro organisms are deprived of air, sunlight *etc.*, and life cycle of birds is disturbed. Also, it reduces the water surface areas for free movement of large birds/ animals. Thus, removal of weeds should be an invariable part of regular maintenance of a wetland and needs to be undertaken periodically before it becomes unmanageable.

We observed that large area of Nal Sarovar was covered with accumulated weeds. As against the area of 120.82 sq km, removal of weeds in 0.14 sq km to 0.02 sq km only was done during 2009-10 to 2012-13. The activity of removal of weeds was not done in the year 2013-14 and 2014-15. It indicated that the Department did not give adequate attention to the work of removal of weeds.

DCF accepted (May 2014) the existence of large scale weeds at Nal Sarovar. It was further stated that every year removal of weeds was proposed (in APO) and is carried out. During 2013-14, APO was not got approved. On the other hand, Government stated (September 2015) that weeds were important for wetlands as weeds provided shelter and roosting sites to the birds. Further, removal of unwanted weeds was carried out as and when required in the quantity necessary for the management of area as per the provisions of APO and MAP. However, need for removal of weeds was not felt necessary hence, it was not done in the year 2013-14.

The replies of DCF and Government were contradictory to each other.

2.9.1.5 Development of eco friendly environment at wetlands

A wetland, being distinguished geographical assets of the state, requires a careful and balanced intervention of the Department for maintaining eco-friendly environment and providing comfortable birds viewing opportunity to the visitors without disturbing eco-sensitivity. This required arrangement of comfortable boats, adequate number of watchtowers at important viewing points, aerial and safe viewing of birds and restriction of movement of tourists in sensitive areas of wetlands *etc.*

Nal Sarovar and Thol Lake are important Wetlands attracting different species of birds from all over the world. As per the last five census conducted between 2010 and 2015, 1,05,156 to 1,85,149 and 13,055 to 21,255 birds visited the Nal Sarovar and Thol Lake respectively. During the period 2010-15, 40,890 to 82,316 and 30,188 to 81,035 respectively visitors visited the wetlands.

We observed that Nal Sarovar spread over a large area of 120.82 sq. km was declared as Ramsar Site in September 2012. However, the birds viewing facilities were not upgraded and there were no arrangements for aesthetical and safe boating for birds viewing at Nal Sarovar. The viewers were left at the mercy of private boat owners who used old, shabby and uncovered boats (**Figure 2**). Interpretation Centre constructed in February 2009 at Nal Sarovar for providing information about visiting birds was not functioning (September 2015).

Figure 2: Boating arrangement at International site of Nal Sarovar (Photo taken on 8 April 2015)



Government stated (September 2015) that the Department has a comprehensive vision plan for eco friendly environment and all the wetlands were well maintained. Regarding shabby boats, Government feared that boats with shed might disturb the birds. For interpretation centre, Government assured to strengthen the monitoring and supervision over Eco Friendly committee.

Facts remained that there were inadequate facilities as discussed above and Government did not furnish a copy of the comprehensive vision plan in support of their reply.

Conclusion and recommendations

Large numbers of migratory birds visit Nal Sarovar and Thol Lake every year. However, baseline data were not prepared and a common conservation strategy could not be framed. BRC was functioning without veterinary doctors, equipments and medicines. The Department did not make adequate surveillance for controlling poaching at Nal Sarovar. Further, efforts for weeds removal and development of eco-friendly environment were inadequate.

- **Government may consider maintaining baseline data of migratory birds and adopt strategy for conservation of migratory birds.**
- **Government may also strengthen surveillance for curbing poaching by using modern technology.**
- **Government needs to assess the requirement of removal of weeds at wetlands for conservation and provide nesting, feeding and roosting site to the birds.**

2.9.2 Khijadiya wetland

Khijadiya wetland in Jamnagar District has a unique geographical peculiarity and is a combination of a sweet water lake and coastal saline water marshland.

It is a bird sanctuary of international fame and known as safe haven for birds. Both the parts are very high value biodiversity area. Around 300 species of birds visit this wetland every year. The wetland hosted eight bird species⁸ falling under “Globally Threatened/ Nearly Threatened” as per criteria of International Union for Conservation of Nature (IUCN)⁹/ Bird Life International. The birds visiting the wetland during 2010-15 are shown in **Table 6** below.

Table 6: Birds visiting Khijadiya Lake during 2010-15

Particulars	2010-11	2011-12	2012-13	2013-14	2014-15
Total birds visited the wetland	87,770	1,50,852	11,601	1,36,179	10,144
No. of birds falling under endangered category	1,646	3,203	2,847	6,783	688
No. of birds falling under nearly threatened category	1,152	1,504	635	3,183	2,948

(Source: Information collected from the F&E Department)

The Wetland is under control of DCF, Marine National Park, Jamnagar for conservation. The audit findings relating to conservation of wetland are discussed in the succeeding paragraphs.

2.9.2.1 Baseline data of migratory birds

Due to peculiar geography of the wetland, Khijadiya wetland attracted 10,144 to 1,50,852 birds every year including “Critically Endangered” (688 to 6,783 birds) and “Nearly threatened” (635 to 3,182 birds) categories during 2010-15. We observed that baseline data of migratory birds was not maintained by the Department relating to bird life and movements, population parameters *etc.*

2.9.2.2 Maintenance of eco friendly environment

We observed that Khijadiya wetland has an average inflow of 75 daily visitors. The Department had provided five watch towers for viewing the birds to the visitors.

2.9.2.3 Water retention work

Water is the key to the livelihood of the entire biodiversity. Thus, retention of water at wetlands is therefore of paramount importance as drying up of water drastically affects feeding, nesting and other activities of the birds.

We observed that the wetland was completely dependent on rainfall and there was no artificial source of water for feeding it. The joint site visit by Audit with the departmental officers in late monsoon season (September 2014)

⁸ Dalmatian Pelican, Darter, Painted stork, Black headed Ibis, Black Necked Stork, Lesser Flamingo, Palla’s Fish eagle and Indian Skimmer.

⁹ IUCN is an international organization working for finding pragmatic solutions to environment and development changes. It is having more than 1,000 Government agencies and NGOs as its members and over 11,000 volunteer scientists in 160 countries. Based on its assessment of conservation status of species, it publishes Red List of Species. Several countries frame their strategies/ policies on wild life conservation based on Red List of IUCN.

revealed that in spite of annual average rainfall of 516 mm, the wetland gets dried up soon after monsoon even before onset of winter when migratory birds visit the wetland (**Figure 3**). Activities *like* deepening of pond, construction of check dam and earthen bund, creation of small ponds in small areas only were carried out by DCF.

Figure 3: Khijadiya Lake, Jamnagar dried up in late monsoon (photo taken on 19 September 2014)



During the year 2012 and 2014, rainfall was very low and number of birds reduced to 11,601 and 10,044 respectively. Drying up of the wetland immediately after monsoon invariably had drastic effect on the biodiversity and there was an abnormal drop during 2009-14 in the number of visiting birds at wetland as shown in the **Table 7** below:

Table 7: No. of Birds visiting Khijadiya Lake as per Census

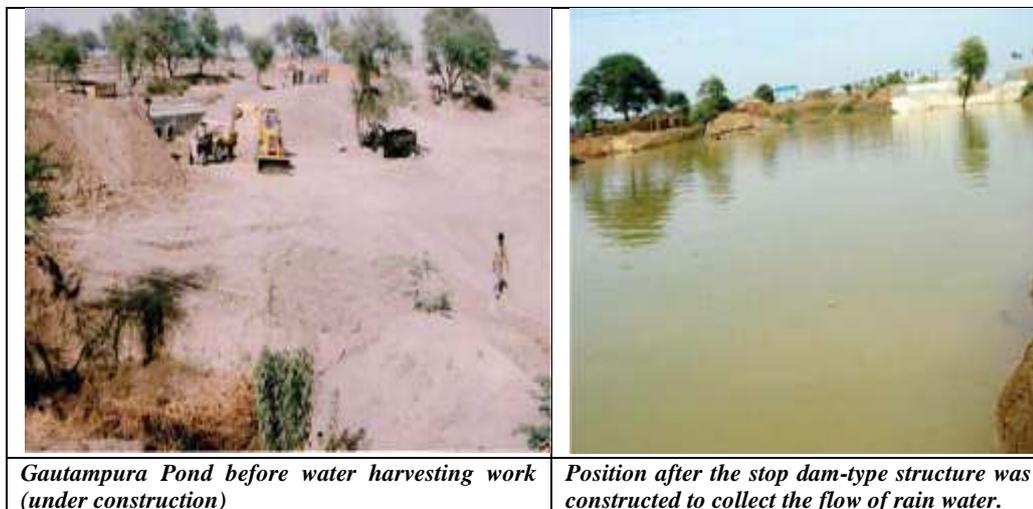
Year	No. of birds visited
2009	6,92,078
2010	87,770
2011	1,50,852
2012	11,601 (Due to failure of monsoon)
2013	1,36,179
2014	10,144 (Due to failure of monsoon)

(Source: Information collected from the F&E Department)

We also observed that there were no efforts made to find out the reasons for its drying up. The Department had not carried out geological investigation, sub surface investigation and rim survey of reservoir. The best engineering practice for water conservation (**Figure 4**) *such as* stoppage of rainy brooks or water retention works *viz.*, gully plugging, covering of porous layers in soil with impervious material *like* clay, bentonite *etc.*, lining of at the bottom, laying of plastic cover, works for reduction of evaporation rate by sprinkling of chemicals were not followed. We further observed that these measures were not even envisaged in the APO of the wetland though there were conducive factors for water conservation works *like* (i) Jamnagar District was having a

consistently good/ medium annual average rainfall of 516 mm (except during 2012 and 2014), (ii) the wetland being very near to coast, land is always full of moisture and weather is always humid. Thus, ecological balance of the wetland could not be maintained and water birds visiting wetlands dwindled sharply whenever the rainfall was less.

Figure 4: Photographs showing good practice of Water Conservation adopted at Gautampura Nagar Panchayat Pond, Near Indore, Madhya Pradesh, winner of National Urban Water Award for technological innovations, 2010.



(Source: National Urban Water Award working under Ministry of Urban Development)

Government stated (September 2015) that concern of audit is well appreciated but water conservation works suggested may affect the basic nature of wetland and also birds livelihood and biodiversity of the area on which birds survive. Khijadiya being a sanctuary, such works could not be encouraged beyond a limit. Further, there were a large number of factors which govern the number of birds visiting the area. Simply improving water retention and water level cannot improve the number of birds visiting the area and any interference in the area would be harmful hence it is not advisable. Government further stated that if the wetland is dried up, the birds move to other adjoining wetlands.

While we appreciate the concern to minimise interference, it was evident from the reduction in number of visiting birds that biodiversity was allowed to deteriorate and birds were forced to migrate to other places for want of water as they were not getting their basic survival requirements at the wetland. The Khijadiya wetland is situated in ideal position for water retention works. Water is the prime and fundamental requirement for all type of flora and fauna, for attracting the birds and their stay at the wetland.

Conclusion and recommendations

DCF has not prepared baseline data of migratory birds that visited wetland. There were inadequate water conservation activities to store the water which allowed the wetland to get dried soon after the monsoon and also affected the biodiversity of the wetland forcing the birds to migrate to other wetlands.

- Government may ensure strict time line for preparation of baseline data of migratory birds.
- Government needs to assess the requirement of conservation work to ensure retention of water at wetland so as to enable migratory birds to meet their survival requirements.

2.9.3 Wadhwana wetland

Wadhwana wetland is situated near Vadodara city. It has an irrigation tank under the control of the Narmada, Water Resources, Water Supply & Kalpsar (NWRWS&K) Department. The conservation of wetland is being carried out every year by the DCF (Wildlife), Vadodara under the F&E Department. It was declared as the wetland of national importance in the year 2004-05 being a shelter for migratory birds as well as local migratory birds. A proposal for nominating this wetland as a Ramsar site was submitted (April 2011) by DCF to the Department. During the period 2010-15, 36,578 to 88,381 birds of 100 to 140 species from different parts of the world visited the wetland as shown in **Table 8** below.

Table 8: Birds visiting Wadhwana Wetland during 2010-15

Year	2010-11	2011-12	2012-13	2013-14	2014-15
Total Birds visited the wetland	88,381	44,001	53,095	36,578	55,571
No. of birds falling under endangered category	59	31	24	29	NA
No. of birds falling under nearly threatened category	4,425	1,828	2,123	2,019	NA

(Source: Information collected from the F&E Department)

DCF carried out conservation activities during 2010-15 like formation of Eco development committee, maintenance and repairing of watch towers, excavation works to improve water regime, watch and ward, procurement and maintenance of field instruments, weeds removal, tree plantation for perching, roosting and nesting sites, Socio-Economic development, Eco-development, Eco-tourism works, Public awareness, education and training works, nature education camps *etc.*

We observed that:

- Baseline data of migratory birds was not prepared and maintained by the Department; and
- Department had reported 14 cases of wild life crimes including poaching and trapping of birds during 2010-15. This indicates that surveillance is required to be strengthened by the Department to avoid poaching and trapping cases at wetland.

2.9.3.1 Co-ordination with WR Department for adequate conservation

Shallowness allows the growth and sustenance of plants/ plankton and other connected fauna. Non maintenance of shallowness at wetlands has adverse impact on resting, feeding, roosting sites of birds.

The wetland is an irrigation tank under the control of Executive Engineer, Irrigation Division, Vadodara of Water Resources (WR) Department to provide irrigation to 3,300 ha of land during November to March (including winter season). The water is released from the Jojwa reservoir in Wadhvana Lake and irrigation is being done from Wadhvana Lake through five outlets. During 2006-12, the Irrigation Division maintained the water level up to 6 to 7 feet. This allowed shallowness in the Lake and the site remained conducive for the birds. Considering the local condition of the wetland, DCF, Wild Life, Vadodara observed (January 2014) that the water depth in the wetland should not exceed 6 to 7 feet as the depth beyond 7 feet may not be conducive for the birds to get food, nesting and breeding.

We observed that in 2012-13 and 2013-14, the Irrigation Division increased water level beyond 7 feet during winter *i.e.*, November to February. This led to submergence of feeding, breeding and nesting sites of the birds, affecting their feeding, breeding and nesting activities. Consequently the number of birds visiting Wadhvana Lake declined from 88,381 in 2010-11 to 36,578 in 2013-14 (overall decline was 58 *per cent*). An illustrative decline of seven groups of birds is shown in **Table 9** below:

Table 9: Decline in the number of birds at Wadhvana Wetland

Sl. No.	Group of birds	Year of census			
		2010-11	2011-12	2012-13	2013-14
1	Grebes	493	447	337	215
2	Cormorants & Darters	2,932	623	1,929	545
3	Heron & Egrets	7,022	1,055	1,756	2,480
4	Storks	261	115	80	87
5	Ibises & Spoonbills	8,884	6,027	2,915	2,321
6	Rails, Crakes, Gallinules & Coots	13,028	2,974	4,067	6,934
7	Waders	29,011	10,324	13,958	6,079
Total		61,631	21,565	25,042	18,661

(Source: Information collected from the Forests and Environment Department)

The plantations by Forests Department around wetland for feeding, roosting and shelter of birds were also uprooted (July 2012) by the Irrigation Division. Further, the check posts constructed by DCF for managing and regulating the inflow of visitors were also dismantled by the Irrigation Division. Thus, due to lack of proper co-ordination between the WR Department and the Forests Department, adequate conservation of wetland could not be carried out. The DCF apprised (January 2014) WR Department and PCCF about the negative impact of excess release of water. The DCF also took up (January 2014 to October 2014) the matter with the Collector, District Development Office and NGOs. However, matter could not be resolved (September 2015).

When the matter was taken up by Audit with EE, Irrigation Division, it was stated (January 2015) that raising of water was essential for meeting irrigation needs of the farmers. It was further stated that during a joint site visit (November 2014) of the Wadhvana Lake with DCF, they suggested an alternative way of excavation of area in the upstream side of the lake which would reduce height of the water level to six feet thereby not affecting the irrigation facility.

Government stated (September 2015) that the issue had been taken up with the District Authorities, Irrigation Department and was being resolved.

Conclusion and recommendation

The baseline date of migratory birds was not maintained by the DCF. There was lack of co-ordination with WR Department to maintain water level. This resulted in degradation of biodiversity. Further, plantation done at wetland and check posts constructed were uprooted/ dismantled by WR Department which may affect feeding, roosting and shelter of birds and surveillance of the wetland.

- **Government needs to give urgent attention for effective pursuance and co-ordination with WR Department for maintaining required water level by executing work as suggested by the WR Department.**

2.9.4 Little Rann of Kachchh and Great Rann of Kachchh

Little Rann of Kachchh (LRK) is a unique wetland comprising saline mudflat and marshes. In monsoon, LRK gets transformed into a very large seasonal wetland proving a haven for the migrant avifaunal¹⁰ and invertebrate¹¹ diversity. During the monsoon, the seasonal wetland charged by freshwater inflow and ingress of seawater teems with plant and animal life. It lies in the migratory route of a large number of bird species and draws a host of waterfowl and demoiselle¹² and common cranes. The Great Rann of Kachchh (GRK) is one of the largest seasonal saline wetland having an average water depth between 0.5 to 1.5 metres. The LRK is under control of DCF, Wild Ass Sanctuary, Dhrangadhra and GRK is under control of DCF, Kachchh (West) Division, Bhuj.

Both the wetlands are seasonal wetlands spread over a vast area (LRK 4,953 sq km and GRK 7,000 sq km). There are the most significant pocket areas and rare birds sites therein. LRK is the only nesting colony of Lesser Flamingo in the country. Lesser Flamingo has been declared as “Nearly Threatened” under the “International Union for Conservation of Nature Red List 2013”. In GRK there are exceptionally good birds sites *like* Bhujdo dungar, Kala dungar and Hunj Beyt, the nesting and breeding colony of Greater Flamingo known internationally as “Flamingo City” where lakhs of flamingos congregate for nesting and breeding regularly. Both wetlands are wild life sanctuaries. Our findings relating to conservation activities are discussed in the succeeding paragraphs.

2.9.4.1 Conservation activities

We observed that there are significant pocket areas and rare birds sites at wetlands of LRK and GRK. However, no conservation activity was carried out by the Department. Further, the bird counting was also not carried out. Even

¹⁰ Avifaunal: relating to the birds, or all the kinds of birds, inhabiting a region.

¹¹ Invertebrate: animals without back bone.

¹² Demoiselle: a small crane with a black head and breast and white ear tufts breeding in South East Europe and Central Asia.

pocket areas for which both the wetlands are having international fame were not identified for taking up conservation. Moreover, even survey and land demarcation were also not done at these wetlands.

Government stated (September 2015) that the Government is well concerned with conservation of GRK and LRK. Both wetlands are notified as sanctuaries and thus they were conserved under various schemes of State Government. It was also stated that non-demanding and non-availability of funds from Central Government should not be construed as there were no conservation activities in LRK and GRK.

The reply of the Government is not convincing as both at GRK and LRK, even the base level work of birds counting was not done to start with and in the absence of bird counting, the effectiveness of State Government efforts towards conservation could not be gauged.

2.9.4.2 Poaching at wetland

We observed that the Department had reported (December 2012) one major incidence of poaching case near Velasar village in Maliya-Miyana Taluka during the review period, wherein a large heap of body parts of 33 slaughtered flamingos was found. The case was reported by a wild life conservationist. This indicates that surveillance may not be adequate and possibility of more such cases of poaching going unnoticed can not be ruled out.

2.9.4.3 Baseline data of migratory birds

LRK and GRK are the wetlands of national importance and nesting colony of Lesser Flamingo and nesting and breeding colonies for Greater Flamingos respectively. The bird counting was not done. We observed that the baseline data of migratory birds was not prepared and maintained by the Department.

2.9.4.4 Medical facilities for birds

We observed that in spite of visits of lakhs of Flamingos in LRK and GRK, Bird Rescue Centre (BRC) for providing immediate treatment to the injured birds was not set up at either of wetlands.

Conclusion and recommendations

The MAP for LRK and GRK wetlands were not prepared. Pocket areas having high ecological value were not identified. No conservation activities were done by the Department. Baseline data of migratory birds was also not maintained which affect the conservation activities at wetland. There were no medical facilities for the birds.

- **Government should identify pockets having high ecological value and consider taking up conservation activities of these pockets.**
- **Government needs to strengthen surveillance to avoid poaching and provide sufficient medical facilities to the injured birds by setting up of BRC at the wetlands.**

2.9.5 Pariej wetland

Pariej is an irrigation reservoir constructed by the WR Department in Nadiad District. Conservation of this wetland is carried out by the DCF (Social Forestry), Nadiad under F&E Department. Conservation activities carried out during 2010-15 were protection measures like formation of village wetland committee, watch and ward through contractual staff, Socio-Economic development activities *like* entry point activities, development and maintenance of tourist facilities, development and maintenance of interpretation centre, education and public awareness etc. Audit findings noticed related to conservation activities are discussed in the succeeding paragraphs.

2.9.5.1 Baseline data of migratory birds

We observed that bird counting was not carried out and baseline data was not maintained by the Department. The population estimates for migratory birds and scientific research was under planning (June 2015).

2.9.5.2 Medical facilities for birds

We observed that there was no Birds Rescue Centre. The injured birds are sent to animal care centre at Ahmedabad or Veterinary College, Anand.

Conclusion and recommendation

There was no bird census or the baseline data available with the Department. Further, BCR was not set up. This indicates inadequate efforts of the Department in conservation of wetland.

- **The Government may carry out birds census at regular interval and ensure maintenance of baseline data of migratory birds.**

2.10 Monitoring and Supervision

Monitoring and supervision of conservation activities aid and enable the Department to identify weak areas which require remedial action and to initiate appropriate policy measures.

We observed that inadequate monitoring and supervision system existed in the Department as:

- There was no policy for conservation of wetlands other than those declared as wetlands of national importance. Further, for effective execution of the scheme, a proposal under NWCP guidelines for constitution of a State Wetland Conservation Authority (SWCA) was submitted (May 2014) by the PCCF (Wild life) to F&ED. However, the SWCA has not been constituted (September 2015).
- The Department did not prepare MAPs for five wetlands.

- No provision was made in the budget for conservation of other identified wetlands.
- There was little co-ordination with other Departments for conservation of wetlands.
- As per the order of constitution of Steering Committee, it was required to meet twice in a year. Against 10, only six meetings were held between 2010 and 2015. This indicates deficient monitoring by Committee of conservation of wetlands.

Conclusion and recommendation

The Steering Committee did not meet regularly twice in a year and core conservation issues relating to wetlands were not discussed.

- **The Steering Committee may ensure close monitoring of conservation activities of wetlands of national importance and expedite identification of other important wetlands.**

2.11 Conclusion

The Performance Audit of “Conservation of wetlands” revealed that conservation activities at six wetlands were carried out by the Department as per the APOs. The PA also revealed that there was a lack of focussed approach to conservation in the absence of adequate MAPs and APOs and activities were restricted to the GoI funds only. Certain areas of concern with regard to conservation of wetlands are highlighted below:

- Government did not frame policy or guidelines for wetlands other than those identified as having national importance. As a result, important wetlands remained out of conservation scope.
- The MAPs were either prepared with break in period or not prepared fully. Further, Government mainly relied upon fund released by GoI and shortfall was not met from State fund by the Department.
- Baseline data of migratory birds was not maintained by the Department. The water retention work at Khijadiya and removal of weeds at Nal Sarovar was inadequate. Conservation of the two important wetlands LRK and GRK was not done.
- Proper water level required for wetland was not maintained at Wadhvana Lake due to release of water by the Irrigation Department for irrigation. Poaching at Nal Sarovar and Wadhvana Lake was uncontrolled.
- Inadequate monitoring over the conservation of wetlands both at the Department level as well as Steering Committee level was observed. Out of 10 half yearly meetings as envisaged, Steering Committee met only six times during 2010-15 for review of activities of conservation of wetlands.