THE CONSERVATION OF SUBTIDAL SITES SIN GIBRALTAR: WHAT CRITERIA SHOULD BE USED TO EVALUATE WHICH SITES TO CONSERVE?

Alexander Menez / The Gibraltar Museum.

Resumen

Durante los últimos años ha crecido el conocimiento general de la necesidad de conservar la naturaleza. Gibraltar tiene leyes locales e internacionales que incluyen la protección de los hábitats. Este estudio trata de evaluar el valor en términos de conservación de las zonas sublitorales rocosas en Gibraltar usando variables bióticos y abióticos. El análisis estadístico de los resultados sugiere que los factores aislados, como la diversidad, quizás no puedan determinar qué localidad tiene mayor valor. En su lugar se sugiere el uso de un índice. Se requiere en Gibraltar de un análisis de riqueza de especies, diversidad y organización de comunidades que, combinado con los variables abióticos, permitan que las decisiones conservacionistas se hagan con una base sólida de información científica.

Abstract

Awareness of conservation requirements and policies has increased recently and there is now greater emphasis on conservation research. Gibraltar has local conservation laws and is party to international conservation conventions both of which include habitat protection.

This study is a preliminary attempt to evaluate the conservation value of rocky subtidal sites in Gibraltar using abiotic and biotic variables. Analysis of the data using principal components analysis, classification analysis and linear regression of the principal components' factor scores with the variables, suggests that single variables, such as diversity, may not elucidate the sites that have the greatest value. Instead, a simple index is used which goes some way to achieving this.A priority in Gibraltar subtidal research should be the analysis of species richness, diversity and community organization in conjunction with abiotic variables to allow decision making policy to be based on sound scientific knowledge.

INTRODUCTION

Conservation may broadly be defined as the planned management of natural resources (Lincoln *et al*, 1982). Its major aim is to prevent individual species, or sometimes entire communities, from becoming extinct either regionally or globally (Begon *et al,* 1990) and to protect habitats (Goldsmith, 1991; New, 1995). There are numerous groups, societies and clubs that promote conservation both at popular grass roots level and at the level of scientific research. The awareness of the general public of conservation requirements and policies has increased in the last few years (Singer, 1987; Brown, 1993) and perusal of the scientific literature shows that there is a greater emphasis on conservation research, and especially of biodiversity, than in the past.

There are numerous international conservation conventions in existence which protect both species and habitats (Lyster, 1985). Gibraltar is party to some of these and has, in addition, national regulations that provide protection (Table 1). The most recent Law passed is the Nature Protection Ordinance 1991 (Amendment) Regulations (1995) which allows for the protection of marine sites.

The subtidal is important in primary production and secondary production (Warner, 1984). Suspension feeding is of particular importance in hard bottom communities and in some cases suspension feeders can account for over 70% of the total animal biomass and production (Newell et al, 1982). In addition to the permanent, or true subtidal species, others utilize the habitat for stages in their life cycles, some fish, for example, use the subtidal as nurseries (Barnes & Hughes, 1988).

The subtidal provides a high level of habitat complexity and heterogeneity (sensu McCoy & Bell, 1991) which can be correlated with high diversity (Dayton, 1984). Complexity and heterogeneity are often increased by encrusting and burrowing species (Dayton, 1984) which provide additional spatial and temporal aspects to community organization (Dayton, 1984). These properties highlight the value of conserving subtidal sites.

A consideration in conservation is to formulate criteria by which sites may be evaluated in order to arrive at conclusions about which sites are more valuable than others (Magurran, 1988). This inevitably involves an element of subjectivity (Goldsmith, 1991). Diversity is often used as an analogue of conservation value (Rose, 1978; Yapp, 1979) although in this context diversity is often used synonymously with species richness (Magurran, 1988). Other criteria have also been employed (Table 2).

This study represents a preliminary attempt to evaluate the conservation value of shallow rocky subtidal sites in Gibraltar using a selection of biotic and abiotic variables. Molluscs were chosen from a large selection of groups because they are easy to quantify and identify *in situ.*

METHODS

Eighteen sites (Figure 1) were chosen *a priori* (Lundälv, 1985; Ballesteros, 1986; Rakocinski et al, 1992) and met the following criteria:

1. safe accessibility for diving
2. a distance of 5 - 6 metres from the shore

3. a substrate of limestone
4. an inclination of 60 - 80°
5. a depth of 2 - 6 metres

Sites that had been in existence for less than 5 years are termed recent, and those that had been in existence for longer than this are termed established. Recent sites have their genesis in land reclamation. This classification was based only on the age of the sites and not on community organization. One site is termed ephemeral and is discussed later.
Sites were sampled during July - August 1992. All dives were carried out between 11.00 to 14.00 hours.

A selection of physical variables which were thought to be important in determining the distribution and community organization of the mollusc communities were measured at the sites (Krebs, 1985; Bakus, 1990; Begon *et al*, 1990). In addition the following biotic variables were measured: species richness, total number of individuals, diversity and the number of rare species.

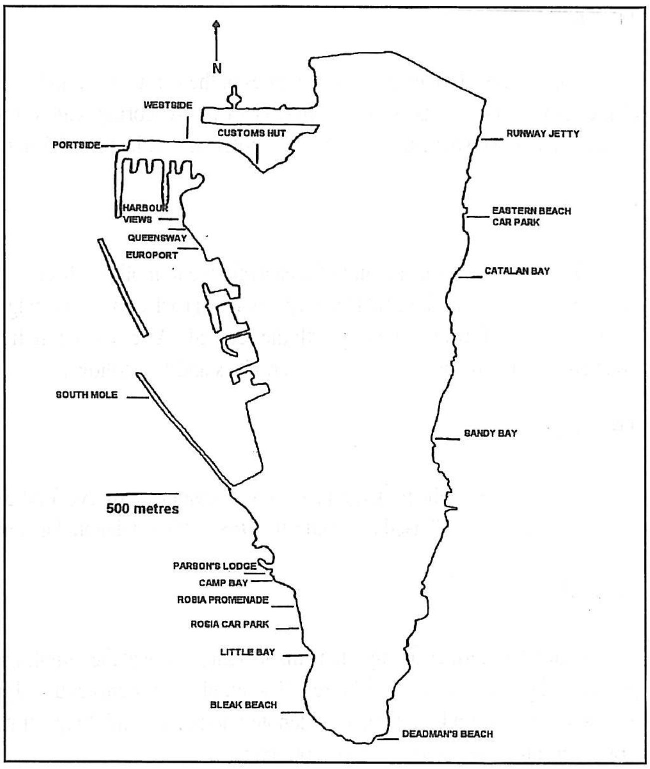

Figure 1. Map of Gibraltar showing the positions of the sites used.

Principal components analysis was used to characterise and ordinate sites using the physical variables (Gauch, 1982; Digby & Kempton, 1987; Kent & Coker, 1992). In addition, the factor scores for the extracted components were used as independent variables in multiple regression analyses (Neter & Wasserman, 1974; Hedderson, 1991) in which species richness, total number of individuals,and diversity were dependent variables.

The sites were classified using hierarchical cluster analysis. This uses the average linkage between groups polythetic agglomerative method in which clusters are combined to minimize the average distance between all pairs of samples in which one member of the pair is from each of the clusters (Digby & Kempton, 1987).

The physical data were found to be non - normal by computing skewness and kurtosis (Eberhardt, 1978; Growns *et al,* 1992; Schmid, 1992) and so were log (x+1) transformed before PCA and cluster analyses were carried out (Digby & Kempton, 1987; Bakus, 1990; Rundle & Omerod, 1991).

The physical variables

A physical variable is defined here as a variable that is non - chemical and does not derive from the mollusc species abundances matrix. It has a much wider definition than, for example, that given by Lincoln *et al,* 1982 and includes variables such as maximum plant height and percentage animal cover.

TOPOGRAPHY

Topography defined the gross features of the site at the sampling depth. The size of rocks, the size range and approximate numbers of rocks in each size class were evaluated by eye. A scoring scale was developed based on these criteria. The scale ranged from 0 to 4 where 0 denoted no hard substrate and 4 denoted mostly large (> 1.5m) rocks with few, to no, smaller rocks, or flatter areas between them.

SHELTER

Shelter defined the amount of area available to molluscs for refuge provided by the hard substrate but not that provided by algae. Available shelter was identified by the presence of rock crevices (Trudgill, 1988; Barnes & Hughes, 1988) and by the presence of hollows at the interfaces formed by rocks with the sea bed. A scale ranging from 0 to 4 was used to score shelter at the sites where 0 denoted no shelter and 4 the presence of many crevices and / or hollows.

TEXTURE

The surfaces of the rocks at the sites were evaluated by eye for the presence of pitting, roughness and irregularities. A scale ranging from 0 to 4 was used (based on Trudgill, 1988) where 0 denoted a completely smooth surface and 4 a coarse one.

LITTER

Litter was defined as any Man - made item present at the sampling depth. These included plastic bags, cardboard packets, batteries, plastic and glass containers and tyres. The numbers of items counted in each of the 20 quadrats were summed and the result scored on a scale ranging from 0 to 4 where 0 denoted no items in all 20 quadrats, 1 denoted 1 - 20 items, 2 denoted 21 - 40 items, 3 denoted 41 - 60 items and 4 denoted more than 60 items.

DISTURBANCE

The disturbance attributed to Man at the area encompassing each site was assessed by eye from the shore prior to diving at each site. This assessment included activities such as boating, water - skiing and fishing. Recreational activities like these may be detrimental to marine communities (Cairns, 1987). Disturbance was scored on a scale from 0 to 4 where 0 denoted no disturbance and 4 denoted severe disturbance.

SAND

The percentage of area in each of the twenty quadrats that contained sand was recorded and a mean obtained from all the quadrats. Sand covering rocks was included in the measurements.

DEPTH OF SILT

The depth of silt in each of the twenty quadrats was measured to the nearest 0.5 mm using a ruler and a mean obtained from all the quadrats. Where possible the silt at the centre of the quadrat was measured to minimize the effects of water movement on the silt.

EXTENT OF SILT

It was difficult to quantify the area of silt in each quadrat because silt was easily dispersed by even slight water movement. The measure used for sand (% of area, see above) was thus not used for silt. Instead the number of quadrats that contained silt was recorded

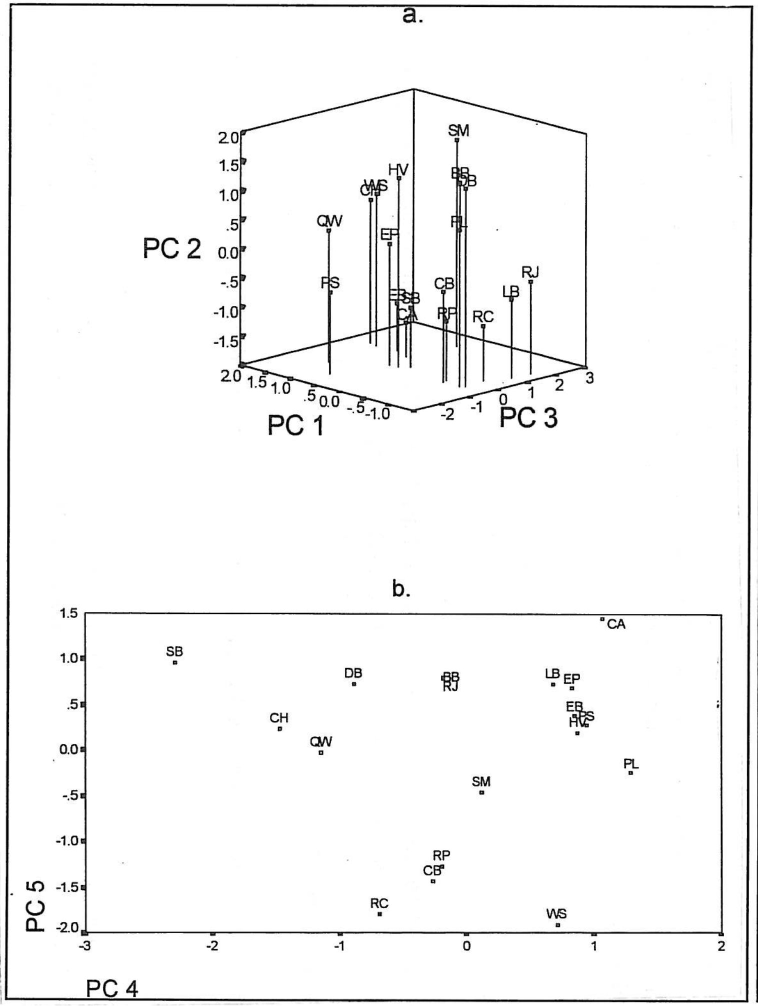

Figure 2. The ordinations of the sites using the factor scores. **a.** On principal components 1, 2 and 3, **b.** on principal components 4 and 5 and **c.** on principal components 5. Site abbreviations: LB=Lien Bay; CB=Camp Bay; WS=Westside; SB=Sandy Bay; SM=South Mole; PS= Portside; HV=Harbour Views; EP=Europort; RC=Rosia car Park; RP=Rosia Promenade; PL=Parson's Lodge; CA=Catalan Bay; EB=Eastern Beach; BB=Bleak Beach; DB=Deadman´s Beach; QW=Queensway; RJ=Runway Jetty; CH Customs Hut.

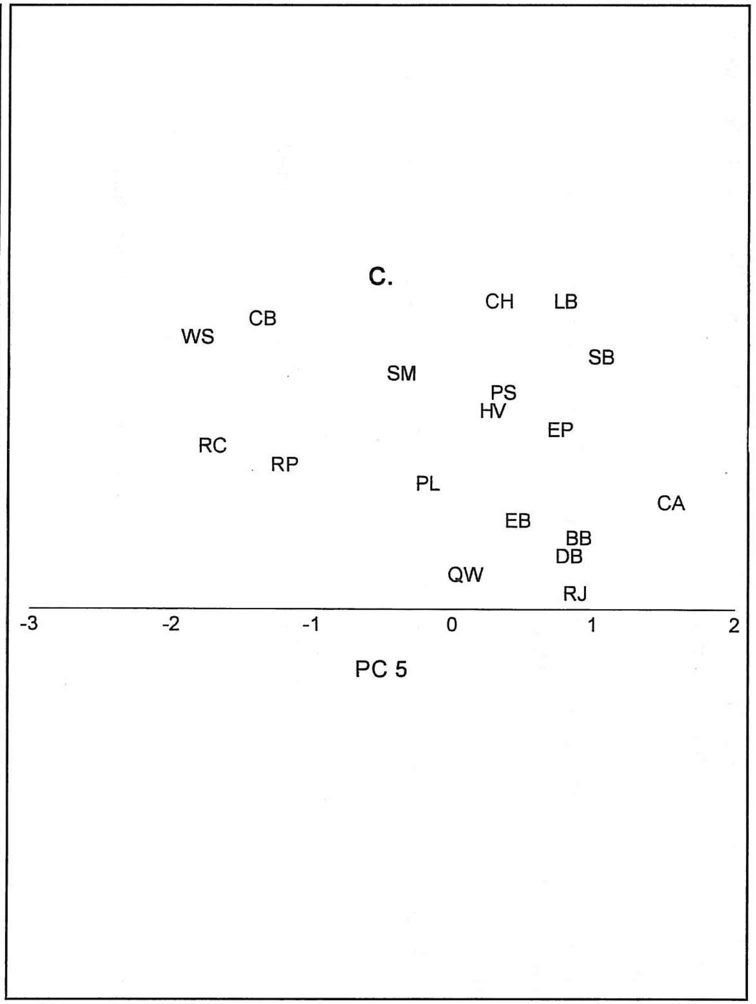

Figure 2 (continued). The ordinations of the sites using the factor scores. **a.** On principal components 1, 2 and 3, **b.** on principal components 4 and 5 and **c.** on principal components 5. Site abbreviations: LB=Lien Bay; CB=Camp Bay; WS=Westside; SB=Sandy Bay; SM=South Mole; PS= Portside; HV=Harbour Views; EP=Europort; RC=Rosia car Park; RP=Rosia Promenade; PL=Parson's Lodge; CA=Catalan Bay; EB=Eastern Beach; BB=Bleak Beach; DB=Deadman´s Beach; QW=Queensway; RJ=Runway Jetty; CH Customs Hut.

and scored on a scale ranging from 0 to 4. On this scale 0 denoted no quadrats containing silt, 1 denoted 2 - 3 quadrats, 2 denoted 4 - 6 quadrats, 3 denoted 7 - 9 quadrats and 4 denoted more than 9 quadrats.

MAXIMUM PLANT HEIGHT

The maximum plant height was measured to the nearest 5 mm using a ruler. The plants were measured as found attached to the substrate, they were not pulled or straightened prior to measurement.

MAXIMUM ANIMAL HEIGHT

The maximum animal height was measured to the nearest 5 mm using a ruler. Molluscs were not included in this measure.

PLANT COVER

The percentage of area in each of the 20 quadrats with plant cover was recorded to the nearest 5 % and a mean obtained from all the quadrats.

ANIMAL COVER

The percentage of area in each of the 20 quadrats with animal cover was recorded to the nearest 5 % and a mean obtained from all the quadrats.

TOTAL COVER

The percentage of area in each of the 20 quadrats with plant and / or animal cover was recorded to the nearest 5 % and a mean obtained from all the quadrats. Plants were never found attached to animals at levels greater than 5 % of the total plant cover and, because 5 % was the level of precision used in measuring both plant cover and animal cover independently, this resulted in total cover being the sum of plant cover and animal cover.

The biotic variables

SPECIES RICHNESS

Species richness is the total number of species in a community (Lincoln et al, 1982) or an area (Southwood, 1978). The species richness was the total number of species in the 20 quadrats at each site.

TOTAL NUMBER OF INDIVIDUALS

The total number of individuals was obtained by summing the numbers of individuals in each of the 20 quadrats.

DIVERSITY

Simpson's Index (D) was used (Magurran, 1988) which takes into account both the abundance patterns (the evenness, or equitability, of the individuals' distributions among the species) and the species richness of a community (Begon *et al,*

1990; Brower *et al,* 1990). The reciprocal form of the index was used which ensured that the value of the index increased with increasing diversity (Magurran, 1988). D is given by:
where ni is the number of individuals of the ith species and N is the total number of individuals. The reciprocal form (Ds) is thus :

NUMBER OF RARE SPECIES

The abundance of each species at each site was calculated per m2 by dividing the number of individuals of each species by the total number of quadrats sampled. A scale was developed for scoring abundances of individuals of each species (Table 3) then the mean abundance score for each species was calculated. Species with mean abundance scores of 3 or less were considered rare.

RESULTS

Characterization of the sites using physical variables

PCA extracted five components (Table 4). The components were interpreted using the variables that loaded highest on each of the components (Digby & Kempton, 1987; Hedderson, 1991; Kent & Coker, 1992).

Figure 2 shows the ordinations of the sites using the factor scores. These plots show ordinations using the first three components, components 4 and 5 and ordination on one dimension using component 5. In this last ordination only the horizontal positions of the sites are important. Vertical staggering of site labels was used only for clarity.

PC 5 explains 8.6 % of the variance in the variables and is of interest in this study because it represents anthropogenic effects and is related to Table 2 in the introduction that considered criteria to be used in evaluation.

On this component Camp Bay, Westside, Rosia Car Park and Rosia Promenade are seen to be the sites less subjected to anthropogenic effects.

Classification analysis based on all the physical variables produced two initial groupings: South Mole and Parson's Lodge as one group and all other sites as the other group. This latter group was further subdivided into Little Bay, Camp Bay, Rosia Promenade, Runway Jetty and Rosia Car Park in one group and all other remaining sites in another group (Figure 3). Sites were ultimately grouped together if they had cluster membership at a rescaled cluster combined distance of 10 (Gauch, 1982; Digby & Kempton, 1987). These groups are shown in Table 5.

The biotic variables

Table 6 shows the results for these. goodness - of -fit (Sokal & Rohlf, 1995) indicates that the values for these variables, except diversity, varied significantly at the sites. Catalan Bay, Eastern Beach, Bleak Beach and Runway Jetty had large numbers of sessile filter feeding bivalves and the communities were essentially *Mytilus galloprovincialis - Stramonita haemastoma.*

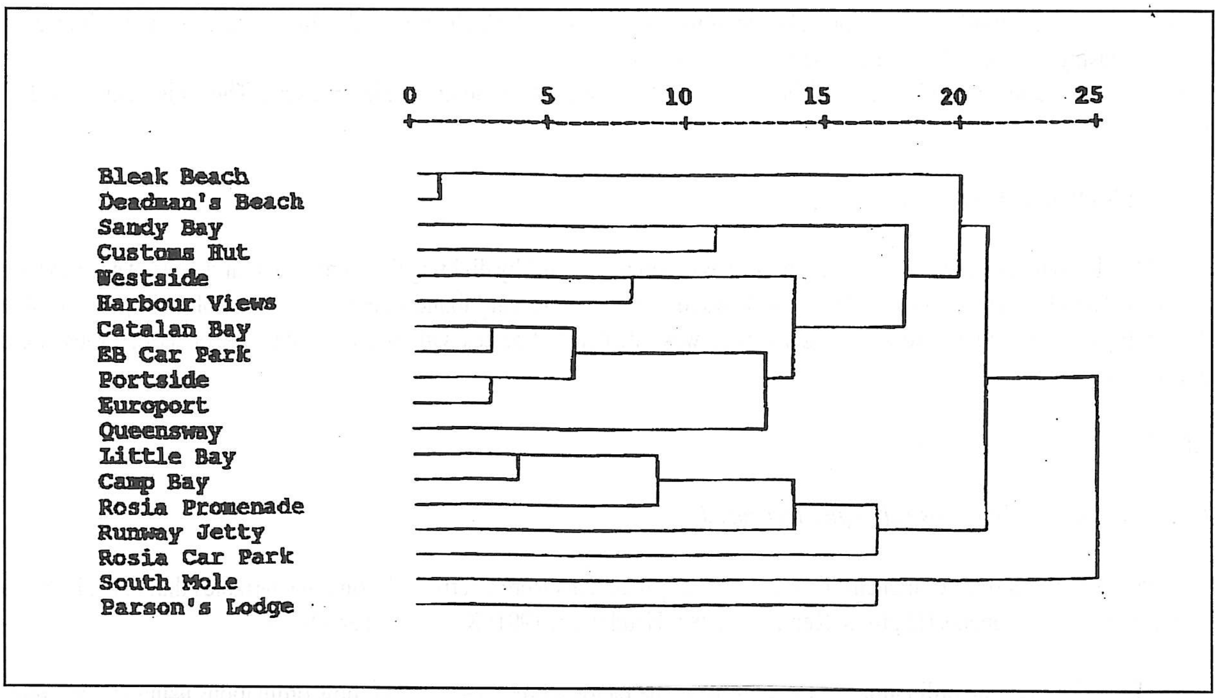

Figure 3. Dendrogram from hierarchical cluster analysis. Sites were ultimately grouped together if they had cluster membership at a rescaled cluster combine distance of 10. (EB Car Park=Eastern Beach)

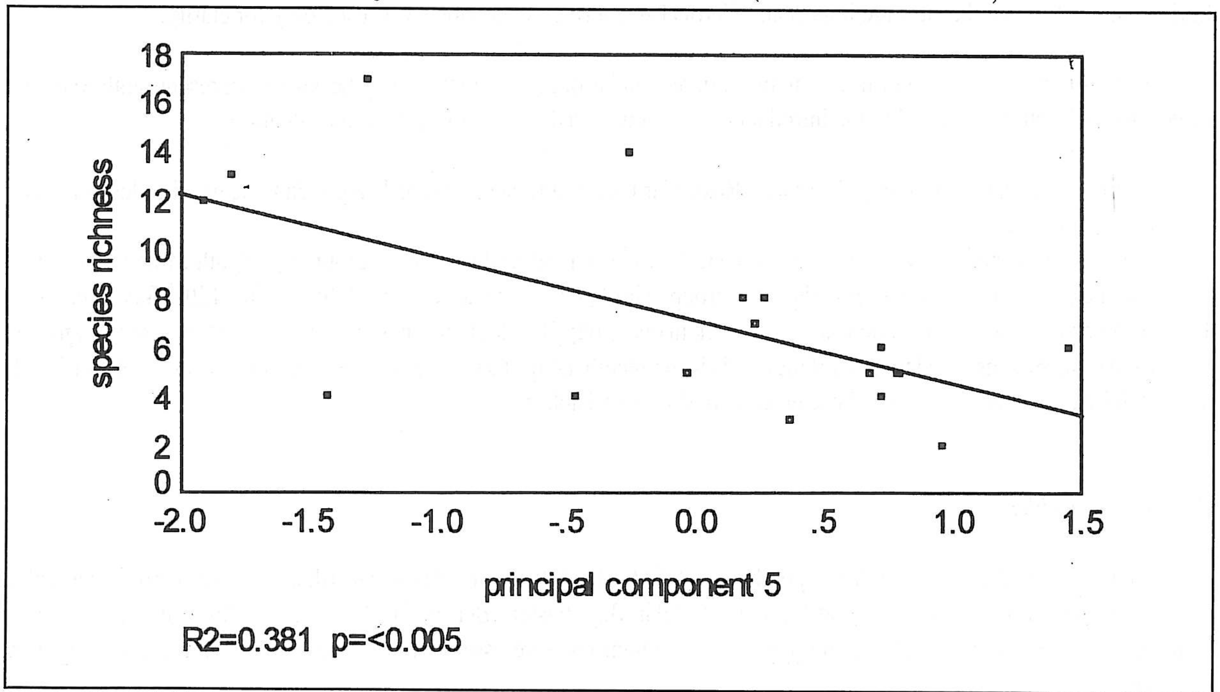

Figure 4. Linear regression using species richness as the dependent variable and principal component 5 (anthropogenic effects) as the independent variable. The plot shows that species richness decreases with increasing values or the principal component.

Regressions of PCA factor scores with the biotic variables

Table 7 shows the multiple R, R2, F and significance of F for regressions of the biotic variables (dependent variables) with the PC factor scores (independent variables). The only relationship which was statistically significant was PC 5 (anthropogenic effects) with species richness. This shows that species richness decreased with increasing values for anthropogenic effects (R2 = 0.381; p < 0.005). (See Figure 4).

DISCUSSION

Characteristics of the sites

PCA and cluster analyses separated the sites into different groups according to the values obtained for the physical variables. Cluster analysis grouped the recent sites in a group which also contained established sites. One reason for this is that the recent sites were made using similar substrate to the established sites and that at least 3 years had elapsed from their making to sampling which had allowed biotic cover to approach levels at the established sites.

Sandy Bay is an ephemeral site. Over the last 5 years the substrate, composed mostly of rocks and boulders 0.5 to 1 metre in diameter, has moved into and out of the site area, and has been covered and uncovered with large volumes of sand on three occasions (pers. obs.). This irregular cycle is driven by rough seas. The community at the site at the time of sampling for this study, and since, had been dominated by juvenile *Mytilus galloprovincialis*. The ephemeral nature of this site provides an ideal opportunity for the study of stochastic factors in larval settling and community succession.

The results suggest that physical variables cannot adequately be used to separate recent from established sites and cannot be used, on their own, to form decisions regarding suitability of sites for conservation. This statement is made with the qualification that all sites were initially chosen to satisfy certain criteria. The same conclusion may not hold for widely differing sites.

Biotic measures

There were significant differences between sites for biotic measures except for diversity. There were however, no significant differences in the means of the measures between established and recent sites (t tests: species richness: -0.073, p >0.1; number of individuals: - 0.221, p >0.1; Diversity: 0.469, p >0.1; number of rare species: -0.172, p >0.1). The results suggest that it may be overly simplistic to rely on only one measure to evaluate sites and that this approach may not segregate recent from established sites.

A simple index of conservation value

It has become obvious that using single variables does not provide adequate information on which to base decisions about conservation value. Is it possible, then, to use the results in a way that suggests the more valuable sites? A possibility is to use some of the variables to formulate a simple index that provides a preliminary indication of which sites these might be. The index of conservation value (**CI**) uses species richness, diversity, the number of rare species and disturbance to provide a value that can be compared intra - site. This is a simple summation index (Schneider, 1994) and is given by:

CI = r + D + s - m

where **r** is species richness, **D** is Simpson's Diversity, **s** is number of rare species and **m** is disturbance (in this study this is the sum of disturbance and litter).

Values for the sites are given in Table 8. If an arbitrary value of 10 is chosen as the lower limit for selecting sites then Little Bay, Westside, Rosia Car Park, Rosia Promenade, Parson's Lodge and Customs Hut are selected for consideration.

Limitations of this study and suggestions for future research

This study only illustrates how sites may be evaluated using biotic and abiotic variables, both of which are important in arriving at any ecologically based decisions (Slingsby & Cook, 1986; Bakus, 1990; Brower et al, 1990;Cox, 1990). A major limitation with the study is that it has used only one biological group to evaluate sites and that other groups would almost certainly have provided different results. This could be overcome in any future study by using a range of groups which would, in addition, provide more information on community organization and about rare species generally.

A priority in Gibraltar subtidal research should be the analysis of species richness, diversity and community organization in conjunction with measures of abiotic variables including pollutants. With these data, which can be statistically compared between sites, it becomes much more convincing, and scientifically correct, to argue for site conservation and to formulate strategies for that conservation.

ACKNOWLEDGEMENTS

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INTERNATIONAL CONVENTIONS
CITES: Convention on international trade in endangered species of wild fauna and flora (1975). RAMSAR: Convention on wetlands of international importance especially as waterfowl habitat (1975). BONN: Convention on the conservation of migratory species of wild animals (1983). WORLD HERITAGE: Convention concerning the protection of the world cultural and natural heritage (1975). BERNE: Convention on the conservation of European wildlife and natural habitats (1982). EC Directive on the conservation of wild birds (1979). EC Habitats Directive: Council Directive on the conservation of natural habitats and of wild fauna and flora (1992).
NATIONAL REGULATIONS
Endangered Species Ordinance (1990). Nature Protection Ordinance (1991). Upper Rock Nature Reserve Regulations (1992). Upper Rock Nature Reserve Regulations (Expanded) (1993). Nature Protection Ordinance (Amendment) (1995).

TABLE 1. International conventions and local regulations that apply to Gibraltar (information courtesy of John Cortés).

CRITERIA	Frecuency of use
- Diversity (of habitats and / or species)	16
- Naturalness, rarity (of habitats and / or species)	13
- Area	11
- Threat of human interference	8
- Amenity and educational value, representativeness	7
- Scientific value	6
- Recorded history	4
- Population size, typicalness	3
- Ecological fragility, position in ecological / geographical unit, potential value, uniqueness	2
- Archaeological interest, availability, importance for migratory wildfowl, management factors, replaceability, silvicultural gene bank, successional stage, wildlife reservoir potential	1

TABLE 2. Popularity of criteria used in 17 conservation evaluation schemes. Diversity, the most frequently adopted criterion, appears in 16 out of the 17 schemes. From Usher, 1986.

Number of individuals per m^2	Abundance score
< 0.01	1
0.01 - 0.02	2
0.03 - 0.04	3
0.05 - 0.06	4
0.07 - 0.10	5
0.11 - 0.20	6
0.21 - 0.40	7
0.41 - 1.00	8
1.05 - 2.00	9
2.01 - 10.0	10
> 10	11

TABLE 3. The scale used for scoring abundance showing the number of individuals per m^2 for each of the abundance scores.

	PC 1	PC 2	PC 3	PC 4	PC 5
% VAR	28.2	19.8	17.6	12.5	8.6
CUM % VAR	28.2	48.0	65.6	78.1	86.7
PC INTERPRETATION	SILT	PLANT COVER AND HEIGHT	HABITAT STRUCTURE	BIOTIC COVER	ANTHROPOGENIC EFFECTS

TABLE 4. The principal components (PC) extracted by principal components analysis using the physical variables showing percentage of variation (% VAR) and cumulative percentage of variation (CUM % VAR) explained by the components and the interpretations assigned to the components based on the variable loadings.

GROUP Nº.	SITES IN GROUP
1	Bleak Beach, Deadman's Beach
2	Sandy Bay
3	Customs Hut
4	Westside, Harbour Views
5	Catalan Bay, Eastern Beach, Portside, Europort
6	Queensway
7	Little Bay, Camp Bay, Rosia Promenade
8	Runway Jetty
9	Rosia Car Park
10	South Mole
11	Parsons Lodge

TABLE 5. Groupings obtained from hierarchical cluster analysis using a rescaled distance cluster combine of 10 as the cut off point for group entry.

SITE	SITE TYPE	SPECIES RICHNESS	NUMBER OF INDIVIDUALS	SIMPSON'S DIVERSITY	NUMBER OF RARE SPECIES
Little Bay	E	13	327	1.44	3
Camp Bay	E	8	40	2.14	1
Westside	R	12	57	4.21	4
Sandy Bay	EPH	2	2	*	0
South Mole	E	4	7	3.50	0
Portside	R	894	2.57	3	
Harbour Views	R	8	144	1.29	0
Europort	R	6	38	2.22	0
Rosia Car Park	E	13	101	3.00	3
Rosia Promenade	E	17	310	1.89	6
Parson's Lodge	E	14	65	3.98	4
Catalan Bay	R	6	22488	1.26	0
Eastern Beach	E	3	74214	1.05	0
Bleak Beach	E	5	1360	1.92	0
Deadman's Beach	E	4	55	1.85	0
Queensway	E	5	31	2.54	0
Runway Jetty	E	5	5269	1.61	0
Customs Hut	E	7	11	7.86	2
mean		7.8	5811.8	2.6	1.4
range		15	74212	7	6
standard deviation		4.3	17880.8	1.6	1.9
mode		5	2	1.05	0
GOF		40	935213	17	43
degrees of freedom		17	17	16	17
p (2 - tailed)		0.01	< 0.001	ns	< 0.001

TABLE 6.

Results of the biotic variables for all sites showing type of site, statistics and goodness - of - fit (GOF) for intra - site differences. Abbreviations: E = established; R = recent; EPH = ephemeral; * = not calculated because of low numbers; ns = not significant.

DEPENDENT VARIABLE: SPECIES RICHNESS				
INDEPENDENT VARIABLE	MULTIPLE	R2	F	Sig F
PC 1	0.16227	0.02633	0.43268	0.5200
PC 2	0.09290	0.00863	0.13928	0.7139
PC 3	0.14864	0.02209	0.36146	0.5561
PC 4	0.26898	0.07235	1.24794	0.2804
PC 5	0.61733	0.38110	9.85222	0.0063
DEPENDENT VARIABLE: NUMBER OF INDIVIDUALS				
INDEPENDENT VARIABLE	MULTIPLE R	R2	F	Sig F
PC 1	0.26099	0.06812	1.16952	0.2955
PC 2	0.39806	0.15845	3.01253	0.1018
PC 3	0.22692	0.05149	0.86858	0.3652
PC 4	0.28213	0.07960	1.38372	0.2567
PC 5	0.21274	0.04526	0.75848	0.3967
DEPENDENT VARIABLE: SIMPSON'S DIVERSITY				
INDEPENDENT VARIABLE	MULTIPLE R	R2	F	Sig F
PC 1	0.37307	0.13918	2.42534	0.1402
PC 2	0.26694	0.07126	1.15089	0.3003
PC 3	0.20741	0.04302	0.67428	0.4244
PC 4	0.33976	0.11544	1.95759	0.1821
PC 5	0.19640	0.03857	0.60179	0.4500

TABLE 7. Results of linear regression analyses using the biotic variables as dependent variables and the factor scores of the five principal components as independent variables. The multiple R is the correlation coefficient between the observed and predicted values of the dependent variable and ranges from 0 to 1. A small value indicates little or no linear relationship between the variables. R2 is the coefficient of determination and is the proportion of the variation in the dependent variable explained by the regression model. It is also the square of the multiple R and ranges from 0 to 1. A small value indicates that the model does not fit the data well. F is the ratio of the two mean squares and Sig F is the significance level of F. The only significant relationship is PC 5 with species richness (shown in bold type).

SITE	I.C.V.	SITE	I.C.V.	SITE	I.C.V.
Little Bay	13.4	Harbour Views	4.3	Eastern Beach	0.1
Camp Bay	9.1	Europort	3.2	Bleak Beach	1.9
Westside	18.2	Rosia Car Park	17	Deadman's Beach	0.9
Sandy Bay	- 3.0	Rosia Promenade	22.9	Queensway	3.5
South Mole	3.5	Parson's Lodge	18.0	Runway Jetty	2.6
Portside	9.6	Catalan Bay	2.3	Customs Hut	12.9

TABLE 8. The values for the index of conservation value (CI) at all the sites.