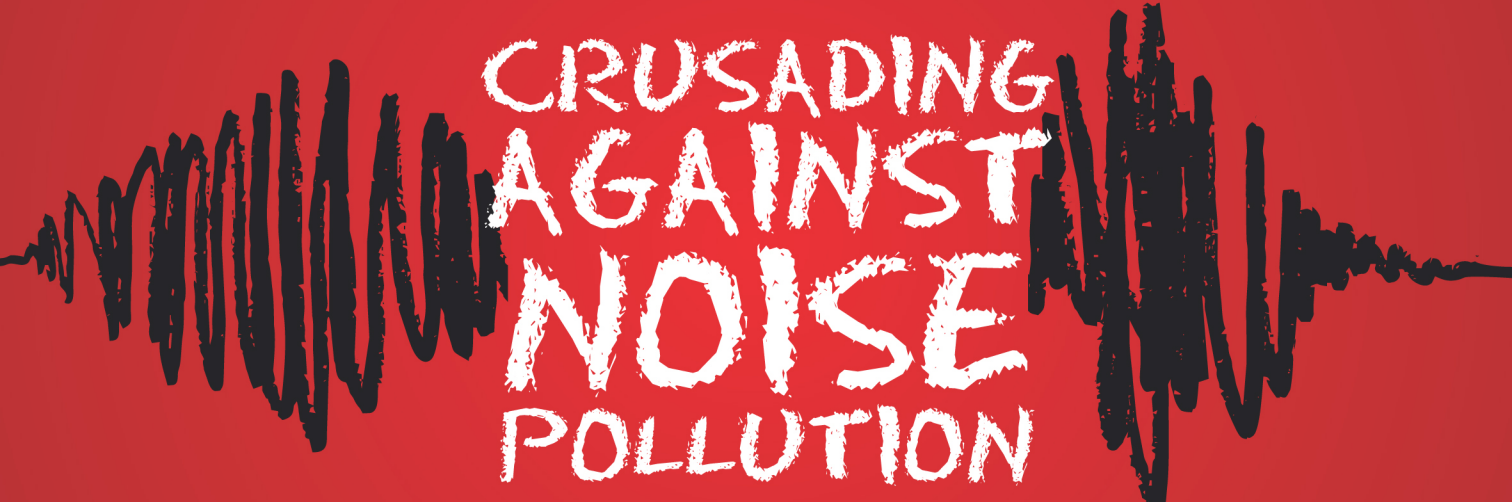


geospatial TODAY

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CRUSADING AGAINST NOISE POLLUTION

For over a decade the Awaaz Foundation has been campaigning against growing noise pollution in Mumbai and surrounding areas.

The movement is gathering momentum as more and more people are becoming noise activists with growing awareness.

The Central Institute of Fisheries Education initiated a project for mapping fish production across districts in Chhattisgarh and a GIS tool has been developed to analyse the data and put forward critical suggestions for improving aquaculture in the state. **Ram Singh** and his colleagues present a brief on how the project was implemented

PROMOTING AQUACULTURE IN CHHATTISGARH

Chhattisgarh is one of the 35 constituents of the country and occupies an area of 1,35,194 square km, which is 4.14 per cent of the geographic area of India. Uttar Pradesh in North, Jharkhand in North East, Odisha in East, Andhra Pradesh in South, Maharashtra in South West and Madhya Pradesh and Maharashtra in West form its borders. The state has three agro climatic zones – northern hills, central plateau zone and Bastar plateau zone. The Central Institute of Fisheries Education has developed a GIS tool for promoting aquaculture in



Chhattisgarh. The exercise helped in analysing the current status of aquaculture and provided valuable feedback for increasing fish produce in the state.

Objective

- i. To digitize Chhattisgarh on district level.
- ii. To feed secondary data in Microsoft Excel and find out the fish production growth rate during the 2000-2012 period.
- iii. Join the different datasets with the digitized map of

Chhattisgarh in ArcGIS 9.3.1 and create different thematic maps.

- iv. On the basis of data analysis and result findings give suitable suggestions for more fish production.

Sources of data and methodology

- Fish production data at district level has been taken from Chhattisgarh Mat say Udog Sankhyiki
- Base map has been taken from Census Map of India.
- After scanning the map of Chhattisgarh (district wise) is reregistered in ArcGIS (9.3.1)
- Data on fish production (in Excel tables) is Joined with the digitize map of the state in Arc GIS (9.3.1)
- After joining the Excel tables with digitized map of Chhattisgarh, different thematic maps relating to fish production growth,

fishermen population, inland water area have been prepared.

Growth in fish production at district level has been calculated based on data collected from secondary sources – hand-book of fisheries statistics 2012 published by Chhattisgarh government. Total fish production data for all the districts for the period 2000-12 has been brought in tabular form using Microsoft Excel and the growth rate in fish production has been calculated using the following growth-rate mode in Microsoft excel sheet.

Growth in fish production (y) has been analysed by using the exponential growth function of the form

$$Y=ab^t \quad \dots(1)$$

Where a = intercept, b= Regression Co- efficient, t=Time

The above mentioned

equation has been used to obtain the growth-rate (r) for total fish production of Chhattisgarh separately for the period [2000-12]. Linear form of the equation is obtained by taking logarithms of both sides which is given by

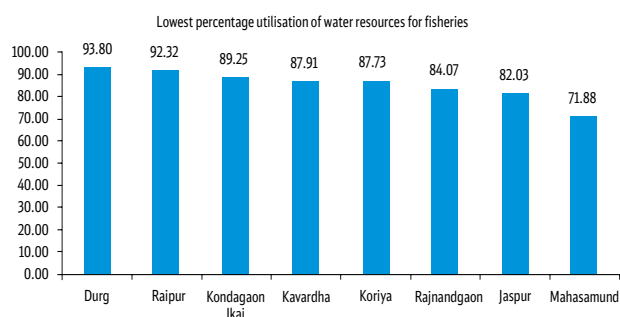
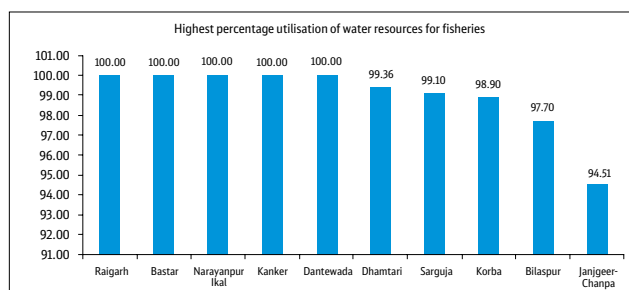
$$\log_e Y = \log_e a + t \log_e b \quad \dots(2)$$

The exponential growth rate (r) can be computed by using the relationship

$$r = [\text{Anti log } e \text{ of } b - 1] \times 100 \quad \dots(3)$$

Growth rate has been calculated in Microsoft Excel and it is joined to the digitized map of Chhattisgarh by allotting a location code (LC) number to each district. Geocoding is performed for customized layering of data in the thematic map developed using ArcGIS. The first layer in thematic map was created for fisheries growth rate in Chhattisgarh, the second layer represents the number of ponds, district





wise for the year 2012. This thematic information is related to Map1. In ArcGIS MAP 2 is created for fishermen population with their occupation status.

Result and discussion

Fisheries growth rate with utilisation of pond resources: In Map 1 (layer 1), districts

are categorised based on fish production growth rate. The lowest growth rate is below 6.05 per cent found in five districts namely Durg, Bilaspur, Koriya, Jaspur and Raigarh. The second last position is occupied by seven districts namely Rajnandgaon, Kabirdhan, Korba, Janjir Chanpa, Raipur, Mahasamund and Dhamtari, with growth rate between (5.69 per cent to 12.33 per cent). Ambikapur and Kanker districts occupy the third last position with fish production growth rate ranging between 20.85 per cent- 44.35

per cent. Narayanpur and Dantewada districts have the second largest fish production rate of 20.80 per cent - 44.35 per cent. The highest growth rate of 74.4 per cent in fish production is found only in Bijapur.

Layer- II, utilisation of pond (water resources): The largest (100 per cent) utilisation of water resources for fish farming is by following districts – Raigarh, Bastar, Narayanpura, Kanker and Dandewada.

In these districts the growth rate in fish farming is highest except in Raipur where the growth rate is 9.20 per cent, whereas Birapur (Baster) has a growth rate of 161.41 per cent, Kanker 20.66 per cent, and Narayanpura 44.35 per cent.

The lowest percentage of use of water resources has been identified in Mahasamund (71.88 per cent) Jaspur (82.03 per cent), Rajandgon (84.07 per cent) Koriya (87.73 per cent) and Kavardha (87.91 per cent).

Fishermen population: Highest fishermen population is found in Durg, Bastar, Raipur, Rajnandgaon, Dhamtari. In Durg general fishermen (by caste) is more and in Bastar professional fishermen population is more. Raipur Rajnandgaon, Dhamtari and Bilaspur contain more of general fishermen.

Lowest fishermen population in the state: Koriya, Dantewada, Kavardha, and Korba contain low fishermen population. In these districts population of fishermen by profession is more.

3. Import and export of fish status in Chhattisgarh: It has been observed that in certain districts where population is

more and fish consumption is also high, fish is imported from surrounding states. These districts include Raipur, Kanker, Koriya, Bastar and Sarguja.

In Bilaspur, Dhamtari, Janjageera, Mahasamunda and Durg districts, important fish species are bred which are exported to U.P, West Bengal and Mumbai (Maharashtra).

Conclusion and Suggestion

Chhattisgarh is situated in the center of the country, and has enormous potential for fisheries development. Its climate & meteorological condition is favourable for aquaculture. Some suggestions for more production of fish in the state are followings:

- Production and distribution of fish seed should be increased in all districts.
- Supply of quality seed for stocking.
- Reservoirs and reverie should be developed for better fish breeding.
- Training should be imparted to farmers and out of the state study tours should be conducted to teach them new techniques of fish farming.

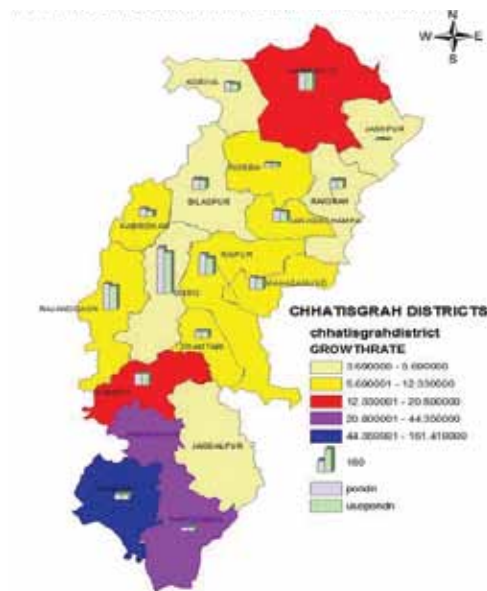
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Fisheries Growth Rate 2000 - 2012 with ponds