

SACON ENVIS Resource Partner on Wetland Ecosystems including Inland Wetlands

Sl.No.	Title	Authors	Journal Name	Year	Volume	Page	Keywords	Wetlands/Lakes	Lat	Long	Abstract
1	Hydrogeological evolution of the Luni river basin, Rajasthan, western India: A review	V N Bajpai	Proc. Indian Acad. Sci. (Earth Planet. Sci.)	2004	3	427-451		Luni river basin			The Luni river basin has been evolved as a result of typical hydrogeomorphic processes of arid zone, operating under the influence of active tectonic lineaments. A detailed analysis of stream morphology in relation to geology and lineaments carried out on selected windows indicated the morphological control of the streams while flowing over the lineaments from the eastern to the west-ern part of the basin. Typical valley fls indicated by dark green tone on digitally processed images and the pediments showing greenish white tone appear in sharp contrast and indicate respectively the graben and horst structures. A detailed
2	Peat swamps at Giral lignite field of Barmer basin, Rajasthan, Western India: understanding the evolution through petrological modelling	Prakash K. Singh P. K. Rajak M. P. Singh V. K. Singh A. S. Naik Alok K. Singh	Int J Coal Sci Techn	2016	3(2)	148–164	Peat swamp, Petrography, Giral lignite, Barmer basin, Western India	Barmer basin			The lignite samples collected from coal lignite field of Barmer basin have been subjected to petrological investigation. The data generated has been discussed to understand the evolution of the paleomires of these lignites. The present study reveals that these low rank C coals are chiefly composed of huminite group macerals, mainly telohuminite and detrohuminite, while lipinitie and inertinite group macerals occur in subordinate amounts. Not much variation in the maceral composition from Seam-I to Seam-VIII has been observed. Barmer lignites are characterized by a very high GI (110) and moderate TPI indicating topogenous mire in the basin which was permanently flooded. The GI and TPI values and the petrography based facies
3	Quality of Water in and Around Chandigarh Region – A Review	Sandeep Singh Nirankar Singh Sunil Kumar	Journal of Chemistry, Environmental	2014	Vol. 1, No. 1	33-43	Water quality, hardness, river water quality, BOD, COD,	Chandigarh Region	30° 43' N	76° 46' E	It is well documented that water is an essential component for the survival of all living beings and development processes on earth. Water is used for domestic purposes, industrial processes and agriculture. All these processes require good quality water. River water and underground water is generally used for
4	Land Transformation in the Western Periphery of Chandigarh:	Ravinder Singh Kumari Preeti	International Journal of	2017	Vol 4, No.3	170-178	LULC, Land Transformation, LULC	Chandigarh Region	30°45'N	76°43'E	Land is the basic natural resource that provides habitat and sustenance for living organisms, and a major source of economic activities (UNEP, 2001). The growing pressure of population coupled with an increasing
5	New Distributional Record of <i>Stuckenia pectinata</i> (L.) Borner in Union Territory of Chandigarh, India	Malkiat Chand Sidhu Shweta Puri Amrik Singh Ahluwalia	Journal on New Biological Reports	2018	7(1)	10-14	Aquatic species, Stuckenia pectinata, Potamogetonaceae, Sukhna, Wetland.	Chandigarh Region			<i>Stuckenia pectinata</i> has been reported for the first time from Sukhna Wetland, Chandigarh, India. It belongs to family Potamogetonaceae and has few morphological variants. It is a filiform, submerged, perennial and aquatic plant. Different plant parts are important as a source of food for many water fowls. It is believed that this species possibly has reached at the present study site through migratory birds.
6	Comparative study of sport fishing and water quality parameters between Siswan dam and Sukhna Lake	Paramveer Singh Mukta Singh S Harihara Sudhan Gohil Kaushik Bharatbhai	International Journal of Fauna and Biological Studies	2018	5(6)	84-86	Siswan dam, Sukhna Lake, spot fishing and water quality parameters	Siswan dam and Sukhna Lake			Siswan Dam and Sukhna Lake four are manmade water bodies situated in the range of Shiwalik Hills at different geographical area like Village Siswan, S.A.S Nagar Punjab and north east region of Chandigarh respectively. We analysed distinct water quality sample from Siswan Dam and Sukhna Lake during October and November 2018 (Morning, Afternoon and evening). Besides this, Sukhna Lake is very popular place for tourism as compare to Siswan Dam. Sukhna Lake is famous for recreational activities like boating,
7	Status of Sukhna Lake: A Remote Sensing and GIS Perspective	Kaiser Manzoor Bushra Zaman Chhotu Rao	International Journal of Current Trends in Science	2017	7(12)	20511-20516	Sukhna, Silt, Storm Water	Sukhna Lake	30° 44' and 30° 50' N	76°48' to 76° 54' E	Sukhna Lake, the life line of the union territory of Chandigarh, has been shrinking at a rapid pace. The lake lies in the foothills of Siwalik Hills in the outer Himalayas. It is an artificial and rain fed lake created by damming the Sukhna Choe, a seasonal stream coming down from the Shiwalik hills. It also serves as an
8	Water Quality Assessment of Sukhna Lake of Chandigarh City of India	P. Chaudhry M.P. Sharma R. Bhargave	HYDRO NEPAL	2013	12	26-31	Lake catchment characteristics, market and non-market	Sukhna Lake			The Sukhna Lake of Chandigarh City is a man-made lake situated in the foothills of the Shiwalik range in the north-east corner of the city. This urban lake is one of the prime tourist places of the 'City Beautiful' and is mainly used for recreational purposes like boating, morning and evening strolls, exercises, food plaza and
9	Length-Weight Relationship (LWR) in <i>Notopterus notopterus</i>	Veeralpal Kaur Y. K. Rawal	Journal of Pharmacy and	2017	12(4)	63-65	Notopterus notopterus (Pallas), Length-Weight	Sukhna Lake			Length-Weight relationship (LWR) of <i>Notopterus notopterus</i> (Pallas), an important food fish has been conducted from Sukhna Lake, Chandigarh. 45 fish samples were collected during different months of study
10	AVIAN DIVERSITY OF CHANDIGARH	Thakur, M. L. Rahul Paliwal	International Journal of	2012	2(1)	103-114	Avifauna, Residential Status, Relative	CHANDIGARH			Studies on avian diversity of Chandigarh revealed the presence of 239 species of birds belonging to 156 genera, 54 families and 17 orders. Analyses of data on residential status revealed that of the total 239 species
11	Water Quality Assessment through GIS: A Case Study of Sukhna Lake, Chandigarh, India	Kaiser Manzoor Pushkar Raj Rohit Sheoran Swastik Dey	International Research Journal of Engineering and Technology	2017	4(11)	1773-1776	Sukhna, Physicochemical Parameters, ArcGIS	Sukhna Lake			The Sukhna Lake of Chandigarh City is a delightful artificial lake but now is fighting for survival. The water quality has become critical for flora and fauna of Sukhna Lake. Stream of sewage from close-by towns (Kansal) in the catchment is the primary reason for low water quality of the lake. The investigation was done out to assess the water quality of Sukhna Lake. Topographic sheets from Survey of India and ArcGIS 10.4
12	Morphometry of <i>Cirrhinus reba</i> (Hamilton) from Sukhna Lake,	Veeralpal Kaur Y. K. Rawal	Journal of Pharmacy and	2017	12(4)	66-69	<i>Cirrhinus reba</i> (Hamilton),	Sukhna Lake			For morphometric analysis of <i>Cirrhinus reba</i> (Ham.), 80 fish specimens were collected during the period from June 2012 to May 2014 from Sukhna Lake, Chandigarh. Out of all 24 morphometric characters
13	Prediction Of Water Availability In Sukhna Lake, Chandigarh For Summer 2015	Suhas Khobragade Sudhir Kumar A. R. Senthil Kumar R. D. Singh	International Journal of Engineering Research &	2015	3(3)	1-7	Water Availability, Sukhna Lake, Water Balance Lake Hydrology, Lake	Sukhna Lake			Sukhna Lake at Chandigarh is facing water availability problems in recent years. The lake got dried almost completely during 2012 summer. Since deficit rainfall has been received during 2014 monsoon, there are apprehensions about its drying in the summer. So, present investigations have been carried out to predict the water availability scenario for the lake during the coming summer of 2015. The analysis has been carried out
14	WATER QUALITY ANALYSIS OF SUKHNA	SIMERJIT KAUR ANNAMMA C.I.	International Journal of	2011	2(3)		Sukhna Lake, Water analysis, Water	Sukhna Lake	32° 42' N	76° 54' E	Water assessment of Sukhna Lake was carried out in the month of November 2009 by selecting ten spots for obtaining water samples. During these investigations, various parameters like pH, temperature, total dissolved
15	Status of Sukhna Lake: A Remote Sensing and GIS Perspective	Kaiser Manzoor Bushra Zaman Chhotu Rao	International Journal of Current Trends in Science	2017	7(12)	20511-20516	Sukhna, Silt, Storm Water	Sukhna Lake	30° 44' and 30° 50' N	76°48' to 76° 54' E	Sukhna Lake, the life line of the union territory of Chandigarh, has been shrinking at a rapid pace. The lake lies in the foothills of Siwalik Hills in the outer Himalayas. It is an artificial and rain fed lake created by damming the Sukhna Choe, a seasonal stream coming down from the Shiwalik hills. It also serves as an

16	SILTATION PROBLEMS IN SUKHNA LAKE IN CHANDIGARH, NW INDIA AND COMMENTS ON GEOHYDROLOGICAL CHANGES IN THE YAMUNA-SATLUJ REGION	Yadvinder Singh	ENVIS Bulletin: Himalayan Ecology and Development	2002	10(2)	18-31		Sukhna Lake	30° 43'.1 - 31° 1.7' N	76° 32.7' - 76° 54.5' E	
17	First Report of Family Physidae (Gastropoda) with <i>Physa acuta</i>	Maansi Meenu Wats	Global Journal of Science Frontier	2018	18(1)		physidae, physaacuta, pulmonate, gastropod,	Freshwaters of Chandigarh			Physidae is the most world widely dispersed and commonly encountered family of freshwater pulmonates. <i>Physa acuta</i> Draparnaud, 1805, one of its common, occurring species belongs to Family Physidae of Class
18	To Study Hydrogeology and Wetland-Groundwater Interactions around	Jasbir Kaur Taak Singh KP Ahluwalia AS	Hydrology Current Research	2016	7(2)		Wetland; Groundwater; Sukhna; Hydrology	Sukhna Lake			In the present paper the hydrological regime around Sukhna wetland is studied to know how a wetland is functioning, its influence on hydrology of the area and wetland-groundwater interactions. The subsurface geology of boreholes drilled around Sukhna wetland reveals thick zones of boulders, pebbles, gravels, sand
19	Spatial variation of water quality parameters of shrimp (<i>Litopenaeus vannamei</i>) culture ponds at Narsapurapupeta, Kajuluru and Kaikavolu villages of East Godavari district, Andhra Pradesh	Myra S Chakravarty PRC Ganesh D Amarnath B Shanthi Sudha T Srinu Babu	International Journal of Fisheries and Aquatic Studies	2016	4(4)	390-395	Water quality, shrimp ponds, East Godavari, Andhra Pradesh	Ponus at Narsapurapupeta, Kajuluru and Kaikavolu villages of East Godavari			Water quality parameters viz., Temperature, pH, Salinity, Dissolved Oxygen, Alkalinity, Hardness, Nitrite-Nitrogen, Nitrate-Nitrogen and Ammonia were studied in 14 shrimp culture ponds (6 at Narsapurapupeta, 4 at Kajuluru and 4 at Kaikavolu villages) of East Godavari district, Andhra Pradesh. Temperature ranged from 26.5 °C to 28 °C in the ponds. pH varied from 6.95 to 8.38. Dissolved oxygen varied from 4.4 to 8.6 mg/l. Minimum values of dissolved oxygen were recorded at Kajuluru village pond and
20	Impact of Aquaculture on Physico-Chemical Characteristics of Water and Soils in the Coastal Tracts of East and West Godavari Districts, Andhra Pradesh, India	A.Rama Krishna Raju Sitarama Reddy Muppidi Raghuram Popuri Suri Babu Golla Rambabu Tenneti	International Journal of Engineering Trends and Technology	2013	6(6)	313-319	Aquaculture, Soil salinity, Mangrove forest, Salt water intrusion, Heavy metals, Eutrophication and Soil nutrients	Coastal Tracts of East and West Godavari Districts			The physico-chemical characteristics of water and soil in 20 aquaculture areas were investigated. Water samples were analysed with respect to PH, Phosphates, Sulphates, Total Alkalinity, Total Hardness, Total Dissolved Solids, Electrical Conductivity, Salinity, Chlorides, Chlorides, Nitrites, Nitrites, Ammonia, D.O., B.O.D. and C.O.D. The soil samples were analysed with respect to PH, Total Dissolved Solids, Electrical Conductivity, Organic Carbon, Nitrogen, Phosphorus, Potassium, Sodium and Sulphur. Heavy metals like Iron, Manganese, Zinc and Copper were also measured in soil samples. A comparison of
21	Aquaculture and its impact on ground water in East Godavari District Andhra Pradesh, India – A Case Study	A.R.K. Raju Penmetsa S.R. Reddy Muppidi Raghuram Popuri Suri Babu Golla Rambabu Tenneti	International Research Journal of Environment Sciences	2013	2(13)	101-106	Aquaculture, ground water pollution, vannamei, drinking water quality, saltwater intrusion, exotic species	East Godavari District	N16° 18' to 16° 23'	E 81° 42' to 81° 57'	Ground water is a significant source for drinking, agricultural and aquaculture purposes in Godavari region. Groundwater if contaminated due to manmade activities cause concern on environment and human health. The aim of the present study is to review the impact of aquaculture on environment briefly and to assess the ground water quality in East Godavari District. Aquaculture activities are major impact on water resources-they are physical, chemical and biological. Physically there is a lot of pressure on water; chemically it is polluted the water as well as land; biologically it introduces exotic species, pathogens and disease. It is due to poor planning of land and water, lower toxicity of ammonia and carbon dioxide and
22	Alkalinity and Hardness Variation in Ground Waters of East Godavari District due to Aquaculture	P.A.R. K. Raju M.S.R. Reddy P. Raghuram G.Suri Babu T.Rambabu	International Journal of Fisheries and Aquatic Studies	2014	1(6)	121-126	Bio-mutation, salinity, toxicity, phytoplankton, autotrophic, photosynthesis, respiration, nitrification	East Godavari District	N160 18' to 16023'	E81042' to 81057'	in aquaculture systems alkalinity leads to stable pH, lower toxicity of ammonia and carbon dioxide and healthy biofilter operations. High concentrations of hardness block the toxic effects of copper and zinc. For waters where alkalinity is high and calcium is low, photosynthesis may increase the pH to levels that are toxic to fish. Excess alkalinity in an ecosystem can reduce that ecosystem's ability to sustain life. Ground water contamination with salt water due to aquaculture and thereby changes in alkalinity, hardness and other parameters are discussed.
23	CHANGE DETECTION MATRIX ANALYSIS OF LAND	Padma Kumari K. K. Srinivas	International Journal of	2015	3(1)	91-99	Remote Sensing, GIS, Land use/Land cover,	East Godavari District	17°16' N 81°41' E	82°32' E 81°41' E	This paper has been made to study the change detection analysis of land use /land cover mapping for the years 2000 & 2014 in coastal part of East Godavari district, Andhra Pradesh India on 1: 50,000 scale. The Coastal region around Bay of Bengal in Central Godavari Delta are mainly agriculture lands and two times annually paddy crops putting in the study area. Canals of Godavari river are the main source of water for irrigation. Geophysical and geochemical investigations were carried out in the study area to decipher subsurface geologic formation and assessing seawater intrusion. Electrical resistivity tomographic surveys carried out in the watershed indicated low resistivity formation in the upstream area due to the presence of thick marine clays up to thickness of 20-25 m from the surface. Secondly, the lowering of resistivity may be due to the encroachment of seawater in to freshwater zones and infiltration during tidal
24	Geophysical and Geochemical Approach for Seawater Intrusion Assessment in the Godavari Delta Basin, A.P., India	V. V. S. Gurunadha Rao G. Tamma Rao L. Surinaidu R. Rajesh J. Mahesh	Water Air Soil Pollut	2011		503-514	Electrical resistivity tomography (ERT) . Groundwater quality . Bay of Bengal . In situ salinity	Godavari Delta Basin	16°25_ N to 16°55_ N	81°44_ E to 82°15_ E	
25	Ethnomedicinal studies of mangroves of Coringa wild life sanctuary, East Godavari District, Andhra Pradesh, India	Velmala Madhu	INTERNATIONAL JOURNAL OF PHARMACY & LIFE SCIENCES	2013	4(9)	2987-2988	Coringa, Mangroves, Ethno medicine, East Godavari District	Coringa Mangroves	16-30' to 17-00' North	82-14' to 82-23'	The present report describes medicinal uses of mangroves of coringa wild life sanctuary used by the local people of coringa village, East Godavari district, Andhra Pradesh, India. Information collected through a survey of seven plant species used for various ailments, aches and disorders with their botanical name, family name, vernacular name, habit and mode of administration have been enumerated.
26	Chemical and microbial characterization of surface and ground waters near	B.Vijaya Kumari Y.L.N.Murthy P.V.S.Machiraju	International Journal of Current Microbiology and	2014	3(12)	205-212	Surface water, Ground water, Estuary,	Godavari Delta Basin	16051 18.05N	81013 56.01E	Surface and Ground water are systems linked with each other. In Coastal region salanization problem is significant for ground water contamination. The transition of ground water in to the surface waters contributes a noticeable change in the ground water environment besides heavy metal cycling. Due to natural
27	Biomass and carbon stocks of trees in tropical dry forest of East Godavari region,	Kantipudi Srinivas Somaiah Sundarapandian	Geology, Ecology, and Landscapes	2019	3(2)	114-122	Climate change; Eastern Ghats; carbon mitigation;	East Godavari Delta Basin			Assessment of biomass and carbon stock (CS) of trees was carried out in three selected study sites (four 0.25 ha [50 m × 50 m] plots in each site) in East Godavari region of Eastern Ghats. Above ground biomass (AGB) was estimated by the non-harvest method by using allometric equations. The AGB ranged from 58.04 (site I)
28	A study on mangrove ecology and socio-economic status of fishing communities in	M Haritha KAS Nisha PS Raja Sekhar	International Journal of Fauna and Biological	2017	4(1)	01-04	Coringa mangroves, Income generation, fishing community,	Coringa Mangroves	160 50" to 170 00"	800 10" to 820 25"	Mangrove forests are considered as one of the rich ecological resources consists of salt tolerant plants and aquatic faunal species formed in intertidal zones of tropical and subtropical regions. These forests are least concerned and often over utilised by the human communities for their development in the process of housing,
29	Economics of Paddy Cultivation in East Godavari district of Andhra Pradesh	K V S D Pravallika P A Lakshmi Prasanna V K Choudhary	Journal of Rice Research	2017	10(2)	89-96	BEO, MSP, Rice, Paddy, East Godavari, Crop-holiday	East Godavari Delta Basin			This study examined the yield, input use, net returns, break-even output and resource use efficiency in paddy cultivation in East Godavari district of Andhra Pradesh. At district level, total variable cost per hectare was Rs.65160.22 whereas total cost of cultivation per hectare was Rs.97884.09. Total variable cost accounts for 66.57% of the total cost. Labour cost constitutes over 63% of the total variable cost. At district level, total

46	Birds Biodiversity and Conservation Status of Keshopur Community Reserve, Gurdaspur, Punjab	Kamal Mehta	International Journal of Science and Research	2012	3(12)	23-27	wetlands, birds, Conservation, Punjab	Keshopur Community Reserve	32°05' 16.3" N	75° 24' 24.2"E	The importance of Wetlands has been increasingly recognized in recent years with the growing interest in them for supplementing human dietary requirements and for their ecological significance in terms of hydrologic, water purification, aquatic productivity, flood control and micro-climatic regulations. Wetlands provide habitats to fishes, birds and wildlife. Bird community of Keshopur wetland in District Gurdaspur, Punjab has been studied from January 2013-June 2014. Though various conservation strategies are implemented in protected areas still network of unrecognized natural wetlands are ignored. The network of such natural sites is important biodiversity corridor that facilitates the movement of migratory birds. The present study is step towards the protection of this valuable habitat, namely Keshopur Miani Community Reserve
47	Avian fauna of Pong Dam Wetland a Ramsar site	R. Jindal H. Singh C. Sharma	INTERNATIONAL JOURNAL OF ENVIRONMENT	2013	3(6)	2236-2250	Pong Dam wetland, Ramsar site, Avian fauna, Migratory birds,	Pong Dam	30°-25°N	75°-45°E	Studies on the avian fauna of Pong Dam Wetland (Himachal Pradesh, India) revealed 304 species of birds belonging to 52 families. Out of these, 70 species are purely aquatic birds. As the water of the wetland is clear, rich in dissolved oxygen and supports variety of aquatic weeds and fishes, it has been found to be
48	Avian Diversity of Wetland Habitats of District Fatehabad,	Girish Chopra Pooja Jakhar	INTERNATIONAL JOURNAL OF	2016	7(9)	5185-5199	Wetland, Fatehabad, Avian	Fatehabad Wetlands			The present study was conducted in three wetland habitats of district Fatehabad, Haryana (India) from December, 2012 to November, 2014 to record the avian diversity, its abundance and status. A total of 73
49	A preliminary study on ichthyofaunal diversity of Diplai Beel of Kokrajhar district of	Nizara Singha Rajesh Nag Parag Deka	International Journal of Fisheries and	2017	5(3)	269-275	Ichthyofaunal diversity, Diplai Beel, Kokrajhar District	Diplai Beel	26°17'31'	90°19' 14'	The present study deals with the ichthyofaunal diversity of Diplai Beel of Kokrajhar District, Assam, India where 67 number of fish species including 4 exotic fish belonging to 49 genera under 25 families from 8 orders is recorded. Among the recorded fish species 1 species is recorded as vulnerable, 2 species
50	Geophysical Changes of Wetland Resources and their Management	Labanya Das A.K. Bora	Trans.Inst.Indian Geographers	2017	39(2)	223-236	Wetlands, Morphology, Biodiversity, Hydrology,	Nonoi Watershed	26° 11' N and 26° 26' N	92° 35' E and 93° 3' E	The Nonoi watershed, which spans over some plain areas of Nagaon district and hilly areas of Karbi Anglong district of Assam has a total wetland area of 12.01 sq km accounting for 2.2 % of the total watershed area.
51	Temporal composition and distribution of	Onkar Singh Braich Rajwinder Kaur	CURRENT SCIENCE	2017	112(1)	116-125	Abundance, biodiversity, macroinvertebrate,	Nangal wetland	31°24'13.52"N	76°22'03.05"E	Studies on the composition, distribution and seasonality of the benthic invertebrates of the Nangal wetland were undertaken for two years from February 2013 to January 2015. Twenty-four genera of benthic
52	Morphological, histopathological and molecular characterization of	Harpreet Kaur Aditya Gupta	Journal of Applied B	2017	5(1)	021-028	18S rDNA; muscles; Phy	Ranjit sagar wetland	32° 26' 30" N	75° 43' 30E	In the present study, a new species, <i>Thelohanellus muscularis</i> n. sp. infecting head muscles of <i>Labeo rohita</i> (Family Cyprinidae) from Ranjit Sagar Wetland, Punjab, India has been described on the basis of its
53	ECO-HYDROBIOLOGY WITH SPECIAL AMPHASIS ON ICHTHYOFAUNAL DIVERSITY OF URPOD WETLAND OF	B.J.Saud M. Chetia V.K. Verma D.Kumar	International Journal of Plant, Animal and Environmental	2012	2(3)	103-109	Hydrobiology, Diversity, Wetland	URPOD WETLAND	26o05'05" N	26o 06'45"	Urpod wetland, situated to the south of the Brahmaputra river of Goalpara District, Assam comes under the Asian wetland directory. The present findings reported a total of 60 fish species belonging to 21 family from the wetland. Many riverine species have amalgamated in this wetland due to connection with the Jhinari and Jhimjiram river. Encroachment, agricultural activities, forest cover change in the adjoining reserved forests,
54	To investigate hydrogeological regime and wetland –groundwater interactions around Ropar wetland, Punjab, India	Jasbir Kaur Taak	Imperial Journal of Interdisciplinary Research (IJIR)	2016	2(5)	1332-1336	Hydrological regime, Ropar, Groundwater and Wetland.	Ropar wetland	31° 01' N	76°30' E	in the present paper the hydrological regime and wetland – groundwater interactions around Ropar wetland is studied to know how a wetland is functioning and its influence on hydrology of the area. The subsurface lithology around Ropar wetland inferred on the basis of borehole data of Bhagowali and Purkhali sites reveals that upto the depth of 25 m bgl is non-granular zone (clay, silty clays, hard clay) followed by granular zone (coarse sand, medium sand, pebbles, gravels, and boulders) upto the depth of 30 – 35 m bgl. Again there is a thin layer of non-granular zone from 60-72 m bgl. As we go deeper upto 05-120 m bgl the granular and
55	A Study on Physico-Chemical Characteristics of Water in Wetlands of Hebbe Range	Pramod, A.F. Vijaya Kumara Raghavendra Gowda, H	Journal of Experime	2011	2(10)	09-15	Wetlands, physico-chemi	Bhadra Wildlife Sanctuary	13°22' to 13°47' N	75°29' to 75°45'	A systematic study has been carried out to evaluate physico chemical characteristics of the selected wetlands of the Bhadra Wildlife sanctuary from May 2009 to April 2010. Three major wetlands which come across the temperate zone of the sanctuary have been selected for the study. Seventeen physico-chemical water
56	Weeds as emerging threat to biodiversity: a consequence of spread of Ludwigia peruviana	Iswar Chandra Barua Jayanta Deka Mitali Devi Rajib L. Deka	CURRENT SCIENCE	2017	112(9)	1904-1914	Biodiversity loss, catchments areas, invasion, Ludwigia peruviana.	Dhansiri and Kopili catchment			Wetlands seem to be more vulnerable to invasions compared to terrestrial ecosystems. The alien invasive weed, <i>igia peruviana</i> , invading the wetlands of the Dhansiri catchment and eastern part of Kopili in Assam has threatened the resident biodiversity and has also posed possibilities of spreading to other wetlands of North East India. The present study was conducted to measure the impact of the weed on the biodiversity of
57	STUDY ON PHYSICO-CHEMICAL PARAMETERS OF MANMADE RESERVOIR FROM PATHARDI TEHSIL, (M.S.) INDIA	B. B. Tilekar	INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY	2016	4(1)	48-52	Investigate, Moharireservoir, Parameters.	Mohari reservoir	19° 9' N	75° 10' E	The quality of water is concern for mankind since it is directly linked with human welfare. The present study was undertaken to investigate the physical and chemical entities comprising of eleven parameters, which will help understanding the status of damwater. Water sample collected Moharireservoirlocated in eastern part of PathardiTahasil, District-Ahmednagar (MS). The physio-chemical parameters are Atmospheric Temperature (AT), Water Temperature (WT), PotentialHydrogenii(pH), Electrical Conductivity(EC), Total Dissolve Solid(TDS), Acidity(Acid), Alkalinity(Alk),Carbon dioxide(CO2), Dissolve Oxygen(DO), Total
58	Water quality assessment of lake water: a review	Rachna Bhateria Disha Jain	Sustain. Water Resour. Manag	2016	2	161–173	Hyperion Plastic debris Sewage Algal				Ever increasing population, urbanization and modernization are posing problems of sewage disposal and contamination of surface waters like lakes. Natural water
59	Recreational Value of Wetlands: The Case of Kuttanad	C. Sulakshana Rao R. Balasubramanian	International Journa	2017	6(11)	1753-1762	Wetland valuation, Travel Cost Method,	Kuttanad Coastal Wetland			Kuttanad wetlands and the backwaters of Kerala are well recognised for their tourism amenities at global level. Tourists from across the world visit the backwaters and consume the recreational benefits provided by
60	Degradation of Wetland Environment: A Case Study of Dora Beel of Kamrup District Assam	Inamani Das	IOSR Journal Of Humanities And Social Science	2015	20(1)	23-29	Conservation, environmental degradation, natural resource, sustainable development, wetland	Dora Beel	26°53'76" N	91°27'99" E	Wetland a relatively new term occupies a significant position as natural resources in our state. The importance of wetland has been increasing day by day due to its role on environment and economy of a region. But the growing pressure of human interference has been degrading the wetland environment constantly and it has posed a serious threat to the biodiversity of the wetland. An attempt has been made in this paper to know the status of wetland and analyze its environmental degradation. The study was carried out during March, 2015 to February, 2016. During the reporting period, a total of 75 species belonging to 49 genera and 23 families were recorded. Cyprinidae was found to be dominant families with 27 species and followed by Bagridae (7 species); Cobitidae (6 species); Channidae (4 species); Siluridae, Schilbeidae and Osphronemidae with 3 species each. In terms of composition of genus, Cyprinidae have 15 genus followed by Cobitidae and Bagridae with 4 each while Schilbeidae with 3. As far as the species composition is concerned, the Cyprinidae was 30.0%
61	Enumeration of Fish from Dulakhojya Beel (wetland) of Lakhimpur District, Assam, India	Budhin Gogoi Ramen Das Santosh Kumar Abujam Debangshu Narayan Das	Journal of Fisheries	2016	10(4)	37-42	Fish diversity; Dulakhojya beel; Assam; India	Dulakhojya beel	27°16' N	94°24' E.	The present study was carried out from Dulakhojya beel (wetland) of Lakhimpur district, Assam, India during March, 2015 to February, 2016. During the reporting period, a total of 75 species belonging to 49 genera and 23 families were recorded. Cyprinidae was found to be dominant families with 27 species and followed by Bagridae (7 species); Cobitidae (6 species); Channidae (4 species); Siluridae, Schilbeidae and Osphronemidae with 3 species each. In terms of composition of genus, Cyprinidae have 15 genus followed by Cobitidae and Bagridae with 4 each while Schilbeidae with 3. As far as the species composition is concerned, the Cyprinidae was 30.0%

62	Ichthyofaunal Diversity & Anthropogenic Stress on Deepor Beel: the only Ramsar site in	Chandasudha Goswami Manash P. Kalita	IOSR Journal Of Environmental Science,	2012	2(1)	54-59	Anthropogenic, Hotspots, Ramsar, Sanctuary,	Deepor Beel	26°03'26"-26°09'26"N	90°36'39"-90°41'25"E	North East India is the conjunction of Himalaya and In-Burma biodiversity hotspots. Deepor Beel, in Assam, has been designated a wetland of international importance under the Ramsar Convention on Wetlands, at the eighth meeting of the Conference of Contracting Parties (COP8) held recently at Valencia in Spain. Again,
63	Water Quality Status of Loktak Lake, Manipur, Northeast India	Jogesh Laishram Mithra Dey	International Journal of	2014	4(6)	1-6	Loktak lake, Physico-chemical properties,	Loktak lake	24° 25' to 24° 42'N	93° 46' and 93° 55' E	The present study was carried out to assess the physico-chemical properties of Loktak lake at five selected villages- three lakeshore villages i.e. Phoubakchao, Laphupat Tera, Nongmaikhong and two island villages-
64	Evaluation of Ecotourism Resources in the Wetlands	NIRANJAN DAS SUJATA DEORI	SAJTH	2012	5(2)		Eco-Tourism Resources, Wetland, Sustainability,	Deepar Beel	26°05'26"N to 26°	90°36'39'E to 91°	The United Nations General Assembly recognized the global importance of Ecotourism, its benefits as well as its impact with the launching of the year, 2002 as the international year of Ecotourism. The present investigation aims with the documentation of aquatic macrophytes from the wetlands of Nalbari district of Assam India situated at the global position between 260 10' N to 260 47' N latitude and 900 15' E to 910 10' E longitude . The study was carried out in four important wetlands of the district viz. Batua kamakhya beel, Borbilla beel, Borali beel and Ghoga beel for a period of two years i.e. January 2012 to December 2013. All the four wetlands are perennial in nature that remain covered by water along with it.
65	Present status of aquatic macrophytes of the wetlands of Nalbari district of Assam, India	Upen Deka	Asian Journal of Plant Science and Research	2014	4(3)	67-75	Wetlands, Macrophytic species, Degradation, Assam,	Nalbari district	26° 10' N to 26° 47' N	90° 15' E to 91° 10' E	The present investigation reveals that the impact of human activities on Tamaranga (beel) wetland a case study from Bongaigaon district, Assam, India. The wetland is situated 260 19°08"N latitude and 90034°19"E longitude in gaigaon district of Assam, covering an area of 627 ha. It is one of the inland of wetlands such as disturbances in physical, chemical and biological processes in an ecosystem and regulating climatic condition. The main human activities are use of wetland area for different natural wetland. The average annual rainfall is 3000mm with maximum and minimum temperature of 360C and 70C respectively. The present A systematic, updated checklist of freshwater fishes of Arunachal Pradesh is provided. A total of 259 fish species under 105 genera, 34 families and 11 orders has been compiled based on present collection, available collections and literatures during the year 2014 to 2016. Thirty four fish species has been added to the previous report of 225 fish species. Besides, the state is type localities of 47 fish species and 32 species are considered endemic in the state. The fish fauna includes 19 threatened species as per IUCN status. The state has high fisheries potential as it harbour many commercially important food, sport or
66	Impact of Human Activities on Wetland: A Case Study from Bongaigaon District, Assam, India	Rahman Ahidur	International Journal of Current Microbiology and Applied Sciences	2016	5(3)	392-396	Wetland, Human activity, Tamaranga, Bongaigaon district, Assam	Tamaranga (beel)	26° 19°08''N	90°34°19''E	The present investigation reveals that the impact of human activities on Tamaranga (beel) wetland a case study from Bongaigaon district, Assam, India. The wetland is situated 260 19°08"N latitude and 90034°19"E longitude in gaigaon district of Assam, covering an area of 627 ha. It is one of the inland of wetlands such as disturbances in physical, chemical and biological processes in an ecosystem and regulating climatic condition. The main human activities are use of wetland area for different natural wetland. The average annual rainfall is 3000mm with maximum and minimum temperature of 360C and 70C respectively. The present A systematic, updated checklist of freshwater fishes of Arunachal Pradesh is provided. A total of 259 fish species under 105 genera, 34 families and 11 orders has been compiled based on present collection, available collections and literatures during the year 2014 to 2016. Thirty four fish species has been added to the previous report of 225 fish species. Besides, the state is type localities of 47 fish species and 32 species are considered endemic in the state. The fish fauna includes 19 threatened species as per IUCN status. The state has high fisheries potential as it harbour many commercially important food, sport or
67	Ichthyofaunal diversity of Arunachal Pradesh, India: A part of Himalaya biodiversity hotspot	SD Gurumayum L. Kosygin Lakpa Tamang	International Journal of Fisheries and Aquatic Studies	2016	4(2)	337-346	Biodiversity, Fish, conservation status, commercial importance, Arunachal Pradesh	Arunachal Pradesh	26.28° N and 29.30° N	91.20° E and 97.30° E	The present investigation reveals that the impact of human activities on Tamaranga (beel) wetland a case study from Bongaigaon district, Assam, India. The wetland is situated 260 19°08"N latitude and 90034°19"E longitude in gaigaon district of Assam, covering an area of 627 ha. It is one of the inland of wetlands such as disturbances in physical, chemical and biological processes in an ecosystem and regulating climatic condition. The main human activities are use of wetland area for different natural wetland. The average annual rainfall is 3000mm with maximum and minimum temperature of 360C and 70C respectively. The present A systematic, updated checklist of freshwater fishes of Arunachal Pradesh is provided. A total of 259 fish species under 105 genera, 34 families and 11 orders has been compiled based on present collection, available collections and literatures during the year 2014 to 2016. Thirty four fish species has been added to the previous report of 225 fish species. Besides, the state is type localities of 47 fish species and 32 species are considered endemic in the state. The fish fauna includes 19 threatened species as per IUCN status. The state has high fisheries potential as it harbour many commercially important food, sport or
68	Morphometric Analysis of Singki River Catchment using Remote Sensing & GIS: Papumpare, Arunachal Pradesh	Mahendra S. Lodhi Masoom Reza	International Journal of Advanced Remote Sensing and GIS	2017	6(1)	2023-2032	Geology; Morphometry; River Catchment; Remote Sensing & GIS	Singki River	27°4'- 27°12'N	93°30'- 93°38"E	River is playing an important role in landform development, its shapes the structure of area. River process is a natural phenomenon supported by many agents such as precipitation. It has participated role in changing river behaviour, rainfall contributes in the volume of water and work as an agent in erosional process. Carrying scientific study to understand the
69	Channa pomanensis, a new species of snakehead (Teleostei: Chamidae) from Arunachal Pradesh, northeastern India	Shantabala Devi Gurumayum Lakpa Tamang	Species	2016	17(57)	175-186	snakehead, new species, taxonomy, Poma River, Brahmaputra basin.	Poma River			This paper describes a new species of Channa from the Poma River (Brahmaputra River basin) in Papum Pare district of Arunachal Pradesh, northeastern India. The new species can be differentiated from its congeners occurring in Eastern Himalayan region in India and northern and southern Rakhine State, Myanmar in having the following combination of characters: 7 oblique bands on body, generally extending to lateral line; a thin preorbital streak; black to brown and broad to thin postorbital streak
70	Ichthyofauna of Ranganadi River in Lakhimpur, Assam, India	Gitartha Kaushik Sabitry Bordoloi	Check List	2016	12(2)		fish fauna; Ranganadi River basin; Lakhimpur	Ranganadi River	26°48' N to 27°53' N	093°42' E to 094°20' E	The ichthyofauna of the Ranganadi River, a tributary of the Brahmaputra River in Lakhimpur district, Assam, India, as not been documented so far. To fill this knowledge gap, samples were taken in the Ranganadi River from April 2012 to March 2014, which included 61 species of fishes belonging to six orders, 17 families and 45 genera. One of these species is Endangered, two are as
71	Biomass and Productivity of Riparian Vegetation along Dikrong River System, Arunachal Pradesh, India	Tapati Das Abhiik Gupta Ayyanadar Arunachalam	Assam University Journal of Science & Technology	2010	6(1)	13-20	Biomass, productivity, riparian vegetation, Dikrong river system	Dikrong River			A study on the biomass and productivity of riparian vegetation along Dikrong river system comprising three rivers, Pare, Pachin and Dikrong in Arunachal Pradesh was carried out. Both the biomass and productivity of the riparian vegetation was greater along river Pare and was least along river Pachin. It was observed that the intensity of disturbance along the riparian zone played a significant role in decreasing both the biomass and productivity of the riparian vegetation. Hence proper management initiatives should be taken to maintain
72	Application Of Arc Gis For Estimation Of Basin Potential (A Case Study - Kharun River Basin)	S.Modak M.K.Verma C.P.Devatha	International Journal of Engineering Research & Technology	2012	1(9)	1-14	Index Term-rainfall,runoff yield,Arc GIS,runoff coefficient,75%dependability	KHARUN RIVER BASIN	200 33' 30" - 210 33' 38" N	810 17' 51" E - 810 55' 25" E	Application of ArcGIS for estimation of basin potential(a case study-Kharun river basin, Chhattisgarh, India) has been presented in this paper. The objective of the present work is to find out the balance water available in the basin after assessing the present water use including industrial water demand and projected water demand to be fulfilled by Kharun river. Water resources of the world in general and India are under heavy stress due to increased demand and limitation of available quantity. Sustainable water Lake water is an important source for drinking, domestic and irrigation purposes in rural and urban area. The present study aims at evaluating the water quality of various lakes in Raipur city, Chhattisgarh. There existed 154 lakes in the city but it shrank to 85 in number due to encroachment or drying up of lakes. Twenty seven prominent lakes are selected to study and evaluate the water quality for drinking and irrigation purposes. The water samples were collected and analysed for pH, Turbidity, Electrical Conductivity (EC), Total Dissolved Solids (TDS), Alkalinity, Hardness, Sodium(Na+), Potassium(K+), Calcium(Ca2+), Magnesium(Mg2+), Bicarbonate(HCO3-), Sulphate (SO42-), Nitrate (NO3-),Phosphate(PO43-) Fluoride(F-), Chloride (Cl-), Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD), Dissolved Oxygen (DO), Total Coliform (TC) and Fecal Coliform (FC). There are variations for pH (6.59-8.29), EC (382-2330µS/cm), Turbidity (1-232 NTU), TDS (244-1491 mg/L), Alkalinity (120-600 mg/L), Hardness (66-330mg/L), Na+(37-430 mg/L), K+ (8-253 mg/L), Ca2+ (9-90 mg/L), Mg2+(3-26 mg/L), SO42- (5-200 mg/L), NO3-(0-19 mg/L), PO43-(0.19-5.3 mg/L), F-(0.18-1.41 mg/L) and Cl- (46-388 mg/L), DO(1-8.6 mg/L), BOD (0.1-11.3 mg/L), COD (8-118 mg/L), Total Coliform(15-3600 MPN/100ml) and Fecal Coliform (4-240 MPN/100 ml). The results have been compared with the drinking water standard prescribed by Bureau of Indian Standard (BIS). All the Raipur is the capital town of the newly formed state of Chhattisgarh. There are several ponds situated in the city area out of which seven ponds (1) Raja Talab (2) Dumaratarai Talab (3) Telibandha Talab (4) Naraharadeo Talab (5) Maharajabandh Talab (6) Karabala Talab and (7) Budha Talab have been selected for present study. Water samples were collected once in a season from these ponds in year 2006-2007 for
73	Assessment of Water Quality of Lakes for Drinking and Irrigation Purposes in Raipur City, Chhattisgarh, India	Sumant Kumar N.C. Ghosh R.P. Singh Mahesh M. Sonkusare Surjeet Singh Sanjay Mittal	Int. Journal of Engineering Research and Applications	2015	5(2)	42-49	Lake, water quality, drinking, irrigation, Raipur	lakes existing in the municipal boundaries of Raipur City, Chhattisgarh, India			There are several ponds situated in the city area out of which seven ponds (1) Raja Talab (2) Dumaratarai Talab (3) Telibandha Talab (4) Naraharadeo Talab (5) Maharajabandh Talab (6) Karabala Talab and (7) Budha Talab have been selected for present study. Water samples were collected once in a season from these ponds in year 2006-2007 for
74	HEAVY METALS PRESENT IN THE PONDS OF RAIPUR CITY (CHHATTISGARH, INDIA), - AN ALARMING SITUATION	DEO SAJAL K.L. TIWARI	Jr. of Industrial Pollution Control	2014	30(2)	243-246		PONDS OF RAIPUR CITY	22o 33'N to 21o14'N	82o6'E to 81o38'E	Raipur is the capital town of the newly formed state of Chhattisgarh. There are several ponds situated in the city area out of which seven ponds (1) Raja Talab (2) Dumaratarai Talab (3) Telibandha Talab (4) Naraharadeo Talab (5) Maharajabandh Talab (6) Karabala Talab and (7) Budha Talab have been selected for present study. Water samples were collected once in a season from these ponds in year 2006-2007 for
75	EVALUATION OF WATER QUALITY OF KHARUN RIVER STRETCH NEAR THE RAIPUR CITY	S. R. Mise Sadik Mujawar	International Research Journal of Engineering and Technology	2017	4(9)	1071-1078	Water quality, physico-chemical assessment, physico-chemical parameters, Water pollution, Kharun River	KHARUN RIVER STRETCH	20°33'30" - 21°33'38"N	81°17' 51" E - 81°55' 25" E	In the same means that no 2 human bodies are alike, no 2 bodies of water are a similar. Ponds across a street from one another will usually have completely different physical and chemical characteristics even supposing they're separated by solely some feet. Very similar to tests performed at a doctor's workplace, skilled environmentalists will use water quality parameters to assess the health of a water body and confirm what every specific water body may have. Water is vitally important to each facet
76	Testing and Analysis of Pond Water in Raipur City, Chhattisgarh, India	Arvind Kumar Swarnakar Shweta Choubey	International Journal of Science and Research	2016	5(4)	1962-1965	Water quality testing, drinking water standard, Pollutant, Pond water	PONDS OF RAIPUR CITY			Pond (locally called Talab) water is very essential constituent for living being. It maintains water table, temperature, drinking purpose, domestic and irrigation demand for the city. The present water testing aim is for evaluating the water quality of various ponds in Raipur city, capital of Chhattisgarh. Testing and analysis of pond water samples were analyzed for various physico-
77	STUDY OF ICTHYOFAUNAL DIVERSITY OF PAKHANJOOR RESERVOIR	Divya Kumudini Minj R.K. Agrawal	International Journal of Pure and Applied Zoology	2015	3(2)	144-147	Aquatic system, Trophic status, Ichthyofaunal diversity, Pakhanjoor reservoir,	PAKHANJOOR RESERVOIR	20°02'31, 33N	80°38' 05, 06'E	Biodiversity indicates the potential of any aquatic system and also depicts its trophic status. It is important to have an adequate knowledge of the constituent biota especially for the purpose of conservation and management of the inland water resources such as rivers, reservoirs and ponds. Ichthyofaunal studies were undertaken during July-2009 to June-2010 in Pakhanjoor reservoir
78	REVIVAL AND REJUVENATION STRATEGY OF WATER BODIES IN A METROPOLITAN CITY: A CASE	Paridhi Rastogi S. K. Singh	International Journal of Advanced Research	2017	5(2)	189-195	Rainwater harvesting, Ecosystem services, Water quality, Groundwater	NAJAFGARH LAKE			Urban Indian cities are facing a water crisis due to loss of watershed, increasing pollution levels, deteriorating water balance, encroachment, illegal constructions and a dire lack of groundwater recharge. Although there are sufficient policies and acts for protection and restoration of water bodies they remain insufficient and ineffective in the face of such complexities. To meet the

79	Revival of Hauz Khas Lake in Delhi: Approaches to Urban Water Resource Management in India	Deya Roy	Journal of Management and Sustainability	2016	6(4)	73-78	Sustainability Matrix, urban renewal, water resource management, sustainable water management, treated sewage water, Lake Restoration, ground water recharge	Hauz Khas Lake			The decline of urban water bodies in India needs to be arrested for sustainable water management in rapidly expanding Indian cities. Reuse of water after partial recycling can reduce environmental stress. Delhi, the Indian capital, has a number of surviving water storage structures built by successive rulers over centuries to tackle water shortage in the summer. In modern Delhi, a fourteen million plus city, water is supplied through technological networks, hastening the decline of the old water storage structures. The old lakes are choked with filth and the step-wells are heaps of rubble. The Indian National Trust for Art and Cultural Heritage (INTACH) and the Delhi Development Authority (DDA) have undertaken a project to revive a 700 year-old water body, lying dry for decades, the Hauz Khas Lake, with treated sewage water. The idea was to raise the groundwater table and restore the natural environment of the lake, a past habitat for water birds. This paper attempts to evaluate the immediate impact and the long-term sustainability of the effort through discussions with technical personnel, field observations and interviews with local residents. Manuals and progress reports of the concerned organizations are used as secondary sources. The paper also examines the views of government officials and NGOs regarding the role of other similar projects in alleviating Delhi's water shortage.
80	PHYSICO-CHEMICAL CHARACTERISTICS OF HAUZ KHAS LAKE, NEW DELHI, INDIA	Disha Jain Jakir Hussain	International Journal of Current Research	2014	6(11)	9963-9969	Water Quality, Lake, Eutrophication, DO, BOD	HAUZ KHAS LAKE	28.55° N	77.19° E	In India, urban water bodies commonly become cesspools due to lack of sanitation facilities. Delhi is continually urbanizing at a rapid pace that has affected the condition of water bodies. Hauz khas is an area which is located in South Delhi and the lake 9.6 and in zone 3 was 9.7 which showed the lake water is not suitable for irrigation, fish culture, outdoor bathing. It is very clear that
81	PHYSICO-CHEMICAL AND BIOLOGICAL ASSESSMENT OF RIVER BEAS WATER DURING MONSOON SEASON IN HIMACHAL PRADESH, INDIA	SUMAN SHARMA Y.K. WALLIA	Pollution Research	2016	35 (4)	713-721	River Beas, Water Quality, Water quality parameters	Beas River			Present investigation consist the analysis of water quality parameters of river Beas in Himachal Pradesh during Monsoon Season. Physical Aggregate Properties such as alkalinity, conductivity, pH, temperature, total dissolved solids (TDS), total hardness, turbidity, Metals such as calcium, magnesium, potassium, sodium, cadmium, copper, iron, lead, Non Metals including chloride, fluoride, nitrate, biochemical oxygen demand (BOD), chemical oxygen demand (COD), Coliform and Escherichia coli were analyzed from six sampling stations, i.e. Beaskund, Shamshi, Pandohdam, Dharmpur, Nadaun and Pongdam in the study area. The analysis of data reveals that
82	Assessment of River Beas Water Quality during Summer Season in Himachal Pradesh, India	Suman Sharma Y. K. Wallia	Biological Forum	2016	8(1)	363-371	River Beas, Water Quality, Summer, parameters.	Beas River			In present investigations the analysis of water quality parameters of river Beas in Himachal Pradesh during summer season was undertaken. Parameters such as alkalinity, conductivity, pH, temperature, total dissolved solids (TDS), total hardness, turbidity, calcium, magnesium, potassium, sodium, cadmium, copper, iron, lead, chloride, fluoride, nitrate, and Biological parameters such as biological oxygen demand (BOD), chemical oxygen demand (COD), Coliform and Escherichia coli were analyzed from six sampling stations i.e. Beaskund, Shamshi, Pandohdam, Dharmpur, Nadaun and Pongdam in the study area. The analysis of data reveals that Cadmium, iron and were found to be higher than the acceptable limit prescribed
83	Seasonal variations in physico-chemical parameters of River Beas, Himachal Pradesh with special reference to planktonic population	Ashok Kumar D.R. Khanna R. Bhutiani	Environment Conservation Journal	2015	16(3)	127-131	Physico-chemical, phytoplankton, River Beas, seasonal variation, zooplankton	Beas River			The present communication highlights the seasonal abundance and fluctuations trends of planktonic population of River Beas in relation to its physico-chemical parameters. Plankton plays an important role for maintaining the productivity of the water body. Plankton refers to microscopic aquatic plant having little or no resistant to water current and living free floating and suspended in open or pelagic water. Present investigation revealed the presence of Bacillariophyceae, Chlorophyceae, Rodophyceae and Cyanophyceae among phytoplankton groups and Copepods followed by Rotifers, Protozoans, and Cladocera among Zooplankton. A total of 26 phytoplankton genera were encountered with most dominant being Closteridium, Schroederia, Ulothrix, Closteriopsis, Gomphonema and Batrachospermum. Maximum population of phytoplankton was observed during winter season where as minimum was observed in rainy season.
84	Zooplankton Fauna of the River Beas	S.S.Dhillon H. Kaur K.S. Bath G..Mander J. Syal	Environment & Ecology	1993	11(4)	916-919		Beas River			Studies were conducted on the zooplankton density of the Beas river between Talwara and Harike-Pattern from June 1989 to March 1990. Maximum zooplankton density was observed at the pollution free site and at a typically eutrophicated site. Zooplankton density was found to be low at the site where the water current was fast and at the polluted site. Maximum variety of animals was found at the unpolluted site. Zooplankton density was high during January to March while it decreased during the raint season. Qualitatively, zooplanktons consisted of Protozoa, Rotifers, Nematoda, Crustacea and Insects.
85	Abundance and distribution modelling for Indus river dolphin, <i>Platanista gangetica</i> minor in River Beas, India	Mohd Shah Nawaz Khan	CURRENT SCIENCE	2016	111(11)	1859-1864	Abundance, distribution modelling, freshwater ecosystem, <i>Platanista gangetica</i> minor	Beas River	31°30'30.5"N	75°18'2.5"E	The present study was conducted between April 2011 and May 2013 in an approximately 70 km long stretch of River Beas to estimate the abundance and distribution pattern of Indus river dolphin along the Beas, as an initial step towards its better conservation. Based on the line transect method for wide channel, seven vessel-based collinear line transects of 10 km each were surveyed once every month. A total of 33 sighting frequencies were possible during the study. The studied isolated sub
86	STUDY OF VARIATION IN ABIOTIC FACTORS OF BEAS RIVER WATER NEAR DHARAMPUR, MANDI (H.P.)	Ashu Rana Ankush Sharma Meenakshi Sharma	Proceedings of National Conference	2019		61-71	Hydrological cycle, River, Beas, Physical, Chemical Parameters.	Beas River			The network of rivers on earth is an interface between the land and the ocean. River play an important role in controlling the hydrological cycle. Freshwater is most important for the survival of life on earth as it is an essential component of the environment for regulation of climate, also most of the animal as well as plant communities flourished near the water bodies. Himalayan region known for its diverse form of water sheets. Present investigation was carried out to study the fortnightly variation and correlation in abiotic factors such as water temperature, pH, electric conductivity, turbidity, total dissolved solids, dissolved oxygen, free carbon dioxide, free carbon dioxide, alkalinity and hardness of Beas river water near Dharampur (Tehsil), which is located at a distance of 22km from district headquarter Mandi (Himachal Pradesh). The physical and chemical analysis of Beas river water revealed that the water of river is slightly alkaline, well oxygenated and the most of physical and chemical parameters with in desirable limits and there are positive and negative correlation between various parameters.

87	Assessing Land Use and Land Cover Change in River Beas Floodplain, Punjab	GURSEWAK SINGH BRAR VISHWA B.S. CHANDEL KARANJOT KAUR BRAR	Current World Environment	2020	15(1)	52-58	Floodplain; Land Use and Land Cover; River Beas; Remote Sensing and GIS.	Beas River	31°07'08"N to 32° 08'07"N	74°56'25"E to 75°54'02"E	Floodplains are the most fragile ecosystems of the world which attracted the humans since the dawn of civilizations. Due to their resource enrichment, these remained center of attraction to fulfill the socio-economic needs of people. As a result, the natural land cover of these floodplains are under the influence of human induced activities. River Beas Floodplain of Punjab has also witnessed such changes. Human intervention in these landscapes has depleted natural wealth and has altered its land use. Construction of upstream dam and artificial embankments and diversion of water through canals further paved the ways for intensification of land use changes. The outcome of these human actions is that wetlands, barren land, and river channels has reduced. On the other hand, agriculture and settlements recorded a sharp increase in recent decades. The growth of agricultural area and human settlements are putting pressure on the natural resources and depleting the human environment relationship in the floodplain. This study utilized multi-temporal satellite data from Landsat for the classification of land use and land cover.
88	Assessment of freshwater ecosystem services in the Beas River Basin, Himalayas region, India	Sikhululekile Ncube Lindsay Beevers Adebayo J. Adeloye Annie Visser	International Association of Hydrological Sciences	2018	379	67-72		Beas River Basin			River systems provide a diverse range of ecosystem services, examples include: flood regulation (regulating), fish (provisioning), nutrient cycling (supporting) and recreation (cultural). Developing water resources through the construction of dams (hydropower or irrigation) can enhance the delivery of provisioning ecosystem services. However, these hydrologic alterations result in reductions in less tangible regulating, cultural and supporting ecosystem services. This study seeks to understand how multiple impoundments, abstractions and transfers within the upper Beas River Basin, Western Himalayas, India, are affecting the delivery of supporting ecosystem services. Whilst approaches for assessing supporting ecosystem services are under development, the immediate aim of this paper is to set out a framework for their quantification, using the macroinvertebrate index Lotic-Invertebrate Index for Flow Evaluation (LIFE). LIFE is a weighted measure of the flow velocity preferences of the macroinvertebrate community. Flow records from multiple gauging stations within the basin were used to investigate flow variability at seasonal, inter-annual and decadal time scales. The findings show that both mean monthly and seasonal cumulative flows have decreased over time in the Beas River Basin. A positive hydroecological relationship between LIFE and flow was also identified, indicative of macroinvertebrate response to seasonal changes in the flow regime. For example, high LIFE scores (7.7-9.3) in the winter and summer
89	Review of status, threats, and conservation management options for the endangered Indus River blind dolphin	Gill T. Braulik Uzma Noreen Masood Arshad Randall R. Reeves	Biological Conservation	2015	192	30-41	Freshwater dolphins Endangered species Dams Aquatic biodiversity Habitat fragmentation	The Indus River			The Indus River dolphin (<i>Platanista gangetica minor</i>) is a freshwater cetacean that occurs only in the Indus River system in Pakistan and India. This review provides a comprehensive summary of issues surrounding Indus dolphin conservation, and includes a description of their distribution, the threats they face and a discussion of conservation and research activities, options and priorities. Information was gathered from published current and historical literature, newspaper articles, and unpublished reports. Prior to construction of the Indus Irrigation system dolphins occurred in 3500 km of the Indus River system. Their range has now declined by 80% due to fragmentation of river habitat by barrages and large-scale diversion of water for irrigated agriculture. The subspecies was estimated to number approximately 1450 individuals in 2011, and occurs in 6 subpopulations, three of which are probably too small to persist. There is an urgent need to evaluate whether dolphins move through barrages, as this has the potential to extirpate upstream subpopulations. Pre-requisites for dolphin translocations to combat this problem are outlined. Mortality in fishing gear and high levels of chemical pollution in water courses are both increasing threats exacerbated by depleted flows. Research and conservation priorities include maintenance of river flows, mortality monitoring, canal rescues and community-based conservation. Conservation and research action is urgently needed to prevent the Indus dolphin from succumbing to the
90	Conservation status and distribution pattern of the Indus River Dolphin in River Beas, India	MOHD SHAHNAWAZ KHAN ANJANA PANT	BIODIVERSITAS	2014	15(1)	75-79	Conservation, distribution, dolphin, River Beas	Beas River	N 31°30'30.5"	E 75°18'2.5"	Khan MS, Pant A. 2014. Conservation status and distribution pattern of the Indus River Dolphin in River Beas, India. Biodiversitas 15: 75-79. Decline in the populations of Indus River Dolphins <i>Platanista gangetica minor</i> throughout its range of distribution and a perception that it is a 'keystone species' for riverine ecosystem stirred the idea of proposed study. Deficiency of baseline data on its distribution and ecology is a major constraint that this (only known sub-population in India) species' conservation is facing in the country. Thus to ascertain its conservation status and distribution pattern, the study was conducted between December 2010 to June 2012. During the study, three schools of dolphins have been identified, one each along Beas bridge-Gagdewal; Baguwal-Dhunda and Karmowala-Harike that comprised of adult, sub-adult and calves. The occurrence
91	Water quality of River Beas, India	Vinod Kumar Anket Sharma Ashwani Kumar Thukral Renu Bhardwaj	CURRENT SCIENCE	2017	112(6)	1138-1157	Drinking water guidelines, pollution, river water, water quality index.	Beas River			This article is a review of the pollution status of River Beas, India as analysed by different workers over a period of time. River-water pollution is an important environmental problem because it is the main source of water for consumption by humans as well as aquatic species living in the river. Water quality index was determined using nine standard water quality parameters for River Beas and was found to be 60.93. The mean values of dissolved oxygen (DO) (8.82 mg/l), biological oxygen demand (BOD) (0.87 mg/l) and total coliform (1451.60 MPN/100 ml) were found for River Beas in Himachal Pradesh. The mean values of DO (7.29 mg/l), BOD (3.75 mg/l), chemical oxygen demand (COD) (48.89 mg/l) and total coliforms (562.88 MPN/ 100 ml) were also found for River Beas in Punjab. DO, COD, BOD and total coliforms ranges of the river were found above permissible limits of BIS for drinking water.
92	Drainage Morphometric Analysis of Watershed Basin of River Beas at Harike Pattan, Punjab-Using Remote Sensing and GIS Approach	Gh Nabi Najar Puneeta Pandey	International Journal of Advanced research in science and engineering	2018	7(4)	641-653	GIS Harike, Morphometry, Punjab, Remote Sensing, Strahler, Watershed	Beas River	31°09'-31°33' N	74°56'-75°15'E	To understand the hydrological processes of a watershed and its characteristics, its morphometric analysis is necessary. Nowadays there is an increasing trend of using Remote Sensing (RS) and Geographic Information System (GIS) to delineation the drainage pattern and groundwater potential and its planning. In the present study Remote Sensing and GIS was used to understand the geometry of one of the watersheds of Harike Lake with much emphases on the evaluation of the morphometric parameters, which include linear parameters such as Stream number, Stream order (U), Stream Length (LU), Mean stream length (Lsm), Stream length ratio (RL), Bifurcation Ratio (Rb) relief parameters such as Basin relief (Bh), Relief Ratio (Rh), Ruggedness Number (Rn).
		Bhaskar R. Nikam Vishal Sharma1									The North West Himalayan basins have always been prone to hydro-meteorological disasters. Among them Beas Basin is one of the highly affected basins. Beas basin is prone to cloudburst which causes huge loss to life and property every year. Increase in these devastating events have been noticed in the recent years. Climatic change is considered as the major driver for this increased occurrence of these events in the recent past. The analysis of long-term hydrological extremes over the basin will help in understanding the pattern of the hydro-meteorological extremes and also predicting its nature in near and far future. The

93	ESTIMATION OF HYDRO-METEOROLOGICAL EXTREMES IN BEAS BASIN OVER HISTORIC, PRESENT AND FUTURE SCENARIO	Praveen K. Thakur1 Vaibhav Garg1 S. P. Aggarwall S. K. Srivastav1 Prakash Chauhan	The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences	2020		139-147	Cloudburst, ERA-Interim, CORDEX, Variable Infiltration Capacity, hydro-meteorological, sustainable development.	Beas River	31°30' N to 32°30' N 76°00' E to 78°00' E	Variable Infiltration Capacity (VIC) model at the grid size of 0.025° × 0.025° has been used in the present study, for simulating the hydrological behaviour of the Beas Basin. The parameterization of the model inputs is derived from Remote Sensing based and field observed datasets. The model was forced with meteorological dataset of ERA-Interim for the past and present time period and CORDEX dataset for the future time period. The model was calibrated using observed discharge data of Nadaun and Sujampur stations. The Nash-Sutcliffe model efficiency of calibrated model was achieved to be 0.77 and 0.72 and coefficient of determination (R2) was 0.80 and 0.72, respectively. The validation results of the model for the same stations shows the model efficiency to be 0.73 and 0.74 with coefficient of determination (R2) as 0.67 and 0.82, respectively. The well calibrated model was used to simulate the hydrological behaviour of historic period (1979 – 2000), present period (2001 - 2017), near future period (2018 – 2050) and far future period (2051 – 2099). The exceedance probability curve method has been utilized in estimating the flood peak value for the future time period. The flood peak discharge value for the future time period comes out to be 1050 m3/s. The hydro- meteorological extremes rate per year in each period was found to be 9, 9, 12 and 14, respectively. The hydro-meteorological extremes rate is showing increasing trend in near future and very high increase in far future. The study highlights the probability of occurrence of catastrophic events in coming future. The methodology and results of the present study can be beneficial for sustainable development of the basin to counter the effect of probable hydro-meteorological extremes in coming future.
94	Assessment of soil properties from catchment areas of Ravi and Beas rivers: a review	Vinod Kumar Anket Sharma Parminder Kaur Rakesh Kumar Ali Keshavarzi, Renu Bhardwaj Ashwani Kumar Thukral	GEOLOGY, ECOLOGY, AND LANDSCAPES	2018			Soil pollution; heavy metals; contamination factor; ecological risk assessment; multivariate statistical techniques	Ravi and Beas rivers	32°2' N 77°05' E	Soil is a substantive environmental medium that is subjected to various physiochemical challenges derived by natural, as well as human activities. The present review attempts to summarize the pollution status of soil from the catchments areas of Beas and Ravi Rivers in Punjab, India, as reported by different workers. Principal component analysis (PCA) showed that anthropogenic activities and lithogenic factors are the major sources of metals. The average values of heavy metals of Beas River for heavy metals, Cr, Cu, Co, and Cd, were lower than the values suggested by Awasthi, European Union, and Ewers. The average values of C (0.29%), P (0.05 mg/g), and N (0.13 mg/g) were found for the Beas River, whereas for Ravi River the average values recorded were C (0.32%), P (0.01 mg/g), and N (0.16 mg/g). The results of contamination factor (CF) indicate that soil of Beas River is less contaminated by the metals. The results of ecological risk index indicate that metals showed low ecological risk in the soils of Beas River.
95	Twenty-first-century glacio-hydrological changes in the Himalayan headwater Beas River basin	Lu Li Mingxi Shen Yukun Hou Chong-Yu Xu Arthur F. Lutz Jie Chen Sharad K. Jain Jingjing Li Hua Chen	Hydrol. Earth Syst. Sci.,	2019	23	1483–1503		Beas River		The Himalayan Mountains are the source region of one of the world's largest supplies of freshwater. The changes in glacier melt may lead to droughts as well as floods in the Himalayan basins, which are vulnerable to hydrological changes. This study used an integrated glaciological model, the Glacier and Snow Melt – WASMOD model (GSM-WASMOD), for hydrological projections under 21st century climate change by two ensembles of four global climate models (GCMs) under two Representative Concentration Pathways (RCP4.5 and RCP8.5) and two biascorrection methods (i.e., the daily bias correction (DBC) and the local intensity scaling (LOCI)) in order to assess the future hydrological changes in the Himalayan Beas basin up to Pandoh Dam (upper Beas basin). Besides, the glacier extent loss during the 21st century was also investigated as part of the glacio-hydrological modeling as an ensemble simulation. In addition, a high-resolution WRF precipitation dataset suggested much heavier winter precipitation over the highaltitude ungauged area, which was used for precipitation correction in the study. The glacio-hydrological modeling shows that the glacier ablation accounted for about 5% of the annual total runoff during 1986–2004 in this area. Under climate change, the temperature will increase by 1.8–2.8 C at the middle of the century (2046–2065), and by 2.3–5.4 C until the end of the century (2080–2099). It is very likely that the upper Beas basin will get warmer and wetter compared to the historical period. In this study, the glacier extent in the upper Beas basin is projected to decrease over the range of 63 %–87% by the middle of the century and 89 %–100% at the end of the century compared to the glacier extent in 2005. This loss in glacier area will in general result in a reduction in glacier discharge in the future, while the future streamflow is most likely to have a slight increase because of the increase in both precipitation and temperature under all the scenarios. However, there is widespread uncertainty regarding the changes in total discharge in the future, including the seasonality and magnitude. In general, the largest increase in river total discharge also has the largest spread. The uncertainty in future hydrological change is not only from GCMs, but also from the bias-correction methods and hydrological modeling. A decrease in discharge is found in July from DBC, while it is opposite for LOCI. Besides, there is a decrease in evaporation in September from DBC, which cannot be seen from LOCI. The study helps to understand the hydrological impacts of climate change in northern India and contributes to stakeholder and policymaker engagement in the management of future water resources in northern India.

96	Estimation of snow/glacier melt contribution in the upper part of the Beas River basin, Himachal Pradesh, using conventional and SNOWMOD modeling approach	Rajeev Saran Ahluwalia	Journal of Water and Climate Change	2011	6(4)	880-890	Beas River, hydrograph, snow/glacier melts runoff, SNOWMOD	Beas River Basin			In the present study, an attempt has been made to estimate the snow/glacier melt contribution in the head water region of the Beas Basin using a conventional hydrograph approach and a modeling (SNOWMOD) technique. The discharge and other meteorological data from 1996 to 2008 of the Manali site were used for the study. The results of SNOWMOD modeling reveal that snow/glacier melt contribution to the Beas River in the head water region varied between 52 (minimum) and 56% (maximum) with an annual average of 54% during the study period. The results obtained using the conventional approach showed the contribution of snow/glacier melt varied between 48 (minimum) and 52% (maximum) with an annual average of 50%. Results obtained using both techniques corroborate each other. This study reveals that the Beas River is mainly sustained by the snow/ glacier melt contribution in the head water region.
		S. P. Rai									
		S. K. Jain									
		D. P. Dobhal									
		and Amit Kumar									
97	Macrobenthic Faunal Diversity of Beas River near Indora, H.P.	Sonali Jamwal	Proceedings of National Conference, Ami University	2017		224-233	Macrobenthic Organisms, River, Density.	Beas River	31° 2 to 32°N	75° to 77°45 E	Inland freshwater bodies whether lentic or lotic play vital role in food web, nutrient recycling and act as perfect home for different aquatic micro-organisms and macro-organisms. Present investigation carried out on macrobenthic faunal diversity of Beas river, near Tanda Village (District Kangra). Macrobenthic fauna constitutes diverse group of animals, size larger than ½ mm and they are sedentary, live on rocks, sediments, debris and on aquatic plants, and these organisms are detritivores, ability to convert low quality and low energy detritus in to better quality food. Macrobenthic fauna includes animals of phylum Porifera, Coelenterate, Annelida, Arthropoda and Mollusca and some animals of vertebrates. These organisms are used to measure pollution in water bodies caused by municipal, industrial, oil and agriculture waste. This study on river ecosystem revealed 12 animal species belonging to 3 phyla namely Annelida, Arthropoda and Mollusca. Phylum arthropoda was the dominant phyla and seven species of this phyla recorded during whole study period.
		Maliti Jamwal									
		Ankush Sharma									
98	PHYTOSOCIOLOGY AND LANDSAT TM DATA: A CASE STUDY FROM RIVER BEAS BED, PUNJAB, INDIA	Vinod Kumar		2017			River Beas, vegetation, remote sensing, diversity indices and multivariate techniques	RIVER BEAS BED	31.51' N	77° 05' E	The present work was designed to study the phytosociology and its correlation with Landsat TM data from the catchment areas of river Beas, Punjab, India, for a stretch of 63 km between the towns of Beas and Harike for four seasons, i.e., summer, pre-monsoon, post-monsoon and winter seasons respectively. Various phytosociological parameters (density, abundance, frequency, relative density, evenness and relative abundance) and diversity indices (Simpson's, Shannon's, Margalef's, Brillouin's, Chao-I and Menhinick indices) were studied. During the pre-monsoon and winter seasons, Beas recorded maximum abundance and density. Maximum abundance was found for Harike during the post-monsoon season. Maximum Menhinick, Margalef's, Chao-I, Simpson's and Shannon's indices were found for the Harike during the winter season. Significant positive correlation of band ratios (G/R) was found with Simpson's, Shannon's and Brillouin's indices, whereas negative correlation of band ratios (R/NIR) existed with Simpson's, Shannon's and Brillouin's indices. Various multivariate statistical techniques (Principal component analysis (PCA), factor analysis (FA) and artificial neural networks analysis (ANN)) were applied for the analysis of results. ANN models were fitted to the data. Correlation between target and output values was found to be highly significant.
		Anket Sharma									
		Renu Bhardwaj									
		Ashwani Kumar Thukral									
99	Pollution Status of River Sutlej in the Region of Punjab (India): Based on Species Diversity Indices	C. Sharma	INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY	2014	3(8)	696-700	Simpson index, Shannon-Wiener index, Berger-Parker index, Margalef index, River Sutlej .	Sutlej	30°59'N	76°31' 12"E	Plankton species diversity of river Sutlej was conducted at River Sutlej (S1) at Ropar Headworks, (S2) downstream after the confluence with BudhaNallah, (S3) at Harike before the confluence with river Beas, (S4) at Harike before the confluence with river Beas. Water samples were collected on the monthly basis for two consecutive years (November, 2009-October, 2011). Data on the different species diversity indices viz., Simpson index, Shannon-Wiener species diversity index, Berger-Parker index, Margalef richness index revealed that that higher values (4.11) of Berger-Parker index was at S3, Simpson index (0.72) at S1 and (0.16) at S3; Shannon-Wiener index (2.97) at S1 and (2.53) at S3; and Margalef richness index (4.85) at S1 and (4.11) at S3 were recorded, whereas lower values of Shannon-Wiener Index (2.39) at S2; Simpson index (0.14) at S2 and Historical secondary data for Beas River (India) were used to study the water parameters for a period of eight years at 23 hydrological stations. Similarity tests have been conducted for each parameter to examine the fluctuations at the stations and per years. An aggregated indicator of water quality (WA) was computed using the mean value of each parameter and two classification techniques were used for the analysis of river water quality data. Two-step clustering proved to be an appropriate technique to create three profiles of all data collected from the stations of Beas River for each year. C&RT technique was used to classify all stations based on the WA indicator. The approach can be employed for any data for taking documented decision about preservation and amelioration the water quality of different rivers.
		UdayBhan Singh									
100	STATISTICAL ANALYSIS AND CLASSIFICATION OF THE WATER PARAMETERS OF BEAS RIVER (INDIA)	ALINA BARBULESCU	Romanian Reports in Physics	2019	71		water quality, classification, aggregated indicator, statistical analysis	Beas River			Historical secondary data for Beas River (India) were used to study the water parameters for a period of eight years at 23 hydrological stations. Similarity tests have been conducted for each parameter to examine the fluctuations at the stations and per years. An aggregated indicator of water quality (WA) was computed using the mean value of each parameter and two classification techniques were used for the analysis of river water quality data. Two-step clustering proved to be an appropriate technique to create three profiles of all data collected from the stations of Beas River for each year. C&RT technique was used to classify all stations based on the WA indicator. The approach can be employed for any data for taking documented decision about preservation and amelioration the water quality of different rivers.
		ANITA DANI									
101	Zooplanktonic Diversity of Beas River Near Indora, Kangra	Shakha Devi	Proceedings of National Conference, Ami University	2017		100-107	Beas River, Zooplankton, Bio-indicator, Food chain.	Beas River	31° 2 to 32°N	75° to 77°45 E	Planktonic community comprises two forms i.e. phytoplankton (plants community) and zooplankton (animals community). Zooplanktons are the microscopic organisms, and play important role in any aquatic food chain. These organisms maintained important bridge between primary to tertiary trophic level. Some species of this group also act as bio-indicator of water quality. The present investigation was carried out on Beas River, near Tanda village located in Kangra district near Indora. Beas River is one of the major river ecosystem in state Himachal Pradesh. Fortnightly zooplankton samples were collected from three study stations and preserved method prescribed by Saxena (2001). The zooplanktonic study was carried out on Beas River, revealed six species of three important groups, namely Protozoa, Rotifera and Crustacea.
		Dhiksha Sharma									
		Sapna Bhagat									
		Ankush Sharma									
		Praveen K. Thakur									The Himalayan region are home to the world's youngest and largest mountains, and origins of major rivers systems of South Asia. The present work highlight the importance of remote sensing (RS) data based precipitation and terrain products such as digital elevation models, glacier lakes, drainage morphology along with limited ground data for improving the accuracy of hydrological and hydrodynamic (HD) models in various Himalayan river basins such as Upper Ganga, Beas, Sutlej, Teesta, Koshi etc. The
		Pankaj Dhote									

102	SIGNIFICANCE OF REMOTE SENSING BASED PRECIPITATION AND TERRAIN INFORMATION FOR IMPROVED HYDROLOGICAL AND HYDRODYNAMIC SIMULATION IN PARTS OF HIMALAYAN RIVER BASINS	Adrija Roy S.P. Aggarwal Bhaskar R.Nikam Vaibhav Garg Arpit Chouksey A S Kumar1,2.	The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences	2020		911-918	Precipitation, Terrain, Remote sensing, North West Himalaya, Hydrological and Hydrodynamic models	HIMALAYAN RIVER BASINS			satellite based rainfall have mostly shown under prediction in the study area and few places have are also showing over estimation of rainfall. Hydrological modeling results were most accurate for Beas basin, followed by Upper Ganga basin and were least matching for Sutlej basin. Limited ground truth using GNSS measurements showed that digital elevation model (DEM) for carto version 3.1 is most accurate, followed by ALOS-PALSAR 12.5 DEM as compared to other open source DEMs. Major erosion and deposition was found in Rivers Bhagirathi, Alakhnanda, Gori Ganga and Yamuna in Uttarakhand state and Beas and Sutlej Rivers in Himachal Pradesh using pre and post flood DEM datasets. The terrain data and river cross section data showed that river cross sections and water carrying capacity before and after 2013 floods have changed drastically in many river stretches of upper Ganga and parts of Sutlej river basins. The spatio-temporal variation and evolution of glacial lakes was for lakes along with GLOF modeling few lakes of Upper Chenab, Upper Ganga, Upper Teesta and Koshi river basin was done using time series of RS data from Landsat, Sentinel-1 and Google earth images.
103	Mountain hazard susceptibility and livelihood security in the upper catchment area of the river Beas, Kullu Valley, Himachal Pradesh, India	Abhay S. Prasad1 Bindhy W. Pandey Walter Leimgruber Ripu M. Kunwar	Geoenvironmental Disasters	2016	3(3)	1-17	Landslide, Cloudburst, Flash flood, Forest fire, Sustainable livelihood, Mountain tourism and sustainable development	Beas River	31°20' and 32° 26' N	76°59' and 77°50' E	Background: Natural hazards have had significant impacts on life, livelihood and property in the mountain regions. Hazards identification in high mountain areas involved intensive and lengthy fieldwork and mapping with the interpretation of landforms and its related hazards, compulsion of increasing intensity of land-use and careless application of technology leading to further land degradation. Frequent occurrences of hazards such as landslides, snow avalanche, floods and other types of mass wasting are becoming common features in mountainous regions. Results: Himalayan watershed has undergone a most dynamic change in land-use owing to the rapid increase in the population. The change in biophysical systems posed the direct bearing on the hydrological regime of Beas River. The peoples' perceptions regarding origin of hazards and techniques of control to the hazards showed that indigenous and lowland communities are more susceptible to hazards. Deforestation, slope cutting, construction of roads and heavy rainfall were high responsible factors resulting frequent landslides and soil erosion. Hazards cannot be avoided, however their disastrous pursuits can be lessened through pro-active uses of a variety of planning measures, infrastructure and risk transfer
104	Water Quality Assessment of River Beas during Winter Season in Himachal Pradesh, India	Suman Sharma Yogesh Kumar Walia	Current World Environment	2016	11(1)	194-203	River Beas, Water Quality, Physicochemical, Biological parameters	Beas River			Present investigation was carried out in 256 km stretch of river Beas in Himachal Pradesh for analysis of important physical, chemical and biological water quality parameters during winter season. Parameters such as temperature, pH, conductivity, turbidity, alkalinity, total dissolved solids (TDS), total hardness, calcium, magnesium, potassium, sodium, cadmium, copper, iron, lead, chloride, fluoride, nitrate, biological oxygen demand (BOD), chemical oxygen demand (COD), Coliform and Escherichia coli were analyzed from six sampling stations i.e. Beaskund , Shamshi, Pandohdam, Dharampur, Nadaun and Pongdam in the study area. The analysis of data reveals that turbidity, cadmium and lead, were found to be higher than the acceptable limit prescribed by Bureau of Indian standards (BIS), 2012 for drinking water in India. Coliform and E.coli were present in all the sampling stations of river Beas except at SS-1 and SS-2. All the other physicochemical parameters excepting pH at SS-5 (8.98±0.057) were within the limit prescribed by World Health Organization (WHO), 2011 and BIS, 2012 for drinking water in India.
105	Water Quality of River Beas, India, and Its Correlation with Reflectance Data	Vinod Kumar Anket Sharma Renu Bhardwaj Ashwani Kumar Thukral	Journal of Water Chemistry and Technology	2020	4(2)	136-143	river Beas, water quality index, normalized difference water Index, remote sensing	Beas River	32°21'59" N	77°05'08"	River Beas originates in the Himalayas in Central Himachal Pradesh, and merges with river Sutlej at Harike in the state of Punjab and this river is a habitat of the endangered freshwater dolphin, Platanista gangetica minor R. The pollution of water bodies is a significant environmental jeopardy as the river is the prime source of water for the consumption by human beings and aquatic species residing in the river. The water quality indices (WQI) of the river Beas using nine standard parameters recommended by National Sanitation Foundation, were determined for pre-monsoon, post-monsoon and winter seasons at three sampling sites between the towns of Beas and Harike over a stretch of 63 km. The results of WQI of river Beas at Harike before confluence with river Sutlej and at Goindwal Sahib is superior to those at the Beas bridge. This is due to self-purification of the water downstream from Beas bridge to Harike. Season-wise, water quality during the pre-monsoon season was somewhat superior at Harike and Beas. This is attributed to fast degradation of organic matter in river during the summer season. Bioassay for appraising the toxicity of river water was also determined by using Girardinus guppii fish and their results indicate that the water of river Beas is not toxic. Toxicity bioassay using Girardinus guppii fish indicates that the water of river Beas is not toxic. Digital number (DN)
106	Birds of Natural Wetlands of North-west Punjab, India	R. Bal A. Dua	Our Nature	2010	8	72-81	wetlands, birds, Punjab	Wetlands of North-west Punjab	32°05'30"N	75°22'35"E	Bird community of four natural wetlands around Gurdaspur, Punjab, India has been studied from April 2006-March 2010. Though various conservation strategies are implemented in protected areas still network of unrecognized natural wetlands are ignored. The network of such natural sites is important biodiversity corridor that facilitates the movement of migratory birds. The present study is step towards the protection of these valuable habitats, namely Keshpur Miani Community Reserve, Magarmudian chamm, Shalla Pattan wetland and Kahnawan Wetland.
107	Birds Biodiversity and Conservation Status of Keshpur Community Reserve, Gurdaspur, Punjab	Kamal Mehta	International Journal of Science and Research	2014	3(12)	23-27	wetlands, birds, Conservation, Punjab.	Keshpur Community Reserve	32°05' 16.3" N	75° 24' 24.2"E	The importance of Wetlands has been increasingly recognized in recent years with the growing interest in them for supplementing human dietary requirements and for their ecological significance in terms of hydrologic, water purification, aquatic productivity, flood control and micro-climatic regulations. Wetlands provide habitats to fishes, birds and wildlife. Bird community of Keshpur wetland in District Gurdaspur, Punjab has been studied from January 2013-June 2014. Though various conservation strategies are
108	PLANNING FROM ECOLOGICAL AND ECONOMIC PERSPECTIVE AS A NEW DIMENSION IN URBAN PLANNING	Gurpreet Singh Sandhu		2014			Dominating Urban Planning Streams, Effect on the other landuses, Effect on Flora and Fauna, Effect on Crops	KESHOPUR CHHAMB	32° 05' 16.3" N	75°24'24.2" E	As urban planning is heading on a fixed vision that's growing planned concretization and planned mobilization of goods and people between urban and rural areas. It means that Urban Planning has most of its focus on development of land as Commercial, Residential and Industrial only on the cost of loss of ecological destruction. This paper will highlight the case study of the Kishorpur Chamb (Wet land). How this wet land has changed to commercial use
109	Birds and their conservation status at Nandur Madhmeshwar bird Sanctuary near Nasik, India	Shivaji Prabhakar Chavan Arvind N Kulkarni Pavan L Jadhav	International Journal of Fauna and Biological Studies	2018	5(4)	109-119	IBA, Nandur Madhmeshwar Bird Sanctuary, Nasik, India	Nandur Madhmeshwar bird Sanctuary	20° 00' 43' N	74° 06' 24' E	Nandur Madhmeshwar Bird Sanctuary (NMBS) near Niphad, district Nasik, Maharashtra State established as one of the unique natural habitat for local resident and migratory species over a period of one hundred years. Wetlands, small atolls, marshy lands, trees, agriculture land and a small patch of forest provides multiple habitat conditions for the birds especially water birds. During this study 105 species belongs to 14 Orders and 40 Families were recorded in winter season, year 2018, out of that the distribution and characteristics was 64 (60.9%) migratory, 41 (39.0%) Resident, 04 (3.8%) Near Threatened, 6 (5.17%) Abundant, 36 (34.2%) Occasional, 43 (40.9%) Common, 20 (19.0%) Rare. Winter migratory species were 16 (15.2%). Maximum number was of different duck species (Anseriformes) with species diversity 14 (14.3%). Winter season is population and diversity rich period for the occurrence of birds. It is nearly pollution free zone for the birds and protected under the Department of Forest and Wild life, Government of Maharashtra. The visitors have to take care not perform any activity or behave that disturb the life and ecological processes of birds and the habitat.

110	Fish fauna of Nandur-Madhmeshwar wetland, Maharashtra, India	Prashant Wagh Sudhakar Kurhade Shrikant Jadhav Deepa Jaiswal	Journal of Threatened Taxa	2018	10(7)	11973-11979		Nandur Madhmeshwar bird Sanctuary	20.008°N	74.131°E	
111	Butterflies of Nandur Madhmeshwar Wildlife Sanctuary, Maharashtra (India): Part – I	Sudhakar Kurhade Prashant Wagha	Journal of Basic Sciences	2015		88-93	Butterflies, Insecta, Nandur Madhmeshwar Wildlife Sanctuary.	Nandur Madhmeshwar bird Sanctuary			The Government of Maharashtra has declared the Nandur Madhmeshwar weir and area around it as a Wildlife Sanctuary in 1986. However till date, the sanctuary has not been explored scientifically for its varied faunal diversity. Hence the present study aimed to understand butterfly diversity is undertaken. The study is carried out from April 2013 to May 2014, using Checklist Survey method. The study reveal 41 butterfly species belonging to 5 families, of which Nymphalidae (11 species belonging to 9 genera and 31.70 %) is dominant family followed by Lycaenidae, Pieridae, Hesperidae and Papilionidae. Among recorded species, Hypolimnas misippus, Atrophaneura hector and Euploea core are listed as schedule species.
112	COLLARED PRATINCOLE (GLAREOLA PRATINCOLA) FIRST SIGHTING IN DHULE (MAHARASHTRA) AND ITS RELATION WITH MIGRATION PATTERN AND SIGHTING HISTORY IN INDIA.	Dr Prashant J Patil Pranav V More Atul R Vibhandik	PARIPEX - INDIAN JOURNAL OF RESEARCH	2019	8(5)	2250 - 1991		DHULE	21.0671457°N,	74.8353267°E	Sonwad Dam is an earthen reservoir near Sindkhede, in Dhule district, located at 21.0671457 N, 74.8353267 E. During Asian Wetland Bird Census 2019 visit, on 10th Jan 2019 at 3.30 pm a pair of Collared Pratincoles (Glareola Pratincola) was sighted for the first time. A follow-up visit on two more occasions about a weeks apart showed its presence. Confirmed presence of the pair of Collared Pratincole in the Sonwad Dam area in Dhule district was for more than 18 days (10 Jan to 27 Jan 2019). Each visit presence of more Collared Pratincoles was sought, but none were found. There are very sparse sighting records of such long duration stay of bird in Maharashtra. Duration of presence indicates its winter migration period. Records of Collared Pratincole sightings and nearest breeding places for last 10 years were studied and compared. Close proximity with Gujarat, favorable habitat and climatic condition indicate observation of migration and movement pattern of Collared Pratincole in Dhule.
113	Phytoplankton Community Structure and Species Diversity of Nangal Wetland, Punjab, India	Braich O.S. Kaur R.	International Research Journal of Biological Sciences	2015	4(3)	1-5	Abundance, bio-indicator, freshwater, Menhnick index, Shannon-Weiner.	Nangal Wetland			The phytoplankton community structure and species diversity were studied at Nangal Wetland during February 2013 to January 2014. Phytoplankton samples were collected using phytoplankton net on monthly basis. The samples collected were preserved in 5% solution of formaldehyde on the spot, and then brought to the laboratory for further study. 49 genera belonging to three major classes i.e., dominated by Chlorophyceae (21 genera) followed by Bacillariophyceae (19 genera) and Cyanophyceae (13 genera) were reported. The range, mean and standard deviation for all 3 classes of phytoplankton were recorded. The most abundant genera include Navicula spp., Cymbella spp., Pinnularia spp., Gomphonema spp., Meridion spp., Fragillaria spp., Tabellaria spp., Spyrogyra spp. and Oedogonium spp. The maximum and minimum species richness (Menhnick index R2) was found to be 0.05
114	Zooplankton community structure and species diversity of Nangal Wetland (Punjab), India	Onkar Singh Braich Rajwinder Kaur	International Journal of Advanced Life Sciences	2015	8(3)	307-316	Bio-indicators, freshwater, ecosystem, food-chain, abundance, diversity and zooplankton	Nangal Wetland	31°24'13.52"N	76°22'03.05"E	Freshwater zooplankton plays a vital role in food chain, nutrient recycling and energy flow in the aquatic ecosystems. The present study was carried out between February 2013 - January 2014 for assessing community structure and species diversity of zooplankton at Nangal Wetland, Punjab. The population of this wetland consists of 17 genera of zooplankton. The recorded genera were categorized into 5 different groups - Protozoa, Rotifera, Cladocera, Copepods and Ostracods. Protozoa and Rotifera were the
115	Avifaunal diversity of Nangal wetland, Punjab (India)	Onkar Singh Braich Rajwinder Kaur	International Journal of Advanced Life Sciences	2016	9(1)	77-88	Nangal Wetland, avifauna, migratory birds, ecology and conservation	Nangal wetland	31°24'13.52"N	76°22'03.05"E	Wetlands are very important aquatic ecosystems. The study of avifaunal diversity at Nangal Wetland was conducted during February 2013 to January 2014. This Wetland is an important aquatic ecosystem because it attracts thousands of migratory birds during the winter season. Migratory birds as well as other resident birds are dependent on this wetland for food and habitat. The present study was aimed to document the avian diversity of Nangal Wetland, Punjab. A total of 146 bird species belonging to 46 families (resident and migratory) under 17 orders were recorded. Data was collected every month, 5 days per month and twice a day. Among the various waterbird species, Common Pochard, Red-crested Pochard, Northern Pintail, Bar-headed Goose, Ruddy-shelduck, Northern Shoveller were frequently
116	Blooming Faunal Diversity of Nawabganj Bird Sanctuary, Unnao, Uttar Pradesh, India	Amita Kanaujia*, Adesh Kumar, Ashish Kumar, Sonika Kushwaha Akhilesh Kumar	G- Journal of Environmental Science and Technology	2014	2(2)	14-24	Nawabganj Bird Sanctuary, Water birds, Faunal diversity, Lucknow, Invertebrates, Vertebrates	Nawabganj Bird Sanctuary	26°34' N	80°40'	A study of faunal diversity in Nawabganj Bird Sanctuary was done during January 2013 to December 2013. This Sanctuary has an area of 224.60 hectares. The state and nature of the habitat plays a crucial role in diversity and population composition of fauna in study area. For their basic needs, food, roosting and breeding etc., various fauna prefer this site. According to this study Nawabganj Bird Sanctuary is an ideal wetland. The result includes 150 species of birds belonging to 17 orders and 46 families, 10 orders of insects with 61 species, 12 species of fishes belonging to 5 families, 16 species of reptiles, 3 species of amphibians belonging to 14 families, 4 species of mollusks belonging to 3 orders, 3 species of annelids belonging to 3 orders and 12 species of mammals belonging to 10 families from Nawabganj Bird Sanctuary. All these faunal species depend on the wetland flora and fauna and nearby agriculture fields.
117	Grey-headed Lapwing increases the avian species count of Nawabganj Bird	Adesh Kumar	Zoo's Print	2020	35(8)	53-55			26.49°N	80.301°E	

117	Species Count of Nawabganj Bird Sanctuary	Amita Kanaujia									
118	A Preliminary Assessment of Avifaunal Diversity of Nawabganj Bird Sanctuary, Unnao, Uttar Pradesh	Adesh Kumar Amita Kanaujia Sonika Kushwaha Akhilesh Kumar	IOSR Journal of Environmental Science, Toxicology and Food Technology	2015	9(4)	81-91	Nawabganj Bird Sanctuary, Water Birds, Water Weeds, Avifaunal Diversity, Wetlands	Nawabganj Bird Sanctuary, Water Birds, Water Weeds, Avifaunal Diversity, Wetlands	26°34' N	80°40' E	Avifaunal Diversity is one of the most important ecological indicators to evaluate the status of habitats. Birds are the crucial animal group of an ecosystem which maintains a trophic level. Therefore, detail study on avifauna and their ecology is important to protect them. They are one of the biological control tools to control pests in gardens, on farms, and other places. They abet in the pollination of plants. Birds are also good seed dispersal. The study was performed in Nawabganj Bird Sanctuary (NBS) during January 2013 to March 2014. NBS covers the 224.60 hectare area and provides breeding grounds to multiple populations of flora and fauna. Surveys were carried out seasonally and observations were made along line transects with the aid of 10x50 binoculars and Canon EOS 1000 D SLR camera. The Avifaunal assessment of NBS includes 150 species of birds belonging to 17 orders and 46 families. The order Passeriformes has maximum 51 species of birds. Purple moorhen and lesser whistling duck are the most abundant residential species in the NBS. Habitat wise classification reveals that 43.33% of birds were dependent on aquatic habitat (65) i.e. Moti Jheel in NBS followed by 6.66% waders (10) and 50% terrestrial birds (75) which shows that the NBS is an important abode of many birds. Food preference of birds showed that maximum species were insectivorous (49) followed by omnivorous (28), piscivorous (25), vegetarian (13), carnivorous (9), granivorous (8), frugivorous (5) and others (13).
119	Nesting behavior of painted-storks in Lucknow district of Uttar Pradesh, India	Adesh Kumar Amita Kanaujia	Asian Journal of Conservation Biology	2015	4(2)	151-153	Nesting Behavior, Nest Sanitation, Painted storks	Lucknow	26.8470° N	80.9470°E	The Painted stork is a large wading bird in the family Ciconiidae and is listed as Near Threatened. A study was carried out in Lucknow District, Uttar Pradesh, India from July 2013- March 2014. Painted storks show only seasonal short distance movements in search of food and breeding grounds. They are the local migratory bird. Selection of the nest site is often considered as an important factor of reproductive success in many bird species. The aims of the study was to understand the factors affecting selection of nesting habit-tat and nest tree as well as time management during nest building so as to recommend management of the species for conservation. The role of nest site selection and nest building behavior has been poorly explored in this species. Painted stork prepares their nest in trees or areas that are near the water body. The nest trees selected were on Ashoka (Saraca
120	A Flourishing Breeding Colony of Asian Open Bill Stork (Anastomus oscitans) in Nawabganj Bird Sanctuary, Uttar Pradesh	Adesh Kumar Amita Kanaujia	International Journal of Extensive Research	2016	10	1-4	Wetland, Nawabganj bird sanctuary, Asian open bill, nests.	Nawabganj Bird Sanctuary	26° 34' N	80°40'	Asian open bill stork is a colonial wetland local migratory bird having I.U.C.N Status of Least Concern belonging to family Ciconiidae. The name of this predominantly grayish white with glossy black wings and tail bird is derived from the distinctive gap formed between the lower and upper mandible of the beak in adult birds, which is used as nut cracker as an adaptation to handle hard and slippery shell of Pila (Apple Snail) which is its main food. The study was carried out in Nawabganj Bird Sanctuary, Unnao District, Uttar Pradesh, India from June 2013- December 2015. They show only seasonal short distance movements in search of food and breeding grounds. The purpose of the study was to understand the factors affecting habitat and nest tree as well as breeding behaviour so as to recommend management of the species for conservation. Open bills prepare their nest in trees
121	Araneofauna of Nawabganj bird sanctuary, Unnao, Uttar Pradesh, India	Ashish Kumar Amita Kanaujia Adesh Kumar Vikas Kumar Himanshu Mishra	Journal of Entomology and Zoology Studies	2017	5(4)	1952-1955	Araneae, Diversity, Wetland, Nawabganj, Bird Sanctuary	Nawabganj Bird Sanctuary	26°34'N	80°40' E	Spiders are eight legged arthropods belonging to the order Araneae of the class Arachnida and Phylum Arthropoda. The present study was carried out to investigate the diversity of spiders in Nawabganj Bird Sanctuary which is a large wetland located in Unnao district, Uttar Pradesh, India, covering an area of about 224.60 hectares. The study was conducted from May 2016 to October 2016. During this study a total of 55 Spider species were identified belonging to 41 genera & 14 families. Out of this, majority of spiders were belonging to family Araneidae (~20%) followed by Salticidae (~18%) and Lycosidae (~10%). Total species reported here represents about 23% of total spider families found in India.
122	Phytodiversity (pteridophytes and angiosperms) of Parvati Arga Bird Sanctuary, Gonda District, Uttar Pradesh, India	K. K. Khanna	Geophytology	2015	45(2)	239-244	Phytodiversity, pteridophytes, angiosperms, Parvati Arga Bird Sanctuary, Parvati Arga Wetland	Parvati Arga Bird Sanctuary			The paper deals with an account of pteridophytic and angiospermic plants occurring in Parvati Arga Bird Sanctuary in Gonda district, Uttar Pradesh. The study has indicated that a total of 215 species belonging to 155 genera and 60 families are found in the sanctuary. Of these, 3 species under 3 genera and 3 families belong to pteridophytes whereas 212 species under 152 genera and 57 families belong to angiosperms. An analysis has further indicated that Poaceae is the most
123	Invasion of Alien Species in Wetlands of Samaspur Bird Sanctuary, Uttar Pradesh, India	C. Sudhakar Reddy M. Rangaswamy Chiranjibi Pattanaik C.S. Jha	Asian Journal of Water, Environment and Pollution	2009	6(3)	43-50	Wetland, invasion, flora, Samaspur Bird Sanctuary, Uttar Pradesh.	Samaspur Bird Sanctuary	25° 58' to 26° 01' N	81° 21' to 81° 25' E	The expansion of invasive alien plants in wetlands leads to loss of native plant diversity. Invasive weeds are also responsible for shrinking of water bodies and becoming a severe environmental problem. In this context, plant diversity of wetlands in Samaspur Bird Sanctuary, Rae Bareilly district, Uttar Pradesh, was surveyed. 149 species of higher plants have been listed of which 108 were dicots followed by 40 monocots, and one pteridophyte. Species are distributed in 129 genera and belongs to 60 families. Poaceae is the dominant family with 28 species followed by Euphorbiaceae (9), Papilionaceae (8), Asteraceae (7) and Mimosaceae (7). Various members have been categorized into nine morpho-ecological groups. Out of all species, planted species (48), dry bank species (46) and wetland hydrophytes (38) contribute to the high diversity. Of the 101 natural species, alien plants represent 41.6% of the flora. Habit-wise analysis of natural flora shows that herbs are occupying higher proportion (86.1%) with 87 species followed by shrubs (6.9%) and climbers (4%). Among the 48 planted species, 25 are alien ones. The presence of Eichhornia crassipes, Typha angustata, Prosopis juliflora and Ipomoea carnea are considered as one of the most serious threat to the Samaspur wetlands. Effective steps are to be taken for conserving these wetlands.
124	Conservation Status and Monitoring of Wetlands of Samaspur Bird Sanctuary and Environs, Uttar Pradesh	C. Sudhakar Reddy	SACON ENVIS Newsletter SAROVR SAURABH	2007	3(3)	4-5		Samaspur Bird Sanctuary	25° 58' to 26° 01' N	81° 21' to 81° 25' E	
125	STAKEHOLDER ANALYSIS FOR CONSERVATION AND MANAGEMENT OF SAMASPU	Chinmay Korgaonkar						Samaspur Bird			The six lakes known as Samaspur wetlands in Rae Bareilly district of Uttar Pradesh were declared as Samaspur Bird Sanctuary in 1987. Out of the 800 Ha of total area of sanctuary, about 370 Ha is private and community lands. Due to this, the management and conservation of the sanctuary has become an extremely complex issue. Each year about one-lakh birds migrate here from regions like Siberia during the winter season. But the percentage of visiting birds has

125	MANAGEMENT OF SAMASPUR BIRD SANCTUARY, UTTAR PRADESH.	Yogesh Gokhale						Sanctuary			year about one-lakh birds migrate here from regions like Gujarat during the winter season, but the percentage of visiting birds has reduced to just one-fourth in last eight-ten years. This paper tries to find out the factors responsible for this sharp decline mainly through interactions with various stakeholders associated with this sanctuary like the forest department, local communities etc. Certain critical issues like submergence of agricultural lands around the lakes or large scale poaching of birds are identified in
126	Waterbird diversity of Samaspur Bird Sanctuary, Rae Bareli District, Uttar Pradesh	Adesh Kumar Amita Kanaujia	Discovery Nature	2015	9(23)	48-57	Waterbirds, Wetlands, Avifauna, Samaspur Bird Sanctuary	Samaspur Bird Sanctuary	N 25 59.458'	E 081 23.857'	The inland wetlands support vast diversity of flora and fauna by providing them with suitable habitats. Samaspur Bird Sanctuary is a natural lake and dotted by several islets. Samaspur Bird Sanctuary (SBS) harbours excellent population of waterfowl and support a variety of other resident bird species and also attracts several migrants' varieties. Birds help in the pollinization of plants and also good seed dispersal. A study was performed in Samaspur Bird Sanctuary (SBS) during January 2014 to March 2015. SBS covers the 799.371 Hectare area and provides breeding grounds to multiple populations of flora and fauna. Surveys were carried out seasonally and observations were made along line transects with the aid of 10x50 binoculars and Canon EOS 1000 D SLR camera. The documentation of biodiversity in any ecosystem is a requirement for better management and
127	THE BIODIVERSITY AT SANDI BIRD SANCTUARY, HARDOI WITH SPECIAL REFERENCE TO MIGRATORY BIRDS	Ashok Kumar Meena Srivastav	Octa Journal of Environmental Research	2013	1(3)	187-196	Birds, Biodiversity, Hardoi, Nature, Sanctuary, Uttar Pradesh	SANDI BIRD SANCTUARY	N 26°53'' to 27°46''	79°41'' to 80°46''	Indian subcontinent plays host to a number of migratory birds in summers as well as winters. It is estimated that over hundred species of migratory birds fly to India, either in search of feeding grounds or to escape the severe winter of their native habitat. Sandi bird sanctuary was created in 1990 in order to protect and conserve the natural habitation and surroundings and also the marine vegetation for the migratory birds, as well as for the local people of the region. The term migration is used to describe movements of populations of birds or other animals. There are three types of migrants. One way to look at migration is to consider the distances traveled. The pattern of
128	A BIODIVERSITY HUB: SANDI BIRD SANCTUARY, HARDOI, UTTAR PRADESH, INDIA	Adesh Kumar Amita Kanaujia Sonika Kushwaha Akhilesh Kumar	International Journal of Applied Biology and Pharmaceutical Technology	2015	6(2)	273-288	Sandi Bird Sanctuary, Water birds, Biodiversity Hub, Hardoi, Invertebrates, Vertebrates.	SANDI BIRD SANCTUARY	26° 53' N	80°46' E	Diversity refers variety in nature i.e. the variety of life on Earth and its biological diversity is commonly referred to as biodiversity. Sandi Bird sanctuary was developed and conserved in the year 1990 as natural biodiversity hub for aquatic vegetation as well as local residents and migratory birds. This Sanctuary has an area of 309 hectares. A study of faunal diversity in Sandi Bird Sanctuary was done during January 2013 to March 2014. Sandi Bird Sanctuary is well known as popular tourist destination because of the diverse assemblage of avifauna especially migratory water birds that congregate at the Sandi Bird Sanctuary in winter. The result includes 3 species of annelids belonging to 3 orders, 10 orders of insects with 61 species, 4 species of mollusks belonging to 3 orders, 11 species of fishes belonging to 5 families, 3 species of amphibians and 15 species of reptiles belonging to 13 families, 157 species of birds, and 12 species of mammals belonging to 09 families from Sandi Bird Sanctuary. The sanctuary is an envoy area of the Indo-gangetic eco-system. Wetland vegetation is also found in the sanctuary.