

Appendix 3. Ecosystem services coding and importance value index

3.1- Criteria for coding benefits in ecosystem services

In the field, we assigned correspondences between the benefits perceived in the photos and the cards drawn to perform the hierarchy. Then, during laboratory work, we systematically coded the services from the benefits to analyze the data. The expressions used by cattle ranchers to refer to the benefits were interpreted in the context of each full interview. The different expressions for the same service, as shown in Table 1, were considered synonyms for the service.

We considered as services all the benefits that were offered by the ecosystem, both in its biotic and abiotic components. We discarded: a) benefits obtained from human infrastructure, such as paved roads and public lighting, b) conditions that favor the achievement of benefits, such as government support, c) management practices for these benefits, such as the hauling of water for livestock, and d) structure of the ecosystem, such as the shape of the land or the space available to develop or extend productive activities.

To classify each service into a type according to the nomenclature proposed by the Millennium Ecosystem Assessment (MEA 2005), we used the following definitions: a) Provisioning: services that interact directly with individuals for the satisfaction of basic needs, such as food, health, room, b) Regulating: services that interact indirectly with individuals through the regulation of the biophysical conditions of the socio-ecosystem to promote their direct well-being or to regulate of agricultural activities, c) Cultural: tangible or intangible benefits that arise from experiences or capacities of the interactions between individuals and their environment, and d) Supporting: basic ecosystem processes that support the offer of other services.

3.2- Development of the Importance Value Index

In the laboratory, we digitized the flipchart obtained from each interview. From each flipchart, we extracted two details of the services represented on the cards: 1) the **position** of each card (from its center) over the horizontal gradient (from 0 to 1) using Data Thief software (<http://datathief.org/>), and 2) the **order** of importance expressed by the interviewee from the order in which it was selected (in decreasing order).

With these data, we constructed an Importance Value index related to each service, per cattle rancher (Individual Importance Value). The Individual Importance Value (equation 3.1) was obtained by multiplying the value of the “*p*” position of the service “*i*” on the horizontal gradient by the second term of the equation. The second term was obtained by subtracting the ratio of the order in which (*o*) the service “*i*” appeared and the total of services (*N*) recognized by the cattle rancher “*j*” from the maximum value found (1) among the “*i*” services.

$$\text{Importance value} = p_i \times \left[1 - \left(\frac{o}{N_j}\right)\right]$$

equation 3.1

In addition, we obtained two indicators of the importance of each service from the group of cattle ranchers. The General Importance Value was based on Individual Importance Value and resulted from the addition of the Individual Importance Value attributed to each service by the individual cattle ranchers who mentioned it. The general frequency resulted from the number of mentions given to each service.