

LIMNOLOGICAL VARIATION AND ITS EFFECT ON FRESH WATER BODIES OF DISTRICT KALAT (KARCHAP DAM MANGOCHAR) BALOCHISTAN, PAKISTAN

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Abstract

The current occupation paying attention on the seasonal dissimilarity in the physico- chemical parameters of clean water Karchap dam, situated at Mangochar in Kalat district the study is carried out from February 2017- March 2018. (Rafique, R.N., Mehboob's., Ahmad (2002). Mirpurazad Kashmir int. J, Biol 4:223-226) whole of 10 parameters were analyzed & seasonal dissimilarity in standards of one year is discuss monthly variation in the physical biological and chemical parameters' such as temper, pH total alkalinity, dissolved oxygen, free CO₂, total hardness, total dissolved solids, BOD, COD, Mg hardness, transparency, salinity, nitrate, phosphate were investigated. All the parameters are possible limits on monthly basis. For biological life zooplankton, biomass may vary considerably from season-season and between successive years. The statistics (facts & figures) is represent as continuing mean +_ S. D with coefficient of dissimilarity. far above the ground value of physical-chemical parameters were notice payable to entrance of agriculture run off & irregularly flow of sewage into the dam. It is considered that limnological condition are model for fisheries growth specially for cold H₂O fishes. records have analyzed statistically by means of standard deviation & standard mistake mean. (like color odor found in stable range). The physiological properties of Karchap (Mangochar) Dam were clear of the limit of WHO for drinking purposes. The results were compared with WHO H₂O principle. (WHO, WFCF, APHA, standard methods DC, 2007).

Key Words: Physico – Chemical, Parameters, Mangochar, Mam, Limnology Kalat.

1. Introduction

Pakistan is unique enormous cultural country variety connected with the entire sort of climate, rich flora & fauna. Baluchistan province cover a vast area in the southwest of Pakistan. It is a meagerly occupied land neighboring Afghanistan & Iran. greatly of it is a towering unfruitful upland 1,000 to 1,250 meters (3,000 to 4,000 feet) over sea stage with this by the Tobakakar mountain series beside the Afghan border & by the Suleiman series which boundaries the Indus river, to the south lies 1 of the majority uncongenial deserts in the world, the Makran Baluchistan is particularly wealthy in biodiversity (Cosgrove W. J; Rijsberman F. R;2000). another area of importance too biodiversity are the mangroves forest of the Makran cost Niaman,et.,al(2006) water is plentifully obtainable substance in environment, which gentleman has develop extra than several income for the nourishment of existence. H₂O of first-class excellence is compulsory for alive creatures.H₂O property



contribute present knowledge about the attentiveness of a variety of solutes at a particular, place & time. H₂O excellence parameters provides the source for judging the appropriateness of H₂O for it's designed usage & to get better obtainable surroundings. (Shindess, VN, Muley SP, 2011, 2(2), 207-213). Present data is important and desirable which is allow for H₂O excellence programmers. Loyed R, (1992). As of currently just world is the planet heaving approximately 75% of H₂O. however due to greater than before human population industrialization, use of plant food in the agriculture & artificial activity it is exceedingly impure with diverse injurious contaminants. Pollution of water IS measured by parameters of water. The excellence of H₂O for its greatest exploitation like drinking, irrigation, fisheries & industrial purpose & also supportive in indulgent the composite process communication b/w the climatic & biological process in the H₂O. Khan s.u Mahood-ul-Hassan (2010).

Fig.1. Wall boundry of karchap dam

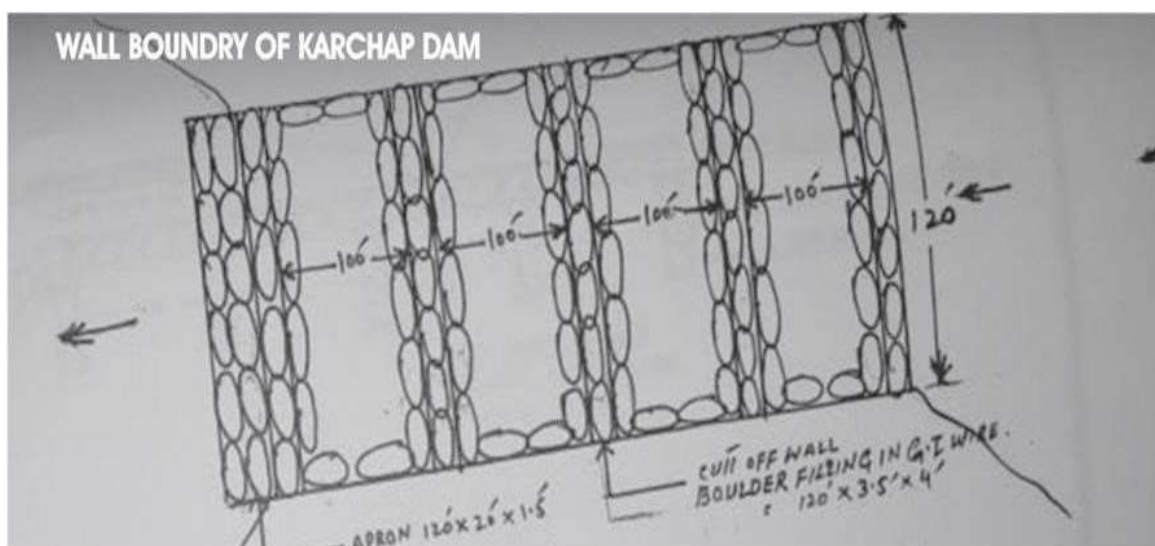
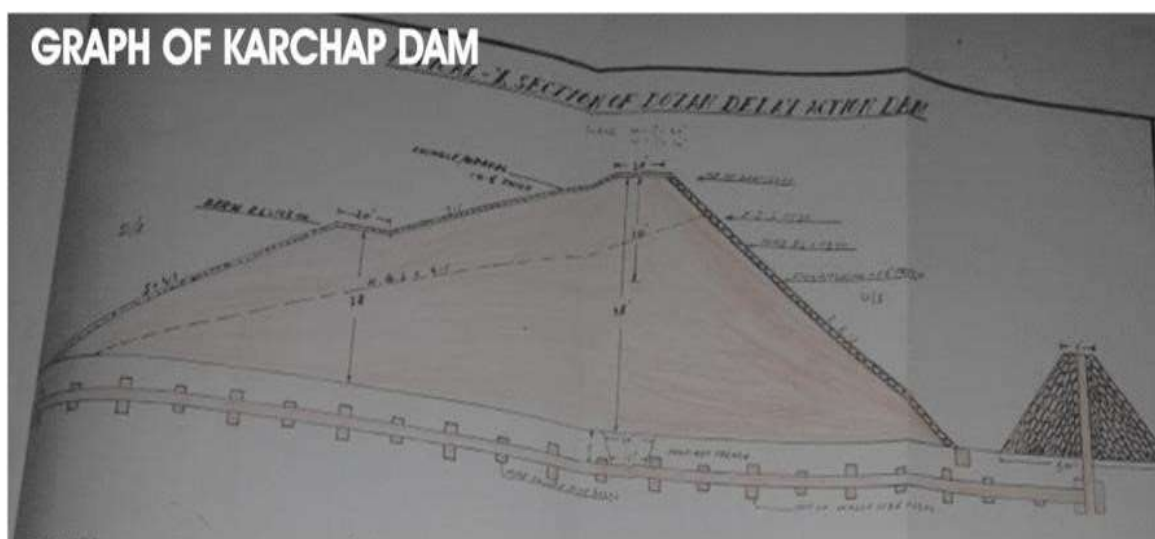


Fig.2. Graph of Karchap dam



Kalat is a tribal area of Balochistan Pakistan which particular reference to its crash on fish expansion & nonstop survival. Through soil analyzed in the present study includes i.e. color, odor, temperature, pH TDS, from the product of the present survey, it was accomplished that Karchap Dam is good to support the survival and production of aquatic life especially fish fauna. Total geographically area of Kalat district is (6,621 km²), (2'556sqmi) square kilometer. Karchap Mangochar dam is imperative source of drinking water & irrigation H₂O in the district. Sarwar, s., Ahmad, F (2007 agric., 23;1041-1046) (Venkateshharaju, K, Smashekar RK journal of ecology 2010 2(1),1-9. The typical weather of the district is normally waterless moderately waterless weather prevails in Kalat valley. The district is positioned at an elevation of (1928 meter). there for the water is enormously dry.

The H₂O is very chilly & the lowest amount temp series b/w 15-7 C° in summer is comparatively gentle & the greatest temp range b/w 32-35 C°. in spring the summer season there is enormously little rain falls, the heaviest rain falls & snow falls happen in Jan & Feb. The main H₂O flow to the different water bodies starts from Mehrab mountains, the water to dams have all seasonal and from snow. Siddiqui (1962) river of Bolan, Hub, Zhob). So good H₂O & soil quality is extremely necessary for continued existence & development of fish.

Fig.3 Map Representing Kalat Area



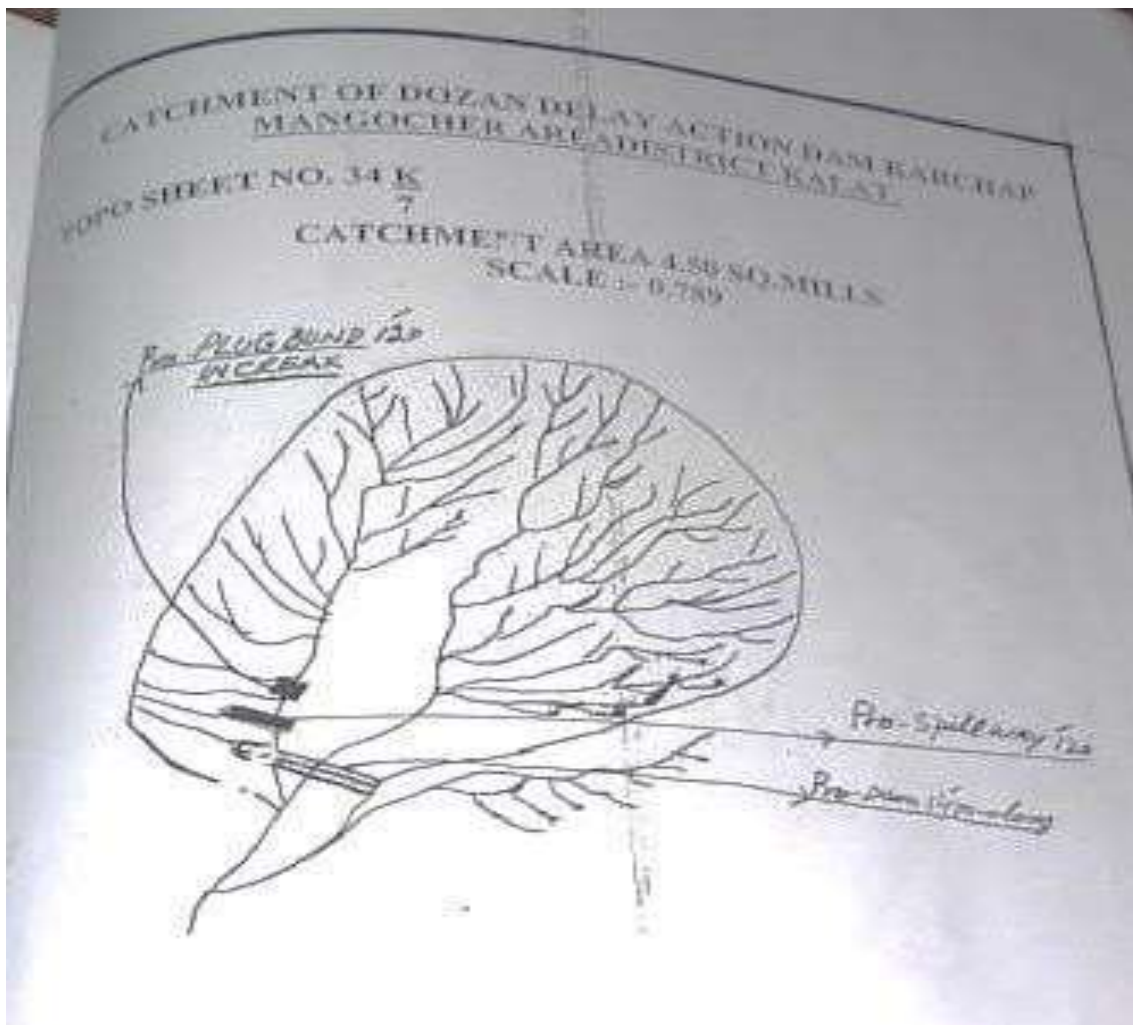
2. Material and Methods

For the examiner of Physico-Chmical H₂O samples were together in the morning hours in between (10:00AM to12:00AM) from the Karchap Dam exterior in a fresh bottle for the duration of 1 year in one little bottle from three sites of the dam water sample from dam was collected every month. a quantity of the consequences was noted at the example sites where as the others were noted in the laboratory. The physical parameters such as temp & digital pH meter. the intelligibility of H₂O to daylight was calculated by utilize Secchi Disc, & also turbidity was measured by Secchi Disc method dissolved water oxygen, hardness, sulphates overall alkalinity, chlorides, & dissolved solids, free co₂, acidity and BOD etc. all these determinates by average methods & also determinate in laboratory as per average methods. APHA, (2005)



Study Area

Fig. 4. Catchment Area of Karchap Dam



THE REPORT WAS DONE ON KARCHAP DAM WHICH IS LOCATED IN KALAT DISTRICT IN THE BALOCHISTAN AREA OF PAKISTAN WRITTEN REPORT WAS ABOUT 2YEARS.

Mangochar valley is famous for fruits and other cash crops. the source of agriculture is depending tube wells in the area. But now the water depth is so much deep having no water in Mangochar area. The site of scheme is located at the district Kalat Mangochar toward northwest direction .it is situated 139km (2hr 3in) away from Quetta City. Which is 40km away from

Kalat district. the dam is dead water & hexagonal in form IT is measured on every side total length is 750ft, average height 48ft, 'U\S and D\S slopes 2.5:/ and 4.1, top width 20ft, U\S stone pitching '1.5ft thick, and flow of water depth 4.30ft, storage capacity 266Acre\feet, catchment area 4.50sq, Discharge 3500cs. (Aftab-ur-Rehman ,. 1988) Mangla dam project 6 1st annual session paper no 490) the dam serves as H2O preserve for agriculture, washing clothes & for drinking& washing household animals.

3. Result and Discussion

Water samples collected were analyzed for Physico-Chemical parameters and result are specified in table (1) also having graphs, shapes angles of dam. Water is important source of all biological activities. the present investigation on physic-chemical parameters & it's effectuated on fish manufacture in Karchap dam. Baluchistan is a challenge to characterize the H₂O bodies in term of productiveness. Table 1 showing the importance about some parameters of H₂O sampling dam such as ph, TDS, Temp, conductivity of fish produced in Dam.

Physical parameters Temperature

Average water temperature during the study period was found to be in range of (10-20c) during sampling. the minimum temperature (0c) was pragmatic throughout the month of January, (2017) & the maximum temp notice throughout the month of June (18.5c) 2017. [10,11] (Salve BS ,CJ 2006) (jayabhaye UM, pentwar MS, Hiware CJ 2006). Detect that throughout winter H₂O temp highest due to near to the ground H₂O stage & environment was not clear. the level of hotness or coldness in the body of alive organisms is termed as Tempe. Fish is clod blooded animal its body temp modify accordance to its environment affecting the fish production.

Turbidity

The turbidity ranges from (11.0 -35.6 NT) units. the greatest limit "n" valuate (66.6NT) units during the July month 2017, and the smallest amount turbidity range (11.0 NT) units was notice for the duration of the month of January 2017.comparable outcome was observed by Manjare et.,al (2010). (joshi DM KumarA, Agrawal 2009).

Total Dissolved Solids (TDS)

The TDS is quality of all dissolved material in water. Normal TDS range from 5-1000mg/l (Brady, N.C. and R.R weil 2004). TDS value of water were 310mg/l which were in the desirable range for fish growth and survival. The TDS range wavered from (305 mg/l- 155 mg/l) the highest level of TDS institute in month of June. (305 mg/l) and the minor value create for the period of the month of September (155 mg/l).

Electrical Conductivity (EC)

Conductivity is most important sign of fish manufacture. Conductivity of H₂O calculates on its ionic concentration, temp, & on variations of resolve solid state. The electrical conductivity in the H₂O of the dam analyzed during the study period has been found to be fluctuating b/w (310 μ s) high level & (211 μ s) low level, hence all these value lies within the desirable range for fish survival. conductivity of fresh water is mostly ranged from 50 to1500 us/ml u (Boyd ,c.e 1979. Water quality).



Chemical Parameters

pH is a general phrase usage to convey the final strength of the acid or alkaline status of solution. The pH of a marine environment is closely related to biological productivity appropriate pH variety for fish survival is b/w 6.7 & 9.5, while perfect pH range for fish survival the above or below is stressful for fish. Throughout the nearby study the pH of the H₂O sample ranges from (7.5) in September OF month 2017, to (7.9) in the November of month. This variety indicated that the H₂O is AlkalIC in condition. (Alaka PA 2014; journal of environment science 3:48-53).

Dissolved Oxygen (DO)

Dissolved Oxygen is compulsory for fish cultivation because the resolved O₂ necessities of several fish class various with the (age), (temperature), & awareness of (minerals) in H₂O (A. A khan and A.Q (1974) During the study time period we observed that the dissolved oxygen value was ranged from(10.0mg/l) high level-(2.7mg/l)low level.(Mali KN,2004,7,113-119). consequently, DO is appropriate to maintain a well-to-do fish fauna.

Total Salinity

Salinity affect the quality of H₂O which has vital influences on marine biology & every kind of organism has atypical salinity collection that it can accept. Salinity of soil is essential for the fish strength and it increases the vital slim coat of fishes.

During present investigation the total salinity of dam water which is we get in different time period of a one year was the highest value (0.4 g/l) and the lowest value was 0.0.

Biological Oxygen Demand (BOD)

The present study of the total (BOD) biological oxygen demand of the water in the dam ranged from 13.4 Mg/l was highest value and the lowest value was 7.5Mg/l.

DISTRICT KALAT (KARCHAP DAM)

SEASONAL VARIATION (MEAN + SD (CV) IN PHYSICO-CHEMICAL PROPERTIES OF WATER (2017-2018) TABEL. 01:

Parameters	Summer (June July August)	Winter (Dec, Jan ,February)	Spring (Mar, April, May)	Autuam (Sep , Oct, Nov)
PH	7.766±0.1247(0.0160)	7.0666±0.0942(001334)	7.233± 0.205 (0.0284)	7.33±0.418(0.0571)

Temperature	20±2.857(01428)	4.333±5.436 (1.2545)	9.666± 4.496 (0.465)	10.1667 ±1.465 (0.1441)
Do	3.2333±0.3771(0.16)	9.133±0.6342(0.6694)	5.3 ± 1.1025(0.2093)	9.9333± 0.094(0.009)
BOD	5.1±0.489 (0.085)	10.433±2.955(0283)	8.966± 1.302(0.145)	9.433± 0.703(0.0772)

TDS	264 ± 29.473(0.116)	206.66±88.42 1(0.185)	255± 14.719(0.057)	172.833± 13.356(0.0772)
Conductivity	296.33±10.656 (0.0359)	256.66±16.49 9(0.0)642	264.6± 8.178(0.030)	263.33± 12.472(0.0473)
Salinity	0.1333±0.0471 (0.353)	0.133±0.1247(0.9354)	0.1333± 0.047 (0.353)	0.0± 0.0816(0.272)
Turbidity	51.6±20.5086 (0.397)	16.833±7.542(0.448)	26.533± 6.527(0.2459)	27.066± 5.3080(019)

Biological Parameters

Biological water characteristics are used to describe the presence of micro biological organisms and other organisms like algae, algae are mostly major inhabitants of water body and also play important role in food chain of aquatic ecosystem. their presence of absence



indicates quality of water body. Many organisms can cause illness when directly consumed by human and animals. (14) water superiority has developed into a worldwide concern payable to in excess of growing population & developmental behavior that had in excess of develop and contaminated the H₂O possessions obtainable to us. In this background an effort has been completed to evaluate the excellence of H₂O in Karchap Dam.

The result obtain from PhysicoChemical psychoanalysis were equivalence with 2 standards specifically WHO, BIS. In now days study all the parameters (BOB), (TDS), (DO), were create to be within acceptable confines. The H₂O body is not appropriate for drinking purposes. So likely counteractive method should be adoptive for this H₂O limit their fourth H₂O resource. As the TDS & EC charge are within the limitation there for the water of this dam know how to be used for irrigation function. (15). Venketesharaju.et al., (2010).

4. Conclusion

During one year of keep an eye on we come to the determination that as dissimilar behavior completes at the locate power of pollution utilize at the place is not similar for each day. As concentration stressed out on H₂O body is dissimilar for dissimilar days. It's not likely that we obtain similar result of physic-chemical parameters throughout similar seasons of all year. The present study has been focused on to limnological study of dam of high altitude specific environmentally associations. The Physico-chemical individuality of Karchap dam not compulsory there was toxic for drinking water but suitable for irrigation. it is concluded that physic o-chemical parameters of Karchap dam is suitable ranges of fish culture.

Karchap dam indicate that the growth rate is quite satisfactory and found to be with in the suitable range of fish culture. our result indicates these parameters of soil & H₂O such as pH, Temper, TDS & smaller amount of comparable to the mean signification for aquaculture activity in district Kalat Karchap dam. community observed is as well more or less associated to the analysis.it can be suggested that the water physical characters in Karchap dam 100k similar to be suitable for evolution of aquaculture & that if suitable organization approach determination not be established than the aquaculture determination not be established than the aquaculture determination successfully developed in Pakistan.

5. Reference

Aftab-ur-Rehman, 1988 *Mangala Dam project appraisal of performance of structures and bedrocks*. Paper present at Pakistan. Engineering congress,.6 1st annual session proceeding paper No 490.

Alaka PA(2014) *An assessment of water quality of Bargaon reservoir in Sangli district of Maharashtra India , international Research Journal of environment science* 3:48-53.

APHA (2005) *standard methods of examination of water and waste water*. American public health association, Sawana Hingoli district Maharashtra.



- APHA, AWWA, WFCF, WHO, *standard methods for the estimation of water and waste water, 20th edition*, American public health Association, Washington, DC (2007)
- Boyd, C. E. (1979). *Water quality in warmwater fish ponds* (No. 639.3 B6923w Ej. 1 009523). AUBURN UNIVERSITY,
- Cosgorve W.j; Rijsberman F.R. *world water vision making water everybody's*. world water council earthman London Uk 2000.
- Jayabhaye UM, Pentewar MS, Hiware CJ (2006) A study on physic -chemical parameters of a minor reservoir sawana, Hingolidistrict Maharashtra.
- Joshi DM, kumar A, Agrawal (2009) *studies on physic-chemical parameters to assess the water quality of river Gamg of drinking purpose in Naridwar district, RasayanJ.chem* 2:195-203.
- Khan S.U., Mahmood-ul- Hassan. *Classification of Pakistan, paper presented at the BA/wois 2010-ohrid republic of Macsdonia 25-29 May 2010-pp.1-49.*
- Lloyd R. *pollution and fresh water fish fishing news Books*, (1992). Alabama, pp: 359.
- Lubal, M. J., Sutar, A. U., & Pawar, K. W. (2012). *Studies on Physico-chemical aspects of Mhaswad water reservoir of Satara District (Maharashtra) India. IJPAES*, 2(3), 12-15.
- Mali KN SC. *Assessment of primary and hydrological characterization of a fish culture pond*, Gujarat. *India Hydrobiology* ,2004,7,113-119.
- Niaman,R.j;prieue-Richard ,A.-H; soto,D;stiassy,M.J;et al *fresh water biodiversity importance, threats ,status and conservation challenges*.*Biol.Rev.*2006,81,163-182.
- Rafique, R.N., Mehoob, S Ahmad M .and saleem S., 2002. *Seasonal variation in Magla reservoir at sukian*, Mirpur, (Azad Kashmir) *int .j.Agric,Biol* 4:223-226
- Salves BS, Hiware CJ (2006) *studies on water quality of wanpakal pa reservoir Nagapur, near ParlivaajinathDistBeed, Marathwada region*, *j aqua Bio* 21:113-117.
- Sarwar,s.,Ahmad ,F. and khan.j 2007 *assessment of the quality of Jhelum river water for irrigation and drinking at district Muzaffarabad Azad Kashmir sarhad* *j.Agric.*,23:10411046.
- Shinde ss, Kamtikarvn, Muleysp, NimbalkarRK.*studies on phvsico-chemical parameters of water and zooplanktons diversity in khan rtver Aurangabad district (Ms India)* *bioscience discovery* 2011, 2(2), 207-213
- Siddiqui (1962) *studies on the fish fauna of river Bolan, Hub, Porali, Dasht Rakshan and Zhob river.*

