Case study for conservation concern indexes

Consider an area of interest (AOI) that contains three CFs, , and where only three commercial activities are physically possible, .

A completed concern table is shown in Table 1.

Table 1. Conservation concern assessment table for our AOI.



In the calculation of the indexes, the three levels of concern have been given weight scores, (*W*) to reflect their relative importance, where:

Another important piece of information is that the AOI overlaps with 70%, 10%, and 100% of the total areas of CF1, CF2, and CF3, respectively.

Therefore, the *coverage,* , of the CFs in the AOI are:

,, and .

Substituting these weights into Table 1 and adding a column for coverage, *F*, gives Tables 2 and 3 for *MNSC* and *SC*, respectively.

Table 2. Conservation concern assessment table with MNSC weights.



Table 3. Conservation concern assessment table with SC weights.



#### Conservation Action Priority related indexes

**AAR:**

where is mean -value per region, *i. e.*, mean value of all PUs inside selected area or inside ArcNet domain.

Let’s say it is only A1 is present in AOI, its amount within AOI is 0.5, then:

AA = 0.5 + 0 + 0 = 0.5,

AAR = 0.5/ 10 = 0.05

**CAPR:**

Absolute:

CAA = 0.5\*(((12\*100) +(9\*10+3\*100) +(12\*10)) \*0.7) + 0\* (((12\*10) +(12\*10)+(12\*1))\*0.1)+ 0\* (((12\*1)+(3\*10+9\*1)+(12\*1))\*1) = 598.5

Relative:

where is for ArcNet domain.

CAPR = 0.5\*(((12\*100) +(9\*10+3\*100) +(12\*10)) \*0.7) + 0\* (((12\*10) +(12\*10)+(12\*1))\*0.1)+ 0\* (((12\*1)+(3\*10+9\*1)+(12\*1))\*1) / 1 \*(((12\*100) +(9\*10+3\*100) +(12\*10)) \*0.7) + 1\* (((12\*10) +(12\*10)+(12\*1))\*0.1)+ 1\* (((12\*1)+(3\*10+9\*1)+(12\*1))\*1) = (598.5 / 10) / (1393.2 / 100) = 4.29

Meaning that average PU in AOI has more than 4-time higher conservation action priority than average PU in ArcNet Domain. This can be explained by the fact that it’s MNSR is 40% higher than average for the Domain on the other hand half of the A1 amount is concentrated within the AOI having a very small area (10 PU vs 100 PU for the Domain). Even though no other activities are present within the AOI, it’s A1 is the most concerning for biodiversity inhabiting the AOI – its MNSIA is 0.8 vs 0.3 vs 0.1 for other activities.

**CAP:**

CAP = 0.5\*(((12\*100) +(9\*10+3\*100) +(12\*10)) \*0.7) + 0\* (((12\*10) +(12\*10)+(12\*1))\*0.1)+ 0\* (((12\*1)+(3\*10+9\*1)+(12\*1))\*1) / 1\*(3600\*0.7) + 1\* (3600\*0.1)+ 1\* (3600\*1) = 598.5 / 6480 = 0.09

This number says that even this area has a very high relative level of conservation action priority for the Arctic (more than 4 times higher than average), it still has a relatively low conservation action priority in absolute values – this is because just one activity is present, and two out of three CFs haver relatively low levels of conservation concern (MNSCF2 = 0.07 and MNSCF3 = 0.0175).