

Fisheries Potential of Village Dams in Northern Ghana

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Fish constitutes over 60% of animal protein component of diets in the majority of Ghanaian communities. However, its availability in inland rural communities is low. The situation adversely affects the nutritional status of the people and thus their socioeconomic performance. Major factors contributing to scarcity of fish in inland rural areas are accessibility to traditional fish sources and markets.

There is growing evidence that rural small waterbodies (SWBs) could contribute considerably to improving fish availability. Sustainable fish production from SWBs requires their management, for which information on the characteristics of the waterbodies, e.g., the limnochemical status and characteristics of their fish stocks, is needed.

Hundreds of SWBs in the form of village reservoirs/ponds/dug-outs exist in the Northern, Upper East and Upper West Regions of Ghana, where water conservation for aquaculture, live-stock and domestic purposes is most crucial.



In Northern Ghana, hundreds of reservoirs (foreground) were constructed in the vicinity of villages (background) in topographically suitable locations. All PHOTOS BY MARK PREIN

Most of these waterbodies dry up during severe dry years as in 1982-1984. That situation hastened the efforts of the Fisheries Department to develop SWBs.

There is the need to assess and appropriately develop the fisheries or aquaculture potential in such areas as a basic developmental activity. Currently, fisheries production from these bodies could be just a small part of their potential.

We made a twelve-month assessment of the fisheries and aquaculture potential of SWBs in the West Gonja District of Northern Ghana as part of preparatory activities of the Programme for Rural Action (PRA) of the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) based in Tamale, Northern Ghana. Our report* submits recommendations for fisheries development in the SWBs with due recognition of other uses for which they would be required.

Our survey involved investigations into the limnology, phytoplankton, benthos, zooplankton, fish and fisheries of three SWBs in the West Gonja District. The reservoirs were at Busunu, Achubunyo and Damango (Fig. 1). The primary ob-

*The published project report is: Abban, E.K., P.K. Ofori-Danson and C.A. Biney. 1994. Fisheries and aquaculture development assessment of impoundments in West Gonja District, Northern Ghana. IAB Tech. Rep. 136, 75 p. Institute of Aquatic Biology, CSIR, Accra, Ghana.

jectives of the project were to establish whether the fisheries within reservoir basins in the West Gonja and Nanumba Districts (Northern Region) could be enhanced and aquaculture associated with the SWBs could be viable. For sociopolitical reasons, the reservoirs in the Nanumba District could not be assessed during the study period.

The study area was a typical tropical savanna area. Reservoir waters were replenished during the short wet period (June until October). Water levels decreased greatly during the long dry period, mainly through evaporation.

Physicochemical monitoring of waters of the impoundments showed that they could support fish life. Water temperatures ranged from 23.0 to 31.5°C. Nutrient levels determined in the waters were acceptable but low. It was therefore not surprising that both primary and secondary productivity levels were observed to be low. The situation could, however, be enhanced to support reasonable fisheries.

Waters of all the reservoirs were poor in important algal species diversity and

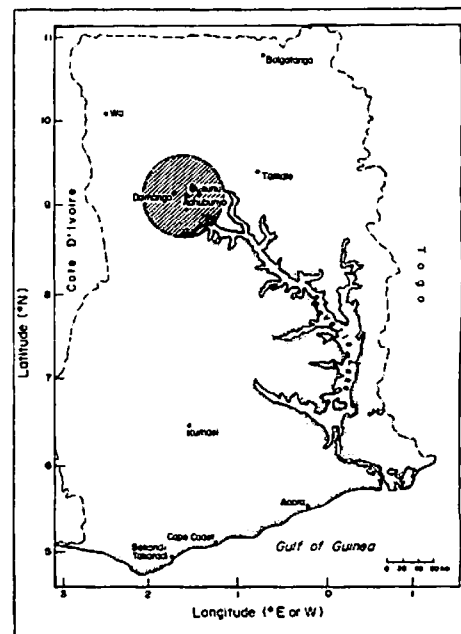
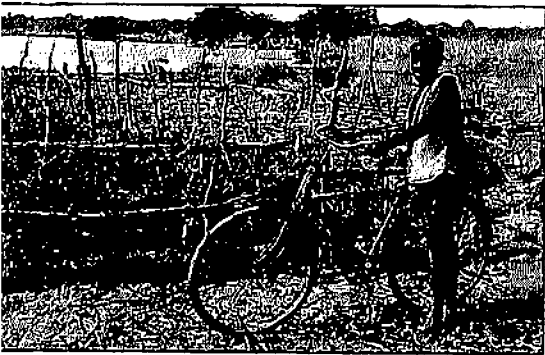


Fig. 1. Map of Ghana showing the location of the three reservoirs studied in this project.



Reservoirs are important sources of domestic water for households in villages and herded livestock.



In some reservoirs, crops and vegetables (here tomatoes) are grown in the draw-down area of reservoirs using moisture and fertile soil.



Fish constitutes more than 60% of the animal protein content in the diet of the Ghanalans.

populations. The situation was partially attributed to higher densities of blue-green algae which suppress the growth and development of more useful green algae.

Zooplankton populations were considered poor in diversity and population sizes. Benthic invertebrate fauna were more abundant but apparently unstable.

Twenty-nine fish species were encountered in the three SWBs. Sixteen of the species were known food fishes but only four—*Clarias anguillaris*, *Oreochromis niloticus*, *Sarotherodon galilaeus* and *Tilapia zillii*—were of fisheries importance. Monthly experimental fishing showed that stocks of the impoundments would require enhancement and management to provide sustainable fisheries. Catches obtained and estimated potential yields from the reservoirs were considered to be relatively high. This was attributed greatly to the shallowness of the reservoirs.

In all three reservoirs, the ecological balance of fish communities could be improved.

Catch samples over the twelve months indicated that fish populations would be greatly suppressed if regular fishing is conducted on them without management.

The topography of sites in relation to water availability and seasonal flooding of area did allow consideration of pond culture of fish in the areas.

Our principal recommendations were that the water retention capacity of two of the SWBs (Busunu and Achubunyo) be improved by rehabilitation of reservoir walls. Fish stocks should be enhanced annually from material to be collected from the floodplains at the appropriate periods. Management of the reservoirs would have to be provided by

local authorities. Therefore, some informal education of the community is advised.

No pond culture enterprise was recommended in relation to these two reservoirs. However, opportunities to engage in fishpond culture which might be integrated with vegetable production were identified at the third (Mahama) reservoir.

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