

**APPLICATION OF GIS TO IDENTIFY POTENTIAL
AREAS FOR AQUACULTURE IN BADULLA
DISTRICT , UVA PROVINCE**

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
in partial fulfillment of the requirements of
the degree of
Bachelor of Aquatic Resources Technology

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2013

ABSTRACT

Aquaculture is farming aquatic organisms including fish, mollusks, crustaceans and aquatic plants (FAO, 1990). The main intent of the present study is to highlight the role of Geographic Information System (GIS) in identification of potential areas for aquaculture in Badulla district, because GIS can use as powerful analytic and decision-making tool for the selection of potential and suitable site for aquaculture. The study was carried out in Badulla district, Sri Lanka located at longitude 80°.45 to 81°.15. Latitude 6°.34 to 7°.18. It covers an area of about 2,827 km².

Secondary sources data have been collected and used to generate maps to identify the fresh water bodies in Badulla district as seasonal tanks, perennial tanks, Stream network and rivers of Badulla district were developed.

Water availability (proximity to rivers), soil texture, soil pH, rainfall, temperature and topography (slope, elevation) and land use factors were considered to identify potential areas for aquaculture (pond culture). Water availability, soil texture, soil pH, slope, elevation, rainfall, temperature, land use/ land cover thematic layers were created using ArcGIS 10.1 software. All these thematic layers have been assigned the weights according to their relative influence on pond construction using Analytic Hierarchy Process (AHP) and GIS approach. Finally, all thematic layers have integrated using map algebra in a ArcGIS 10.1 environment to generate an aquaculture potential map.

Thus, four aquaculture potential areas have been Identified, viz. "Most suitable", "Suitable", "Fairly suitable", "Unsuitable". The north part of the Badulla district is identified as most suitable and the southern part of the Badulla district is identified fairly and unsuitable for aquaculture. The study thus demonstrates that GIS is very useful tool for delineating aquaculture potential areas in Badulla district.

Key words: Aquaculture, Geographic Information System, Analytic Hierarchy Process, potential area