**Supplementary Materials**

**Table S1.** Variables used in the MCSA model. Variables like V04, although their use was not explicitly found as defined in this study, there are other studies that use variables measuring water importance. Regarding V06, the author performs an analysis of the importance of this variable but does not conduct a spatial study. As for V07, no study was found that relates it to the definition of restoration areas.

| **Variable** | **Criteria** | **Authors who have used this variable for similar analyses** | **Related Factor** | **Related Disturbance** |
| --- | --- | --- | --- | --- |
| V01 – Land cover | Ecological | [22,36,52,62] | Stressor / Limiter / Enhancer | - |
| V02 – Erosion and mass movements | Ecological (Ecosystem services improvement) | [41,22,36,62]  | Stressor / Limiter | Landslides |
| V03 - Flooding | Ecological (Ecosystem services improvement) | [41]  | Stressor / Limiter | Flooding along the Chicó River and other drainage systems |
| V04 – Water importance | Ecological / Socioeconomic | - | Enhancer | Impact on supplying watersheds |
| V05 – Ecological connectivity (resistance + nodes) | Ecological | [22,41,52,62]  | Enhancer | Loss of ecological connectivity |
| V06 – Properties with conservation processes | Socioeconomic(Territory context) | [61] | Enhancer | - |
| V07 – Properties with live fences | Socioeconomic (Territory context) | Own | Enhancer | - |
| V08 – Construction density | Socioeconomic (Territory context) | [22,52,62]  | Stressor / Limiter / Enhancer | Agricultural expansion with monocultures (creole potato, tree tomato, cape gooseberry, avocado, among others) |
| V09 – Distance to forest loss | Ecological / Socioeconomic | [22,60,62] | Stressor / Limiter / Enhancer | Deforestation |

In this study, to compare the different pairs of variables among themselves, the following question is posed: *Which variable do you consider most important in defining suitable areas for landscape restoration?* Each response is assigned a rating (according to Table S2). The values are then compiled into a comparison matrix for pairwise criteria to assess their importance relative to each other. Based on a series of statistical and mathematical analyses, the principal eigenvector is obtained, which establishes the weights ($W\_{j}$) and, in turn, provides a quantitative measure of the consistency of value judgments among pairs of factors [38].

**Table S2**. Fundamental comparison scale for the assessment of elements. Source [37].

| **Value** | **Definition** | **Explanation** |
| --- | --- | --- |
| 1 | Equal importance | The importance of A and B is the same |
| 3 | Moderate importance | A is slightly more important than B |
| 5 | Large importance | A is significantly more important than B |
| 7 | Very large importance | A is much more important than B |
| 9 | Extreme importance | A is entirely more important than B |
| 2 4 6 8 |  | Intermediate values |

**Table S3.** Proposed landscape restoration activities concerning changes in land cover between 2010-2020 in the study area. This relationship is assumed for the creation of the landscape restoration activity map, which is overlaid with the feasibility map of activities.

| **Actividad de restauración del paisaje** | **Cambio de Clase de Cobertura terrestres** |
| --- | --- |
| Preservation | Forest - ForestRiver - RiverGrasslands - ForestTransition - ForestInfrastructure - ForestRiver - Grasslands |
| Ecological Restoration | Transition - TransitionForest - TransitionGrasslands - TransitionPlantation - Transition |
| Sustainable Use | Grasslands - GrasslandsTransition - GrasslandsForest - GrasslandsGrasslands - PlantationPlantation - GrasslandsPlantation - PlantationTransition - PlantationInfrastructure - GrasslandsForest - Plantation |
| No Activity | Infrastructure - InfrastructureGrasslands - InfrastructureTransition - InfrastructureForest - Infrastructure |

**Table S4**. Prioritization matrix for defining suitable areas for landscape restoration, according to AHP (Analytic Hierarchy Process). The values within the matrix represent the average of the importance ratings among variables, based on expert evaluations. The horizontal and vertical sum values are the product of matrix analysis. The priority vector displays the results of variable weights.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **AGGREGATED MATRIX** | **V01-Land cover** | **V02-Erosion and landslides** | **V03-Flooding** | **V04-Water importance** | **V05-Ecological connectivity** | **V06-Properties with conservation processes** | **V07-Properties with live fences** | **V08-Density of constructions** | **V09-Distance to forest loss** | **Horizontal Sum** | **Vertical Sum** | **Priority Vector** |
| **V01-Land cover** | 1.00 | 0.75 | 3.38 | 0.28 | 0.41 | 6.21 | 3.21 | 8.14 | 1.15 | 24.5 | 10.1 | 0.17 |
| **V02-Erosion and landslides** | 1.33 | 1.00 | 6.11 | 1.55 | 1.40 | 6.43 | 3.74 | 7.24 | 3.00 | 31.8 | 4.2 | 0.22 |
| **V03-Flooding** | 0.30 | 0.16 | 1.00 | 0.64 | 0.71 | 3.16 | 1.93 | 2.63 | 0.79 | 11.3 | 15.9 | 0.08 |
| **V04-Water importance** | 3.55 | 0.64 | 1.55 | 1.00 | 2.41 | 4.83 | 6.43 | 5.81 | 2.54 | 28.8 | 4.8 | 0.20 |
| **V05-Ecological connectivity** | 2.46 | 0.71 | 1.40 | 0.41 | 1.00 | 4.83 | 5.52 | 6.21 | 1.00 | 23.6 | 7.5 | 0.16 |
| **V06-Properties with conservation processes** | 0.16 | 0.16 | 0.32 | 0.21 | 0.21 | 1.00 | 0.57 | 1.48 | 0.30 | 4.4 | 32.3 | 0.02 |
| **V07-Properties with live fences** | 0.31 | 0.27 | 0.52 | 0.16 | 0.18 | 1.75 | 1.00 | 0.80 | 0.49 | 5.5 | 25.7 | 0.04 |
| **V08-Density of constructions** | 0.12 | 0.14 | 0.38 | 0.17 | 0.16 | 0.68 | 1.25 | 1.00 | 0.49 | 4.4 | 35.3 | 0.03 |
| **V09-Distance to forest loss** | 0.87 | 0.33 | 1.27 | 0.39 | 1.00 | 3.38 | 2.04 | 2.04 | 1.00 | 12.3 | 10.8 | 0.08 |
|  | 10.11 | 4.17 | 15.92 | 4.82 | 7.49 | 32.27 | 25.69 | 35.34 | 10.76 | 146.6 | 146.6 | 1.0 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Maximum Lambda index** | 9.86 | **Consistency index** | 0.108 | **Consistency ratio** | 0.07 |

Table S5 shows that the most significant changes associated with the loss of natural land cover occur between the transition to pastures (89.18 ha, equivalent to 2.40% of the total area) and forests to pastures (33.22 ha, equivalent to 0.89% of the total area). Additionally, there is a gain from pastures to forests of 6.89 ha, equivalent to 0.18% of the total area, as well as from pastures to transition (5 ha, equivalent to 0.13%). Another important point is the change between pastures and forest plantations, which increased by 0.67% (25.10 ha).

**Table S5**. Land Cover Change Matrix between 2010-2020. It mainly highlights the forest losses, which amount to a total of approximately 43 ha. Compared to the transition to pastures, which amount to a total of 89 ha.

| ***Land Cover Change Matrix 2010-2020 (ha)*** | **Land Cover 2020** |
| --- | --- |
| ***Forest*** | ***Infrastructure*** | ***Pastures*** | ***Plantation*** | ***River*** | ***Transition*** | ***Total*** |
| **Land Cover 2010** | ***Forest*** | 561.30 | 1.10 | **33.22** | 0.40 |   | 10.07 | 606.09 |
| ***Infrastructure*** | 0.02 | 108.19 | 0.93 |   |   |   | 109.14 |
| ***Pastures*** | ***6.89*** | 7.42 | 2658.03 | ***25.10*** |   | ***5.00*** | 2702.45 |
| ***Plantation*** |   |   | 10.45 | 2.93 |   | 0.18 | 13.56 |
| ***River*** |   |  | 0.15 |   | 13.63 |   | 13.79 |
| ***Transition*** | 4.12 | 4.47 | **89.18** | 1.76 |   | 164.26 | 263.79 |
| ***Total*** | 572.33 | 121.18 | 2.791.96 | 30.19 | 13.63 | 179.52 | 3708.82 |

**Table S6.** Change in land cover classes between 2010 and 2020, with their respective landscape restoration activities assigned. Some of the values that show 0.00% are because there is an area, but its representation in percentage relative to the total area (ha) is very low.

| **Landscape restoration activity** | **Land cover class change 2010-2020 (%)** | **Area (ha)** | **Area (%)** |
| --- | --- | --- | --- |
| **Preservation** | Forest - Forest (15.13%)River - River (0.37%)Pastures - Forest (0.19%)Transition - Forest (0.11%)Infrastructure - Forest (0.00%)River - Pastures (0.00%) | 586.11 | 15.80% |
| **Ecological restoration** | Transition - Transition (4.43%)Forest - Transition (0.27%)Pastures - Transition (0.13%)Plantation - Transition (0.00%) | 179.51 | 4.84% |
| **Sustainable use** | Pastures - Pastures (71.67%)Transition - Pastures (2.40%)Forest - Pastures (0.90%)Pastures - Plantation (0.68%)Plantation - Pastures (0.28%)Plantation - Plantation (0.08%)Transition - Plantation (0.05%)Infrastructure - Pastures (0.03%)Forest - Plantation (0.01%) | 2822 | 76.09% |
| **No activity** | Infrastructure - Infrastructure (2.92%)Pastures - Infrastructure (0.20%)Transition - Infrastructure (0.12%)Forest - Infrastructure (0.03%) | 121.18 | 3.27% |
|  |  | 3708.8 | 100.00% |

**Table S7**. Activities and feasibility assessment for landscape restoration within the study area. Approximately 4% of the area is considered to have medium to very high feasibility for ecological restoration. In terms of sustainable use, 55.7% of the area has medium to very high feasibility. Regarding preservation, the total value is 15.8% of the entire area, associated with areas of forests of high interest.

| **Activity** | **Feasibility** | **Area (ha)** | **Area (%)** |
| --- | --- | --- | --- |
| **Preservation** **(15.80%)** | Very low | 16.3 | 0.4% |
| Low | 71.4 | 1.9% |
| Medium | 103.6 | 2.8% |
| High | 194.9 | 5.3% |
| Very high | 199.8 | 5.4% |
| **Ecological restoration** **(4.84%)** | Very low | 11.0 | 0.3% |
| Low | 24.5 | 0.7% |
| Medium | 59.1 | 1.6% |
| High | 52.3 | 1.4% |
| Very high | 32.6 | 0.9% |
| **Sustainable use** **(76.09%)** | Very low | 337.7 | 9.1% |
| Low | 421.8 | 11.4% |
| Medium | 902.8 | 24.4% |
| High | 805.7 | 21.7% |
| Very high | 354.0 | 9.6% |
| **No activity****(infrastructure)** **(3.27%)** | - | 121.1 | 3.27% |
|  |  | 3708.8 | 100% |

**Table S8.** Summary of the distribution of detailed and general landscape restoration activities in each of the properties evaluated through social cartography processes.

| **ID Property** | **Landscape restoration general activity** | **Landscape restoration specific activity** | **Specific activity area (ha)** | **Specific** **activity area** **(%)** | **General activity area (ha)** | **General activity area(%)** | **Total area (ha)** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | Preservation | Preservation of wetlands | 0.33 | 0.05 | 2.38 | 37.1% | 6,41 |
| Preservation of forests | 2.05 | 0.32 |
| Restoration | Enrichment with native and timber species | 0.92 | 0.14 | 0.92 | 14.3% |
| Sustainable use | Trout farming | 0.14 | 0.02 | 3.04 | 47.5% |
| Rotation of crops | 0.07 | 0.01 |
| Living fences + Sustainable livestock | 2.83 | 0.44 |
| Infrastructure | Infrastructure | 0.07 | 0.01 | 0.07 | 1.1% |
| **2** | Preservation | Nature tourism | 1.82 | 0.10 | 6.16 | 32.8% | 18,76 |
| Glamping initiative | 0.03 | 0.00 |
| Birdwatching | 4.32 | 0.23 |
| Restoration | Restoration in water sources and important water areas | 0.98 | 0.05 | 1.13 | 6.0% |
| Restoration in current/old erosion areas | 0.15 | 0.01 |
| Sustainable use | Living fences | 0.24 | 0.01 | 11.25 | 59.9% |
| Rotation of crops | 0.02 | 0.00 |
| Sustainable livestock | 10.99 | 0.59 |
| Infrastructure | Infrastructure | 0.23 | 0.01 | 0.23 | 1.2% |
| **3** | Preservation | Birdwatching | 9.47 | 0.18 | 11.34 | 21.1% | 53,74 |
| Preservation of forests | 1.00 | 0.02 |
| Preservation of water sources | 0.88 | 0.02 |
| Restoration | Restoration in water sources and important water areas | 3.40 | 0.06 | 3.40 | 6.3% |
| Sustainable use | Living fences + Sustainable livestock | 36.47 | 0.68 | 36.47 | 67.9% |
| Infrastructure | Infrastructure | 2.52 | 0.05 | 2.52 | 4.7% |
| **4** | Preservation | Preservation of forests | 1.82 | 0.12 | 2.90 | 18.6% | 15,57 |
| Preservation of riparian forest relics | 1.08 | 0.07 |
| Restoration | Enrichment with secondary vegetation | 0.17 | 0.01 | 0.38 | 2.5% |
| Restoration in water sources and important water areas | 0.21 | 0.01 |
| Sustainable use | Sustainable livestock | 11.61 | 0.75 | 12.18 | 78.3% |
| Trout farming | 0.30 | 0.02 |
| Rotation of crops | 0.27 | 0.02 |
| Infrastructure | Infrastructure | 0.11 | 0.01 | 0.11 | 0.7% |
| **5** | Preservation | Preservation of riparian forest relics | 0.06 | 0.01 | 2.00 | 25.2% | 7,93 |
| Preservation of forests | 1.94 | 0.24 |
| Restoration | Restoration in water sources and important water areas | 0.12 | 0.02 | 0.12 | 1.5% |
| Sustainable use | Sustainable livestock | 5.55 | 0.70 | 5.55 | 69.9% |
| Infrastructure | Infrastructure | 0.27 | 0.03 | 0.27 | 3.4% |
| **6** | Preservation | Preservation of riparian forest relics | 0.44 | 0.13 | 0.44 | 13.2% | 3,33 |
| Sustainable use | Rotation of crops | 0.16 | 0.05 | 2.65 | 79.5% |
| Sustainable livestock + Living fences | 2.48 | 0.75 |
| Infrastructure | Infrastructure | 0.24 | 0.07 | 0.24 | 7.3% |
| **7** | Preservation | Preservation of forests | 5.13 | 0.18 | 5.13 | 18.5% | 22,61 |
| Sustainable use | Sustainable livestock | 22.23 | 0.80 | 22.23 | 80.2% |
| Infrastructure | Infrastructure | 0.38 | 0.01 | 0.38 | 1.4% |
| **8** | Preservation | Preservation of forests | 0.48 | 0.13 | 0.48 | 12.8% | 3,70 |
| Restoration | Restoration of riparian vegetation | 0.18 | 0.05 | 0.18 | 4.8% |
| Sustainable use | Rotation of crops | 0.07 | 0.02 | 2.65 | 71.6% |
| Sustainable Livestock + Living Fences | 2.58 | 0.70 |
| Infrastructure | Infrastructure | 0.40 | 0.11 | 0.40 | 10.8% |
| **9** | Preservation | Preservation of forests | 10.90 | 0.13 | 11.26 | 13.0% | 86,88 |
| Preservation of riparian forest relics | 0.11 | 0.00 |
| Preservation of wetlands | 0.25 | 0.00 |
| Restoration | Enrichment with native species | 1.88 | 0.02 | 4.58 | 5.3% |
| Restoration of riparian vegetation | 0.91 | 0.01 |
| Restoration in water sources and important water areas | 1.78 | 0.02 |
| Sustainable use | Living fences | 0.60 | 0.01 | 69.84 | 80.4% |
| Trout farming | 0.05 | 0.00 |
| Forest plantation | 0.44 | 0.01 |
| Sustainable Livestock | 68.75 | 0.79 |
| Infrastructure | Infrastructure | 1.19 | 0.01 | 1.19 | 1.4% |
| **10** | Preservation | Preservation of forests | 0.36 | 0.11 | 0.36 | 10.9% | 3,33 |
| Restoration | Restoration of riparian vegetation | 0.14 | 0.04 | 0.16 | 4.9% |
| Enrichment with native species | 0.01 | 0.00 |
| Restoration in water sources and important water areas | 0.01 | 0.00 |
| Sustainable use | Avocado farming | 2.03 | 0.61 | 2.51 | 65.8% |
| Rotation of crops | 0.27 | 0.08 |
| Sustainable livestock + living fences | 0.22 | 0.07 |
| Infrastructure | Infrastructure | 0.29 | 0.09 | 0.29 | 8.7% |
| **11** | Preservation | Preservation of water sources | 0.84 | 0.33 | 0.84 | 33.1% | 2,55 |
| Restoration | Restoration of riparian vegetation | 0.02 | 0.01 | 0.02 | 0.8% |
| Sustainable use | Sustainable livestock | 1.66 | 0.65 | 1.66 | 65.2% |
| Infrastructure | Infrastructure | 0.02 | 0.01 | 0.02 | 0.9% |
| **12** | Preservation | Preservation of forests | 21.65 | 0.20 | 22.19 | 20.7% | 107,45 |
| Preservation of wetlands | 0.52 | 0.00 |
| Preservation of water sources | 0.02 | 0.00 |
| Restoration | Restoration of riparian vegetation | 0.05 | 0.00 | 2.55 | 2.4% |
| Enrichment with secondary vegetation | 2.09 | 0.02 |
| Restoration in water sources and important water areas | 0.42 | 0.00 |
| Sustainable use | Sustainable livestock | 76.46 | 0.71 | 79.72 | 74.2% |
| Crop rotation | 0.33 | 0.00 |
| Avocado farming | 2.93 | 0.03 |
| Infrastructure | Infrastructure | 2.99 | 0.03 | 2.99 | 2.8% |
| **13** | Preservation | Preservation of forests | 0.74 | 0.01 | 2.82 | 0.9% | 82,73 |
| Preservation of riparian forest relics | 2.08 | 0.03 |
| Sustainable use | Forest plantation | 1.28 | 0.02 | 78.64 | 95.9% |
| Nature tourism | 15.24 | 0.19 |
| Sustainable livestock | 61.37 | 0.75 |
| Infrastructure | Infrastructure | 1.27 | 0.02 | 1.27 | 1.6% |
| **14** | Restoration | Restoration in current/old erosion areas | 0.09 | 0.02 | 0.09 | 2.0% | 4,40 |
| Sustainable use | Sustainable livestock | 4.20 | 0.95 | 4.20 | 95.5% |
| Infrastructure | Infrastructure | 0.11 | 0.03 | 0.11 | 2.6% |
|  |  |  |  |  |  |  |
| Todos | Preservation | - | - | 67.66 | 15.51 | 419.37 |
| Restoration | 12.89 | 3.73 |
| Sustainable use | 329.39 | 78.54 |
| Infrastructure | 9.43 | 2.22 |

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