Training course on the "use of GIS in fisheries and aquaculture" at the Federal University of Rio Grande Do Sul (FURG) in Brazil

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BACKGROUND AND OBJECTIVES

The need to carry out training activities on Geographic Information Systems (GIS) has been highlighted and discussed on several occasions and during meetings organised by the project GCP/INT/920/JPN "Capacity building for an ecosystem approach, including interactions with marine mammals". The Project identified, through its Working Groups and workshops, that a general need exists for basic level training in the application of GIS methods. To respond to this need, a GIS training course on the "Use GIS in Fisheries and Aquaculture" was jointly designed by FAO's Fisheries and Aquaculture Management Division (FIMF and FIMA). The overall objective of this course was to provide basic knowledge of GIS within the context of spatial issues of fisheries and aquaculture management using the most recent software available in the market.

The delivery of the course was linked to one of the GCP/INT/920/JPN project case studies in Brazil, where the goal has been to develop local capacity to implement an ecosystem approach to the management of small-scale and coastal fisheries in southern Brazil. Because of the many potential applications of GIS to management issues under discussion in the case study (e.g. protected areas, effort control and enforcement, etc.) and the interest of a wider audience in Brazil on the theme, e.g. the Special Secretariat for Aquaculture and Fisheries of the Presidency of the Republic (SEAP/PR) and Institute for the Conservation of Biodiversity (ICMBIO), the course was considered part of the efforts to build local capacity on tools in support of the Ecosystem Approach to Fisheries.

PROGRAMME AND PARTICIPATION

The training course was organized by Marcelo Vasconcellos (previously a staff member at FIMF) and conducted by FIMF/FIMA during a ten-day period at the Federal University of Rio Grande (FURG) in Rio Grande do Sul, Brazil (www.furg.br) from 27 January to 6 February 2009.

FIMF/FIMA conducted eight of the ten days of training; for the other two days, training was led by Dr. Phil Scott from the Universidade Santa Úrsula in Rio de Janiero and Mr. Luiz Fernando Vianna from EPAGRI/CIRAM in Santa Catarina in Brazil. Their training focused on lectures and complementary exercises and case studies for aquaculture site selection in Brazil.

The course programme was designed to provide lectures followed by hands-on exercises, case studies, and a field exercise using a Global Positioning Systems (GPS). The agenda was flexible and allowed for ample discussions amongst participants whenever necessary to better understand the concepts, tools and methodologies being learnt. The course was attended by 18 fishery and aquaculture biologists and fishery managers representing Brazilian research institutions and federal organizations. Most participants work mainly on marine fisheries except two working primarily on aquaculture. The computer literacy of the participants was considered to be high (10 or more years of computer experience), so everyone was able to complete the course with minimal assistance. Most of the participants had little or no experience on GIS, except for two having had advanced training.

TRAINING MANUAL, DATA AND LECTURES

FIMF/FIMA wrote a technical manual for use with ArcView 3.3 software that was tested and improved during a GIS training course in Split, Croatia in July 2007. Such training manual contained material which was further improved, updated and translated to the newest GIS software available on the market (ArcGIS 9.3) to benefit from its new features and functions and upon request by FURG.

Each participant received a hard copy of this new training manual along with data prepared by FIMF/FIMA for the practical exercises and case studies (Figure 1). Course lectures were also prepared for this course based on the training in Split in 2007, and these were also updated and improved. Messrs. Scott and Vianna prepared their lectures and exercises and they are also included in the manual (Figure2).

Figure 1. Course exercise on analysis the likely distribution of fishing fleet in the southern coast of the Mediterranean Sea

IMPLICATIONS FOR PROJECT GCP/INT/920/JPN

Although the present course has received very positive feedback from participants in terms of achieved knowledge of GIS techniques and understanding of principles, the course is a starting point, and there is still a need to enforce GIS capacity to better support the implementation of the Ecosystem Approach to Fisheries (EAF) and Aquaculture (EAA) in Brazil. FIMF/FIMA believes that course participants can now begin to explore the possibilities offered by GIS to better understand the interaction between fishery and the ecosystem in order to define operational objectives and strategies for improved management. Therefore, a follow-on recommendation to the project is to conduct a pilot project to demonstrate a practical application of GIS to support the implementation of EAF and EAA.

Given that the FURG has an important role on GIS activities in the region and has a good capacity on GIS, the University has the potential to become a regional resource on GIS in fisheries and aquaculture, with particular emphasis on the EAF.

In terms of future activities in the region, one potential target would be the UTF/URU/025/URU "Gestión pesquera en Uruguay". Given the relevance of the course to the objectives of the UTF, it would be good for the UTF to consider this type of training in the future.

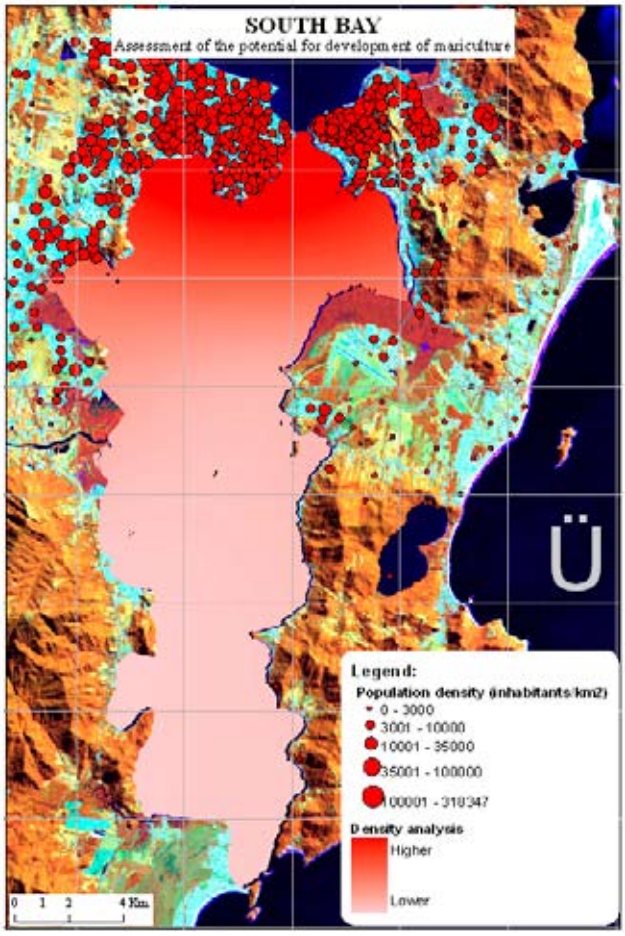

Figure 2. Course exercise on Building scenarios and decision-making methods for coastal aquaculture site selection in Brazil. A case study of South Bay in Florianópolis, Santa Catarina, Brazil – Map showing Population density (inhabitant km²) as one of they key factors for analysis

CIHEAM SEMINAR – ZARAGOZA, SPAIN JUNE 2009

A seminar on the Use of Geographic Information Systems for Fisheries and Aquaculture Planning and Management will be held at Zaragoza, Spain from 8 to 19 June 2009. This seminar is organized, under the sponsorship of the Spanish Agency for International Development Cooperation (AECID), through the NAUTA Programme, by the International Centre for Advanced Mediterranean Studies (CIHEAM), through the Mediterranean Agronomic Institute of Zaragoza (IAMZ), with the collaboration of FAO through the Fisheries and Aquaculture Department.

The seminar is designed for a maximum of 25 participants with a university degree, from public bodies or private entities, with responsibilities in

F. CAROCCI, FAO

Participants of the training course

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Fabio Carocci (FIMF) and José Aguilar-Manjarrez (FIMA) facilitating discussions at the course

aquaculture sectors in their respective countries, or professionals working in the management of aquaculture farms or fishing activities.

Details of the seminar are available at: www.iamz.ciheam.org/en/pages/paginas/pag_formacion6.htm

The programme of the seminar is similar but by no means identical to the course conducted in Rio Grande do Sul, Brazil above because this seminar is specifically designed for Mediterranean countries; thus, it includes case studies that are most relevant to this region. Also a total of eight lecturers from Mediterranean countries will participate. Despite the differences, parts of the technical manual prepared by FIMF/FIMA will be used, so it will be an opportunity to conduct a final test to key parts of the manual and a few new case studies written by some of the lecturers at the CIHEAM seminar will be incorporated in the manual.

ANNOUNCEMENT OF NEW TECHNICAL MANUAL

The new technical manual that was tested and fine-tuned during the course in Brazil and then in Zaragoza will be published as an FAO Fisheries and Aquaculture Technical Paper in 2009. The new manual is a follow-up to a highly requested hands-on self-training manual written by de Graaf *et al.* (2003)[1]. Parts of the manual by de Graaf were included, translated and/or improved for this new manual.

The role of GIS to support the implementation of the EAF and EAA *per se* is currently being reviewed by FIMA and FIMF, so their precise role is yet to be defined. However, the exercises and case studies presented in this new manual, in addition to introducing basic concepts of GIS, illustrate how GIS is used to address key issues in fisheries and aquaculture management. Thus, this manual already represents combined effort by FIMA and FIMF to provide a more holistic approach to training on GIS in fisheries and aquaculture.

[1]de Graff, G., Marttin, F.J.B., Aguilar-Manjarrez, J. & Jenness, J. 2003. Geographic Information Systems in fisheries management and planning. Technical manual, FAO Fisheries Technical Paper. 449. Rome. 162p. (available at: www.fao.org/docrep/006/y4816e/y4816e00.htm).