

MULTIDISCIPLINARY METHODOLOGY PROPOSAL FOR THE BIOGEOGRAPHIC EVALUATION OF NATURA 2000 NETWORK AREAS IN THE BASQUE COUNTRY. THE EXAMPLE OF GÁRATE-SANTA BÁRBARA (GUIPÚZCOA)

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I. INTRODUCTION

Great efforts are destined to improve the conservation and preservation of spaces which offer shelter to valuable natural habitats. It is required to design a transverse and interdisciplinary management scheme including previous work, technologies and knowledge from diverse disciplines such as Geography, Economy, Sociology or Ecology.

Taking into account the multiple interests, especially those of the social and economic agents related to the territory, the Basque Regional Government believes in the necessity of developing a method of environmental, social and economic evaluation of a specific location. Thus, this new methodology will seek to harmonize the opposite interests of those agents who play a vital role in a certain territory.

II. STATE OF THE QUESTION

The present article is based on a research project granted by the Basque Government (Department of Environment and Regional Planning) and IHOBE (Public Society of Environmental Management of the Basque Government) by means of the «Convocatoria Proyectos Innovadores, 2008».

The main aim of this article is to develop a methodological frame for socioeconomic and environmental evaluation of the Natura 2000 areas of the Basque Country Region.

The design of this new approach consists in three different steps. First, generate a methodology for environmental evaluation. Second, integrate the involved agents in the

research, planning and management process. Third, create a technical guide for helping in the decision making procedures. This research article presents exclusively the results of the environmental evaluation method.

III. GEOGRAPHICAL CHARACTERISTICS OF LIC OF GÁRATE-SANTA BÁRBARA

The SCI (Sites of Community Importance) of Garate-Santa Barbara comprises 142 Ha and it is located in the central part of the coast of the province of Guipúzcoa (Basque Country) between the municipalities of Zarautz and Getaria. It is delimited by a track in the North and by a road in the South. In the eastern part the limits coincide with a sharp fall of the hill towards the road of the coast (N-634) and the sea (zone of Zarautz's fishing port). In the western part, the limit passes for the hill of Gárate already inside municipality of Getaria. This perimeter contains 142 Ha.

Regarding the vegetation, according the phytogeographical corology the SCI is located in the «Guipuzcoano» district, «Cántabro-Vascónico» sector, European Atlantic province of the Eurosiberian region. With regards to its altitude, this sector is situated between the termotemperate and mesotemperate zone (Rivas-Martínez, 2007: 38 ss).

IV. METHODOLOGY

Once the vegetable units and their location were defined, 44 plants inventories were realized. There have been characterized, mapped and evaluated 23 units of vegetation, communities or complexes of communities of similar range to the phytosociological association:

- Birch wood (forest of broadleaved trees with *Betula alba* predominant).
- Corn-oak wood (forest of broadleaved trees with *Quercus suber* predominant).
- Gorse bush (bushes with *Ulex spp.* predominant).
- Hazel wood (forest or preforest of broadleaved trees with *Corylus avellana* predominant).
- Hamlets and inhabited places (not valued, but yes mapped).
- Beech wood (forest of broadleaved trees with *Fagus sylvatica* dominant).
- Garden (small plots of gardens in phase of abandon).
- Bulrush-seepage (higrophilous communities for water filtration).
- Suburban park (former private park given to the municipality).
- Plantation of chestnut-trees (fruit plantation of *Castanea sativa*, young plot).
- Plantation of Lawson-cypress (forest plantation of *Chamaecyparis lawsoniana*).
- Plantation of pine of Monterrey (forest plantation of *Pinus radiata*).
- Plantation of northern red oak (forest plantation of *Quercus rubra*).
- Grazed meadow (meadows managed with direct grazing).
- Meadow fit for mowing (meadows managed with indirect grazing).
- Meadow fit for mowing with apple trees (meadows managed with indirect grazing and with apple trees).
- Meadow-bulrush (higrophilous meadows with abundant rushes).

- Oak grove wood (forest of broadleaved trees with *Quercus pyrenaica* predominant, young plots).
- Spontaneous reforestation of black locust (forest of broadleaved trees with *Robinia pseudoacacia* predominant).
- Oakwood (forest of broadleaved trees with *Quercus robur* or *Q. petraea* predominant).
- Aspen wood (forest or preforest of broadleaved trees with *Populus tremula* preponderant).
- Vineyard (fruit plantation of *Vitis vinifera*).
- Bramble patch (bushes with *Rubus spp.* predominant).

V. RESULTS AND DISCUSSION

The units which obtained higher values in the INNAT are the following (in order): corn-oak wood, birch wood, oak wood, aspen wood and hazel wood and in general native vegetation with the exception of the oak grove wood. Subsequently, we emphasized the high score of both communities linked to the water that survive in the LIC. Both are similar and form a continuum, but, phytosociologically, they belong to two different communities: bulrush-seepages and meadow-bulrushes.

We emphasized the suburban park of Vista Alegre as well which, with 71 points, is the artificial community with higher score in the INNAT. The reason behind is the great diversity of trees that it contains and for his structure of forest that grants a high punctuation in the mesologic parameters. In an intermediate band, between 70 and 60 points, there are placed a series of communities of heterogeneous origin which have in common that (i) these are communities of the first or second serial stage; (ii) they are natural but not potential communities and (iii) their bush-like physiognomy: bramble patch, gorse bush or oak grove young wood; or of meadow-culture: meadows fit for mowing and gardens.

Units like the plantations of Lawson's cypress, grazed-meadows, vineyards and hamlets and inhabited sites -which, for definition, is imponderable from the standpoint of biogeography but it is a mapped unit- are found in the lowest scope (below 50 points). These are examples of artificial entities.

Regarding the PRICON index, in general terms, the units maintain the same position obtained in the INNAT. Nevertheless, certain situations must be clarified like the rise of suburban parks to the second position. This condition is due to threats related to the proximity to urban areas (i.e. Zarautz). The same applies to gardens, the bramble patch and the two types of meadows. The units which lower scores indicating a lower priority in their protection include all the plantations, gorse bushes and oak grove young woods that, handicapped by their low INNAT, with the low intensity of the impacts and threats, are a exception among the «natural» communities.

Table 1
PHYTOGEOGRAPHICAL GLOBAL AND INTERMEDIATE SCORES (OWN ELABORATION)

VEGETATION UNITS	Infit	Inter	INNAT	Innatfor	Incorfor	PRICON
Corn-oak wood	46	13,5	111	132,3	149,8	2623,9
Suburban park	18	2	71	92,5	119,5	2390
Aspen wood	38	6	95	111,5	125,5	2384,5
Oakwood	38,5	2,6	98,6	117,6	137,9	2383,3
Meadow-bulrush	34,5	8	79	90,3	102,3	2306
Birch wood	42	5	100	115,5	135,5	2303,5
Bulrush-seepage	38	2	74	86,5	98,5	2167
Hazel wood	36	0	86	104,5	122,5	1960
Meadow fit for mowing with apple trees	21	4	64	74	92	1840
Garden	23	2	63	74	89	1691
Bramble patch	28	2	70	86,5	98,5	1674,5
Beech wood	37	2	80	91,5	103,5	1656
Meadow fit for mowing	22,6	0	60,4	72,3	84,3	1619,2
Spontaneous reforestation of black locust	22	0	70	89	99	1584
Plantation of pine of Monterrey	16,4	1,7	60	79,5	90,4	1559,8
Gorse bush	23	1	69	83,5	91,5	1555,5
Plantation of northern red oak	14,5	1	58,5	75,3	86,3	1462,8
Oak grove wood	25	0	65	82,3	91,3	1370
Plantation of chestnut-trees	17	0	54	63,5	73,5	1323
Grazed meadow	23	0	49	62	71	1274
Plantation of Lawson-cypress	7	0	45	57	63	1134
Vineyard	12	4	30	40,5	52,5	1050
Hamlets and inhabited places	0	0	0	0	0	0