

Appendix 5. Ecosystem services importance and relationships

5.1- Ecosystem services and Importance Value index

We showed the ecosystem services perceived according to how their importance was ranked by cattle ranchers (Table A5.1).

Table A5.1. The 54 ecosystem services defined according to the benefits perceived by cattle ranchers. Services were ordered according to the General Importance Value (the value of added importance for each service by the total of cattle ranchers) and the General Frequency (the number of mentions).

N°	Ecosystem service	General Importance Value	General Frequency
1	Pasture for livestock	12.87	26
2	Water for livestock	10.76	22
3	Rain	10.51	16
4	Food derived from maize	9.97	19
5	Aesthetic appreciation of nature and the landscape	9.33	21
6	Cultivated fodder	9.10	19
7	Forest-rain interactions	6.46	10
8	Habitat	5.76	12
9	Protection of nature	5.20	9
10	Wood	4.95	16
11	Air quality	4.76	8
12	Water for life (wild)	4.50	10
13	Life	4.28	7
14	Food derived from fishing	4.26	11
15	Shade for livestock	4.24	17
16	Coolness	3.97	9
17	Water usage for humans	3.92	8
18	Regulating the flow of water	3.42	6
19	Aesthetic appreciation of wildlife	3.18	9
20	Potential aesthetic appreciation for others	3.02	11
21	Soil protection	2.94	6
22	Aesthetic appreciation of the landscape for oneself	2.87	8
23	Grazing from the forest	2.75	12
24	Aural appreciation of the fauna	2.55	5
25	Post	2.49	5

26	Soil moisture and the vegetation	2.48	4
27	Interactions and properties of the ecosystem	2.37	5
28	Recreational activities in nature	2.26	6
29	Food derived from wild plants or animals	2.19	8
30	Food derived from ranching	1.95	4
31	Appreciation of the positive qualities of productive environments	1.87	5
32	Multiples use for wild species	1.70	6
33	Recharging of groundwater	1.44	2
34	Fire wood	1.42	4
35	Recreational activities in bodies of water and the ocean	1.13	7
36	Soil fertility	0.96	3
37	Environmental conditions for wild plants	0.78	1
38	Water for irrigation	0.73	3
39	Regulating water quality	0.71	1
40	Control of pests	0.65	1
41	Carbon capture	0.64	1
42	Fallen leaves and fertilizer in the soil	0.58	2
43	Food for other domestic animals	0.49	1
44	Future knowledge of animal life	0.40	2
45	Productivity	0.40	1
46	Aural appreciation of water	0.39	1
47	Seasonality (dry)	0.39	1
48	Perches for birds	0.34	1
49	Food for wildlife	0.30	1
50	Health	0.27	1
51	Rock	0.25	1
52	Dairy cattle	0.13	1
53	Happiness	0.12	1
54	Spirituality	0.02	1

5.2- Ecosystem services relationships

Quotes supporting the relationship among ecosystems services, as explained by the perception of five cattle ranchers (CR).

1) “Grazing from the forest” and tree canopy or forest vegetation link:

“[the forest vegetation is a benefit] because we need everything that we have, for ourselves and for animals. (...) For example, as in the photo, you can walk here, all this and then any “matita” (plant) can eat the cattle” (CR6).

2) Services derived from crops (eg. “Food derived from maize”, “Cultivated fodder”) are supporting in the “soil fertility”:

“Well, this terrain is suitable to you want to cultivate. Here all grow, (for example) jitomate, tomato. Look! all soil of here in the coastal zone is dry, in-plane terrain, all you cultivated and irrigated (from different water source “agua rodadiza, agua de pozo o arroyo”), is securely cultivated because here all growing. (...) Here you don't need fertilizers like the “grain” or “sulfate”. Here the terrain has it. This high-quality of “milpa” (maize crop) that we see here, we don't add nothing to it” (CR19).

3) Productivity and fertility link

“The green, when the land is fertile there are beautiful plants; is like when you feed one to the children and if you do not feed them, they are hungry, they are sleep, yes or no?” (CR5).

4) Primary productivity and seasonality of tropical dry forest link:

“The benefit of seeing all that mountain as it is, are the rains. It is the benefit of being so, is beautiful, is green” (CR18).

5) Decomposition and soil fertility linked to seasonality:

“But there are no green trees here. It is dry. It is not dry! it is leafless, it has no foliage!. (...) Here the benefit is in the land that is generating fertilizer for the trees because the fallen leaf is disrupted and is giving benefit to the trees because it is as if it were fuel (...). Yes, the rain arrives, it gets pretty green and also the trees are taking advantage. (...) the leaf litter helps to fertilize and even if the top is without leaves. They are the leaves, which fall to the ground and generate nutrients for the trees” (CR13).