Indian Forester, 143 (8) : 796-799, 2017
http://www.indianforester.co.in

ISSN No. 0019-4816 (Print)
ISSN No. 2321-094X (Online)

BURNING OF *EICHHORNIA* SP. VERSUS WETLANDS BIODIVERSITY: A CASE STUDY IN BICHIA BLOCK, UNAAO DISTRICT, UTTAR PRADESH

ADESH KUMAR AND AMITA KANAUJIA

Biodiversity and Wildlife Conservation Lab, Department of Zoology, University of Lucknow, Lucknow-226007, Uttar Pradesh, India
E-mail: kanaujia.amita@gmail.com

ABSTRACT

The Global Fire Partnership (GFP) is working on positive and negative impacts of fire and control measures. The GFP is working on positive and negative impacts of fire and control measures. Fire plays a key role in shaping our environment and maintaining biodiversity. But fire also have negative impact on biodiversity and alter the hydrology of a site, and present a direct risk to biodiversity and human habitation. The present study is aimed to access the negative impact and loss of biodiversity due to the unregulated and uncontrolled fire to control weed (*Eichhornia* sp.) in Bakrain Jheel during rainy season. Study is done in Bakrain Jheel, Purwa Oonchgaaon, Bichia Block, Unnao in the month of June 2015. People lit the fire in wetlands to avoid the threats of wild animals and robbers. The study concluded that due to fire, a catastrophic loss of wetlands flora and fauna recorded from the study site. A disastrous loss of faunal biodiversity especially large number of insects, annelids, molluscks and reptiles approximately 110 pond turtle of (*Actinemys marmorata*) were found dead. Lot of studies should be done and defined protocol and guideline should be let down for the stakeholders (fisheries stakeholders, chestnut culture stakeholders and water chest nut stakeholders) and for villagers.

Key words: Wetlands, Biodiversity, Wetland fire.

Introduction

Conservation action for wetland diversity and wetland habitats has been investigated and promoted at global level through Ramsar Convention on wetlands; Convention on Wetlands, Convention on Migratory Species (CMS) and Convention on Biological Diversity (CBD).Wetlands provide a vivid pattern of the dynamic, until now fragile interactions that create, maintain, and repair the world's ecological system. The Global Fire Partnership (GFP) includes The Nature Conservancy, World Conservation Union (IUCN), University of California at Berkeley Centre for Fire Research and Outreach, and the World Wildlife Fund (WWF). The GFP is working on positive and negative impacts of fire and control measures. Unfortunately, the fate of many wetlands is decided by the punitive controls measures taken for their conservation. The GFP is working on positive and negative impacts of fire and control measures (Shlisky *et al.,* 2007). Fire plays a key role in shaping our environment and maintaining biodiversity. In some environment-ecosystem wild fire responsible for natural selection, established regional cultural significance (Myers, 2006; Pyne, 1982; Yibarbuk, 1998; Goldammer and de Ronde, 2004), maintain and revive ecosystems (Hassan *et al.,* 2005) and accelerate the ecosystem transformation in the long term (Kershaw *et al.,* 2002). When fire regimes are altered, they can contribute to climate-changing greenhouse gases into the environment; provide a pathway for harmful invasive species. Fire has been, and still is an important tool used by humans to shape the land, producing cultural landscapes that can also support ecological health. But fire also have negative impact on biodiversity and alter the hydrology of a site, and present a direct risk to biodiversity and human habitation. The present study is aimed to access the negative impact and loss of biodiversity due to the Unregulated and Uncontrolled Fire in Unnao district.

Study Area

Study is done in Bakrain Jheel, Purwa Oonchgaaon, Bichia Block, Unnao in the month of June 2015. Situated between rivers Ganga and Sai, Unnao has, since ancient times. This district lies between $26^0$33'0''N and $80^0$28'48''E. The maximum temperature recorded was 45.5^0C and minimum was 2.5^0C (Fig.1).

Material and Methods

Survey is being carried out on foot or vehicle to the area for monitoring of Jheel biodiversity and fire damage. Observations are being carried out using line transect method with the aid of 10x50 binoculars, interviewed the

The present study is aimed to access the negative impact and loss of biodiversity due to the unregulated and uncontrolled fire to control weed (*Eichhornia* sp.).

Fig. 1: Map of study area (Unnao).

local people and data is supported with photography using Canon EOS 70D SLR camera.

Case Study

The present study is aimed to access the negative impact and loss of biodiversity due to the Unregulated and Uncontrolled Fire to Control Weed (*Eichhornia* sp.) in Bakrain Jheel during rainy season of year 2015. The villagers of Purwa Oonchgaaon regularly lit fire every year (lit fire from 2013, we don't have any official record but we have regular practice record and local record by observations and interview of local people) during the rainy season in wetland to remove or eliminate the wild weed especially *Eichhornia* from wetlands. Bakrain Jheel itself a wetland, villagers lit the fire within the jheel when most of portion of jheel is dried and jheel is occupied of dry *Eichhornia* of 70% portion. The reason behind such planning, as these wetlands weeds are a favorable place for hiding of wild animals and robbers (Fig. 2).

Day 1 (04-06-2015, Saturday): During various surveys at Bakrain Jheel Unaao, had observed promising Floral and faunal biodiversity specially migratory as well as residential Water birds, some species of turtles, many invertebrates species and numerous aquatic plants species. At 6:30 am our team reached to the site and

Fig. 2: Wetlands weeds are a favorable place for hiding of wild animals and robbers.

Fig.3: Bakrain Jheel before fire.

Fig. 4: Bakrain Jheel after fire.

surveyed with the flourishing biodiversity (Fig. 3). This site is also an important place for Sarus crane congregation (assemblage) before life partner selection (Kumar and Kanaujia, 2015).

Day 2 (18-06-2015, Saturday): At early morning (6:15 am) during routine survey our team reached and observed that whole lake was seems to black from the distance and we reached at site and found that there was ash which was residue of aquatic vegetation after burning (Fig. 4). During observation a catastrophic loss of wetlands flora and fauna recorded from the study site due to fire. The seasonal timing and frequency of fire to a particular plant species can influence affects on the neighbouring species. In most of cases intense fire can kill plant issues, buds, seeds and other aquatic faunal species. Wetland periphery communities and the canopy, core areas of wetlands also experience the hot conditions due to fire (www.fs.fed.us/database/feis/welcome.htm).

A disastrous loss of faunal biodiversity especially large number of insects, annelids, molluscks and reptiles approximately 110 pond turtle of (*Actinemys marmorata*) were found (Fig. 5). We informed about this disasters loss to PCCF Wildlife, Uttar Pradesh. The forest officials of

Fig. 5: A catastrophic loss of wetlands flora and fauna due to unregulated fire.

Fig. 6: Observation and monitoring of affected wetland in Unnao.

Unnao and Nawabganj Bird Sanctuary Staff were also informed about this incident.

Day 3 (19-06-2015, Sunday): Next day, during morning time around 8:15 am, our team including Prof. Amita Kanaujia, Mr. Adesh Kumar, Ms. Shivangi Mishra, Ms. Vandana Dhiman, University of Lucknow with Mrs. Pratibha Singh, Secretary U.P. State Biodiversity Board, Lucknow reached at study site. Forest officials of Unnao were already present there from the early morning and collected the carapaces of turtles with the permission of PCCF, wildlife Uttar Pradesh. Our team monitored the site again and interacted the local masses to know the reasons of this fire (Fig. 6). In every 3 years' wetlands is given on lease for fish cultivation and harvesting, water chestnut farming and kamalgatta production to the local peoples. Although forest department appoint a forest guard for monitoring jheel and checkout poaching of water birds but sometimes guard is not available due to lot of other works and lack of staff in Unnao forest department, so this type of burning cases occurs. Local people of Purwa Oonchgaaon said that they regularly lit fire every year during the rainy season in wetland to remove or eliminate the wild weed especially *Eichhornia* from wetlands. The reason behind such planning, as these wetlands weeds are a favorable place for hiding of wild animals and robbers.

Conclusion

The case study recommends the maintenance and planning for Wetland conservation is an important part and lot of study it should be done and defined protocol and guideline should be let down for the stakeholders (fisheries stakeholders, chestnut culture stakeholders and water chest nut stakeholders) and for villagers. Integrated Fire Management (IFM) is addressing the damaging and beneficial effect of fires within the perspective of natural environment and socio-economic systems (Myers, 2006). Although forest department is organising awareness programmes such as conservation of wetlands, water recharges, human-wetlands wildlife conflict regularly but burning of fire aspects still is left or negligible at the point of awareness. So as to avoid such disastrous incidents, much more of awareness programmes related to wetlands fire and management should be organized among the villagers and stakeholders in future.

Acknowledgement

Thanks are due to Head of Department of Zoology, University of Lucknow for providing necessary facilities to perform this work. Author thanks to State Forests Department of Uttar Pradesh for providing the permission to carry out the study. Our sincere gratitude to UP State Biodiversity Board for provide funding. Special thanks to Department of Forest, Unnao and all volunteers, local people for their continuous support during the field work.

_ईछोर्निया_ प्रजाति का दहन बनाम आर्द्रभूमि जैवविविधता: बिचिया ब्लॉक, उन्नाव जिला, उत्तर प्रदेश में एक केश अध्ययन

आदेश कुमार एवं अमिता कन्नोजिया

सारांश

विश्व अग्नि साझेदारी (जी एफ पी) आग के सकारात्मक एवं नकारात्मक प्रभावों एवं नियंत्रण उपायों पर कार्य कर रही है। हमारे पर्यावरण को आकार देने और जैवविविधता के अनुरक्षण में आग एक मुख्य भूमिका अदा करती है। किन्तु आग जैवविविधता पर नकारात्मक प्रभाव भी डालती है तथा एक स्थल के जलविज्ञान को बदल देती है और जैवविविधता एवं मानवीय आवास के लिए प्रत्यक्ष जोखिम खड़ा कर देती है। इस अध्ययन का उद्देश्य

वर्षाती मौसम के दौरान बकरैन झील में खरपतवार (*ईछोर्निया* प्रजाति) के नियंत्रण के लिए अनियमित एवं अनियंत्रित आग के कारण जैवविविधता के नकारात्मक प्रभाव एवं क्षति का मूल्यांकन करना है। जून, 2015 में बकरैन झील, पुरवा औछगांव, बिचिया ब्लॉक, उन्नाव में अध्ययन किया गया। लोग वन्य पशुओं और लुटेरों के संकट से बचने के लिए आर्द्रभूमियों में आग लगा देते है। अध्ययन से निष्कर्ष निकला कि आग के कारण आर्द्रभूमियों की वनस्पति एवं प्राणिजात को भयंकर क्षति अध्ययन स्थल से अभिलिखित की गई। प्राणिजात जैवविविधता की भारी क्षति हुई, विशेषकर बड़ी संख्या मे कीट, एनीलिड्स मोलस्क और सरीसृप लगभग 110 पांड कछुवा (*एक्टिनीमीस मार्मोराटा*) मृत पाए गए। अत्यधिक अध्ययन किया जाना चाहिए तथा प्रोटोकाल परिभाषित करना चाहिए और हितधारकों (मत्सय पालन हितधारकों, चेस्टनट संवर्धन हितधारकों तथा वाटर चेस्ट नट हितधारकों) के लिए और ग्रामीणों के लिए मार्गदर्शन निर्धारित करने चाहिए।

References

Goldammer J.G. and Ronde C.de (2004). Wildland Fire Management Handbook for Sub-Sahara Africa. *Global Fire Monitoring Center*. 1-10 pp.

Hassan R., Scholes R. and Ash N. (2005). *Findings of the Condition and Trends Working Group of the Millennium Ecosystem Assessment*. Ecosystems and Human Well-being: Current State and Trends, Volume 1. University of Pretoria Council for Science and Industrial Research UNEP World Conservation South Africa, South Africa Monitoring Centre, United Kingdom. Island Press Washington, D.C.

Kershaw P., Clark J.S., Gill A.M. and D'Costa D.M. (2002). A history of fire in Australia. *In*: R. Bradstock, J. Williams and M. Gill (eds.). *Flammable Australia:the Fire Regimes and Biodiversity of a Continent*. Cambridge University Press, 3-25 pp.

Kumar A. and Kanaujia A. (2015). Congregation of Sarus Crane (Grus Antigone) In Unnao District, Uttar Pradesh, *Inter. J. Science and Research*, 4 (5): 2319-7064.

Myers R. (2006). Living with Fire – Sustaining ecosystems and livelihoods through integrated fire management. *The Nature Conservancy Global Fire Initiative,Tallahassee*, FL. 32 pp.http://tncfire.org/documents/Integrated_Fire_Management_Myers_2006.pdf

Pyne S.J. (1982). *Fire in America: A Cultural History of Wildland and Rural Fire.* Princeton, NJ:Princeton University Press.

Shlisky A., Waugh J., Gonzalez P., GonzalezM.,Manta M., Santoso H., Alvarado E., Nuruddin A.A., Rodríguez-Trejo D.A., Swaty R., Schmidt D., Kaufmann M., Myers R., Alencar A., Kearns F., JohnsonD., Smith J. and Zollner D. (2007). *Fire, ecosystems and people: Threats and strategies for global biodiversity conservation*.The Nature Conservancy Global Fire Initiative Technical Report 2007-2.

www.fs.fed.us/database/feis/welcome.htm.

Yibarbuk D. (1998). Notes on traditional use of fire on the upper Cadell River. *In*: M. Langton. *Burning Questions: Emerging Environmental Issues for Indigenous Peoples in Northern Australia*. Centre for Indigenous Natural and Cultural Resource Management, Northern Territory University, Darwin, 1-16.