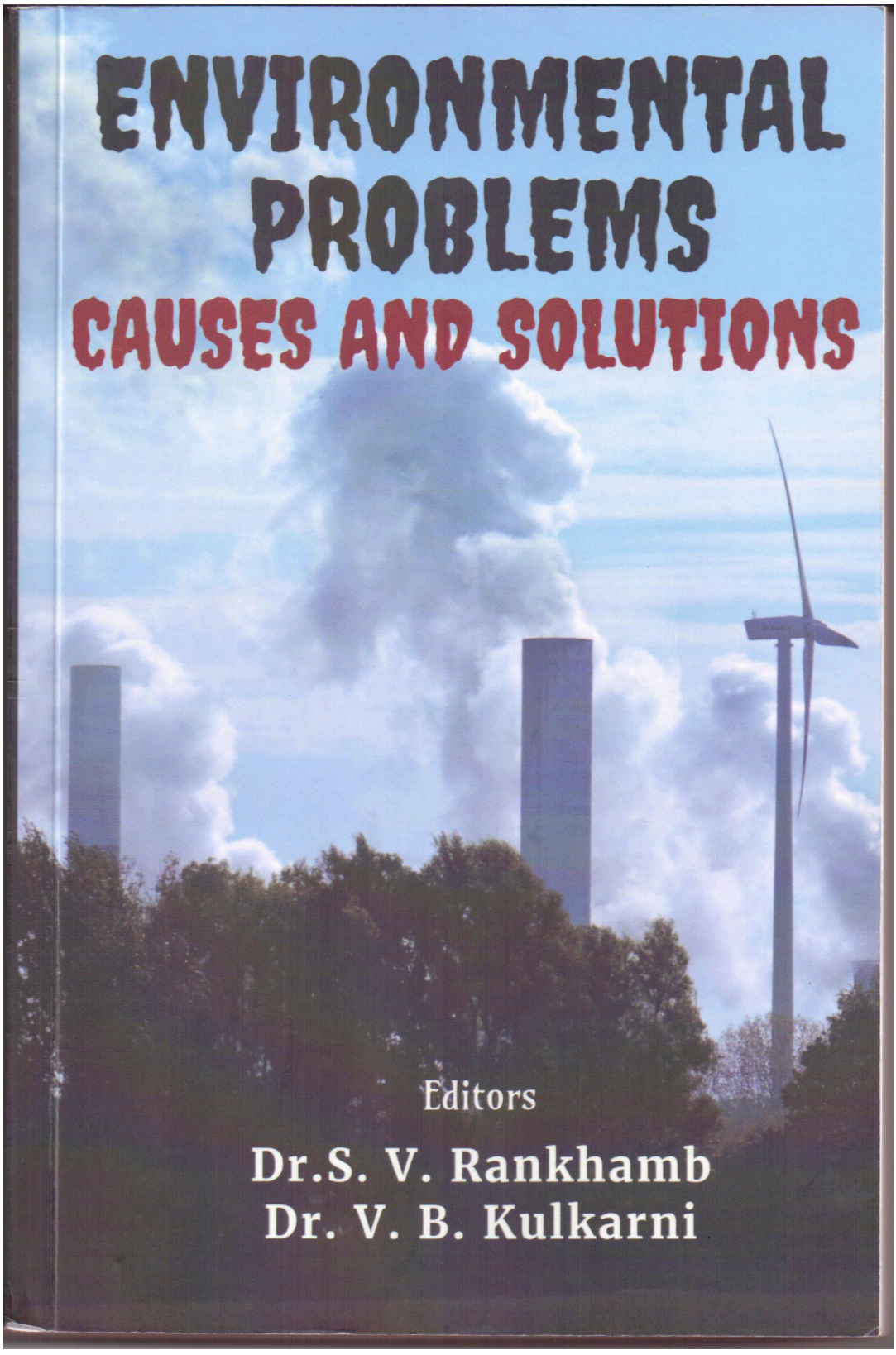
ENVIRONMENTAL
PROBLEMS
CAUSES AND SOLUTIONS
Editors
Dr.S. V. Rankhamb
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Environmental Problems: Causes and Solutions

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ENVIRONMENT AND PARASITES

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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 indicates 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.

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Environmental Problems : Causes and Solutions

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