

NUMBER OF INDICATOR: 98		
THREATENED SPECIES		
CHAPTER NO 4	THEME 3	CATEGORY
ENVIRONMENT	BIOLOGICAL DIVERSITY, ECOSYSTEMS	E

1 - Comments on the definition of the indicator

- (a) Is it clear enough?
- (b) Is this indicator in use in your country?
- (c) Do you have another definition in your country. If so which one?

- (a) The indicator is overall clear with respect to threatened species [at risk of extinction]. Nonetheless, it mentions the Red List status of endangered, vulnerable, rare and indeterminate as defined by the World Conservation Union [IUCN, formerly known as the International Union for Conservation of Nature] (Blue Plan, 2000). This is based on the 'old' IUCN criteria, which were hence used in this report.

According to the Glossary explaining the indicator (Blue Plan, 2000), extinction is defined as "no longer existing anywhere in the world, at least in the wild, and must be distinguished from extermination which means no longer existing in the country or area of interest". In this respect, the term 'possibly extinct' was used, since in a number of cases species are reported as possibly extinct, due to lack of adequate surveys (at the proper place or time, or with appropriate expertise), and a number of 'notoriously' extinct species have been 'rediscovered'.

- (b) An assessment of the conservation status of locally occurring terrestrial, freshwater and marine species was made in 1989 when the first Red Data list for the Maltese Islands was prepared (Schembri & Sultana, 1989), following the criteria established by the IUCN – the World Conservation Union, and modelled on national and international Red Data lists. This was revised in the

'1998 State of the Environment Report' (Schembri *et al.*, 1999). However, it has never been used as an indicator *per se*.

- (c) The definitions in use are those based on the 'old' IUCN criteria, which were hence used in Schembri & Sultana (1989) and this report.

2 - Calculation and monitoring of the indicator:

- (a) Provide the values available for the indicator and the necessary data used for the calculation. (As many years as possible).
- (b) Please specify the geographical place or the geographical level (Indicator have to be at the national level. If not please specify at which level. For example, coastal zone).
- (c) Give the primary sources of data
- (d) Draw, if possible, the most relevant chart for this indicator (use the graph feature of EXCEL) with years on the horizontal axis and indicator value on the vertical axis.

Chordata: Class Actinopterygii	0	0	0	0	0	0	244	–
Chordata: Class Amphibia	0	0	1	0	0	1	1	100
Chordata: Class Reptilia	0	1	12	1	1	15	15	100
Chordata: Class Aves	4	4	17	0	0	25	26	96
Chordata: Class Mammalia	0	0	13	8	3	24	27	89

(i) Previous Data [as extracted from Schembri *et al.*, 1999]

The number of extinct and threatened species of the Maltese Islands. Only those groups included in the *Red Data Book for the Maltese Islands* are given. Adapted from Schembri & Sultana (1989). Key: X: Extinct; E: Endangered; V: Vulnerable; R: Rare; I: Indeterminate.

<i>Group</i>	X	E	V	R	I	TOTAL
Lycophyta (club-mosses and rel.)	1	0	0	1	0	2
Filicophyta (ferns and relatives)	3	2	0	0	0	5
Pinophyta (conifers)	1	1	0	0	0	2
Gnetophyta (gnetads)	1	0	0	0	0	1
Magnoliophyta (flowering plants)	103	71	44	136	34	388
"Pisces" (fish)	0	0	1	0	0	1
Amphibia (amphibians)	0	0	1	0	0	1
Reptilia (reptiles)	0	1	12	1	1	15
Aves (birds)	3	4	13	0	0	20
Mammalia (mammals)	0	0	13	8	3	24

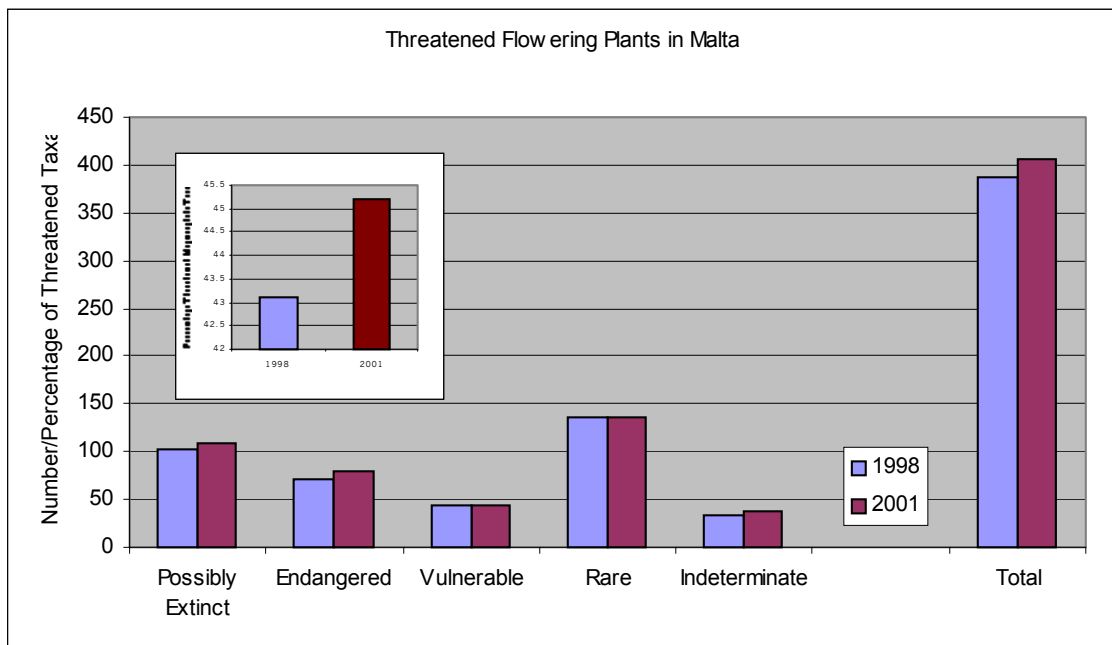
(b) National Level, covering all islands of the Republic of Malta.

(c) The primary source for data was Schembri & Sultana (1989). However, excluding data on fish, which are recently being scientifically studied, all data was updated with current knowledge on the classes in question.

REPOSE TO (d):

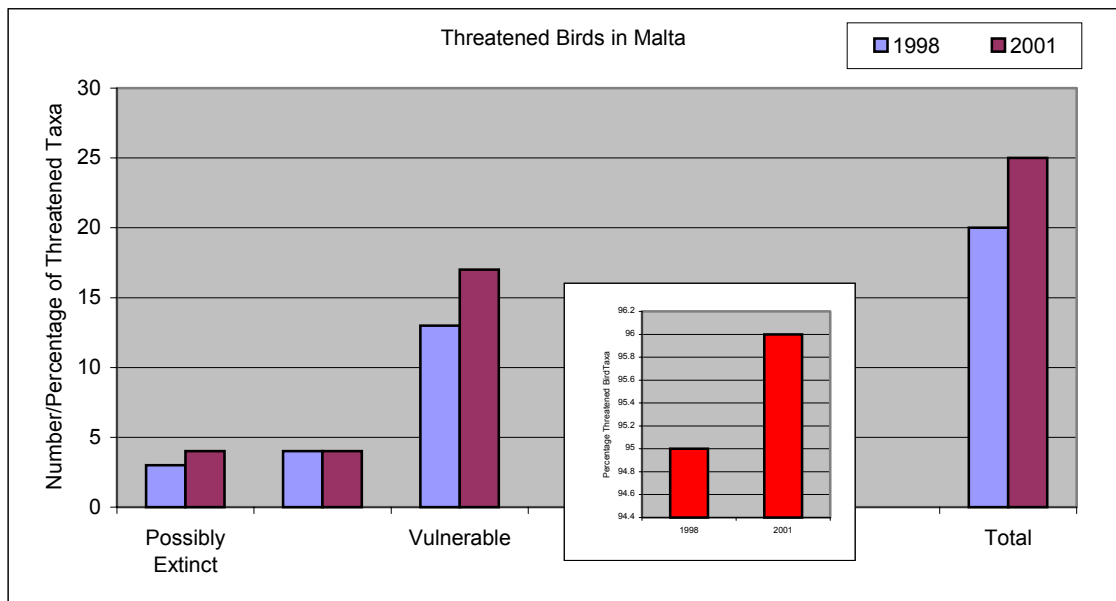
(a) Magnoliophyta [Flowering Plants]

Graph showing the number of threatened flowering plants, with an inset on the percentage threatened in 1998 and 2001 (this study).



(b) Aves [Birds]

Graph showing the number of threatened birds, with an inset on the percentage threatened in 1998 and 2001 (this study). Only regular (or more-or-less regular) breeding birds have been included. Occasional species were not incorporated in the report.



3 - Availability of necessary data:

If the indicator and the necessary data are not available, please specify as following:

- (a) Available in a short term (raw data already collected),
- (b) Available in a medium-term (raw data not collected, but could be procured),
- (c) Not (or never) available

New criteria have been developed by the IUCN for its threat categories (IUCN, 1994, 2001) that are less subjective than the ones employed in this work, but are dependent on various other limiting features:

- the recent IUCN criteria are most appropriately applied to whole taxa at a global scale, rather than to those units defined by regional or national boundaries (IUCN, 1994).
- the new IUCN threat categories include size categories, such as the area of occupancy of the taxon in question. Hence, most declining or rare Maltese species would class as, at least, endangered, since the islands' overall area is of slightly more than 300 km², smaller than the area of occupancy of "less than 500 km²" or the extent of occurrence of "less than 5000 km²" forming the basis of the endangered category (IUCN, 2001).

Excluding the problems due to territorial size, these imply a need to compile an updated red list, since it is not possible to simply translate the old threat ratings to the new ones; each species needs to be re-evaluated from scratch. Moreover, the exercise should involve the use of the draft guidelines for the application of the IUCN Red List criteria at national and regional levels (IUCN, 1999).

In this respect, raw data is not collected, but could be procured.

4 - For those indicators that have been computed describe the pattern of change of the indicator over the period under review.

(a) Magnoliophyta [Flowering Plants]

About 900 taxa of vascular plants are considered as native, possibly native, or archaeophytic to the Maltese Islands. This is a large number, especially when compared to continental Europe. However, despite such a high species richness, this value is rapidly declining, and as much as 45% of the native flora is threatened, if not already extinct.

This decline has been quite rapid as can be seen from comparison with the situation in 1989 as given in the *Red Data Book for the Maltese Islands* (Lanfranco, 1989):

- Lanfranco (1989) lists 9% of the native vascular flora as extinct; recent investigation reveals that this has risen to 12%. However, this value is misleading since a number of taxa upon which the 'new' estimate is based were not included in the *Red Data Book*. On the other hand, other taxa have disappeared since 1989.
- About 140 taxa are not listed in Lanfranco (1989). This increases the number of rare, threatened and/or extinct taxa by 15%. Again, some of the taxa included as threatened in the new estimate were not included in the *Red Data Book*.

Since the *Red Data Book for the Maltese Islands* was published in 1989, there have been many developments. Better exploration of the islands has resulted in the re-discovery of a number of species previously thought to have become extinct while conversely, some previously occurring species have not been recorded for many years and may be extinct. The Maltese landscape has undergone huge changes since 1989, mainly as a result of development, with the result that some habitats have become scarcer (especially natural ones) while others have become more widespread (mainly anthropogenic ones). As a consequence, the species that these habitats support have likewise become rarer or commoner and less widespread or more widespread as the case may be. It is clear that the conservation status of many species reported in the RDB needs revision.

Moreover, our knowledge of some of the groups treated in the table given at point 2 has improved considerably with the result that many new records have been added to the Maltese list, while the taxonomic status of several taxa has been revised.

Since the 'Red Data Book for the Maltese Islands' was published in 1989, there have been many developments. Although new records have been added to the Maltese species list, the threat status of most of these species is to be properly assessed and requires further work, beyond the scope of this exercise. Moreover, the taxonomic status of several taxa requires revision.

Given these important changes, the 1989 RDB data was not considered in the graphical comparison of trends. Moreover, it is difficult to illustrate trends; hence the trends were only described in graphical terms for two well-known groups, the flowering plants (Magnoliophyta) and the Aves (birds).

The data produced for this report shows that the number of threatened flowering plant species has increased since the 1998 assessment, although this increase is of 19 species (raising the percentage of threatened flowering plants from 43 to 45%). Again this is mostly due to habitat loss and modification, the introduction of alien species and possible climate change issues (due to a lower annual rainfall, that is grossly affecting freshwater and coastal communities). In general, threatened plants have declined in numbers and distribution ranges, and some have become much rarer (e.g. *Linaria pseudolaxiflora*). A number of species are also thought to have become extinct since 1998, including species like *Ononis variegata* and *Pseudorlaya pumila*, whilst a number of 'new' records for the Maltese Islands or rediscoveries have been reported since 1998 [e.g. in Bartolo *et al.* (2001); Buttigieg & Lanfranco (2001), Delforge (2000, 2001); Hervouet & Hervouet (1998); Lanfranco (2000); Lanfranco & Spiteri (2001); Lanfranco & Stevens (2000) and Stevens (2001)]; most of these species are threatened although in many cases, these newly described or rediscovered taxa have indeterminate status (e.g. *Capsella rubella*, *Ophrys pectus*), since further studies are required to assess their distribution over the Maltese territory.

(b) Aves [Birds]

The data provided, based on Sultana (1989, 1999, 2001), indicates that 95-96% of the breeding bird species are 'threatened', with most species being vulnerable either due to their rarity, the lack of adequate breeding habitat (especially wetland species), illegal

bird shooting, voluntary or involuntary human disturbance (also because of roads and constructions) and the impact of non-native species, especially domestic and feral cats. Nevertheless, it should be noted that in this case some of species are frequent, as is the case of *Sylvia melanocephala*, which was included because of threats caused by non-native terrestrial vertebrates, like cats.

The results of 1998 and 2001 in the total number of breeding birds vary because a number of species became more-or-less regular breeders since 1998, which is, in itself, a good indication [refer to Sultana (1999) for further detail]. These include, amongst others, *Ixobrychus minutes*, *Charadrius dubius* and *Sturnus vulgaris*, which mostly breed in the bird sanctuaries of *Is-Simar*, *Ghadira*, and *Kemmuna*.

The number of extinct breeding birds has increased from 3 to 4 species, namely *Corvus monedula*, *Falco peregrinus*, *Falco tinnunculus* and *Tyto alba*. However, *Falco peregrinus* was already possibly extinct as a breeding bird in 1998, but was listed as endangered by the compilers of the report (Schembri *et al.*, 1999), following unconfirmed reports of its occurrence as a breeding species. These species have been eradicated as breeding birds due to illegal bird shooting and possibly nest robbing for mounted bird collections (Sultana, 1989).

5 - List the Government Departments/Agencies & other entities contacted during the study (including names of the people that were contacted).

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6 - This is an amplification of (2) above: If the indicator is already computed for Malta please give the following information pertaining to this indicator:

- (a) Years for which the indicator was computed by UNEP
- (b) State whether you have managed to update the indicator up to the year 2000. If not, give the last year for which indicator was computed by yourself.
- (c) Any other comments (such as difficulties encountered) you deem appropriate.

This is one of the most frequent indicators employed to analyse the status of threatened species, mostly because of the international standards set by IUCN. The indicator has been updated to the current knowledge of the compiler, as at March 2002.

7 - This is an amplification of (3) above: If the indicator is not available for Malta please give the following information:

- (a) List the difficulties encountered in procuring the data
- (b) Suggest ways as to how these difficulties can be overcome
- (c) Any other comments you deem appropriate.

It should be noted that the threat criteria employed here are not the aforementioned 'new' criteria developed by the IUCN for its threat categories (IUCN, 1994, 2001), but the ones specified in Blue Plan (2000) and used in the original RDB. For further data refer to point 3.

8 – Cited References

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9 – Compiler of Report

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