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Matoshri Ashatai Kunawar
Arts, Commerce & Science
Women's College, Hinganghat

Appendix I

Certificate Of Publication

This is to certify that the review board of our research journal accepted the research paper/article titled "Peshvekalin Athvyansthethe Nagne dani +hyanche Vyavaharik wa Yetihasic Mahatva" of Dr./Mr./Miss/Mrs. UMESH PANDURANGJI TULASKAR

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विद्येविना मति गेली, मतीविना नीति गेली
नीतिविना गति गेली, गतिविना वित्त गेले
वित्तविना शूद्र खचले, इतके अनर्थ एका अविद्येने केले

-महात्मा ज्योतीराव फुले

❖ विद्यावार्ता या आंतरविद्याशाखीय बहुभाषिक त्रैमासिकात व्यक्त झालेल्या मतांशी मालक, प्रकाशक, मुद्रक, संपादक सहमत असतीलच असे नाही. न्यायक्षेत्र:बीड



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डॉ. प्रा. उमेश पाडुरंगजी तुळसकर

इतिहास (विभाग)

विद्या विकास कला, वाणिज्य व विज्ञान
महाविद्यालय, समुद्रपूर

प्रस्तावना —

कुठल्याही राजाच्या राजवटीत राजकोष, अर्थव्यवस्था व नाणे यांना अत्यंत महत्वाचे स्थान असते. राजाला कोणतेही काम सुरु करायचे म्हणजे कोश हवाच म्हणून प्रत्येक राजाच्या राजवटीत राजकोषाची निर्मिती व त्याची काळजी राजाकडून घेतली जाते. राजकोषावरच राज्याची अर्थव्यवस्था अवलंबून असते. त्यासाठी राजाला देशातील कारखान्याची समृद्धी शीलक्षण, चोराचा बंदोबस्त या कोष वाढवणा—या गोष्टी कराव्या लागतात. तसेच अधिका—यांचा योग्य मान ठेवणे, शेताचा सुपीकपणा, व्यापारी मालाची विपुलता, अधिभौतिक संकटापासून बचाव, जो वसुल यायचा त्याच्यात सुट न देणे व रोख नजराणा या सर्वांमुळे कोष सतत वाढत असतो.

१. या कोशावरच राज्याच्या अर्थव्यवस्थेचे यश, अपयश अवलंबून असते. पेशव्याच्या राज्यकाळात सुद्धा एक सुदृढ अर्थव्यवस्था असल्याचे दिसून येते. या अर्थव्यवस्थेत जमीन महसूल ही एक राज्याचे उत्पन्न वाढविण्याच्या दृष्टिने महत्वाची बाब होती. म्हणूनच वा. कृ. भावे पेशवेकालीन महाराष्ट्र पुस्तकात म्हणतात. “पेशवाईत सरकारी वसूलाच्या पुष्कळ बाबी असल्या तरी त्या सर्वात जमीन बाब ही मुख्य होय”

२. पेशवे काळात जमीन महसूल ही उत्पन्नाची

प्रमुख बाब असल्याचे पेशव्यांनी शेतीच्या व्यवसायाला प्रोत्साहन देऊन जमीन महसूल वाढविण्याचा प्रयत्न केला. जमीन महसूलाची निश्चिती करताना प्रत्यक्ष पीक पहाणी करूनच सारा आकारणी केली जात असे. तसेच जमिनीची वर्गवारी करून सरस, मध्यम, व कनिष्ठ असे तीन भाग पाडले जात असत. शिवाय काळी जमीन, डोंगराळ जमीन, बागाईत जिराईत पाटस्थळ, मोटस्थळ, आमराई इत्यादी प्रकार पाडून सारा आकारणी होत असे हा सारा शिवकाळाप्रमाणेच शेख रकमेच्या किंवा धान्याच्या स्वरूपात वसूल केला जात असे याप्रमाणे पेशवेकाळात प्रत्येक तालुक्यातून दरवर्षी ३ ते ४ लाख रुपये जमीन महसूलापासून सरकारला उत्पन्न मिळत असावे असे पेशवा रोजनिशीतील पत्रावरून स्पष्ट होते.

३. इतिहासाच्या संशोधनात पेशव्याची अर्थव्यवस्था हा एक महत्त्वपूर्ण विषय आहे व अर्थव्यवस्थेत चलनी नाण्याला महत्त्वपूर्ण स्थान आहे सामाजिक व्यवहारात परस्परांच्या व्यवहारासाठी विनिमयाच्या आवश्यकतेतूनच मुद्रा व्यवस्था प्रचालित झाली. अतिरिक्त उत्पादनाच्या विनिमयासाठी प्रारंभ वस्तू विनिमयाची पध्दती अवलंबण्यात आली. त्यानंत विनिमय साधन म्हणून गाईचा उपयोग झाला व त्यानंत हळू हळू मुद्रा विनिमय सुरु झाला. या मुद्राचे उल्लेख ऋग्वेद काळात तसेच बौद्ध ग्रंथातही आलेले. आं ऋग्वेद काळात सोण्याच्या मुद्रेचा तर बौद्ध ग्रंथात सो चांदी, कासे, तांबे या धातूंच्या मुद्रांचे उल्लेख आहे. काळात वस्तु विनिमय पध्दत सुरु असली तरी विनिमय माध्यम म्हणून मुद्रा पध्दती बरीच स्थिर झाली हो. धातूचा पत्रा अयाताकार किंवा गोलाकार व तुकडयावर मुद्रा ठोकून चिन्ह उमटविले जाण्या पध्दती रुढ होती. नाणं म्हणजे ठराविक आकार, व आणि मूल्य असलेल अधिकृत चलन. परंतु त्या व्याख्या एवढ्यापुरती मर्यादित नसून नाणी हे एव कालखंडातील धार्मिक, राजकीय, सामाजिक, आणि सांस्कृतिक स्थिती जाणून घेण्याचही उत्तम अ असलेल साधन आहे. प्रत्येक ऐतिहासिक नाणं हा त्या काळाच प्रतिबिंब दाखविणारा आरसाच अस

४. काळाच्या आघात वेगवेगळे राजे आप

शिकव्यांची नाणी बनवू लागले. अशाच प्रकारे पेशवे राजाची आपली नाणी बनवायला सुरुवात केली.

पेशव्यांच्या काळातील चलन व्यवस्था :

पेशव्यांच्या काळातील नाण्यांचा इतिहास म्हणजे एकंदरीत नाणे पध्दतीच्या न्हासाचा इतिहास होय असे म्हटले जात असले तरी शिवकाळापेक्षा पेशवेकाळात नाणी बनविण्याचे काम अधिक गतीने झाल्याचे दिसून येते. पेशवे काळात राज्यात ३८ प्रकारची सोन्याची नाणी व १२७ प्रकारची चांदीची नाणी प्रचारात होती. नाणी पाडण्याचे काम हे सरकारमार्फत चालत असे. तसेच खाजगी लोकानाही नाणी पाडण्याचे परवाने दिले जात असत. व त्या बदल्यात त्यांच्याकडून परवाना फी वसूल केली जात असे. त्यांचे दरही वेगवेगळ्या भागांत वेगवेगळे असत. पेशवे काळातील नाण्यांपैकी पुष्कळशी नाणी त्यांच्या टांकसाळ नावाने ओळखली जात. उदा. रहिमतपुरी, मलकापुरी, चांदवड, बागलकोटी, भडोची, दौलताबादी, तळगाव इत्यादी. पेशवे काळात टांकसाळीच्या माध्यमातून जी नाणी तयार व्हायची त्यात काही गैरप्रकारही व्हायचे अशा गैरप्रकारावर आळा घालण्याचे कामही पेशवा सरकार करीत होते.

५. तीन धातूपासून नाणी तयार करण्याची पेशव्यांची पध्दती

पेशव्यांच्या काळात सोने, चांदी आणि तांबे या ती धातूपासून टांकसाळीत नाणी बनविण्याची पध्दती होती. आणि त्यात नाणे ओळखाचे विविध प्रकारही होते.

१. टांकसाळीच्या नावाने ओळखली जाणारी नाणी :- पेशवाईच्या काळात काही नाणी टांकसाळीच्या नावाने ओळखली जात होती.

२. राज्याकर्त्याच्या नावाने ओळखली जाणारी नाणी :- पेशवे काळात काही नाणी त्यांच्या राज्यकर्त्याच्या नावाने ओळखली जात असत. उदा. महमदशाही, शिवशाही, मल्हारशाही ही नाणी अनुक्रमे महंमद अदिलशहा, शिवाजी व मल्हारराव होळकर यांच्या नावाने ओळखली जात असे.

३. चिन्हावरून ओळखली जाणारी नाणी :- काही नाण्यावर विशिष्ट चिन्ह असायचे त्यावरून त्याची

ओळख व्हायची उदा. त्रिशुली नाण्यावर त्रिशुलाचे चिन्ह असे. 'फरशी' या नाण्याच्या मुख्य बाजूस फरशी कुन्हाडीचे चिन्ह (परशू) असे. आणि 'तुन्याचा रुपया' या नाण्यावर पिसाचे चिन्ह असे.

४. सरकारी चलन :- पेशव्यांच्या काळात काही नाणे हे सरकारी चलन म्हणून घोषित केले होते. व सरकारी देणी फक्त या नाण्यांच्या रुपानेच स्वीकारली जात. अशी नाणी सरकारी चलन म्हणून ओळखली जात असे उदा. 'पोतेचाल' नावाची चलनी नाणी सरकारी खजिन्यात स्वीकारली जाणार होती व या नाण्यातील धातूचे प्रमाण व नाण्याचा नमुना पेशवे सरकारने ठरवून दिलेला असे.

५. कोरीव नाणी :- चांदवड येथील टांकसाळीत काही कोरीव नाणी तयार व्हायची त्यांना 'कोरीव नाणी' असे नाव असायचे उदा. छापीचांदन काही वेळा ही कोरीव नाणी जास्त हाताळल्या मुळे त्यावरील मजकूर पुसट व्हायचा तेव्हा त्यावर पुन्हा मजकूर कोरून किंवा छापवून घेतला जाई.

६. दोन टांकसाळीच्या नावावरून ओळखली जाणारी नाणी :- काही नाण्यांची नावे दोन दोन टांकसाळीच्या नावावरून पडलेली असत. उदा. अकटि-फुलचरी, अकटिंगंजीकोट, मिरजी, मलकापुरी, ग्वाल्हेर, गंजीकोट इत्यादी. अकटि रुपयाचे नाणे एका ब्रिटीश टांकसाळीत पाडले जात असे तर फुलचरी हे नाणे बहुधा फ्रेंचांनी पॉडेचरीच्या टांकसाळीत पाडलेले होते.

७. शिक्का अगर सिका या नावाने ओळखली जाणारी नाणी :- पेशवेकाळातील काही नाणी शिक्का अगर सिका या नावाने ओळखणारी नाणी होती. उदा. हालीसिका, शाहू शिक्का, वाई-सिका, पुणे-सिका, कल्याण सिका. सिका किंवा सिका हा शब्द बहुतांशी तांकसाळ अशा अर्थी वापरला जाई.

याप्रमाणे पेशवेकाळात सात प्रकारच्या ओहखीची नाणी चलनात असल्याचे दिसून येते. तसेच नाणे बनवण्यामध्ये सोने, चांदी व तांबे या तीन धातूंचेही महत्व होते.

१) सोन्याची नाणी

पेशवेकाळात होन्स आणि मोहर चलनात होते. 'होन्स' चे मूल्य वेळोवेळी बदलायचे पेशवा 'होन्स'

ची निर्मिती राज्याच्या टांकसाळीत करायचे १७६८ A.D. मध्ये दोन सोनारांना धारवाड येथे टांकसाळीत होन्स तयार करण्याचा परवाना देण्यात आला. होन ३ १/२ माशाचे असायचे ज्यात २ ग्रॅ. माशा शुध्द सोने आणि ५/२ चांदी त्यात मिसळत. तर मोहर चे वनज ३/४ तोळा असायचे, ३/४ माशा आणि १ गुंज यात पूर्णपणे सोन्याचा वापर केला नाही. १७६७-६८ A.D. मध्ये दोन सोनारांना चिंचवड येथे केवळ शेटशाही मोहरा पाडण्यासाठी टांकसाळ उघडयाची परवानगी देण्यात आली होती. व या मोहरा शुध्द सोन्यापसून बनवण्यात येई उदा. 'जयनागरी मोहरा' अशाप्रकारे वेगवेगळ्या परिमाणाच्या मोहरा त्या काळी चलनात होत्या. 'होन' हा शब्द 'पोन' यापासून आला आहे. ज्याचा अर्थ 'सोने' द्रविडी भाषेत 'पोन' तर 'कन्नड' भाषेतील सोन्याचे नाणे 'होन' मध्ये सोने चांदीचे मिश्रण असे त्याकाळी 'अच्युतराई' 'देवराई' 'रामचंद्राई' 'गुणी होन' 'धारवाडी' 'सावनूर' 'लक्ष्मीसवर' होन, त्याकाळी चलनात होते, याच्या सोबतच दोन नीमहीन जसे बेलुरी देवनहल्ली इत्यादी. सुध्दा चलनात होते. हे धारवार, सावनूर, लक्ष्मीसवर इत्यादी ठिकाणच्या टांकसाळीत निर्माण केले जायचे.

तसेच त्याकाळी प्रचलित सुवर्ण मुद्रा (मोहर) ज्या चलनात होत्या त्या औरंगाबादी, नादरशाही, प्रयागी, तुगच्या कुन्याच्या, मल्हारशाही, सेठशाही, राजुशाह ज्ञाणी, गैसाल, हैदराबादी, अजमेरी, तोफखानी, मथुरा, असाजपुरी, भावनागरी, बसबरेली, मुरली, नागपननी, हरडनली, अलमशाही सुलाखी, इकेरी, इकेरी पेशवा त्यांच्या टांकसाळीत मोहरा पाडायचे, शेटशाही मोहरा पुणा - टांकसाळ आणि चिंचवड टांकसाळ येथे बनविण्यात येत असत व नेहमी शुध्द सोन्याची असो याबद्दल ची चौकशी पुणे येथील सोनारतुका सोनार आणि मोरोजी सोनार चिंचवड येथील, यांना जुण्या औरंगाबादी मोहर सारखी दिसणारी व जयनागरी शिक्का असणारी मोहर बनविण्यास सांगण्यात आले. ही बनविलेली मोहर पूर्ण वजनाची व शुध्द सोन्याची होती व त्या वर्षीचा उल्लेख सुध्दा त्यावर होता. (१९) अशाप्रकारची सोन्याची नाणी पेशवेकाळात उपलब्ध होती.

२) चांदीची नाणी

सोन्याप्रमाणे चांदीची नाणी बनविण्याचा प्रकार पेशवेकाळात होता. कदाचित उत्तरेमध्ये प्रामुख्याने चांदीची नाणी प्रचलित असावी व त्याला पुरक म्हणून सोन्याची नाणी असावी, तर दक्षिणेत सोन्याची नाणी मुख्यत्वे करून चलनात असून चांदीची नाणी पुरक म्हणून होती. शिवाजी आणि पेशवा 'होन' मध्ये पैसा देणाऱ्यांना 'सनद' उपाधी प्रदान करत, खंडणी होन मध्ये घेतल्या जाई आणि खाती ही होनमध्ये लिहली जाई, अपवाद इतर उद्देशासाठी जसे महसूल उत्पनासाठी रुपया चांदीची नाणी इत्यादी. स्वीकारली जात.

'घडणी रुमाल' आणि सरकारी दफतरखानातील पुणे येथील 'रोजकीर्द' या गोष्टीला सिध्द करते. त्यात अनेक प्रकारच्या चांदीच्या नाण्यांचा समावेश होता. जसे 'चांदवड' 'भलकापुरी' 'फुलचेरी' 'सरकारी' 'महम्मदशाही' 'गांडीकोट' 'रहिमतपुरी' 'फारशी' (पुध्दात वापरली जाणारी कुन्हाड) चिंचवड कलदार, काशी सीत्का तुरीयाचे औरंगाबादी अहमदाबादी, वज्रजोगाई मीर्चवासंगी, सरोला, त्रिशुली, बेलापुरी, निलकांठी नबाबी, तळेगावी, छपीमुलाखी, हापीसचाल सुरनी, मानवाडीअल्वर, मातीचे, दौलताबादी झाबा इत्यादी. पुण्यात तीन टांकसाळी होत्या व त्या पेशवा सरकारकडून नियंत्रित केल्या जात या ठिकाणी ४ प्रकारचे रुपयं, काही लहान आकाराची चांदीची नाणी आणि तांबे व सोन्याची नाणी त्या ठिकाणी बनविण्याचे काम केले जाई. पेशवा सरकार सरंजामदारांना त्यांचे स्वतःच्या वापरासाठी टांकसाळ चलविण्याची परवानगी देत असे. सरदार आणि त्यांनी ठिकठिकाणी चालविलेल्या टांकसाळीचे वर्णन 'टांकसाळ' मध्ये वर्णीत करण्यात आलेले आहे. पेशवा आणि त्यांचे सरदार सुरवातीच्या काळात मराठा राजा शाहु छत्रपती यांनी स्विकार केलेले चलनी नाणे वापरित असत. परंतु काळाच्या ओघात स्वतःच्या सुविधेकरिता ते स्वतःच्या खाजगी टांकसाळी चालवित. डॉ. जी.एच. खरे मराठा नाण्याचे अभ्यासक व तज्ञ यांनी पेशवा काळातील तीन प्रकारच्या रुपयाचे वर्णन केलेले आहे: त्यांनी पुरंदरे इस्टेट जे पुण्याच्या कोर्ट ऑफ वार्डसच्या ताब्यात आहे. येथील ७२० चांदीच्या नाण्यांचा अभ्यास केला.

त्यांनी केलेल्या अभ्यासपूर्ण निश्चिना अंतर्गत छानणीत त्यांना असे आढळून आले की, ती सर्व पेशवे काळातील असून मराठा टांकसाळीतून बनविण्यात आलेली आहे. त्यापैकी ३४५ नाण्यांवर चंदोर टांकसाळीचे चिन्ह आहे. १८४ अंकुशी रूपया, ८९ श्री सिक्का रूपया आणि २ जरीपटका रूपया टांकसाळीच्या चिन्हाखेरिज काही देवनागरी अक्षरे आढळून आलेली आहे.

३) अंकुशी रूपया:-

अंकुशी रूपी श्री सिक्का सोन्याची मोहोर (शेटशाही) इ. पूणे येथील टांकसाळीत बनविण्यात येणारी नाणी असत. या प्रकारच्या रूपयावर नाण्याचे वर्णन आलेले आहे. ते १८०५ मध्ये " यादी अंकुशी व श्री सिक्का रूपयाची मोहोर शेटशाही नवीन टांकसाळ शहर पूणे येथे घालावयाची त्या वीसी सु !! " डॉ. जी.एस. खरे यांच्या नुसार अंकुशी रूपया 'वाई' येथे पाडण्यात आला. परंतु घडणी रूमाल नुसार या प्रकारचे रूपी इतरही पाडले जात. या रूपयाचे वजन ११ मासे इतके होते. परंतु यात फक्त ११ मासे किंमतीची चांदी वापरण्यात येई. मराठा काळात चांदीची नाणी ज्यावर 'अंकुश' ची खून होती. ते सर्वसाधारणपणे चलनात होते. श्री. एम.जी. रानडे यांच्या मते अशा प्रकारची नाणी 'वाई' आणि पूणे (जुनार) येथे पाडण्यात आलेली होती.

४) बागल कोट रूपी:-

मल्हारराव रास्ते यांना कर्नाटकाची जागीर देण्यात आली होती. त्यांनी बागलकोट येथे टांकसाळ सुरू केली होती. नेहमीप्रमाणे शहा अलम दुसऱ्याचे नांव आणि इतर पार्श्वीयन शब्द त्या रूपीवर कोरलेले आढळते. बांगलकोट येथील नाण्यावर रोमन अक्षर 'ट' सारखे चिन्ह आढळले आणि दोन टिंब बांगलकोट रूपया ११ मासे होता.

५) तांब्याची नाणी:-

पेशव्यांच्या काळात पूणे सरकारी दफ्तर खान्यात तांब्याच्या नाणी संबंधी केवळ ३ ते ४ दस्तावेज आहे. त्यात नाण्याचे वजन दिलेले आहे. इडजसे 'शिवराई' वजन १० मासा, आलमगिरी १४ मासे आणि ढबू २१ मासा वेळेवेळी याचे वजन बदलत असे. ऊरील नाण्याचे वजन ११/४, १३.३/४ आणि

१८.१/२ सवाई माधवरावांच्या काळात होत. त्यावेळी टंका, रूनका, पैसा, दामडी, दमशिवशाही, कवडी, आलमगिरी दु-दोंडी इ. देखिल चलन होते. त्यावेळी तांब्याची नाणी चलनात होती. या नाण्यावर मधात भूपृष्ठाळा समांतर रेखा होत्या. पेशव्यांच्या अधिपत्याखाली असणा-या प्रदेशामध्ये ही नाणी चलनात होती. त्याचप्रमाणे शिंदे, होळकर, आणि नागपूरचे भोसले यांच्या प्रदेशात देखिल ही नाणी प्रचलित होती. कोसे यांचे नाणी यादीमध्ये भोसल्यांचे नाणे म्हणून यांचा उल्लेख आलेला आहे. तसेच डॉ. जी.एच. खरे यांनी टंक आणि पार्तूगिज टांगा ही दोन्ही नाणी सारखीच असल्याचे नमूद केले आहे. पोर्तुगीजांनी 'टंकनाण्यात' वरून टांगा नाणी बनविली. टंकनाणे हे तांब्याचे नाणे होते. आणि जमिनी वरील महसूल खात्यात आणि इतर खात्यामध्ये त्यांचा वापर केला जाई. अशा प्रकारची नाणी १६६९ इ.डी. उजैन येथील टांकसाळीत बनविली होती.

याशिवाय पेशवे काळात काही तास्यांच्या नाण्याचा वापर सर्वसाधारणपणे सामान्य तोड व खेड्यातील लोक करित असत. नाण्यामधील कयशक्ती ही फार होती. अशा प्रकारे पेशवाईत सोने, चांदी, तांबे या धातूपासून व अतरही धातूपासून बनविलेल्या नाण्याचा व्यवहारात देवाण-घेवी करिता उपयोग केला जात होता. पेशवेकालान नाण्याचे व्यावहारिक महत्त्व पेशवे काळात सर्वसामान्यांचे व्यवहार हे पेशवे काळात असलेल्या नाण्यावरून होत होते. तसेच पेशवे काळात सरकार दरबारी प्रदीचा व्यवहार फारच भरभराटीला आलेला होता. राज्यातील बहुतेक निम्मे अधिक आर्थिक व्यवहार पेढीमार्फतच होत असत. तसेच सावकारशाही वाढलेली होती. सावकाराकडून पैसे देणे घेणे या व्यवहारातही नाणी वापरली जायची. शेतक-यांना त्यांच्या शेती करिता, व्यापा-यांना त्यांच्या व्यापाराकरिता व व्यावसायीकांना त्यांच्या व्यवसायासाठी लागणा-या पैशासाठी सावकारवर अवलंबून राहावे लागत असल्याने माहाराष्ट्रात सावकारी धंदा वाढीस लागला. व त्यात या नाण्याचे व्यावहारिक महत्त्वही वाढू लागले. पेशवेकालीन नाण्याचे जसे व्यावहारिक महत्त्व आहे. तसेच त्याकाळाच्या नाण्यांना ऐतिहासिक महत्त्वही प्राप्त

झालेले आहे. नाण्याचा ऐतिहासिक साधन या दृष्टीने बराच उपयोग होतो. नाणी ही एकप्रकारच्या अविनाशी ऐतिहासिक साधनांपैकी एक आहेत. या साधनाच्या सहाय्याने राज्याच्या नावाचा व नाण्याच्या आणि त्यांच्याबरोबर फक्त राज्याच्या काळाचा बोध होऊ शकतो. या अर्थाने पेशवेकालीन नाण्याचे ऐतिहासिक महत्त्वही अनन्य साधारण असे आहे.

अशाप्रकारे पेशवे काळातील आर्थिक व्यवस्थे मध्ये नाणे घडविण्याचे व नाण्याच्या व्यावहारिकतेला महत्त्व प्राप्त झालेले होते.

संदर्भ ग्रंथः—

१) कौटिल्य अर्थशास्त्र— दूर्गा भागवत, वरदा बूक्स, ३९७/१ सेनापती मार्ग पूणे, आवृत्ती चौथी २००१ पृष्ठ क्र. १६८

२) मराठ्यांचा प्रशासकीय आणि सामाजिक आर्थिक इतिहास, बी. एस. सावंत, प्रा. व्ही. के. जाधव, विद्या प्रकाशन नागपूर प्रथम आवृत्ती पृष्ठ क्र. ७६

३) कित्ता— ७७

४) नागपूर अमरावती विद्यापीठ इतिहास परिषद, निवडक शोध निबंध खंड तीसरा. २००४—२००५ संपादक प्रा.बी.आर. मस्के — ऐतिहासिक नाणी प्रा. सौ.निलन खेरडे पृष्ठ क्र. २८

५) मराठ्यांचा प्रशासकीय आणि सामाजिक आर्थिक इतिहास— बी. एस. सावंत, व्ही. के. जाधव विद्या प्रकाशन नागपूर प्रथम आवृत्ती पृष्ठ क्र. २४३, २४४.

६) पेशवाईच्या सावलीत— ना.गो. चाफेकर

७) "शिव छत्रपती चलन" सी. एन. परचूरे, पूणे १९७४

८) "पूणे येथील टांकसाळ" (BISMQ)

९) "मंडळातील नाणी" जी. एच. खरे, पूणे १९३३ ती. एच. खरे "पेशव्याचे काही नाणे"

१०) "उजैनी येथील टांकसाळ" के.के. लेले

११) "पूण्यास नवीन टांकसाळ" "सिक्क्याचा रूपया" (BISMQ)



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संत गाडगे महाराज महाविद्यालय

हिंगणा जि नागपूर

प्रकाशन

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२३ शांता दुर्गा निवास ,

रामदासपेठ, नागपूर

टिप: प्रसिद्ध होणा-या स्मरणिकेमधील लेखांतील मते त्या लेखकांची आहे. या
प्रकाशक, संपादक व कार्यकारी संपादक मंडळ सहमत असतीलच असे नाही.



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Advantages and Disadvantages of GST

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Abstract : GST is one of the biggest tax reforms of the country, the Goods and Service Tax (GST) subsumes many indirect taxes which were imposed by central and state such as excise VAT and service tax, It is levied on both good and services sold in the country. There are endless taxes in present system few levied by central and rest levied by state, the remove this multiplicity of taxes and reducing the burden of the tax payer a simple tax is required and that is Good and service tax (GST). This paper focuses on good & service taxes advantages and disadvantages.

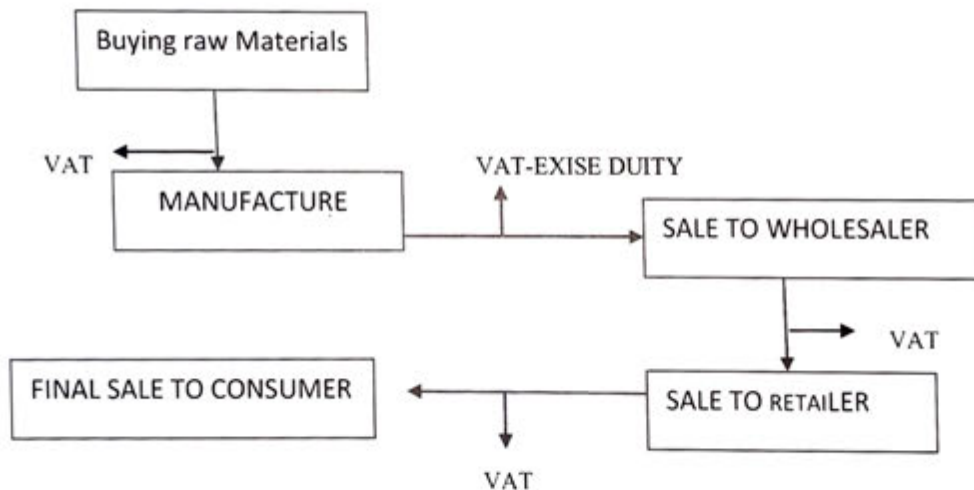
Introduction :-

Goods and Services Tax (GST) is the newest indirect tax regime in India. It is a value – added tax levied on the supply of goods and services across the country. As GST has already affected the Indian economy since 1st July 2017, It has changed the working style of every business. GST advantages and disadvantages are imperative to understand. Benefits will enlighten you as to why GST is necessary. It has almost been a year since GST rolled out in India hence it is imperative to understand the advantages and disadvantages of GST.

GST :-

GST (Good and Services Tax) is the biggest Indirect tax reform of India. GST is a single tax on the supply of good and services. It is a destination based tax. GST has subsumed taxes like central Excise low, Service Tax low, VAT, Entry Tax, Octroi etc. GST is one of the biggest indirect tax reforms in the country. GST is expected to bring together state economies and improve overall economic growth of the nation.

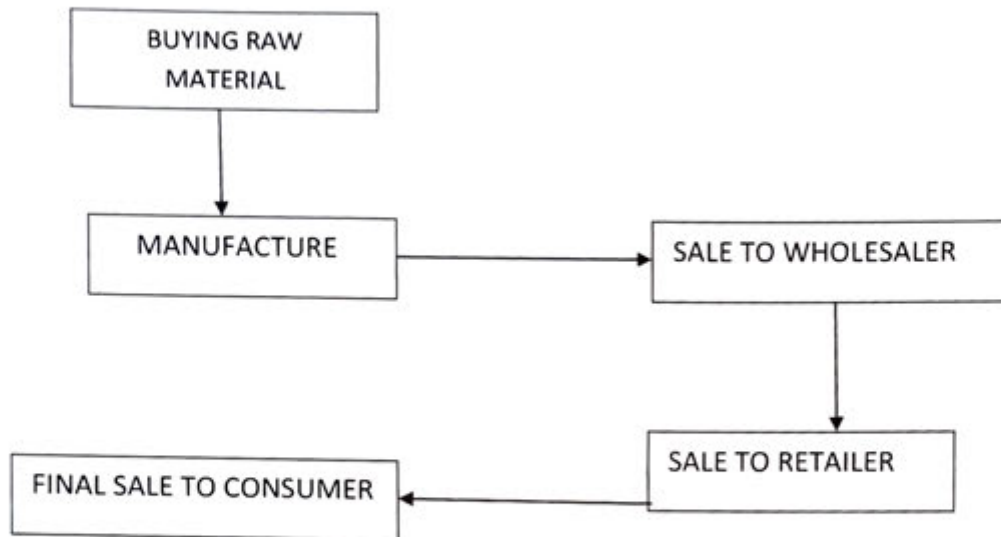
Before Good and service Tax the pattern of tax levy was as follow.



Under the GST regime, the tax is Levied at every point of sale. In short we try to understand the definition of Good and Service Tax.

GST is a comprehensive, multi-stage, destination- based tax that is levied on every value addition”

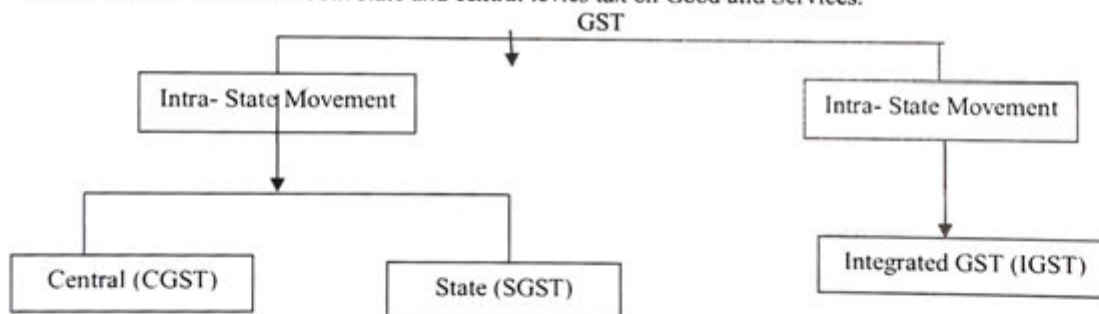
There are multiple change of hands in item goes through along its supply chain ; from manufacture to final sale to the consumer



Goods and services Tax is levied on each of these stages which makes it a multi-stage tax.

GST is a comprehensive indirect tax levy on manufacture, sale and consumption of good as well as services at the national level. It will replace all indirect taxes levied on good and services by states and central. Business are required to obtain a GST Identification Number in every state they are registered.

There are around 160 countries in the world that have GST in place. GST is a destination based taxed where the tax is collected by the state where goods are consumed. GST has been implemented in India from July 2017 and it has adopted the dual GST model in which both state and central levies tax on Good and Services.



SGST - State GST, collected by State Govt.

CGST - Central GST, collected by Central Govt.

IGST – Integrated GST, collected by Central Govt.

Advantages and Disadvantages of Good and Service Tax (GST) –

Good and services Tax (GST) is the newest indirect tax regime in India. It is a value – added tax levied on supply of Good and Services across the country .It has changed the working style of every business.GST advantages and disadvantages are imperative to understand. GST benefits will enlighten you as to why GST is necessary. It has almost been a year since GST rolled out in India. Hence it is imperative to understand the advantages and disadvantages of GST law. Let's look at some advantages of GST.

1. GST eliminate the cascading effect of Tax. –

GST is a comprehensive indirect tax that was designed to bring the indirect taxation under one umbrella. More importantly it is going to eliminate the cascading effect of tax that was evident earlier. Cascading tax effect can be best described as 'Tax on Tax' Let us take this example to understand what is tax on tax.

Before GST regime :-

A consultant offering services for say, Rs 50000 and charged a service tax of 15% ($50000 \text{ Rs} \times 15\% = 7500$)

Then say he would buy office supplies for RS 20000 paying 5% as VAT ($20000 \text{ Rs} \times 5\% = 1000$) He had to pay Rs 7500 output service tax without getting any deduction of Rs1000 VAT already paid on stationary

His total outflow is RS 8500

Under GST: -

GST on service of RS 50000 @ 18 %	9000
Less: GST on office supplies (20000 Rs X 5%)	1000
Net GST to pay	8000

2. Higher threshold for registration: -

Earlier in the VAT structure, any business with a turnover of more than Rs 5 Lakh (in most states) was liable to pay VAT. Please note that this limit differed state wise. Also, service tax was exempted for service providers with a turnover of less than RS 10 Lakh

Under GST regime, however, this threshold has been increased to Rs 20 Lakh, which exempts many small traders and services providers.

Let us look at this table below

Tax	Threshold limits
Excise	1.5 Crores
VAT	5 Lakhs in most states
Service Tax	10 Lakhs
GST	20 Lakhs (10 Lakhs For any states)

3. Obliteration of multiple taxes and avoidance of double taxation-

All central government indirect taxes such as central excise duty and additional excise duties, service tax, central sale tax etc. and all state government indirect taxes such as state surcharges and cess, entertainment tax, VAT, entry tax, etc. are subsumed by a single tax GST this eliminating the issue of multiple taxation for which you have to apply for GST registration.

Also in the previous regime, there were some specific industry transactions which were taxed as goods as well as services. For example, a taxpayer providing restaurant service tax on such transaction considering it as service and was also required to pay VAT on the same transaction considering it as the sale of Good, which lead to double taxation of the single transaction, since GST is levied uniformly on good and services, issues relating to double taxation would not be arise.

4. Seamless flow of Goods across Nation: -

In the previous tax regime, while transporting goods from one state to another, CST (Central state tax) and entry tax were levied for entering into another state, the trucks transporting these goods had to pay entry tax while entering to every state border which was collected by individual state border which was collected by individual state. Due to this, same manufacturers would avoid supplying their goods outside their own state. However, after GST rolled out, interstate transportation of goods become much easier a CST and entry tax was replaces by a single tax, i.e., GST It also resulted in the reduction in transportation cost.

5. The number of compliances is leaser -

Earlier, there was VAT and service tax each of which had their own return and Compliances. Below table shows the same

Tax	Return Filling
Excise	Monthly
Service Tax	Proprietorship / Partnership- Quarterly
VAT tax	Different for Different state Some state require monthly return over a threshold limit. Some state like Karnataka require

Under GST however, there is just one, unified return to filed. Therefore, the number of return to be filled has come down, there are about 11 returns under GST. Out of which 4 are basic returns which apply to all taxable persons under GST. The main GSTR 1 is manually populated and GSTR 2 and GSTR 3 auto populated.

6. Improved efficiency of logistics -

Earlier, the logistics industry in India held to maintain multiple warehouses across states to avoid the current CST and state entry taxes on inter-state movement. These warehouses were forced to operate below their capacity giving room to increased operating cost.

Under GST, however, these restrictions on inter-state movement of goods have been lessened as on outcome of GST, warehouse operators and e-commerce aggregator's players have shown interest in setting up their warehouses at strategic locations such as Nagpur (Which is the zero mile city of India) instead of every other city on their delivery route

Reduction in unnecessary logistics costs is already increasing profits for businesses invoiced in the supply of goods through transportation.

7. Ease of Doing Business: -

Before July 2017, a business person had to register with different tax authorities and File different tax returns. After GST came into existence, one was required to comply with only one single tax. Due to this, a business person can now focus on his business without worrying about different indirect taxes and laws.

8. Composition schemes for small business: -

The tax and compliance burden on many small businesses have been reduced. Further, Small businesses i.e. those businesses with a turnover of 20 to 75 lakh rupees can benefit from the option of utilizing composition schemes.

9. Composition schemes for small business:

The tax and compliance burden on many small business have been reduced. Further, small businesses i.e. those businesses with a turnover of 20 to 75 lakh rupees can benefit from the option of utilizing composition schemes

10. Simple and easy online procedure:-

The entire process of GST (from registration to filling return) is made online and it is super simple. This has been beneficial for start-ups especially, as they do not have to run from pillar to post to get different registration such as VAT excise and service tax. Our ClearTax GST software is already on a roll filling GST return.

Let us now look at disadvantages of GST:-

Disadvantages of GST :-

1. Increased costs due to software purchase :-

Business have to either update their existing accounting or ERP software to GST compliant one or buy a GST software so that they can keep their business going. But both the options lead to increased cost of software purchase and training of employees for an efficient utilization of the new billing software.

ClearTax is the first company in India to have launched a ready to use GST software called clearTax GST software. The software is currently available for free for SMES, helping them transition to GST smoothly. It has truly eased the pain of the people in so many way.

2. Being GST – Compliant

Small and medium sized enterprises (SME) who have not yet signed for GST have to quickly grasp the nuances of the GST tax regime. They will have to issue GST compliant invoices be compliant to digital record keeping and of course, file timely returns. This means that the GST compliant invoice issued must have mandatory details such as GSTIN, place of supply, HSN codes, and others.

Clear tax has made it easier for SME, with the clear Bill book web application. This application is available for FREE until the end of September and is an easy solution to this problem. This will help every business to issue GST compliant invoices to their customers. These same invoices can then be used for return filing through the ClearTax GST platform.

3. GST will mean an increase in operational cost-

We have already established that GST is changing the way how tax is paid businesses will now have to employ tax professionals to be GST complaints. This will gradually increase costs for small businesses as they will have to bear the additional cost of hiring experts.

Also businesses will need to train their employees in GST compliance. Further increasing their overhead expenses.

4. GST come into effect in the middle of the financial year:-

As GST was implemented on the 1st of July 2017, businesses followed the old tax Structure for the first 3 months (April, May & June), and GST for the rest of the financial year.

Businesses may find it hard to get adjusted to the new tax regime, and some of them are running these tax systems parallelly resulting in confusion and compliances issues.

5. SME will have a higher tax burden :-

Smaller businesses, especially in the manufacturing sector will face difficulties under GST. Earlier, only businesses whose turnover exceeded RS 1.5 crore had to pay excise duty. But now any business whose turnover exceeds RS 20 lakh will have to pay GST.

However, SMEs with a turnover upto RS 75 lakh can opt for the composition scheme and pay only 1 % tax on turnover in lieu of GST and enjoy lesser compliances. The catch though is these businesses will then not be able to claim any input tax credit. The decision to choose between higher taxes or the composition scheme will be a tough one for many SMEs.

6. Online taxation system :-

Unlike earlier tax regime, most invoicing was done through pen and paper. It might be difficult for smaller businesses to adopt this technologically ridden change. Businesses need to upload their invoices and returns forms.

7. Website Issues:-

Every normal registered person is required to file a minimum of 3 returns every month or before the relevant due date. At times, the GST portal is unable to handle the load on these due dates, resulting in site blocking or denial of access error. However the Government is working to overcome such problem.

8. Lack of computer Literacy:-

As the whole GST system is technology driven. It is very important for a taxpayer to be a computer literate in order to comply with GST law. The current GST system is a paperless system where compliance is done via GST online portal. The computer literacy rate among small. Smallbusiness and traders is very low, which would result in hindrance to the GST compliance process.

Conclusion :-

These are the pros and cons of GST. GST law is still in its primary stage and will tend to have problem and issues. However, the Government is trying its best to simplify the GST compliance procedures and promptly addressing the issues.

Currently there may be many obstacles in GST path, whether it is an implementation of law or adaptation by people, but in the long run, GST would surely prove beneficial for each and every segment of the Indian economy.

References : -

BOOK	AUTHOR
1. GST Refunds	Aditya Singhania
2. GST Guide for students	Aditi Singhania 4 th Edition January 2019
3. GST (Goods and Service Tax) (One nation, one tax, one market)	CA VIVEK KR AGRAWAL CA Suresh Prabhu
4. India GST for Beginners 2 nd Edition	Jayram Hiregange & Deepak Rao
5. The Complete जी एस टी गाईड (हिन्दी में)	ब्रिजेश जायसवाल

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RESEARCH ARTICLE

Aves of Ajanti reservoir region of Wena River, Hinganghat (Wardha) Central India

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ABSTRACT

The investigations on diversity of birds; their habitats, feeding habits and migratory status were carried out in and around the Ajanti Dam area of Hinganghat (Wardha), Central India from April 2015 to March 2017. Total 134 species of birds were recorded belonging to 16 orders viz., Pelecaniformes (03-Species), Ciconiiformes (12-Species), Anseriformes (07-Species), Falconiformes (06-Species), Galliformes (04-Species), Gruiformes (03-Species), Charadriiformes (08-Species), Strigiformes (04-Species), Columbiformes (06-Species), Psittaciformes (03-Species), Cuculiformes (05-Species), Pteroclidiformes (01-Species), Caprimulgiformes (02-Species), Coraciiformes (07-Species), Piciformes (04-Species) and Passeriformes (59-Species). Amongst the recorded species, 7 (5.22%) species are migratory (M), 87 (66.41%) species are Resident (R) and 38 (28.35%) species are Resident migratory (RM). The ecosystems in and around the dam consists of diverse range of habitats; suitable for feeding, resting and roosting sites. The food availability and natural habitat of this region is the main attraction for the bird species. From the observed species most birds observed throughout the year while other is mostly winter migrants. Very rare record of 04 species in particular viz., European white Stork, Brown hawk Owl, Indian eagle Owl and Stork-billed Kingfisher was done.

Keywords: Ajanti Dam, Avifauna, Biodiversity, Birds.

OBSERVATIONS

A total of 134 species of birds belonging to 16 Orders, 48 Families and 104 Genera were recorded during the study. The 3 species belongs to 02 Genera and 01 Family were recorded from the Order Pelecaniformes; 12 species of 11 Genera belongs to 03 Families of Order Ciconiiformes; 07 species recorded from 05 Genera of 01 Family of Order Anseriformes; 06 species of 06 Genera from 02 Families belongs to Order Falconiformes; 04 species of 03 Genera and 01 Family noticed from Order Galliformes; 03 species and 03 Genera of 01 Family were recorded from Order Gruiformes; 08 species from 06 Genera of 04 Families belongs to Order Charadriiformes; 04 species of 04 Genera and 02 Families recorded from Order Strigiformes; 06 species noted from 03 Genera 01 Family of Order Columbiformes; 03 species of 01 genus belongs to Order Psittaciformes; 05 species from 04 genera of 01 family belongs to Order Cuculiformes; 01 species noticed from Order Pteroclidiformes; 02 species

from 01 Genus recorded from Order Caprimulgiformes; 07 species from 06 Genera belongs to 04 families of Order Coraciiformes, 04 species of 03 Genera belongs to 02 Families of Order Piciformes; while from Order Passeriformes a maximum number of 59 species were recorded from 45 Genera belongs to 22 Families (Table 1, Table 2, Figs. 4(I&II)).

In the present report out of 134 bird species, 89 (66.41%) are resident, 38 (28.35%) species are resident migratory and 7 (5.22%) species are migratory; while 102 (76.11%) species are common, 28 (20.89%) are occasional and 4 (2.98%) are rare (Table 1, Table 3).

Some rare species particularly; European White Stork (*Ciconia ciconia*), Indian eagle Owl (*Bubo bengalensis*), Brown Hawk Owl (*Ninox scutulata*), Stork-billed Kingfisher (*Halcyon capensis*) were recorded during the study period.

Table 1:- Checklist of biodiversity of birds in Ajanti dam.

Sr. No.	Order	Family	Common Name	Scientific Name	Status
1	Pelecaniformes (1 Family)	Phalacrocoracidae (2 Genera)	Darter	<i>Anhinga melanogaster</i>	RM, O
			Great Cormorant	<i>Phalacrocorax carbo</i>	RM, O
			Little Cormorant	<i>Phalacrocorax niger</i>	RM, C
2	Ciconiiformes (3 Families)	Ardeidae (9 Genera)	Asian Open bill	<i>Anastomus oscitans</i>	R, C
			Purple Heron	<i>Ardea purpurea</i>	RM, C
			Indian Pond Heron	<i>Ardeola grayii</i>	R, C
			Cattle Egret	<i>Bubulcus ibis</i>	RM, C
			Little Egret	<i>Egretta garzetta</i>	R, C
			Yellow Bittern	<i>Ixobrychus sinensis</i>	RM, C
			Median Egret	<i>Mesophoyx intermedia</i>	RM, C
			Painted Stork	<i>Mycteria leucocephala</i>	RM, O
			Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	R, C
		Ciconiidae (1 Genus)	Woolly-necked Stork	<i>Ciconia episcopus</i>	R, C
			European White Stork	<i>Ciconia ciconia</i>	M, RARE
3	Anseriformes (1 Family)	Anatidae (5 Genus)	Black Ibis	<i>Pseudibis papillosa</i>	R, C
			Northern Pintail	<i>Anas acuta</i>	M, O
			Common Teal	<i>Anas crecca</i>	M, C
			Spot-billed Duck	<i>Anas poecilorhyncha</i>	RM, C
			Lesser Whistling-duck	<i>Dendrocygna javanica</i>	R, C
			Cotton Teal	<i>Nettapus coromandelianus</i>	R, O
			Red-crested Pochard	<i>Rhodoness arufina</i>	M, O
			Ruddy Shelduck	<i>Tadorna ferruginea</i>	RM, O

INTRODUCTION

Birds are adapted to inhabit in a huge range of diverse habitats; from deserts to the open oceans. Amongst about 9,000 species of birds in the world, the Indian subcontinent contains about 1,300 species i.e. occupied with 13% of bird diversity of the world [1]. Climate change affects the biodiversity of a habitat, but it makes an important contribution in migration and adaptation of birds. Birds fulfill many ecological functions in their habitats; for instance, they are bio-indicators of healthy ecosystems and are important markers of environmental quality [2-3]. In addition, insectivorous species and raptors regulate disease vectors, including mosquitoes and rodents. Scavenger birds contribute to biomass recycling and to some degree reduce levels of disposable wastes. Frugivorous birds play an important role in seed dispersal of fleshy fruit-producing plants [4]. Birds are also important in plant pollination as demonstrated by sunbirds, which participate in crossbreeding of flowering plants, especially those with bird-pollination syndrome [5].

Present status of bird diversity has been decreasing due to the destruction to natural habitats and anthropogenic activities [6] [7] [8][9]; thus majority avian species are unknowingly enters to inhabit in the urban areas [10]. Study of birds reveals that there are similar minor but well-marked and readily recognizable differences in size, coloration and other details in those species which range over a wide area and live under diversified natural conditions; these differences should be recognized for study of birds [11].

The investigation was carried in and around Ajanti reservoir of Hinganghat, District Wardha. The dam was constructed on river Wena; one of the major tributary of river Wardha, which occupies a large area of Wainganga basins in central India. The dam is surrounded by the woods, farmlands, aquatic weeds, grassy meadows, bushes which attract the birds for natural habitat. The report finds the current status of avian diversity of Ajanti reservoir region and to prepare an updated checklist of birds for the purpose of conservation of indigenous as well as migratory species inhabit in this area.

METHODOLOGY

The present report is the part of survey conducted to record bird biodiversity of Ajanti dam region, 3 Km distance North-East from Hinganghat, Dist. Wardha. The study of biodiversity of birds was done during the month of April 2015 to March 2017 in the morning and evening hours. Bird watching and recording were done during Sunday and holidays in such a way that there should be least two visits in a month. The record of birds was done according to the Line transect method [12]; [13]) of 0.5 km to 1.5 km length with 50 m to 150 m on either side. The present study is based on 5 line transects to study the birds biodiversity. The birds were observed with the help of binocular and the photographs were captured with SLR cameras (Canon 1100 D; Canon 1200 D). Flash was mostly kept off to capture the natural colour of birds. Spot identification was done by using field guides of Ali [11], Grimmett *et al.* [14]. Birds observed were recorded and identified by the habitat type; ecological status and checklist were prepared.

STUDY AREA

Ajanti dam located geographically 20°35'31"N, 78°52'40"E., elevated 228M (705Ft) and lies 3 Km North-East to Hinganghat, Dist. Wardha; In British India Hinganghat was said to be the Center of Country. At vena river pump house on an historical old stone it was written that "Hinganghat the center of India".

The dam was constructed as a part of irrigation project by government of Maharashtra, India as well as a primary source for drinking water supply to Ajanti village. This dam primarily used for water supply to Hinganghat, irrigation purpose and industries. This region provide rich food sources viz., variety of nectar and seed flora, fruits, insects, beetles, grubs, molluscs, shrimps, crustaceans, tadpoles, fishes, amphibians and reptiles etc. Such fascinating conditions of an ecosystem attract most of the resident and migratory species of bird for feeding as well as nesting (Figs. 3(I-VI). The maximum Summer Temperature reaches to 48° C while it falls to 9° C in the Months of Winter. The annual rain fall measures around 1200 mm.



Fig. 1



Fig. 2

Fig. 1: Map showing study area of Ajanti dam, Tah. Hinganghat, Dist. Wardha, MS, India. (P.C. Google map).

Fig. 2: Map showing Line transect at study area of Ajanti dam. (P.C. Google map).



Fig. 3 (I-VI): Study area showing different habitats of the Ajanti dam Hinganghat, Dist. Wardha, Maharashtra, India

OBSERVATIONS

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from 01 Genus recorded from Order Caprimulgiformes; 07 species from 06 Genera belongs to 04 families of Order Coraciiformes; 04 species of 03 Genera belongs to 02 Families of Order Piciformes; while from Order Passeriformes a maximum number of 59 species were recorded from 45 Genera belongs to 22 Families (Table 1, Table 2, Figs. 4(I&II)).

In the present report out of 134 bird species, 89 (66.41%) are resident, 38 (28.35%) species are resident migratory and 7 (5.22%) species are migratory; while 102 (76.11%) species are common, 28 (20.89%) are occasional and 4 (2.98%) are rare (Table 1, Table 3).

Some rare species particularly; European White Stork (*Ciconia ciconia*), Indian eagle Owl (*Bubo bengalensis*), Brown Hawk Owl (*Ninox scutulata*), Stork-billed Kingfisher (*Halcyon capensis*) were recorded during the study period.

Table 1:- Checklist of biodiversity of birds in Ajanti dam.

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1	Pelecaniformes (1 Family)	Phalacrocoracidae (2 Genera)	Darter	<i>Anhinga melanogaster</i>	RM, O
			Great Cormorant	<i>Phalacrocorax carbo</i>	RM, O
			Little Cormorant	<i>Phalacrocorax niger</i>	RM, C
2	Ciconiiformes (3 Families)	Ardeidae (9 Genera)	Asian Open bill	<i>Anastomus oscitans</i>	R, C
			Purple Heron	<i>Ardea purpurea</i>	RM, C
			Indian Pond Heron	<i>Ardeola grayii</i>	R, C
			Cattle Egret	<i>Bubulcus ibis</i>	RM, C
			Little Egret	<i>Egretta garzetta</i>	R, C
			Yellow Bittern	<i>Ixobrychus sinensis</i>	RM, C
			Median Egret	<i>Mesophoyx intermedia</i>	RM, C
			Painted Stork	<i>Mycteria leucocephala</i>	RM, O
			Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	R, C
		Ciconiidae (1 Genus)	Woolly-necked Stork	<i>Ciconia episcopus</i>	R, C
			European White Stork	<i>Ciconia ciconia</i>	M, RARE
3	Anseriformes (1 Family)	Anatidae (5 Genus)	Black Ibis	<i>Pseudibis papillosa</i>	R, C
			Northern Pintail	<i>Anas acuta</i>	M, O
			Common Teal	<i>Anas crecca</i>	M, C
			Spot-billed Duck	<i>Anas poecilorhyncha</i>	RM, C
			Lesser Whistling-duck	<i>Dendrocygna javanica</i>	R, C
			Cotton Teal	<i>Nettapus coromandelianus</i>	R, O
			Red-crested Pochard	<i>Rhodoness arufina</i>	M, O
			Ruddy Shelduck	<i>Tadorna ferruginea</i>	RM, O

4	Falconiformes (2 Families)	Accipitridae (5 Genara)	Shikra	<i>Accipiter badius</i>	R, C
			Black-shouldered Kite	<i>Elanus caeruleus</i>	R, C
			Black kite	<i>Milvus migrans</i>	RM, C
			Oriental Honey-buzzard	<i>Pernis ptilorhynchus</i>	RM, C
			Crested Serpent Eagle	<i>Spilornis cheela</i>	R, C
5	Galliformes (1 Family)	Phasianidae (3 Genara)	Common Kestrel	<i>Falco tinnuculus</i>	RM, C
			Common Quail	<i>Coturnix coturnix</i>	RM, C
			Painted Francolin	<i>Francolinus pictus</i>	R, C
			Grey Francolin	<i>Francolinus pondicerianus</i>	R, C
			Indian Peafowl	<i>Pavo cristatus</i>	R, C
6	Gruiformes (1 Family)	Rallidae (3 Genara)	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	R, C
			Common Moorhen	<i>Gallinula chloropus</i>	RM, C
			Purple Moorhen	<i>Porphyrio porphyrio</i>	R, C
7	Charadriiformes (4 families)	Charadriidae (2 Genara)	Little Ringed Plover	<i>Charadrius dubius</i>	RM, C
			Red-wattled Lapwing	<i>Vanellus indicus</i>	R, C
			Yellow-wattled Lapwing	<i>Vanellus malarbaricus</i>	R, C
		Scopacidae (2 Genara)	Common Sandpiper	<i>Actitis hypoleucos</i>	RM, C
			Wood Sandpiper	<i>Tringa glareola</i>	M, O
			Green Sandpiper	<i>Tringa ocropus</i>	R, O
		Recurvirostridae (1 Genus)	Black-winged Stilt	<i>Himantopus himantopus</i>	R, C
8	Strigiformes (2 Families)	Strigidae (3 Genara)	River Tern	<i>Sterna aurantia</i>	R, O
			Spotted Owlet	<i>Athene brama</i>	R, C
			Indian eagle Owl	<i>Bubo bengalensis</i>	R, RARE
			Brown Hawk Owl	<i>Ninox scutulata</i>	R, RARE
		Tytonidae (1 Genus)	Barn Owl	<i>Tyto alba</i>	R, C
9	Columbiformes (1 Family)	Columbidae (3 Genara)	Blue rock Pigeon	<i>Columba livia</i>	R, C
			Spotted Dove	<i>Streptopelia chinensis</i>	R, C
			Eurasian Collared Dove	<i>Streptopelia decaocto</i>	R, C
			Little Brown Dove	<i>Streptopelia senegalensis</i>	R, C
			Red Collared Dove	<i>Streptopelia tranquebarica</i>	R, O
			Yellow-footed Green Pigeon	<i>Treron phoenicoptera</i>	RM, C
10	Psittaciformes (1 Family)	Psittacidae (1 Genus)	Plum-headed Parakeet	<i>Psittacula cyanocephala</i>	R, C
			Alexandrine Parakeet	<i>Psittacula eupatria</i>	R, C
			Rose ringed Parakeet	<i>Psittacula krameri</i>	R, C
11	Cuculiformes (1 Family)	Cuculidae (4 Genara)	Greater Coucal	<i>Centropus sinensis</i>	R, C
			Pied Crested Cuckoo	<i>Clamator jacobinus</i>	RM, O
			Common Cuckoo	<i>Cuculus canorus</i>	RM, C
			Indian Cuckoo	<i>Cuculus micropterus</i>	RM, C

			Asian Koel	<i>Eudynamis scolopacea</i>	R, C
12	Pteroclidiformes (1 Family)	Pteroclididae (1 Genus)	Painted Sandgrouse	<i>Pterocles indicus</i>	R, C
13	Caprimulgiformes (1 Family)	Caprimulgidae (1 Genus)	Indian Nightjar	<i>Caprimulgus asiaticus</i>	R, C
			Jungle Nightjar	<i>Caprimulgus indicus</i>	RM, C
14	Coraciiformes (4 Families)	Alcedinidae (3 Genara)	Small Blue Kingfisher	<i>Alcedo atthis</i>	RM, C
			Pied Kingfisher	<i>Ceryle rudis</i>	R, C
			White-breasted Kingfisher	<i>Halcyon smyrnensis</i>	R, C
			Stork-billed Kingfisher	<i>Halcyon capensis</i>	R,RARE
		Meropidae (1 Genus)	Small Bee-eater	<i>Merops orientalis</i>	R,C
		Upupidae (1 Genus)	Common Hoopoe	<i>Upupa epops</i>	RM, C
		Coraciidae (1 Genus)	Indian Roller	<i>Coracias benghalensis</i>	R, C
15	Piciformes (2 Families)	Picidae (2 Genara)	Yellow-crowned Woodpecker	<i>Dendrocopos mahrattensis</i>	R, C
			Black-rumped Flameback Woodpecker	<i>Dinopium benghalense</i>	R, C
			Common Flameback	<i>Dinopium javanense</i>	R, C
		Capitonidae (1 Genus)	Coppersmith Barbet	<i>Megalaima haemacephala</i>	R, C
16	Passeriformes (22 Families)	Alaudidae (3 Genara)	Rufous-tailed Finch Lark	<i>Ammomanes phoenicura</i>	R, C
			Ashy-crowned Sparrow Lark	<i>Eremopterix grisea</i>	R, C
			Syke's Crested Lark	<i>Galerida deva</i>	R, C
		Hirundinidae (1 genus)	Red-rumped Swallow	<i>Hirundo daurica</i>	RM, C
			Common Swallow	<i>Hirundo rustica</i>	RM, C
			Wire-tailed Swallow	<i>Hirundo smithii</i>	R, C
		Dicruridae (1 Genus)	Black Drongo	<i>Dicrurus macrocercus</i>	R, C
		Laniidae (1 Genus)	Rufous Backed Shrike	<i>Lanius schach</i>	R, C
			Bay-backed Shrike	<i>Lanius vittatus</i>	RM, C
		Oriolidae (1 Genus)	Eurasian Golden Oriole	<i>Oriolus oriolus</i>	RM, C
		Sturnidae (2 Genara)	Common Myna	<i>Acridotheres tristis</i>	R, C
			Asian Pied Starling	<i>Sturnus contra</i>	R, O
			Brahminy Starling	<i>Sturnus pagodarum</i>	R, C
			Rosy Starling	<i>Sturnus roseus</i>	M, O
		Corvidae (2 Genara)	House Crow	<i>Corvus splendens</i>	R, C
			RufousTreepie	<i>Dendrocitta vagabunda</i>	R, C
		Campephagidae (1 Genus)	Small Minivet	<i>Pericrocotus cinnamomeus</i>	R, C
		Irenidae (2 Genara)	Common Iora	<i>Aegithina tithia</i>	R, C
			Red-vented Bulbul	<i>Pycnonotus cafer</i>	R, C

		White-browed Bulbul	<i>Pycnonotus luteolus</i>	R, O
	Timaliidae (3 Genara)	Yellow-eyed Babbler	<i>Chrysomma sinense</i>	R, C
		Common Babbler	<i>Turdoides caudata</i>	R, C
		Large Grey Babbler	<i>Turdoides malcolmi</i>	R, C
		Jungle Babbler	<i>Turdoides striata</i>	R, C
		Rufous-bellied Babbler	<i>Dumetia hyperythra</i>	R, C
	Monarchidae (2 Genara)	White-throated Fantail	<i>Rhipidura albicollis</i>	R, O
		Asian Paradise-flycatcher	<i>Terpsiphone paradisi</i>	RM, O
	Sylviidae (4 Genara)	Blyth's Reed Warbler	<i>Acrocephalus dumetorum</i>	RM, O
		Common Tailorbird	<i>Orthotomus sutorius</i>	R, C
		Plain Prinia	<i>Prinia inornata</i>	R, C
		Ashy Prinia	<i>Prinia socialis</i>	R, C
		Common Lesser Whitethroat	<i>Sylvia curruca</i>	M, O
	Turdidae (7 Genus)	Brown Rock-Chat	<i>Cercomela fusca</i>	R, O
		Oriental Magpie Robin	<i>Copsychus saularis</i>	R, C
		Bluethroat	<i>Luscinia svecica</i>	RM, O
		Black Redstart	<i>Phoenicurus ochruros</i>	RM, C
		Pied Bushchat	<i>Saxicola caprata</i>	R, C
		Indian Robin	<i>Saxicoloides fulicata</i>	R, C
		Orange-headed Thrush	<i>Zoothera citrina</i>	RM, O
	Motacillidae (2 Genara)	White Wagtail	<i>Motacilla alba</i>	RM, C
		Citrine Wagtail	<i>Motacilla citreola</i>	RM, O
		Large Pied Wagtail	<i>Motacilla maderaspatensis</i>	R, C
		Yellow Wagtail	<i>Motacilla flava</i>	RM, C
		Paddy field Pipit	<i>Anthus rufulus</i>	R, C
	Zosteropidae (1 Genus)	Oriental White-Eye	<i>Zosterops palpebrosus</i>	R, C
	Nectarinidae (1 Genus)	Purple Sunbird	<i>Nectarinia asiatica</i>	R, C
		Purple-rumped Sunbird	<i>Nectarinia zeylonica</i>	R, C
	Ploceidae (2 Genara)	House Sparrow	<i>Passer domesticus</i>	R, C
		Baya Weaver	<i>Ploceus philippinus</i>	R, C
	Estrildidae (2 Genara)	Red Munia	<i>Amandava amandava</i>	R, C
		Indian Silverbill	<i>Lonchura malabarica</i>	R, C
		Scaly-breasted Munia	<i>Lonchura punctulata</i>	R, C
	Tephrodornithidae (1 Genus)	Common Woodshrike	<i>Tephrodornis pondicerianus</i>	R, C
	Pittidae (1 Genus)	Indian Pitta	<i>Pitta brachyura</i>	R, O
	Muscicapidae (4 Genara)	Tickell's Blue Flycatcher	<i>Cyornis stickelliae</i>	R, O
		Blue Rock Thrush	<i>Monticola solitarius</i>	RM, O
		Verditer Flycatcher	<i>Eumyias thalassina</i>	R, O
		Common Stonechat	<i>Saxicola torquata</i>	RM, C
	Stenostriridae (1 Genus)	Grey headed Canary Flycatcher	<i>Culicicapa ceylonensis</i>	R, O
	Orders- 16	Families- 48	No. Of bird species-134	No. Of bird genera-104

R- Resident; RM- Resident migratory; M- Migratory; C-Common; O-Occasional; RARE.



Fig.5-12. 5) Darter (*Anhinga melanogaster*), 6) Great Cormorant (*Phalacrocorax carbo*), 7) Little Cormorant (*Phalacrocorax niger*), 8) Asian open bill stork (*Anastomus oscitans*), 9) Purple Heron (*Ardea purpurea*), 10) Indian pond heron (*Ardeola grayii*), 11) Cattle egret (*Bubulcus ibis*), 12) Little egret (*Egretta garzetta*).



Fig.13-20. 13) Yellow Bittern (*Ixobrychus sinensis*), 14) Median egret (*Mesophoyx intermedia*), 15) Black crowned night heron (*Nycticorax nycticorax*), 16) White Necked Stork (*Ciconia episcopus*), 17) European White Stork (*Ciconia ciconia*), 18) Shikra (*Accipiter badius*), 19) Black kite (*Milvus migrans*), 20) Oriental Honey-buzzard (*Pernis ptilorhyncus*).

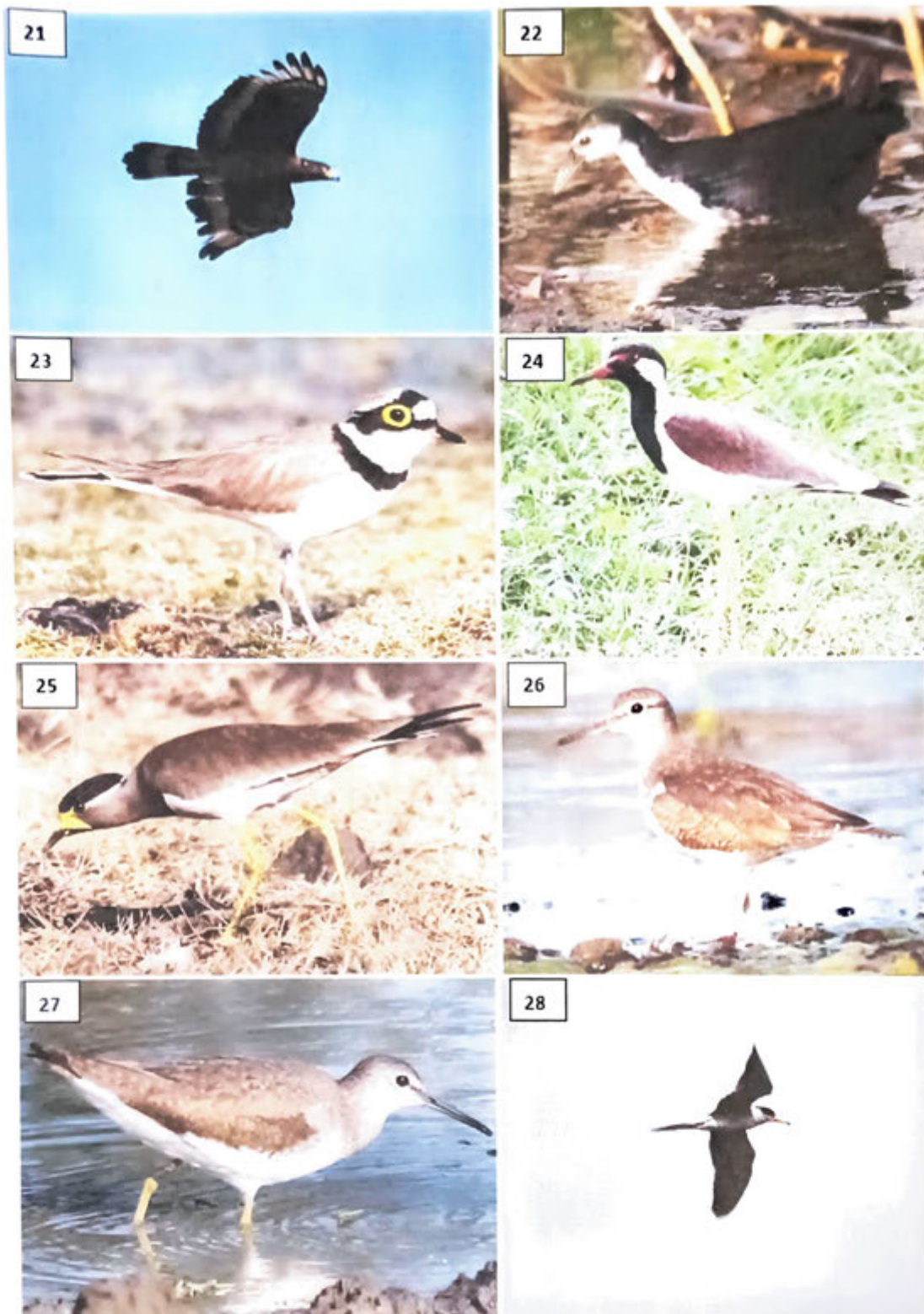


Fig.21-28. 21) Crested serpent eagle (*Spilornis cheela*), 22) White breasted waterhen (*Amaurornis phoenicurus*), 23) Little Ringed Plover (*Charadrius dubius*), 24) Red-wattled Lapwing (*Vanellus indicus*), 25) Yellow-wattled lapwing (*Vanellus malabaricus*), 26) Common Sandpiper (*Actitis hypoleucos*), 27) Wood Sandpiper (*Tringa glareola*), 28) River Tern (*Sterna aurantia*),

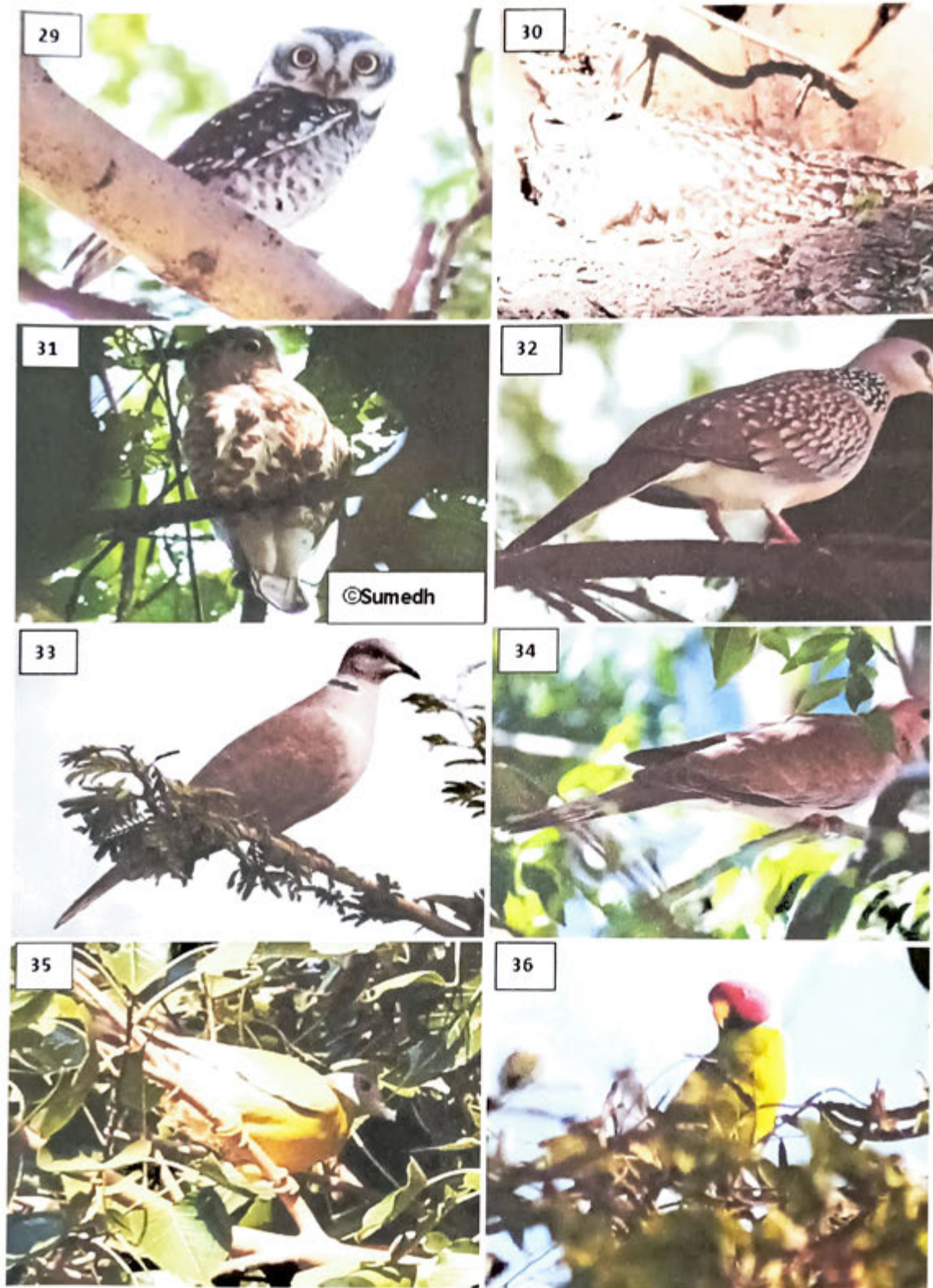


Fig.29-36. 29) Spotted owllet (*Athene brama*), 30) Indian eagle Owl (*Bubo bengalensis*), 31) Brown Hawk Owl (*Ninox scutulata*), 32) Spotted dove (*Streptopelia chinensis*), 33) Eurasian collared dove (*Streptopelia decaocto*), 34) Little brown dove (*Streptopelia senegalensis*), 35) Yellow footed Green Pigeon (*Treron phoenicoptera*), 36) Plum headed parakeet (*Psittacula cyanocephala*),

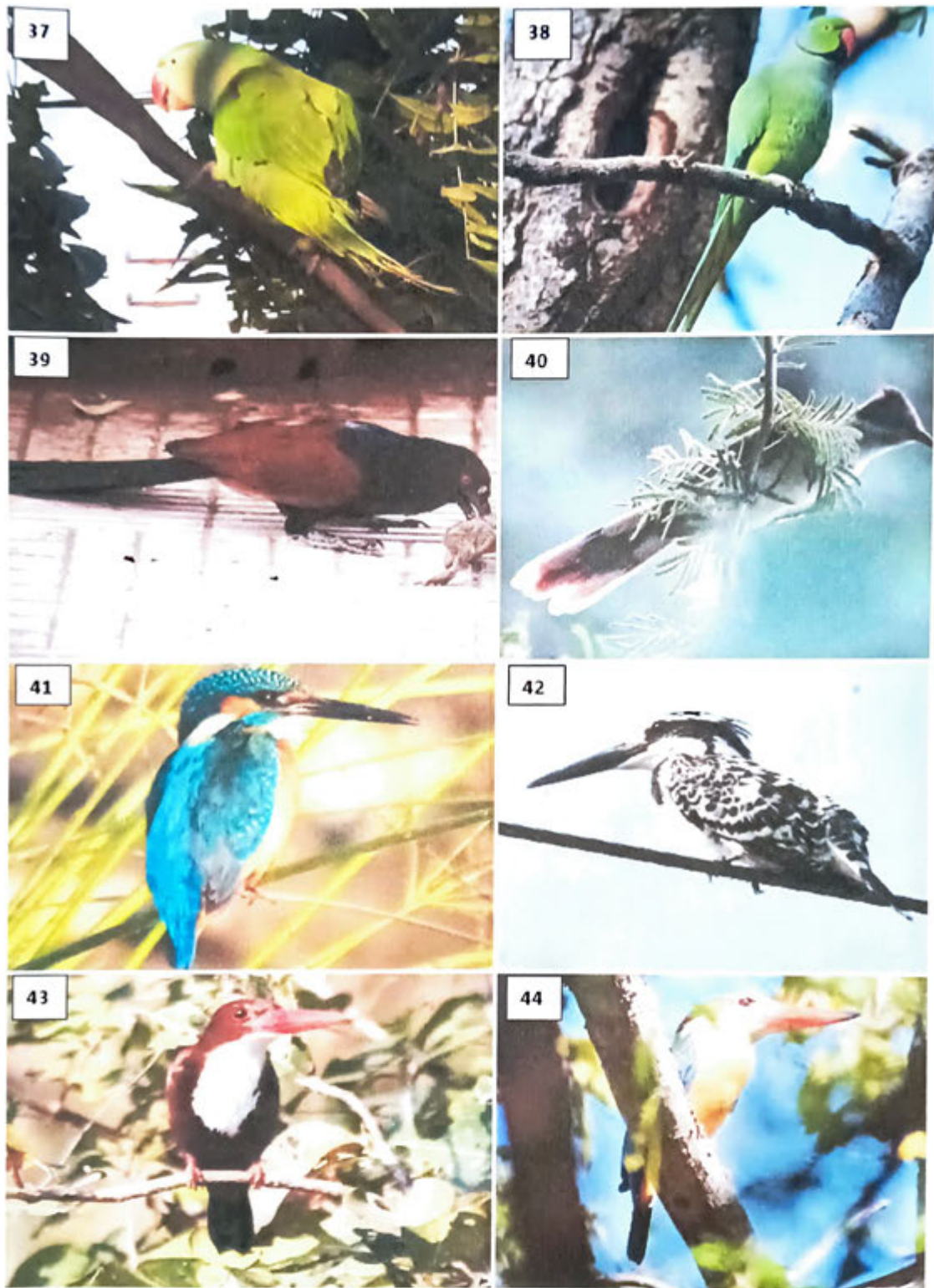


Fig.37-44. 37) Alexandrine parakeet (*Psittacula eupatria*), 38) Rose ringed Parakeet (*Psittacula krameri*), 39) Greater coucal (*Centropus Sinensis*), 40) Pied crested cuckoo (*Clamator jacobinus*), 41) Small blue kingfisher (*Alcedo atthis*), 42) Lesser pied kingfisher (*Ceryle rudis*), 43) White-breasted kingfisher (*Halcyon smyrnensis*), 44) Stork billed Kingfisher (*Halcyon capensis*).



Fig.45-52. 45) Small bee-eater (*Meropus orientalis*), 46) Common hoopoe (*Upupa epops*), 47) Indian roller (*Coracias benghalensis*), 48) Yellow-crowned Woodpecker (*Dendrocopos mahrattensis*), 49) Lesser golden backed woodpecker (*Dinopium benghalense*), 50) Coppersmith barbet (*Megalaima haemacephala*), 51) Rufous-tailed Finch Lark (*Ammomanes phoenicura*), 52) Ashy-crowned Sparrow Lark (*Eremopterix griseus*),



Fig.53-60. 53) Wire tailed Swallow (*Hirundo smithii*), 54) Black Drongo (*Dicrurus macrocercus*), 55) Rufous Backed Shrike (*Lanius schach*), 56) Eurasian Golden Oriole (*Oriolus oriolus*), 57) Common myna (*Acridotheres tristis*), 58) Brahminy starling (*Sturnus pagodarum*), 59) House Crow (*Corvus splendens*), 60) Rufous Treepie (*Dendrocitta vagabunda*).



Fig.61-68. 61) Small Minivet (*Pericrocotus cinnamomeus*), 62) Common Iora (*Aegithina tiphia*), 63) Red vented bulbul (*Pycnonotus cafer*), 64) White-browed Bulbul (*Pycnonotus sluteolus*), 65) Yellow-eyed Babbler (*Chrysomma sinense*), 66) Common Babbler (*Turdoides caudatus*), 67) Large Grey Babbler (*Turdoides malcolmi*), 68) Jungle Babbler (*Turdoides striatus*).



Fig.69-76. 69) Rufous bellied Babbler (*Dumetia hyperythra*), 70) Asian Paradise-flycatcher (*Terpsiphone paradisi*), 71) Blyth's Reed Warbler (*Acrocephalus dumetorum*), 72) Common Tailorbird (*Orthotomus sutoris*), 73) Plain prinia (*Prinia inornata*), 74) Ashy prinia (*Prinia socialis*), 75) Oriental magpie robin (*Copsychus saularis*), 76) Bluethroat (*Luscinia svecica*).

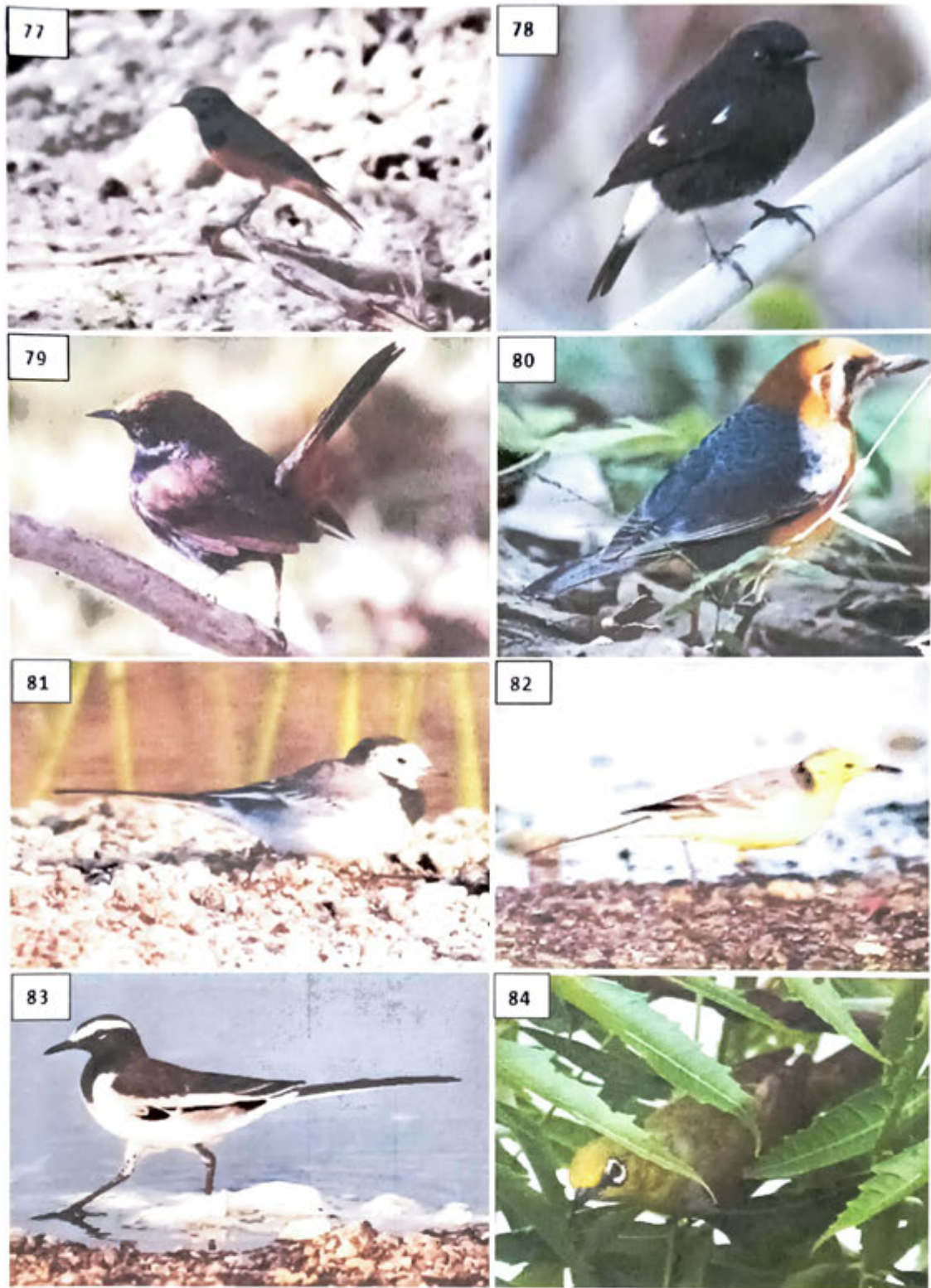


Fig.77-84. 77) Black redstart (*Phoenicurus ochruros*), 78) Pied Bushchat (*Saxicola carpata*), 79) Indian robin (*Saxicoloides fulicata*), 80) Orange headed thrush (*Zoothera citrine*), 81) White wagtail (*Motacilla alba*), 82) Citrine wagtail (*Motacilla citreola*), 83) Large pied wagtail (*Motacilla maderaspatensis*), 84) Oriental White-Eye (*Zosterops palpebrosus*),

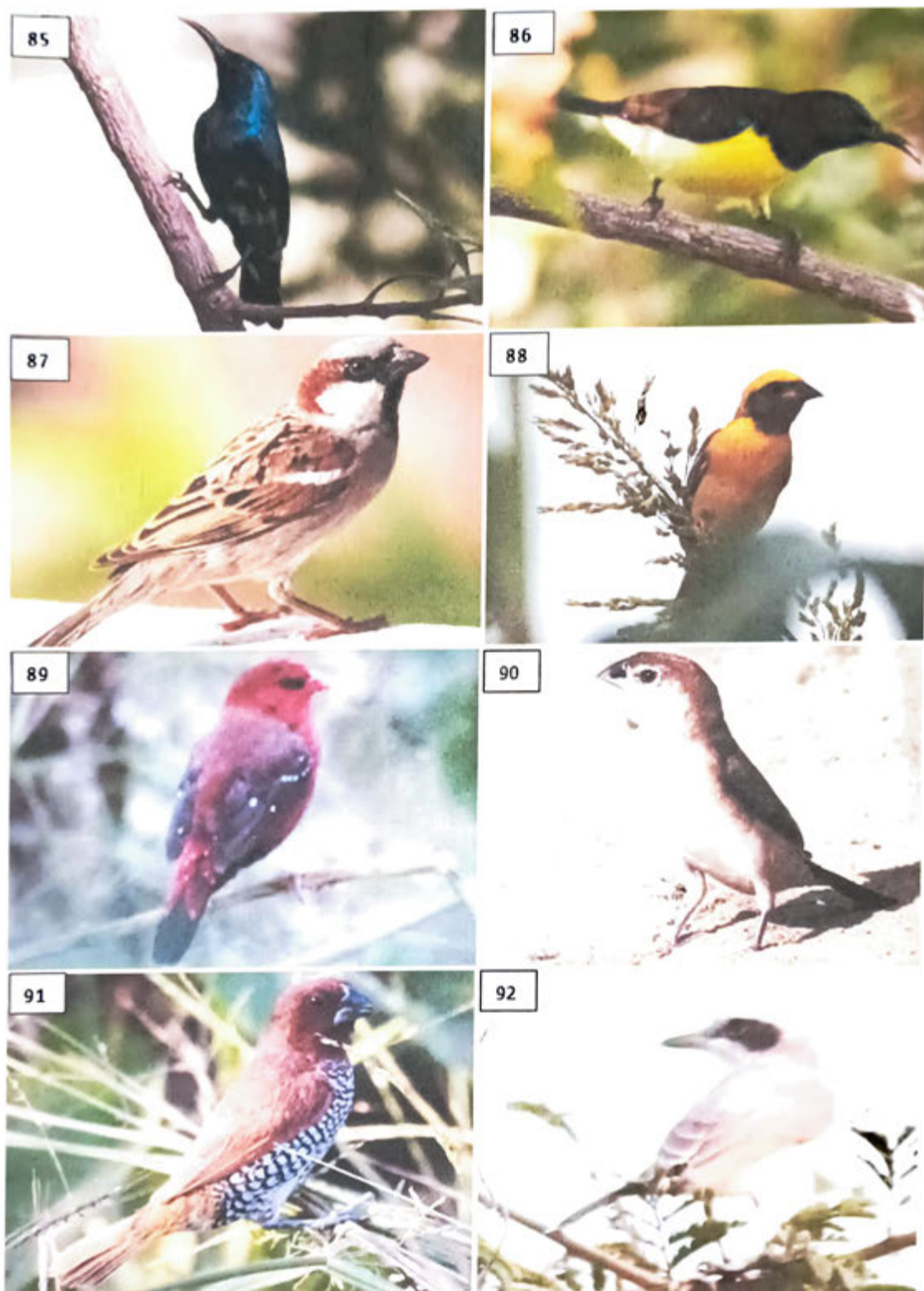


Fig.85-92. 85) Purple Sunbird (*Nectarinia asiatica*), 86) Purple-rumped Sunbird (*Nectarinia zeylonica*), 87) House Sparrow (*Passer domesticus*), 88) Baya Weaver (*Ploceus philippinus*), 89) Red Munia (*Amandava amandava*), 90) Indian Silverbill (*Lonchura malabarica*), 91) Scaly-breasted Munia (*Lonchura punctulata*), 92) Common woodshrike (*Tephrodornis pondicerianus*).

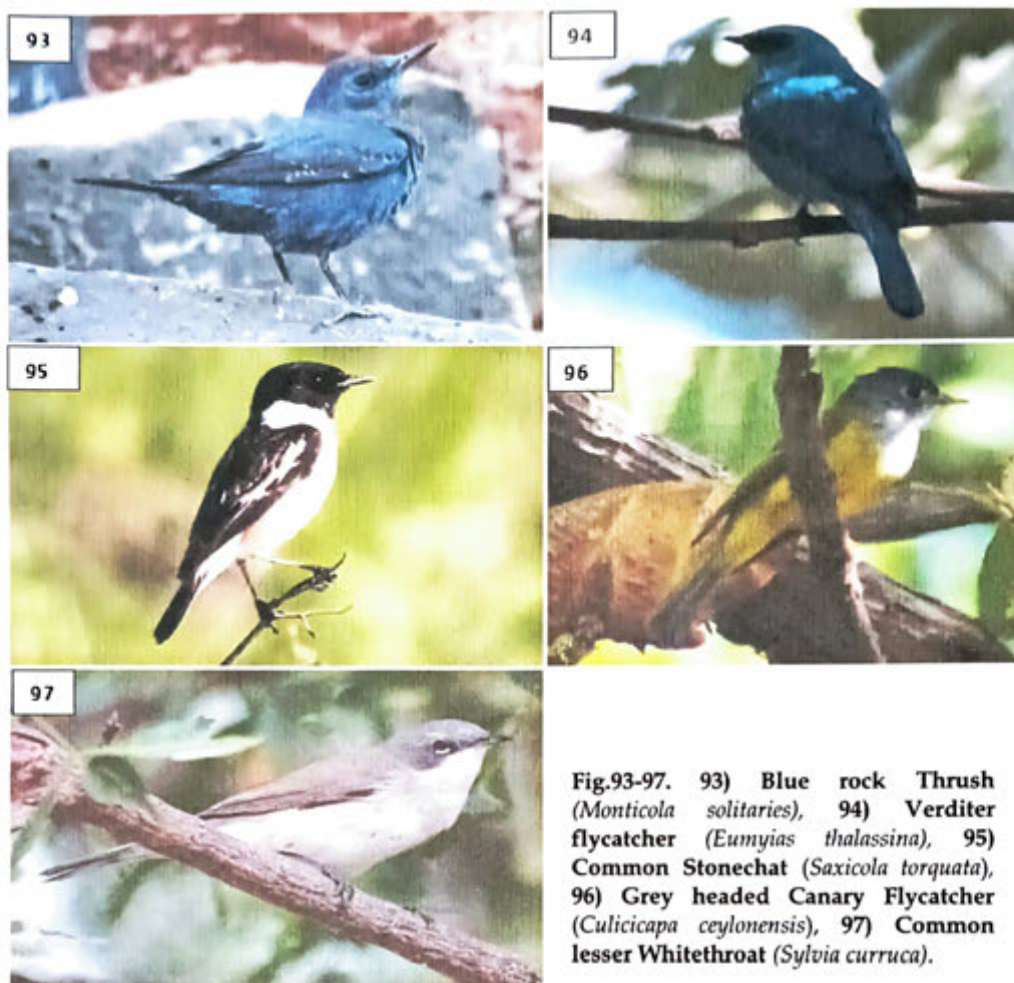


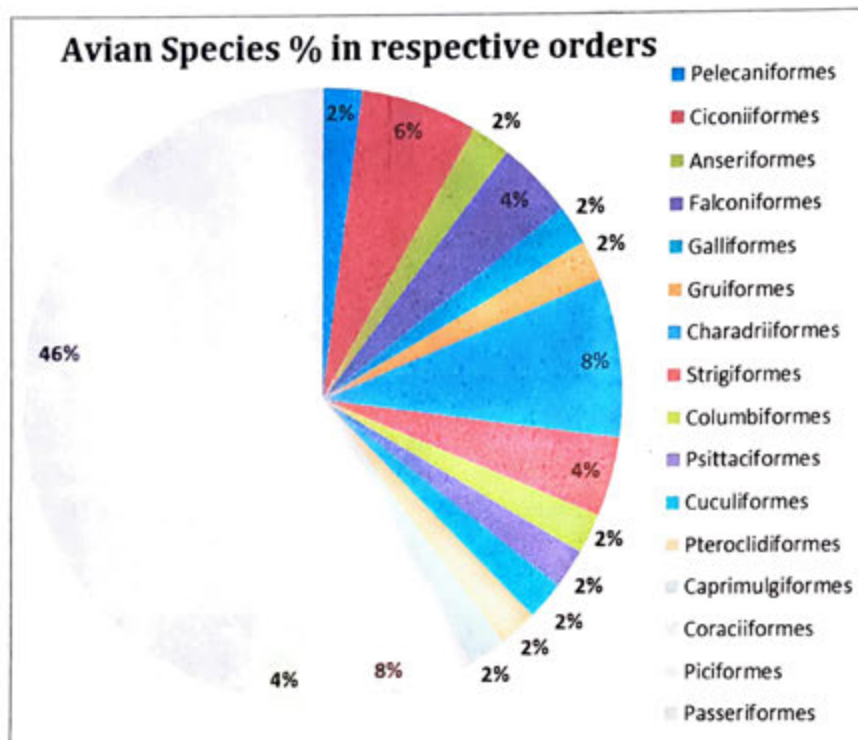
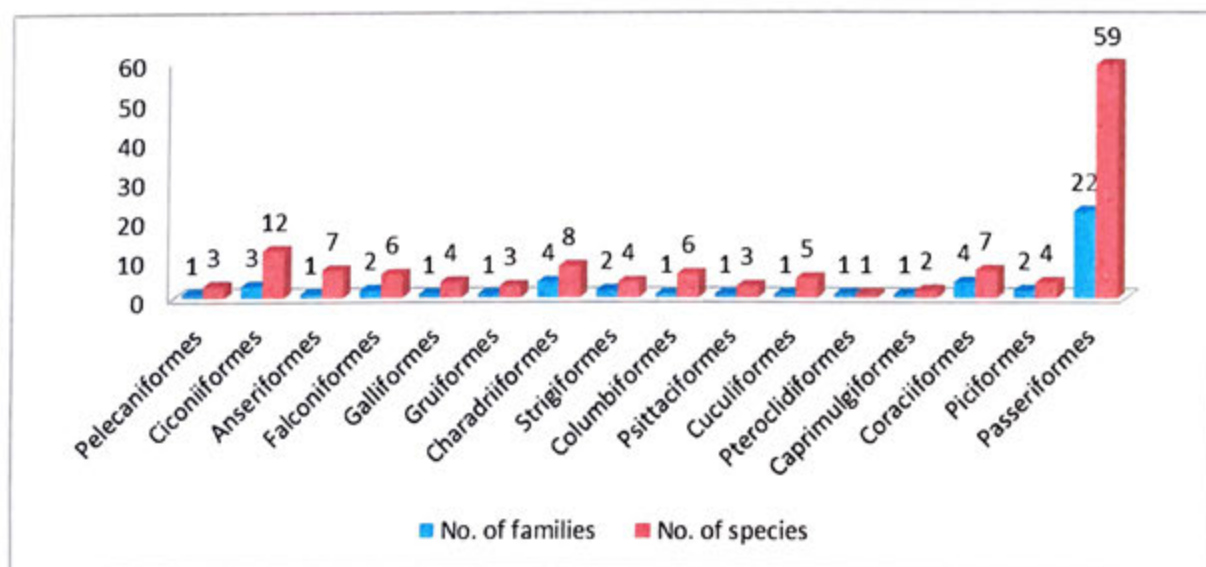
Fig.93-97. 93) Blue rock Thrush (*Monticola solitaries*), 94) Verditer flycatcher (*Eumyias thalassina*), 95) Common Stonechat (*Saxicola torquata*), 96) Grey headed Canary Flycatcher (*Culicicapa ceylonensis*), 97) Common lesser Whitethroat (*Sylvia curruca*).

Table 2:- Biodiversity of birds in respective orders.

Sr.No.	Order	No. of families	No. of Genera	No. of species
1	Pelecaniformes	01	02	03
2	Ciconiiformes	03	11	12
3	Anseriformes	01	05	07
4	Falconiformes	02	06	06
5	Galliformes	01	03	04
6	Gruiformes	01	03	03
7	Charadriiformes	04	06	08
8	Strigiformes	02	04	04
9	Columbiformes	01	03	06
10	Psittaciformes	01	01	03
11	Cuculiformes	01	04	05
12	Pteroclidiformes	01	01	01
13	Caprimulgiformes	01	01	02
14	Coraciiformes	04	06	07
15	Piciformes	02	03	04
16	Passeriformes	22	45	59
Total	16	48	104	134

Table 3:- Status of birds.

Sr.No.	Status of birds	No. Of bird species	% of bird species
1	Resident	89	66.41 %
2	Resident migratory	38	28.35 %
3	Migratory	07	5.22 %
		134	100.00 %

**Fig. 4(I): To show avian species percentage in respective orders.****Fig. 4(II): To show avian species and family diversity in respective orders.**

DISCUSSION

The survey was conducted to record biodiversity and the ecological status of birds from Ajanti dam region, 3 Km distance North-East from Hinganghat, Dist. Wardha, Maharashtra of central India. In present report a total of 134 species birds were recorded from 16 orders and 48 Families. Out of 134 bird species 89 (66.41%) are resident, 38 (28.35%) species are resident migratory, 7 (5.22%) species are migratory and the order Passeriformes is the largest order which covered 20 families out of 48. Out of 134 bird species, 102 (76.11%) species are common, 28 (20.89%) are occasional and 4 (2.98%) are rare. The report co-incudes Shende and Patil [16]; they were recorded 190 species from 17 orders and 51 families in Gorewada International Biopark, Nagpur of central India. Out of which 89 species are resident, 77 species are resident migratory and 24 were migratory species and the order Passeriformes is the largest order which covered 20 families out of 51. Wanjari et al. [9] were recorded 158 species from 46 Families in Tipleshwar wildlife sanctuary, Maharashtra. Out of which 129 species are resident, 12 are resident migrant and 17 are migrant. Chavan et al. [3] were recorded 168 species from 53 Family and 15 order from Godawari River Basin in Nanded district. They also noticed maximum number of species from Order Passeriformes which counts 73. Joshi et al. [15] examined 146 species from 46 families of 16 Orders within different habitats of Kernala bird sanctuary, Maharashtra. They noticed that the species richness was highest in deciduous forest habitats (40) where it was lowest in rocky habitats (17). In the region of Singhori wildlife sanctuary, Raisen district of Madhya Pradesh, Talmale et al. [17] recorded 173 species of birds from 16 orders and 49 families. Patil [18] recorded A total of 159 species of birds belonging to 17 orders and 60 families form Urban Wetlands of Kolhapur.

The observations of above studies are typically similar to the investigation in present report; which shows the resident birds are predominant than the resident migratory and migratory birds. The birds are seen in all the three seasons but mostly in winter season and less in summer season because of scarcity of food. All above studies indicates the rich avifaunal diversity in the central part of India. The region gifted with diverse range of healthy habitats and ecosystems to provide place for nesting, breeding, feeding and shelter etc. [19].

It is noticed that the birds like kingfisher, swifts and kites are always seen flying in separate companies while swallows, babblers and quails are seen in mixed companies. White-browed Fantail, Flycatchers and Sunbirds are particularly observed during the migration months.

The species of Wagtails, Cuckoos, Bee eaters, Flycatchers, Warblers, Robins, Lapwings, Drongos were observed of which food was basically insects, grubs, beetles, midges, flies grasshoppers etc. Piscivorous birds like Kingfishers, Egrets and Pond herons, bird species are also observed near wetland habitats as their chief food like insects, crustaceans, tadpoles and small amphibians was flourished in this area. Carnivorous species as Kites, Shikra and Shrike were observed to feed upon grasshoppers, snails, crabs, frogs, snakes, hatchlings of birds.

Omnivorous birds eg. Larks, Mynas, Babblers, Asian koel, Red vented bulbul, Rufous tree pie noticed as resident species. Their chief food was consists of grains, fruits and small invertebrates. Sparrows and Bush chats were common and observed frequently.

In winter season when there was flowering and fruiting, frugivorous species i.e. Parakeets, Coppersmith barbets were observed to be feeding on various fruits like guava, custard apple, berries, wild fig and their fruit buds. Small nectar feeder species like Oriental white eye, Purple sunbird and Purple rumped sunbirds were observed while feeding on nectar and pollen grains from different varieties of flowers. A few rare species as European White Stork (*Ciconia ciconia*), Indian eagle Owl (*Bubo bengalensis*), Brown Hawk Owl (*Ninox scutulata*), Stork-billed Kingfisher (*Halcyon capensis*) were recorded during the study. The nesting of rare species such as Indian eagle owl was found containing 3 eggs.

CONCLUSION

Ajanti dam is a healthy natural habitat adds hilly terrain and Forest which is rich in food resource like nectar and seed flora, fruits, insects, beetles, grubs. Aquatic fauna includes micro and macro-organisms, shrimps, molluscs, crustaceans, tadpoles, fishes and amphibians, protein rich invertebrates and other food also attract bird species for feeding, breeding and nesting. This study contributes to the knowledge of bird diversity in Ajanti dam and provides the most recent status of bird diversity. This

study of biodiversity of birds will be helpful in the protection and conservation of threatened and vulnerable birds.

Out of 134 bird species 89 (66.41%) are resident, 38 (28.35%) species are resident migratory, 7 (5.22%) species are migratory and the order Passeriformes is the largest order which covered 20 families out of 48. Out of 134 bird species, 102 (76.11%) species are common, 28 (20.89%) are occasional and 4 (2.98%) are rare. During the study we found 4 rare species such as Brown hawk Owl, Indian eagle Owl (Nesting has 3 eggs), Stork-billed Kingfisher and European white Stork, which shows ecological health of Ajanti dam.

This study will be helpful to obtain information of staging, feeding, and breeding area of resident and migratory birds, areas of migratory birds. The report will help for protection and conservation of birds in the region of Ajanti wetlands.

REFERENCES

- Grimmett R, Inskipp C and Inskipp T. Annotated checklist of the Oriental region. Oriental Bird club, UK, 1998a.
- Mistry J, Berardi A and Simpson M. Birds as indicators of wetland status and change in the North Rupununi, Guyana, *Biodiversity and Conservation*, 2008, 17 (10): 2383-2409.
- Chavan SP, Dudhmal D, Hambarde S and Kulkarni AN. Birds from Godawari River Basin in Nanded district of Maharashtra state. India: Annotated status and new records. *Int. Jour. Curr. Res. Acad. Rev.*, 2015, 3(4): 328-351.
- Stevenson T and Fanshawe J. Field Guide to the Birds of East Africa: Kenya, Tanzania, Uganda, Rwanda, Burundi, T & A D Poyser, London, UK, 2002.
- Judd WS, Campbell CS, Kellogg EA, Stevens PF and Donoghue MJ. Plant Systematics: A Phylogenetic Approach, Sinauer Associates, Sunderland, Mass, USA, 3rd edition, 2008.
- Grewal B. Birds of the Indian Subcontinent." Publisher: Local Colour Ltd. Quarry Bay Hong Kong. 2000, PP 213.
- Patil KG and Tijare RV. Study of Feeding Habits of Avifauna in Vicinity of Gorewada Lake, Nagpur, Maharashtra (India). *Bionano Frontier*, Special issue, 2012, 9:112-114.
- Patil KG and Tijare RV. Study of Avifauna in Visited to Borgaon Region of Nagpur, Maharashtra, India." In Impact of Global Climate Change on Earth Ecosystems. (Khanna D. R. et al. Eds.) Biotech Books New Delhi. 2013, Chapter-28, PP 223-240.
- Wanjari AJ, Pawar SS and Patil KG. Birds of Tipeshwar wildlife Sanctuary, Maharashtra, India. *International Research Journal of Science and Engineering*, 2013, 1(3): 79-84.
- Dayananda GY. Avifaunal Diversity of Gudavi Bird Sanctuary, Sorab, Shimoga, Karnataka. *Our Nature*, 2009, 7:100-109.
- Ali S. The book of Indian birds," Thirteenth Revised Edition, BNHS, Oxford University Press, Mumbai, 2001.
- Pollard E, Yates TJ. Monitoring Butterflies for Ecology and Conservation. Chapman & Hall, London, UK, 1993.
- Caldas A, Robbins R. Modified Pollard transects for assessing tropical butterfly abundance and diversity. *Biological Conservation*, 2003, 110: 211-219.
- Grimmett R, Inskipp C and Inskipp T. Birds of the Indian Subcontinent." London: Christopher Helm, 1998b.
- Joshi P, Raut N, Khanolkar C and Kumar P. Avifaunal distribution within different habitat of Karnala bird sanctuary, Maharashtra, 2013.
- Talmale SS, Limje ME and Sambath S. Avian diversity of Singhori wildlife sanctuary, Raisen District, Madhya Pradesh, 2012.
- Patil KG, Dabrase D and Shende VA. Birds of Rawanwadi Region Bhandara, Central India. *Malaysian Journal of Medical and Biological Research*, 2016, 3(3): 109-116.
- Patil Nachiket Suryakant. Avifauna and Comparative Study of Threatened Birds at Urban Wetlands of Kolhapur, Maharashtra, India; *International J. of Life Sciences*, 2017, 5 (4): 649-660.
- Shende VA and Patil KG. Richness of Avifauna in Gorewada International Bio-Park, Nagpur, Central India. *Asia Pacific journal of energy and environment*, 2015, 2(3):133-140.

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Referee: Ram Mone.



- **Name of species:** Stork-billed Kingfisher
- **Scientific name:** *Pelargopsis capensis*
- **Status:** Least concern
- **Date of sighting:** 25 February 2017
- **Time of sighting:** 9 to 11 am
- **Weather parameter:-** Sunny
- **Number of time sighted:-** Twice
- **Number of birds:-** Single
- **Gender of bird:-** Unidentified
- **Locality:-** Ajanti Dam, Hinganghat, Dist. Wardha, Maharashtra.
- **Brief description:-** Olive brown head, brightly colored bird with large size and enormous, compressed blood red bill. Blue wings and tail.
- **Habitat description:-** Wooded habitat near lakes, rivers and ponds.
- **Distance from human habitation:-** Approximately 1 km.
- **Bird behavior:-** Perching on tree stem.
- **Threats:-** Habitat destruction, fishing area.
- **Photographs:-** Attached. Camera:- Canon 1100

Fig. 1:- Stork-billed Kingfisher perching near water body at Ajanti Dam, Hinganghat, Dist. Wardha.

Fig. 2:- Stork-billed Kingfisher perching near river at Ajanti Dam, Hinganghat, Dist. Wardha.

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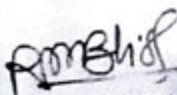
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23. Relevance of Indian Thinkers in Indian Economy

Ku. Vaishali Gunwant Tadas

Matoshri Ashatai Kunawar, Arts, Commerce and Science, Womens College, Hinganghat.

Introduction

After independence, Indian chartered a path of economic development based on mixed economy, building a new industrial structure around the public sector and a closely monitored, regulated and controlled system where government played the role of licenser in the process of building industry. The great Indian thinkers in Indian Economy play an important role to growth in economy and faced with numerous challenges.

Some Indian famous Economists are

1. Chanakya (371BC -283BC)
2. Adi Shankar (788 AD -820AD)
3. Debendranath Tagore(1817 - 1905)
4. Dr. B. R. Ambedkar (1891 - 1956)
5. Amartya Sen (3rd Nov 1933)

Contribution of Indian thinkers in Indian Economy

Chanakya, also known as Kautilya is India's most illustrious political economist of time. He regarded economic activity as the driving force behind the functioning of any political dispensation. In fact, he went to the extent of saying that revenue should take priority over army because sustaining the army was possible out of a well-managed revenue system. Chanakya advocated limiting the taxation power of the state, having low rates of tax, maintaining a gradual increase in taxation and most importantly devising a tax structure ensuring compliance. He strongly encouraged foreign trade, basing it on the promise that a successful trade contract to be established, if had to be beneficial to all. He emphasized control and investment in land, water and mining. Chanakya was a true statesman who bridged the gap between experience and vision. For Chanakya, good governance was paramount. He suggested built-in checks and balances in systems and procedures for the containment of malpractices. Many postulates of Chanakya's philosophy of political economy are applicable in contemporary times.

One of the most important philosophers and religious leaders of the ancient world, Chanakya is also known as a religious reformer.



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4. Dr. B. R. Ambedkar (1891 - 1956)
5. Amartya Sen (3rd Nov 1933)

Contribution of Indian thinkers in Indian Economy

Chanakya, also known as Kautilya is India's most illustrious political economist of all time. He regarded economic activity as the driving force behind the functioning of any political dispensation. In fact, he went to the extent of saying that revenue should take priority over the army because sustaining the army was possible out of a well – managed revenue system. Chanakya advocated limiting the taxation power of the state, having low rates of taxation, maintaining a gradual increase in taxation and most important devising a tax structure that ensured compliance. He strongly encouraged foreign trade, basing it on the promise that for a successful trade contract to be established, it had to be beneficial to all. He emphasized state control and investment in land water and mining. Chanakya was a true statesman who bridged the gap between experience and vision. For Chanakya, good governance was paramount. He suggested built –in checks and balances in systems and procedures for the containment of malpractices. Many postulates of Chanakya's philosophy of political economy are applicable to contemporary times.

Adi Shankaracharya, one of the most important philosophers and religious leaders in Indian history and the Hindu Sanatan religion, is widely revered as a religious reformer, the

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Fish Diversity of Pothara dam of Samudrapur Tehsil in Wardha District

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ABSTRACT

The aquatic ecosystems of the world are important water resources which inhabit a large number of economically important animals especially fish which is an commercially important source of food to man since time immemorial. The Ichthyofauna of a reservoir represents the fish faunal diversity present in that reservoir, which varies from terrain to terrain.

In this context to know the diversity of different commercially important fishes present in Pothara dam located in Samudrapur tehsil of Wardha district studies were made to assess its fish diversity. The study was undertaken for a year from January 2018 to December 2018 to know the fish diversity. Pothra dam is clean water reservoir having abundant fish fauna of varying nature. Frequent visits were given and the caught fishes were studied. The observations reveal occurrence of 17 different species of fishes belonging to 4 different orders and 5 different families. Family Cyprinidae was dominant with 12 species in the reservoir water. The beautiful biodiversity of fishes present in the freshwater reservoir of perennial nature is recorded in present research work.

Key words: Pothara Dam, fish Fauna, biodiversity, samudrapur tehsil.

INTRODUCTION

Maharashtra is one of the leading states for fish production harbouring plenty of natural and man made water bodies, and there is huge scope for developing fisheries in Maharashtra state. The development of fisheries in these fresh water resources needs to be increased for man's needs. Fishes are aquatic vertebrates that breathe through gills. They have great biodiversity in aquatic environment. Fishes are abundant in natural ecosystems.

The Indian fish fauna is represented by Chondrichthyes and Osteichthyes. The class Chondrichthyes is represented by 131 species with 67 genera, 28 families and 10 Orders in the Indian region. The Indian Osteichthyes are represented by 2,415 species belonging to 902 genera, 226 families and 30 orders, of which, five families, are endemic to India [1]. In India, Cyprinidae is one of the largest family of fish.

Fishes are a rich food source and nutrition and became an important and delicious food of man. Fishes provide valuable and easily available source of protein. In addition to serving as an important item of food they provided several products and by product. The fish provides fish oil used in medicinal and industrial use in the life of human beings. Several byproducts are obtained from different parts and waste parts of fishes.

Ichthyofaunal diversity is the wealth of our world [2,3] and it varies based on water quality. A reservoir conserves a rich variety of small and big fish species which supports the commercial fisheries. The fresh water sources like tanks, dams, and lakes contains about 20,000 fish species in the world of which about 2179 species are found in India. Various researchers have studied fishes of India [4 to 22] on rivers, dams and lakes.

After going through exhaustive literature survey we came to know that no fish landing data is available for a freshwater dam of Pothara located in Samudrapur tehsil of Wardha district till date. In this context the present research work was undertaken to analyze the

types of commercially important fishes present in dam water during January 2018 to December 2018.

METHODOLOGY

Pothara dam is a perennial freshwater earthfill dam built on river Pothara near Hinganghat town of Wardha district, in Maharashtra state. The height of dam is 14.2 mts and length 2,20 mt. Total volume is 318 km³ and storage capacity is 38,400 km³. This dam is built mainly for irrigation purpose. Its natural beauty is the main cause of tourist attraction.

For the present study, three sampling sites A, B, and C were selected on Pothara Dam. Site A is area near agriculture field, site B is near spillway of dam while, site C is mostly preferred for fishing by fisherman (Fig. 1).

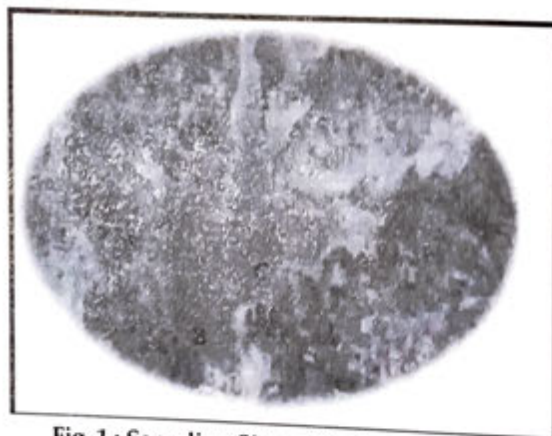


Fig. 1 : Sampling Sites of Pothara Dam

The fishes were collected from local fishermen during the time of fishing by using different type of nets gill nets, cast nets, dragnets and bhor jal from spot A, B, and C. Fishes were brought to laboratory and preserved in 10% formalin solution in separate specimen jars according to the size of species. The identification of fishes was done on the basis of standard literature [2, 3].

RESULTS AND DISCUSSION

In the present research work 17 different species of fishes belonging to 4 different orders and 5 different families are found to be seen and recorded in Table 1.

Table 1. Diversity of Fish Fauna in Pothara Dam.

Sr. No.	Order	Family	Species
1	Anguiliformes	Anguillidae	<i>Anguilla anguilla</i>
2	Clupeiformes	Notopteridae	<i>Notopterus chitala</i>
3	Clupeiformes	Notopteridae	<i>Notopterus notopterus</i>
4	Cypriniformes	Cyprinidae	<i>Catla catla</i>
5	Cypriniformes	Cyprinidae	<i>Cirrhina mrigala</i>
6	Cypriniformes	Cyprinidae	<i>Ctenopharyngodon idella</i>
7	Cypriniformes	Cyprinidae	<i>Cyprinus carpio</i>
8	Cypriniformes	Cyprinidae	<i>Labeo rohita</i>
9	Cypriniformes	Cyprinidae	<i>Labeo bata</i>
10	Cypriniformes	Cyprinidae	<i>Osteobrama cotio</i>
11	Cypriniformes	Cyprinidae	<i>Oxygaster bacaila</i>
12	Cypriniformes	Cyprinidae	<i>Punctius stigma</i>
13	Cypriniformes	Cyprinidae	<i>Punctius sarana</i>
14	Cypriniformes	Cyprinidae	<i>Punctius ticto</i>
15	Cypriniformes	Cyprinidae	<i>Rasbora daniconius</i>
16	Siluriformes	Siluridae	<i>Wallago attu</i>
17	Siluriformes	Clariidae	<i>Clarias batrachus</i>

Table 2. Sitewise landing data of fish at Pothara Dam.

Sr. No.	Name of Species	Site A	Site B	Site C
1	<i>Catla catla</i>	+	+	+
2	<i>Cirrhina mrigala</i>	+	+	+
3	<i>Ctenopharyngodon idella</i>	-	-	+
4	<i>Cyprinus carpio</i>	-	-	+
5	<i>Labeo rohita</i>	+	+	+
6	<i>Labeo bata</i>	+	+	+
7	<i>Osteobrama cotio</i>	-	-	+
8	<i>Oxygaster bacaila</i>	-	-	+
9	<i>Punctius stigma</i>	-	-	+
10	<i>Punctius sarana</i>	-	+	+
11	<i>Punctius ticto</i>	-	-	+
12	<i>Rasbora daniconius</i>	-	-	+
13	<i>Notopterus chitala</i>	+	-	+
14	<i>Notopterus notopterus</i>	-	-	+
15	<i>Anguilla Anguilla</i>	+	-	+
16	<i>Wallago attu.</i>	-	+	+
17	<i>Clarias batracus</i>	+	-	+
	Total Fish Species Recorded	7	6	17

From site A, 7 species of fishes belonging to four families, i.e. family Cyprinidae, Anguillidae, Notopteridae and Clariidae were caught and recorded. Family Cyprinidae was represented by four species namely, *Labeo bata*, *Labeo rohita*, *Cirrhinus mrigla*, *Catla catla*. Family Notopteridae was represented by *Notopterus chitala*, family Clariidae and Anguillidae were represented by single species *Clarias batrachus* and *Anguilla anguilla* respectively (Table 2).

From site B, fish fauna was represented by 6 species belonging to two families i.e. Cyprinidae and Siluridae. They were represented by *Cirrhina mrigla*, *Catla catla*, *Labeo rohita*, *Labeo bata*, and *Puntius sarana* and *Wallago attu* (Table 2).

At Site C, maximum fish diversity i.e. 17 different types of species was recorded which belongs to five different families. Out of 17 species, 12 species belongs to family Cyprinidae followed by family Notopteridae with 2 species, family Siluridae, Clariidae, Anguillidae with each 1 species.

In this study family Cyprinidae shows dominance. Thirty two species in Sina Kolegoan Dam were reported [16]. Six species observed at selected sites of upper stretches of river beas in Himachal Pradesh [15]. Sixty one species of fishes from Harike wetland and these belonging to 17 families, and 35 genera were recorded [4].

The fish faunal diversity changes from reservoir to reservoir depending on water quality, nutrient enrichment, as well as presence and absence of weeds and bottom biota. The physico-chemical conditions also play a major role in it. The present freshwater reservoir is of an oligotrophic type having clear water and very less weeds. Our works were supported by findings of others [9,11,12,16].

The varied and rich biodiversity points out that the water of reservoir is having a rich fish faunal diversity.

Conflicts of interest: The authors stated that no conflicts of interest.

REFERENCES

1. Jagtap HS. Fish Fauna of Himachal Pradesh: A Case Study. International Journal of Scientific Research. 2013; Vol.: 2, Issue 7, 25-28
2. Day F. The fishes of India; being a Natural History of fishes known to inhabit the seas and fresh water of India, Burma and Ceylon, Vol. I and II, 1878; pp XX+778-Pls, CXCXV.
3. Jayaram KC. The fresh water fishes of the Indian Region, 1994; Narendra Publishing House, New Delhi.
4. Dua A, Chander Parkash. Distribution and abundance of fish populations in Harike wet land - Ramsar site in India. J. Environ. Biol. 2009; 30(2): 247-251.
5. Bakawale S and Kanhere RR. Study on the fish species diversity of the river narmada in western zone. Res. J. Animal, Veterinary and Fishery Sci. 2013; Vol. 1(6), 18-20.
6. Bobdey AD. Ichthyodiversity and conservation aspects in a Lake and River ecosystems in Bhandara District of Maharashtra, India: A comprehensive study of surface water bodies. Online International Interdisciplinary Research Journal, 2014; 4(2):103-112.
7. Nilesh KH. Fish diversity studies of two rivers of the Northeastern Godavari basin, India. Journal of Threatened Taxa 2009; 1(10):514-518.
8. Jadhav BV, Kharat SS, Raut RN, Paingankar MM, Dahanukar N. Fresh water fish fauna of Koyana River, Northern Western Ghats, India. Journal of Threatened Taxa 2011; 3(1): 1449-1455
9. Jaiswal DP, Ahirrao KD. Ichthyodiversity of the Rangavali Dam, Navapur, District Nandurbar, Maharashtra State. Journal of Research in Biology 2012; 2(3):241-245.
10. Johal, MS and Jha, SK. Fish Diversity of Haryana State and its Conservation status. Fishing Chimes, 2007; 27(1): 107-108.
11. Kamble AT and Mudkhede LM. Study of fish fauna and productivity of Loni reservoir, Tq. Kinwat (Maharashtra). International Journal of Biomedical and Advance. Research 2013; 4(3):155-159.
12. Keshave JV, Ananthan PS, Asha L. Fish diversity and productivity of Isapur Reservoir, Maharashtra State. International Journal of Biomedical and Advance Research, 2013; 4(12):865-867.

13. Khekare SS, Sawane AP. Monitoring Water Quality Parameters from Some Freshwater Wetlands of Warora Taluka , Chandrapur District, Maharashtra State : International Journal of Research in Biosciences, Agriculuture and Technology,2015; 1,237-243.
14. Khekare,SS, Sawane, AP. Ichthyofaunal Diversity of Wardha River in The Vicinity of Warora, Dist. Chandrapur (M.S.) India: International Journal of Research in Biosciences, Agriculuture and Technology, 2016; 1, ,pp.136-139.
15. Kumar A , Khanna DR. Ichthyofaunal diversity in Upper stretches of river beas, Himachal Pradesh, India , *International Journal of Researches in Bioscience,Agriculture and Technology*, 2014; Vol. II, Issue -2,pp 269-275.
16. Humbe A, Jadhav S, Borde S. Diversity of Ichthyofauna from Sinakolegoan Dam Osmanabad District, Maharashtra, *Weekly Science Research Journal*, 2014; Vol. 1, Issue 40, pp 1-5.
17. Mittermeier RA Mitemeir G. Megadiversity Earth's biologically wealthiest nation. In Mc Allister, D.E. A Littamilton and B. Harvery (Eds).2011; Global S.V. Rankhamb /Rec Res Sci Tech 3,11-1313 fresh water Biodiversity sea wind Cemex, Mexico city," 1997: pp: 1-140.
18. Pawar RH, Patel NG, Patel YE. Review on fresh water fish diversity of Maharashtra (India). *Journal of Entomology and Zoology Studies*. 2014; 2(5): 358-364.
19. Sheikh SR. Studies on Ichthyofaunal diversity of Pranhita River, Sironcha, Dist: Gadchiroli, Maharashtra, India. *International J. of Fisheries and Aquatic Studies*; 2014; 1(5):144- 147.
20. Suresh M.K, Swapnali BL. Diversity, threats and conservation of catfish fauna of the Krishna River, Sangli District, Maharashtra, India. *Journal of Threatened Taxa*; 2014; 6(1):5362-5367.
21. Vats R, Gupta SK. Ichthyofauna of Four District of Northern Haryana. *Journal of Arts, Science & Commerce*. . 2011; Vol. II(4)3-29.
22. Verma D, Kanhere RR. Threatened Ichthyofauna of the river narmada in western zone, *Life Science Bulletin*, 2007; 4(1and2) 17-20.



EVALUATION OF PHYSICO-CHEMICAL PARAMETERS OF VENA RIVER WATER OF WARDHA DISTRICT (M.S.)

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Abstract: The current effort is a component of a survey to evaluate the physico-chemical characteristics of the Vena river water of Wardha district Maharashtra. The Physico-chemical variables including temperature, transparency, turbidity, TDS, Ph, dissolved oxygen, hardness, chloride, alkalinity, phosphate, and nitrate were investigated. January 2020 to December 2022 was the study period. Physico-chemical factors were found to vary seasonally, and the report's findings indicate that some of these shifts may have been caused by surrounding farms, industries, and sewage water.

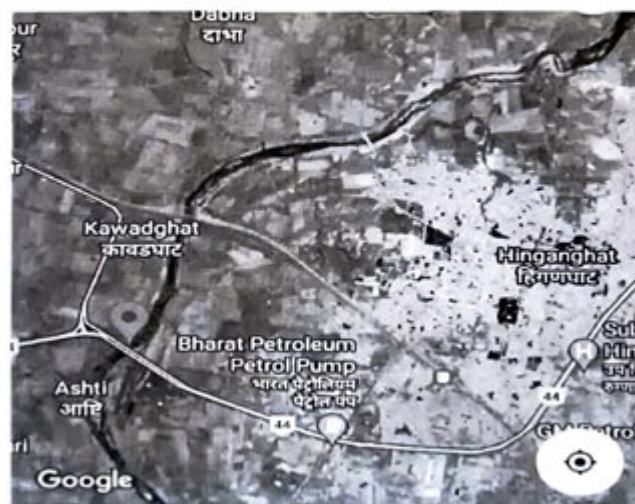
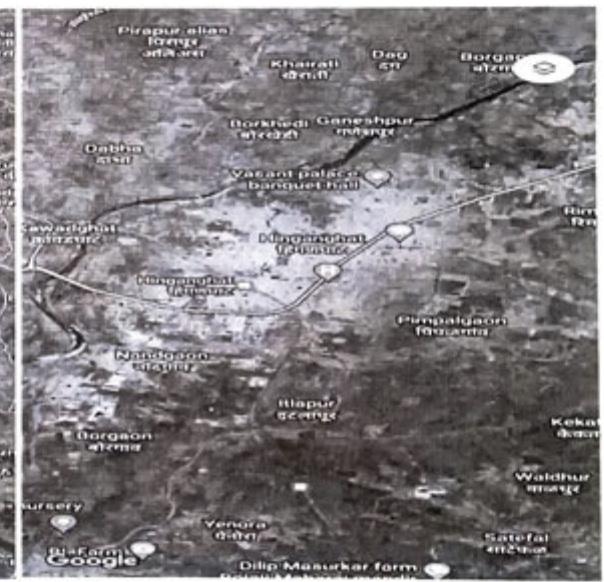
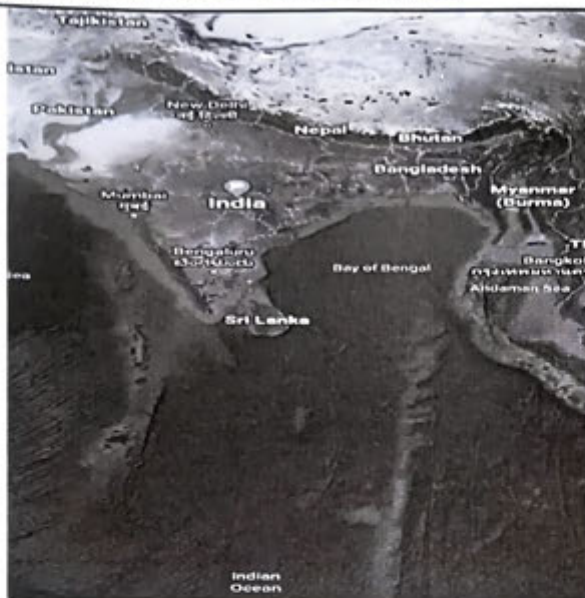
Keywords- Physico-Chemical characteristics, Ground water, Sewage, Effluents, Heavy metals, Pesticides.

INTRODUCTION

Water is the most important factor for the ecosystem. Organisms that are present in the ecosystem depend mainly on water for their growth, development, and nourishment. Water is also important for human existence. The quality of water indicates the presence of good flora and fauna in that specific area. The physical, chemical and biological aspects of water are indicators of its quality [1].

Any changes in physio-chemical characteristics of water denote the contamination of water resources and destruction of aquatic habitat. Water resources could get polluted due to the use of pesticides in nearby farm, industries, domestic waste, etc. Most water resources get polluted due to the release of heavy metals from industries. These heavy metals and pesticides in the water resources get accumulated in the body of aquatic organisms and caused severe damage to them.

Hence the present study put forward to evaluate the physico-chemical parameters of the Vena river water of Wardha district in Maharashtra.





Four study sites of Vena river water of Wardha district (Maharashtra)

Materials and Methods:

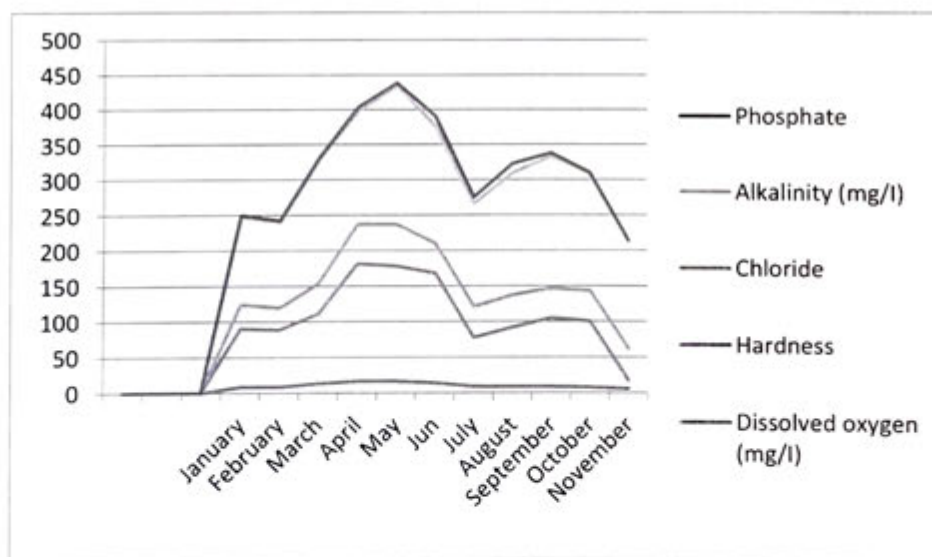
Water samples were collected from four different regions of the Vena River in a plastic bottles, in the evening hours between 5 pm to 6 p.m. in each week of every month of year 2022. A thermometer and a pH meter were used to record the pH and temperature of the water sample at the time of sample collection. Other variables, including DO, Alkalinity, Turbidity, TDS, Phosphate, Nitrate, Chloride, Total Hardness, and Waste Transparency, were estimated in the lab using conventional techniques as advised by APHA [2].

Observations:

It has been observed that there were fluctuations in physical as well as chemical parameters of Vena River water in every month. The given table shown below denotes the variations in physical and chemical characters of Vena river water.

Month	Temperature (°C)	Transparency (cm)	Turbidity (NTU)	TDS (gm/lit)	pH
January	20.6	15	8.70	0.34	7.56
February	22.7	12.6	11.49	0.37	7.54
March	25.8	11.7	13.42	0.5	7.40
April	25.4	6.6	13.11	0.2	7.64
May	36.4	6.1	8.4	0.4	7.15
June	31.7	8.5	10.3	0.6	7.43
July	25.5	45.51	2.4	2.1	7.61
August	25.7	41.60	2.1	2.2	8.51
September	26.6	39.75	2.1	0.4	8.20
October	28.7	72.12	0.5	0.6	7.32
November	22.8	76.15	1.34	1.3	8.4
December	21.9	69.28	1.4	0.6	7.80

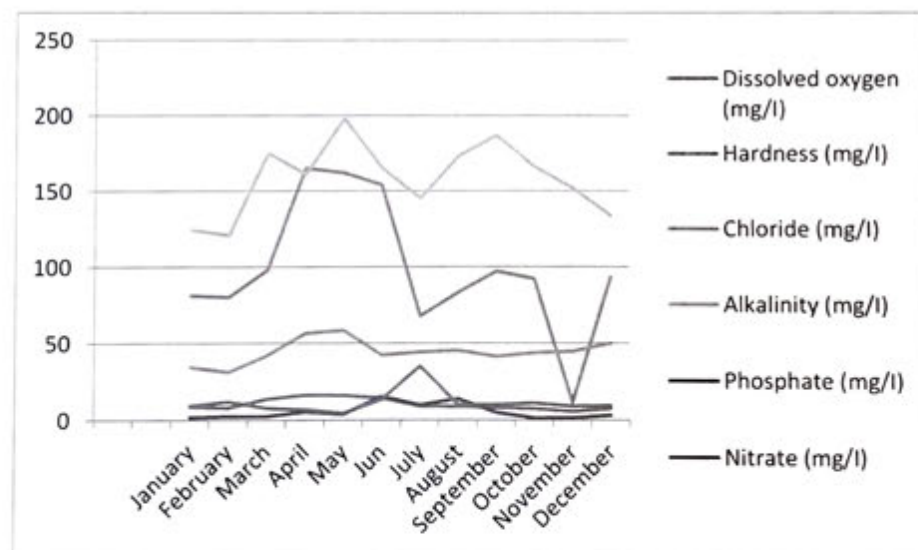
Table No. 1: Physical parameters of Vena River water of Wardha district



Graph 1: Showing changes in Physical parameters of Vena River water of Wardha district

Month	Dissolved oxygen (mg/l)	Hardness (mg/l)	Chloride (mg/l)	Alkalinity (mg/l)	Phosphate (mg/l)	Nitrate (mg/l)
January	8.58	81.04	34.24	124.24	1.81	9.15
February	8.03	80.27	31.02	120.67	2.35	11.83
March	13.57	98	42.01	175	2.31	7.59
April	16.04	165	56.37	161	5.15	6.54
May	16.07	162	58.35	198	3.8	4.40
Jun	14.08	154	42.11	165	15.14	13.27
July	9.03	67.6	44.03	145	9.70	35.02
August	8.56	83	45.12	173	13.41	10.05
September	8.07	97	41.07	187	4.71	10.02
October	7.41	92.13	43.51	166	1.05	11.04
November	5.42	11.2	44.56	152	1.41	9.07
December	7.23	93	49.71	134	3.15	9.12

Table 2: Chemical parameters of Vena River water of Wardha district



Graph 2: Showing changes in Chemical parameters of Vena River water of Wardha district

Results and Discussion:

Temperature:

From the present data analysis of water, temperature ranges from 20.6 °C to 36.4 °C. It was found that the maximum temperature is 36.4 °C and the minimum temperature 20.6 °C. It is shown that winter temperatures are generally lower and summer temperatures higher [3],[4].

Longer days and a rise in the intensity of solar radiation were blamed for the progressive rise in air and water temperatures from January to September. Similarly, the drop in temperature from September to December was brought on by shorter days and a reduction in the amount of solar energy [5]. It was noted that the summer time had a high temperature because the water level was low [6].

Transparency:

The transparency range of Vena River water was reported from 6.1 cm to 76.15 cm. The minimum transparency was recorded in May and the maximum in November. Transparency plays an important role in the penetration of light into the water layer. The transparency of water is mainly affected by various factors such as biological productivity, suspended particles, etc. Due to the absence of rain, runoff, and floodwater as well as the gradual setting of suspended particles, there was more transparency over the winter and summer [7].

Turbidity:

It was reported that the maximum value of 13.42 NTU was recorded in March month. From the observation and evaluation physico-chemical analysis of water, turbidity ranges from 0.5 NTU to 13.42 NTU. Possible causes include human activity, a drop in water level, and the presence of suspended particulates [6].

TDS:

From the present analysis of water, TDS ranges from 0.2 gm /l to 2.2 gm /l. The maximum value was 2.2 gm /l and the minimum value was 0.2 gm /l in August and April. In the August TDS of Vena river, water was maximum because of heavy rainfall and heavy flood.

Ph Range:

From observation, the Ph value ranges from 7.15 to 8.51. It was reported that the maximum value was 8.51 in August and the minimum value in May was 7.15. The range of Ph values indicated that the Vena river water is alkaline. The ph value is maximum in August. It might be due to monsoon, post-monsoon, and other effluents, heavy metals, domestic waste, and pesticides contributing to the basic rain.

Dissolved oxygen:

One of the most crucial parameters is DO. Its relationship to a water body provides both direct and indirect information, such as stratification, bacterial activity, photosynthesis, and nutrient availability [8]. As Summer progressed, dissolved oxygen levels dropped as a result of rising temperatures and increasing microbial activity [9][10][11][12]. From the observation, the dissolved oxygen values range from 7.23 mg/l to 16.7 mg/l. It was reported that the maximum value in May was 16.7 mg/l. Summer's long days and bright sunlight appear to hasten phytoplankton's photosynthesis, which uses CO₂ and emits oxygen. This may be the cause of the higher O₂ quality measurements made in the summer [13].

Hardness:

From the present study, the hardness range of Vena river water was reported from 67.6 to 165. Maximum hardness in April and minimum 67.6 in July. The high rate of water evaporation in the summer may be to blame for the uneven distribution of water volume. Heavy metals, domestic trash, industrial effluents, and other things were dumped into water bodies.

Chloride:

It was reported that the maximum value of Chloride was 58.35 mg/l and the minimum value was 31.02 mg/l in May and February. It concluded that in summer there is less water in the river and due to urbanization, Farm, and nearby industries heavy metals, pesticides, domestic waste, and effluents get into river water and that might be the reason for increasing the Chloride level.

Alkalinity:

The range of alkalinity values reported in the present analysis was from 120.67 in February to 198 mg/l in May. In summer temperature is high hence it affects the carbonic acid. Carbonic acid is present in water in combination with carbon dioxide. River water's dissociation of carbonic acid may aid to increase the level of alkalinity. Winter is characterized by a limited temperature range and a high oxygen dissolution rate [14]

Phosphate:

It was reported the range of phosphate started from 1.05 mg/l to 15.14 mg/l. It was found that the maximum range was in Jun and the minimum in October. The maximum value of phosphate in June is high due to industrial effluent, agriculture runoff, and domestic waste from different sources release into the river water. It is possibly due to rain.

Nitrate:

The maximum value of Nitrates was reported as 35.02 mg/l in July and the minimum value was reported as 6.54 mg/l in April. The maximum value of Nitrate was 35.02 mg/l mainly due to rain, and the release of agricultural runoff which contain pesticides, heavy metals, and effluents from industries.

References

- [1] Manjare, S. A., S. A. Vhanalakar, and D. V. Muley. "Analysis of water quality using physicochemical parameters Tamdolge tank in Kolhapur district. Maharashtra." *International journal of advanced biotechnology and research* 1, no. 2 (2010): 115-119.
- [2] APHA (1989) Standard Methods for the Examination of Water and Wastewater, Part 3, Determination of Metals. 17th, American Public Health Association, Washington DC, 164.
- [3] Jayabhaye, U. M., M. S. Pentewar, and C. J. Hiware. "A Study on Physico-Chemical Parameters of a Minor Reservoir." *Sawana, Hingoli District, Maharashtra* (2006).
- [4] Salve, V. B., and C. J. Hiware. "Study on water quality of Wanparakalpa reservoir Nagpur. Near Parli Vajinath, District Beed. Marathwada region." *J Aqua Biol* 21, no. 2 (2008): 113-117.
- [5] Rajurkar, B. M., and L. P. Dalal. "Physico-Chemical Characteristics of Vena River in Hinganghat Area of Wardha District." *International Journal of Science and Research (IJSR)*: 959-967.

[6] Manjare, S. A., S. A. Vhanalakar, and D. V. Muley. "Analysis of water quality using physicochemical parameters Tamdalge tank in Kolhapur district, Maharashtra." *International journal of advanced biotechnology and research* 1, no. 2 (2010): 115-119.

[7] Khan, M. A. G, and Choudhary S. H. "Physical and chemical limnology of lake Kaptai, Bangladesh." *Trop. Eco.* 35(1)(1994): 35-51.

[8] Premlata, Vikal. "Multivariant analysis of drinking water quality parameters of lake Pichhola in Udaipur, India." In *Biological Forum*, vol. 1, no. 2, pp. 86-91. Satya Prakashan, 2009.

[9] Radha, A., and M. Mumtaz. "Efficacy Of Lemna Minor In The Reusage Of Sugar Mill Effluent." *Think India Journal* 22, no. 14 (2019): 13929-13937.

[10] Madhulekha, Sunita Arya, and Shashi Agarwal. "Study of Correlation Coefficient for Physico-chemical parameter to assess the water quality of river Ganga at Kanpur, India." *International Journal of Innovative Research in Science, Engineering, and Technology* 6, no. 8 (2017): 1-6.

[11] Sangu, R. P. S., V. Shanker, and S. K. Sharma. "An assessment of water quality of River Ganga at Garhmukteshwar(Ghaziabad) U. P." *Indian Journal of Ecology* 14, no. 2 (1987): 278-282.

[12] Bhat, Najeeb Ahmad, Rajni Rainaand, and Ashwani Wanganeo. "Ecological investigation of zooplankton abundance in the Bhoj wetland, Bhopal of central India: Impact of environmental variables." *International Journal of Fisheries and Aquaculture* 7, no. 6 (2015): 81-93.

[13] Masood, Ahmed, and R. Krishnamurthy. "Hydrobiological studies of Wohar reservoir, Aurangabad (Maharashtra state)." *Indian J. Environ. Biol* 11, no. 3 (1990): 335-343.

[14] Ravindra, Khaiwal, and Anubha Kaushik. "Seasonal variations in physico-chemical characteristics of River Yamuna in Haryana and its ecological best-designated use." *Journal of Environmental Monitoring* 5, no. 3 (2003): 419-426.



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BUTTERFLY SPECIES DIVERSITY IN CHHATRAPATI SHIVAJI MAHARAJ PARK, HINGANGHAT (M.S.)

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Abstract: The present study was put forward to find out the diversity in the species of Butterflies in Chhatrapati Shivaji Maharaj Park of Hinganghat City in Wardha District. (M.S) The good flora in the Park indicates that there must be diversity in the butterfly species which acts as pollinating agents for many flowering plants. In the corresponding study area, there were approximately 30 species of Butterflies found such as the Danaid egg fly, Blue pansy, Common evening brown, Dark evening brown, Common Sailor, Great egg fly, Common lemon pansy, Grey pansy, Dark blue tiger, Glassy tiger, Stripped tiger, Blue tiger, Plain tiger, Common Indian crow, Long-tailed blue, Tiny grass blue, Common pierrot, Common grass blue, Zebra blue, Small cupid, Pale sulfur butterfly, Common emigrant, Common wanderer, Common gull, Lime butterfly, Common jay, Common rose, Crimson rose butterfly, Common Mormon, etc. that belongs to Family Nymphalidae, Lycaenidae, Pieridae, Lycaenidae respectively.

Index Terms: Diversity, butterfly, species, photography, Family, Chhatrapati Shivaji Maharaj Park, Hinganghat.

Introduction

Since the beginning of time, people have revered butterflies as a representation of beauty and grace. They are well-known insects because of their diurnal habits. They are easily recognized by their vibrant hues, forms, and exquisite flying, which delights everyone [1]. Butterflies are among the most exquisite and colorful animals in the world and have high aesthetic value [2]. Because of their intricate life cycle and impact on the natural world, butterflies are unique among insects. As a result, studies and in-depth research have focused on butterflies. Throughout ecology, butterflies play a significant role, notably in the pollination process. More than 50 species of crops with substantial economic value can be pollinated by them [3]. One of the most noticeable creatures on Earth is the butterfly. These insects are regarded as valuable bio-indicators because they are very sensitive to changes in their environment such as variations in temperature, humidity, light, and rainfall patterns [4]. By serving as a pollinator, prey, and biological pest control, inducing genetic variation in plants, enhancing environmental attractiveness, and lowering air carbon dioxide levels, butterflies maintain the ecosystem. Children of all ages would unquestionably be worse off if butterflies suddenly vanished from the planet. Butterfly populations and flowering plant populations are often so interdependent that neither could exist without the other.

In the current study, an effort had been made to catalog the diversity of butterflies found in Chhatrapati Shivaji Maharaj Park, Hinganghat in Wardha District.

Material and Methods:

Study areas:

Hinganghat is one of the developing cities in the Wardha District. The average elevation of the city of Hinganghat is modest, at 215 (705ft) above sea level. The city's Vena River encircles the area on two sides [5]. The study or evaluation was conducted in Chhatrapati Shivaji Maharaj Park, Hinganghat. (20.54810N, 78.83820E).

Data collection method:

Data were collected using two methods, first directly by the Photographic method, during the daytime. The second method is by using good Binoculars. With good binoculars, we could bring to see butterflies close to us from afar and it helps in the identification of butterflies. The objective of the study was to collect information about the diversity of species of butterflies. As September month is celebrated as "Butterfly Month" worldwide and after the monsoon, flora starts to blossom. Hence most of the diversity in butterflies could observe in that period. Therefore Study period was from September 2022 to April 2023.

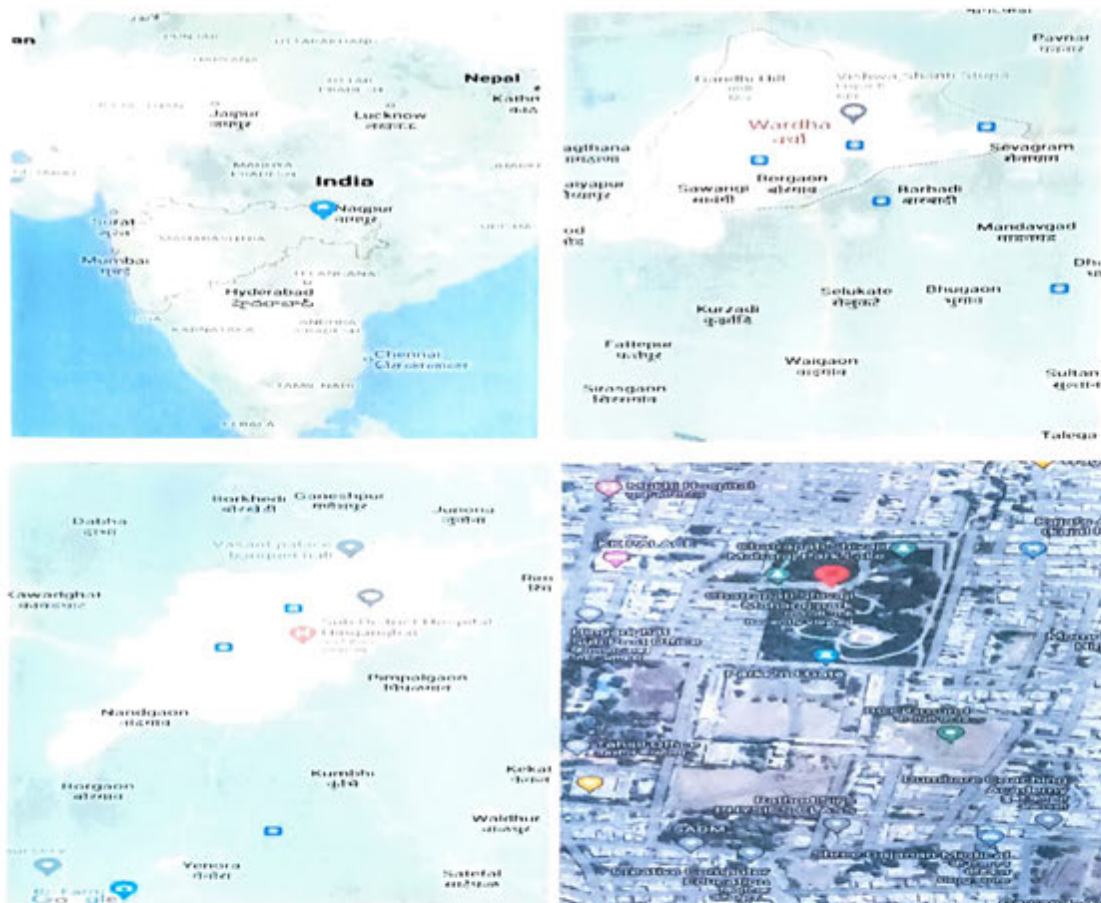


Fig. 1 Showing Map of the Study area in the Hinganghat Region of Wardha District (M.S.)

Observations:

There are various species of butterflies observed that were from Nymphalidae, Lycaenidae, Pieridae, and Papilionidae Family. The details of each species that come under these families are given in the following tables:

Family-Nymphalidae

Sr.No.	Common name	Scientific name	Family	Marathi name
1	Danaid egg fly	Hypolimnastis misippus	Nymphalidae	Chhota chandva
2	Blue pansy	Junonia lemonias	Nymphalidae	Nil bhirbhiri
3	Common evening brown	Melantitis leda	Nymphalidae	Sanjpari, chanchal
4	Dark evening brown	Melantitis phedim	Nymphalidae	Gadad sanjpari
5	Common sailor	Neptis hylas	Nymphalidae	Bhatke tandel
6	Great eggfly	Hypolimnastis bolina	Nymphalidae	Motha chandva
7	Common lemon pansy	Junonia almana	Nymphalidae	Pitnetri bhirbhiri
8	Grey pansy	Junonia atlites	Nymphalidae	Rakhi bhirbhiri
9	Dark blue tiger	Tirumala septentrion	Nymphalidae	Gadad nil
10	Glassy tiger	Parantica aglea	Nymphalidae	Kancha ruikar
11	Stripped tiger	Danaus genutia	Nymphalidae	Patteri ruikar
12	Blue tiger	Tirumala limniace	Nymphalidae	Nil ruikar
13	Common Indian crow	Euploea core	Nymphalidae	Habshi
14	Plain tiger	Danaus chrysippus	Nymphalidae	Ruikar

Family-Lycaenidae

Sr.No.	Common name	Scientific name	Family	Marathi name
1	Common Pierrot	Castalius rosimon	Lycaenidae	Kavdi
2	Common grass blue	Zizina labralus	Lycaenidae	
3	Zebra Blue	Liptotus plinius	Lycaenidae	Pattanil
4	Small cupid	Chilades parthasius	Lycaenidae	Laghu pandav
5	Long-tailed blue	Lampides boeticus	Lycaenidae	
6	Tiny grass blue	Zizula hylax	Lycaenidae	chingi

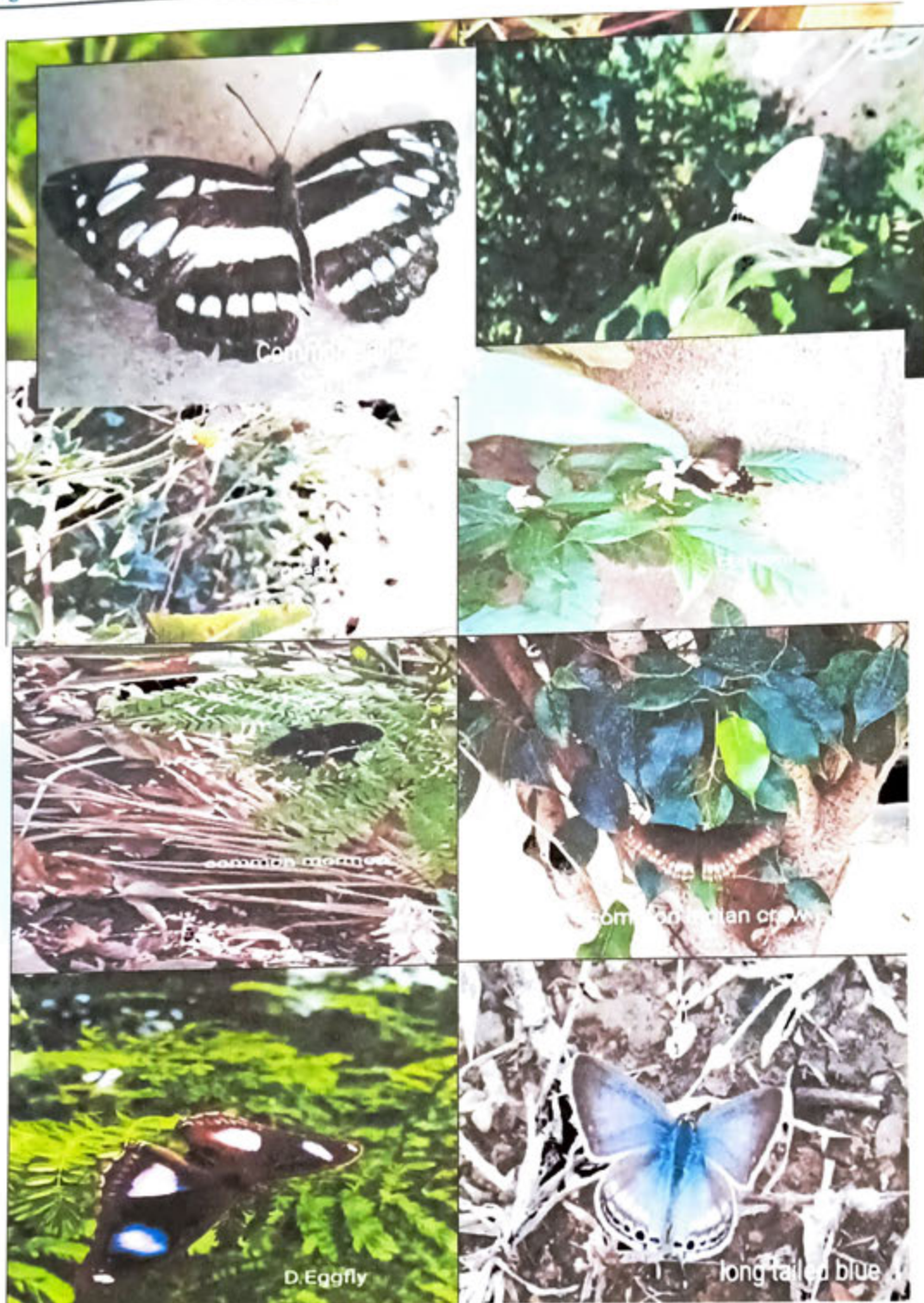
Family-Pieridae

Sr.No.	Common name	Scientific name	Family	Marathi name
1	Common wanderer	Pareronia Valeria	Pieridae	Bhatkya
2	Common emigrant	Coropsilia pomera	Pieridae	Pardeshi, Pravasi
3	Pale sulfur butterfly	Aphrissa statira	Pieridae	
4	Common gull	Cepora nerissa	Pieridae	Kavdshya
5	Common grass yellow	Eurema hecabe	Pieridae	Trun, pitambari

Family-Papilionidae

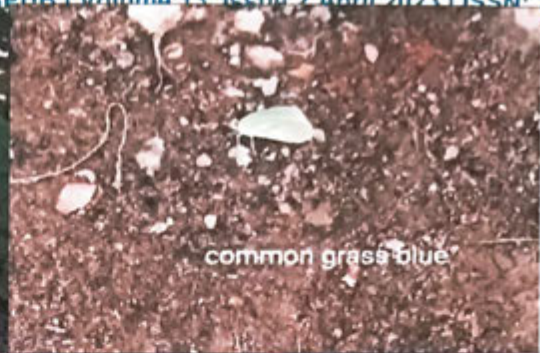
Sr.No.	Common name	Scientific name	Family	Marathi name
1	Lime butterfly	Papilio demoleus	Papilionidae	Limbhali
2	Crimson rose	Pachliopta hectar	Papilionidae	Kirmiji madhalsa
3	Common rose	Pachliopta aristolochiae	Papilionidae	Gulabi rani
4	Common jay	Graphium doson	Papilionidae	Shevali
5	Common Mormon	Papilio polytes	Papilionidae	bahurupi







lime butterfly



common grass blue



great egglfly



pale sulphur butterfly



lemon



small cup



common grass yellow



plain tiger



zebra blue



Fig. 2 Showing Photographs of Butterflies of various species observed in Chhatrapati Shivaji Park, Hinganghat region (M.S.)

Results and discussion

The goal of the current study was to comprehend the diversity of butterflies from Chhatrapati Shivaji Maharaj Park, Hinganghat. The city of Wardha district is located in Maharashtra. A total of 30 butterfly species belonging to 4 families were recorded. The highest number of butterflies belonging to the family Nymphalidae included 14 species, 6 species of Lycaenidae, 5 species of Pieridae, and 5 species were recorded from the Papilionidae by Photography and Binoculars method. Nymphalidae had the highest species and abundance as compared to Lycaenidae, Pieridae, and Papilionidae. This showed that Nymphalidae dominated with the highest species and abundances in the study area of Chhatrapati Shivaji Maharaj Park, Hinganghat. Records from observations indicate that the variety of species changes depending on the local ecosystem and weather.

The ecology is preserved by butterflies so adopting new conservation policies is urgently necessary. Creating a butterfly park, cultivating and protecting plants that serve as the specialized larva and nectar hosts for these butterflies, and protecting and maintaining the butterfly breeding grounds are all measures in the conservation of these species [6].

The results of this study highlight the importance of the city as the preferred habitat for butterflies. If the landscaping and guided maintenance are carefully planned, the diversity of butterflies in Hinganghat can increase variably. Adding a dimension to butterfly conservation and research will also enhance our future efforts to understand the complexity of the utilitarian interaction between butterflies and flowering plants, which is essential for the continuity of ecosystem services [7][8].

References

- [1] Khan, Muhammad Rafique, Muhammad Ather Rafi, M. Munir, Shoukat Hussain, Mirza Wasim Baig, and M. Waheed Khan. "Biodiversity of Butterflies from Districts Kotli, Mirpur and Bhimber, Azad Kashmir." *Pakistan Journal of Zoology* 39, no. 1 (2007): 27.
- [2] Tiple, Ashish. "Butterfly diversity about a relative abundance and status in Seloo city, Wardha Maharashtra, Central India." *International Journal of Researches in Biosciences, Agriculture and Technology* (2018): 1-5.
- [3] Koneri, Roni, and Pience V. Maabuat. "Diversity of butterflies (Lepidoptera) in manembo-nembo Wildlife Reserve, north sulawesi, Indonesia." *Pakistan Journal of Biological Sciences* 19, no. 5 (2016): 202.
- [4] Harsh, Sprih. "Butterfly diversity of Indian Institute of forest management, Bhopal, Madhya Pradesh, India." *Journal of Insects* 2014 (2014).
- [5] Chandrakar, M. R., P. S. Kalwade, and G. S. Pachlore. "Biodiversity of Moths in Hinganghat Taluka, Wardha, Maharashtra (India)." (2022).
- [6] Tiple, Ashish D., and Arun M. Khurad. "Butterfly species diversity, habitats and seasonal distribution in and around Nagpur City, central India." *World Journal of Zoology* 4, no. 3 (2009): 153-162.
- [7] Gilbert, Lawrence E., and Michael C. Singer. "Butterfly ecology." *Annual review of ecology and systematics* 6, no. 1 (1975): 365-395.

[8] New, Timothy Richard. *Butterfly conservation*. Oxford University Press, 1991.



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