



**ENVIRONMENTAL
PROBLEMS
CAUSES AND SOLUTIONS**

Editors

Dr. S. V. Rankhamb

Dr. V. B. Kulkarni

Environmental Problems: Causes and Solutions

- Editors -

Dr. S. V. Rankhamb

Dr. V. B. Kulkarni

NOTION PRESS

NOTION PRESS

India. Singapore. Malaysia.

Published by Notion Press 2021

Copyright © Dr. S. V. Rankhamb and Dr. V. B. Kulkarni 2021

All Rights Reserved.

ISBN 9781639043583

This book has been published with all reasonable efforts taken to make the material error-free after the consent of the author. No part of this book shall be used, reproduced in any manner whatsoever without written permission from the author, except in the case of brief quotations embodied in critical articles and reviews.

The Author of this book is solely responsible and liable for its content including but not limited to the views, representations, descriptions, statements, information, opinions and references [“Content”]. The Content of this book shall not constitute or be construed or deemed to reflect the opinion or expression of the Publisher or Editor. Neither the Publisher nor Editor endorse or approve the Content of this book or guarantee the reliability, accuracy or completeness of the Content published herein and do not make any representations or warranties of any kind, express or implied, including but not limited to the implied warranties of merchantability, fitness for a particular purpose. The Publisher and Editor shall not be liable whatsoever for any errors, omissions, whether such errors or omissions result from negligence, accident, or any other cause or claims for loss or damages of any kind, including without limitation, indirect or consequential loss or damage arising out of use, inability to use, or about the reliability, accuracy or sufficiency of the information contained in this book.

Contents

1. A REVIEW ON 'SWACHTA-PAKHWADA' UNDER 'NAMAMI GANGE PROJECT': ROLE OF SOCIAL MEDIA IN PUBLIC AWARENESS.
Aabshar Abbasi 1
2. ENVIRONMENT AND PARASITES
Swati Jadhav and Atul Humbe 8
3. ECOLOGICAL DEGRADATION: AN ALARMING SIGNAL TO BIODIVERSITY
Digvijay S. Kumbhar 13
4. ENVIRONMENTAL EDUCATION: A TOOL FOR PUBLIC AWARENESS
Amul Late 20
5. BIODIVERSITY STATUS OF INDIA WITH SPECIAL REFERENCE TO HOTSPOT - A REVIEW
Dr. P. P. Joshi 24
6. COVID-19 IMPACT ON GENERAL LIFE AND ENVIRONMENT
Pawan R Shingare.36
7. ENVIRONMENTAL IMPACT OF PESTICIDES ON WATER AND AGRICULTURE SOIL
Jadhav T. J.41
8. NEED AND IMPORTANCE OF ENVIRONMENTAL EDUCATION
Kulkarni Vanita Baburao 55
9. FRESHWATER MALACOFAUNA OF AURANGABAD AND JALNA DISTRICTS: STATUS, IMPORTANCE AND FUTURE PROSPECTIVE
Pande, G. S. 63

10. RESTORATION AND CONSERVATION OF SAMTA NAGAR LAKE, AUSA OF LATUR DISTRICT (M.S.) INDIA
Pathan Amjatkhan Vajidkhan 76
11. ENVIRONMENTAL IMPACT OF VARIATIONS IN THE OOCYTES DEVELOPMENT OF FRESHWATER BIVAVLVE, LAMMELIDENS MARGINALIS DURING DIFFERENT SEASONS FROM KURLA DAM, MAHAD TALUKA (RAIGAD M.S.)
Bhosale P.A. 95
12. IMPACT OF ENVIRONMENTAL CHANGE ON INSECT POPULATION
R. B. Desai and R.C.Shinde 103
13. ENVIRONMENTAL POLLUTION CAUSES, IT'S IMPACT AND CONTROL
Sachin S. Sagar 114
14. THE COVID-19 AND ITS INTERFERENCE WITH ENVIRONMENT- A BRIEF REVIEW-Sandip Badgujar, Jitendra Patil, V.D.Shinde and Govind Balde 126
15. COVID-19, LOCKDOWN AND CHANGING ENVIRONMENT
Keshav Gangurde 144
16. THE IMPACT OF CLIMATE CHANGE ON BIODIVERSITY
R. S. Bhalerao153
17. ENVIRONMENTAL STUDY TO ENHANCE CHILDREN'S ENVIRONMENTAL AWARENESS BY PAINTING AND PHOTOGRAPHY
Rajesh B. Desai and Dhanraj R. Desai 161
18. BIOMEDICAL WASTE MANAGEMENT IN INDIA
Mukundraj B. Patil 175
19. ENVIRONMENTAL POLLUTION CAUSES, ITS IMPACT AND CONTROL
S. S.Chavan and Rafi Ahmed ... 182

20. EFFECT OF HEAVY METALS ON FRESHWATER BIVALVES: A SERIOUS THREAT Dr. Jitendra Tulshiram Jagtap 190
21. REVIEW ON MAJOR CONTEMPORARY ENVIRONMENTAL MOVEMENTS IN CONTEXT WITH INDIA - Sandip Badgajar, Jitendra Patil, Govind Balde and V.N.Rathod198
22. CHALLENGES IN BIODIVERSITY CONSERVATION N.G. Shinde 220
23. REVIEW ARTICLE: ENVIRONMENTAL POLLUTION IT'S CAUSES, EFFECT AND CONTROL Avinash Sahebrao Agale 228
24. IMPACT OF COVID-19 PANDEMIC ON ENVIRONMENT: ARTICLE Ankita.V. Shirke 242
25. WATER POLLUTION: CAUSES, SIIDE EFFECTS AND TREATMENTS Dr. Jyoti A. Agashe 246
26. ROLE OF ENVIRONMENTAL EDUCATION, INEARTHQUAKE DISASTER MANAGEMENT IN MAHARASHTRA;A DATA BASED STUDY K. S. Raut and S. V. Rankhamb 258
27. ENVIRONMENTAL AND ECOLOGICAL MOVEMENTS IN INDIA Dr. Salve B. S. 266
28. IMPACT OF WATERPOLLUTION ON FISHES Pathan T. S280

Dr. S. V. Rankhamb # Dr. V. B. Kulkarni

ENVIRONMENT AND PARASITES

Swati Jadhav¹ and Atul Humbe²

¹Department of Zoology, R. P. College, Osmanabad (M.S.)

²Department of Zoology, S.G.R.G. Shinde Mahavidyalaya
Paranda, Osmanabad (M.S.)

Email:swatijadhav27@gmail.com

Parasitic organisms are found in almost every environment ranging from the extremes of cold conditions in the polar regions to hot climates in the tropics. Due to some abiotic factors such as temperature, oxygen, salinity and hydrogen ion concentration are known to influence the temporal and spatial occurrence of parasites and in particular the helminths of fish (Chubb, 1979, 1980). Several scientists through their efforts to use fish parasites as biological tags to assess fish populations have appreciated the importance of parasites as sensitive probes to monitor a range of environmental factors including stress due to pollution (Mackenzie *et al.* 1995; Lafferty, 1997). Fish parasites are indicators of the physiological-immunological state of their fish hosts.

Parasites are common and dangerous among fishes living in confined space such as aquarium, hatcheries, stocking ponds and tanks (Ali, 1990). The degree of damage by infection is influenced to a large extent by the type and the number of parasites present (Bauer, 1941). Parasites can affect fish population by causing mortality, reduction in growth, weight; loss and suppression of reproductive activity (Bauer, 1961).

Invasion forms of parasites actively seek their hosts & are passively transmitted to them via food and water swallowed during active breathing. Fishes living in water these factors also have to examine because pollutants in water may increase parasitism by increasing host susceptibility or by increasing the abundance of intermediate hosts and vectors.

All species of fish are vulnerable to invasion by parasites depending on the species, age, size of fish and type of habitat where they live some parasites and diseases can kill an entire fish population in a short time (Barta, 1984). Pollutants can also decrease parasitism if infected hosts suffer differentially high mortality, parasites are more susceptible to pollution than their hosts or if pollutants negatively affect intermediate hosts or vectors. These effects vary depending on the particular parasite and pollutant that interact. Many factors can alter water quality; it is unlikely that a generalization about the interaction between water quality and parasitism will emerge (Khan, 1991 and Tulin, 1992; Poulin, 1992; Mackenzie *et al.* 1995; Lafferly, 1997). However, one obvious prediction is that pollutants may reduce the immunological capabilities of hosts, rendering them more susceptible to some parasite (McDowell *et.al*, 1999).

Endoparasitic infection often gives an indication of the quality of water since they generally increase in abundance and diversity in more polluted waters (Paulin, 1992; Avenant oldewage, 2001). The infection levels on any parasite depend not only on the changes in ecological stability of the host, but also on certain external factors such as temperature and rainfall This is all true in case of Poikilothermous hosts, which are easily influenced by the variations of the climatic factors. The rainfall and temperature usually affected the host and its contained infection.

DISCUSSION AND CONCLUSION - Helminth parasites show negative correlation with Transparency, Free carbon dioxide, Rainfall, humidity and also parasites shows positive correlation with Temperature, pH, Turbidity, Electrical conductivity, Total Dissolved solids, Dissolved oxygen, Alkalinity, Chloride, Hardness. Positive correlations show or indicate that when one variable increases i.e. (Physico chemical parameters) then other variable (parasite population) simultaneously increases. Negative correlation shows or indicates that when one variable increases i.e. (Physico chemical parameters), then other variable (parasite population) simultaneously decreases. Increase in temperature with increase in parasitic rate, it's because during High temperature created suitable conditions for their reproduction (Khan M.N.,2003). These may be attributed to the fact that increasing the pH and calcium carbonate in water of fish ponds represent a stress factor on respiration process of fish, especially the gills and may be facilitate such parasites to infect fish.

Increase in Carbon dioxide, decreases the dissolved oxygen level in water, in the low oxygen result in decreased intensity of parasites. Seasonal environmental changes of water (eg. temperature, pH, conductivity) affect the parasites of aquatic hosts (Dogiel, V.A. 1970). These may be attributed to the fact that increasing the pH and calcium carbonate in water of fish ponds represent a stress factor on respiration process of fish, especially the gills and may be facilitate such parasites to infect fish (Eissa, I. A.M.,2011). Increase in Turbidity, total dissolved solids represents increase in harmful organisms that are responsible for decreasing dissolved oxygen level and ultimately its affect on the fish health (McKee. and Wolf, H.W., 1963).

Increase in Hardness, it will affect toxicity, which increases the fish diseases also effect on fish osmoregulation. (Frank Prince Iles, 2011). Fish are influenced by the surrounding water. Osmosis or the movement of water molecules can make

fresh water fish vulnerable to flooding water, while marine fish suffer from effluence of water. Fish body has natural regulator against osmosis which is referred to as osmoregulation. The more the fish releases fluids for osmoregulation increases the osmotic effect. Thus, fish diseases are sometime triggered by water hardness when fish can no longer cope with the increased osmoregulation (Trya Robertson, 2010).

The main pathways used by assemblages of aquatic parasites in response to pollutants were reviewed by Poulin (1992) who showed that parasite communities are influenced indirectly by pollutants which are toxic both to fish and invertebrate hosts and directly to the parasites and their free living stages. Whilst fish and invertebrates have been used extensively in standard toxicity testing, Kennedy (1997) has argued that the relationships between the environment and the fish host and its parasites will not provide an easy option for monitoring environmental change in pollution incidents. Kennedy also suggested that parasites of aquatic hosts and, in particular, fish did not offer clear advantages over the use of free living organisms as indicators of pollution other than providing additional, or confirmatory, sources of information. Author demonstrate that how aquatic fishes and their parasites are likely to indicate changes in water quality and play a significant role in our understanding of natural aquatic ecosystems. This data will help to fill the gaps in our knowledge of parasitism and environmental pollution.

References –

CHUBB, J. C. (1979). Seasonal occurrence of helminths in freshwater fishes. Part II. Trematoda. *Advances in Parasitology* 17, 141–313. Google Scholar

CHUBB, J. C. (1980). Seasonal occurrence of helminths in freshwater fishes. Part III. Larval cestoda and nematoda. *Advances in Parasitology* 18, 1–120. CrossRefGoogle Scholar

EISSA, I. A.M.; GADO, M. S.; LAILA, A.M.; MONA S. ZAKI AND NOOR EL-DEEN, A. E (2011):Field studies on Prevailing Internal Parasitic Diseases in Male and hybrid tilapia relation to Monosex Tilapia at Kafr El-Sheikh Governorate Fish Farms. *Journal of American Science*, 7(3).

KENNEDY, C. R. (1997). Freshwater fish parasites and environmental quality: an overview and caution. *Parassitologia* 39, 249–254. Google Scholar

LAFFERTY, K. D. (1997). Environmental parasitology: what can parasites tell us about human impact on the environment? *Parasitology Today* 13, 251–255. Google Scholar

MACKENZIE, K., WILLIAMS, H.H., WILLIAMS, B., McVICAR, A.H. & SIDDALL, R.

(1995). Parasites as indicators of water quality and the potential use of helminth transmission in marine pollution studies. *Advances in Parasitology* 35, 85–144. CrossRefGoogle Scholar

POULIN, R. (1992). Toxic pollution and parasitism in freshwater fish. *Parasitology Today* 8, 58–61. CrossRefGoogle Scholar

Environmental Problems : Causes and Solutions



Dr. Santosh Vasantrao Rankhamb is Working as Assistant Professor and Head, Department of Zoology, Late Ramesh Warpudkar ACS College Sonpeth, Dist. Parbhani Maharashtra, India Since 2011. He has published 14 research paper in reputed National and international journals and edited one book.



Dr. Vanita Baburao Kulkarni is working as Associate Professor and Head, Department of Hindi, Late Ramesh Warpudkar ACS College Sonpeth, Dist. Parbhani. She has 25 Years of teaching experience. She has published 55 research paper in National and international journals and authored one book. She is recognized research guide of SRTM University, Nanded. She is awarded with several awards.

NOTION PRESS
PUBLICATIONS

Price Rs 350.00
ISBN 978-1-63904-358-3



9 781639 043583