Apêndice 3.3

Confirmation of Environmental Constructs

We validated the choice of two environmental constructs using the routines for scree plots compared to random parallel matrices (using the function *fa.parallel*), the Very Simple Structure (VSS) and Velicer's Minimum Average Partial (MAP) criteria using the function *vss*. The parallel analysis suggests that the number of factors is three and the number of components is two (Figure S1).

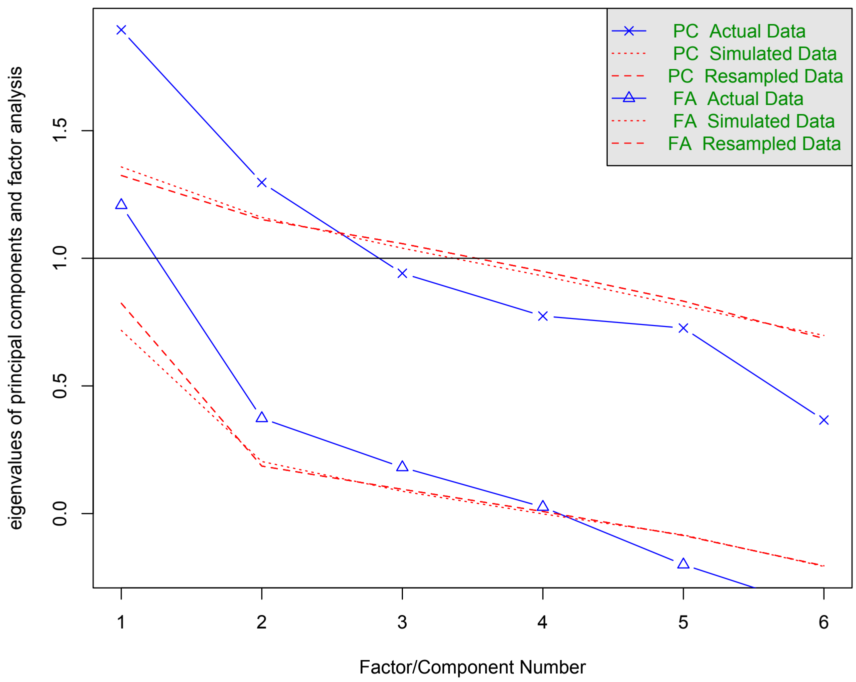

Figure S1. Parallel analysis scree plots of environmental constructs from rural interviewees and environmental specialists in the Brazilian Cerrado savannas.

A principal component analysis reveals that the first principal component is linked to a sustainability/biodiversity conservation awareness and the second to climate change awareness (Figure S2).

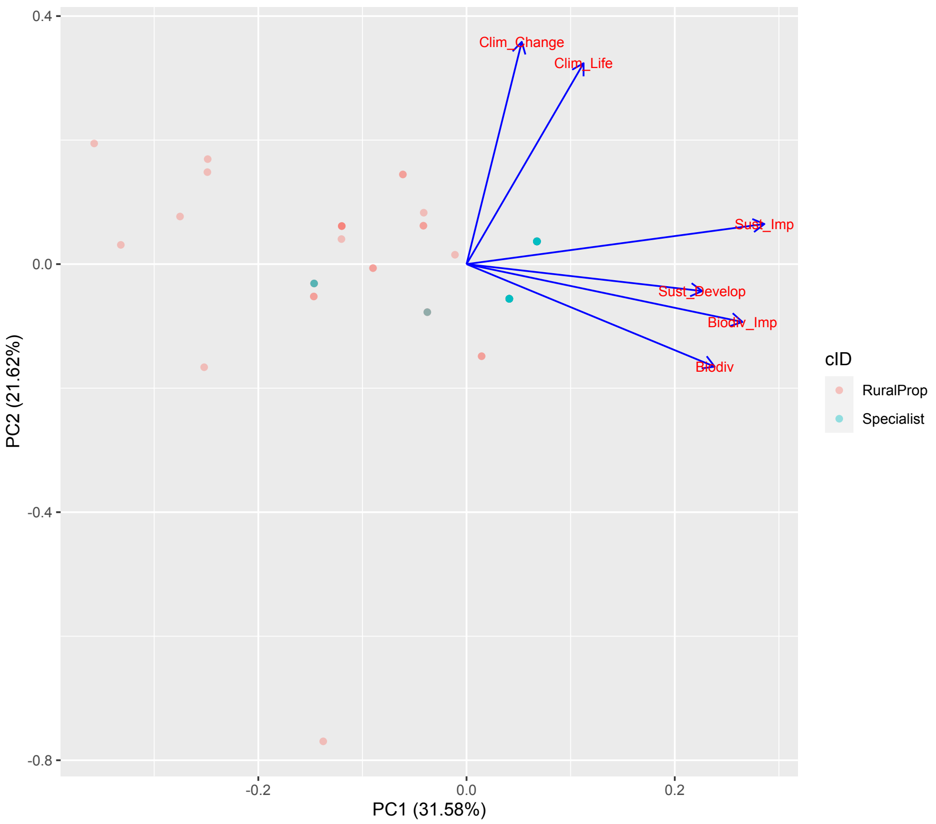

Figure S2. Biplot of principal component analysis (PCA) of environmental constructs from rural interviewees and environmental specialists in the Brazilian Cerrado savannas.

The VSS criterion achieves its maximum with four factors (Figure S3) in every complexity level. The Velicer's MAP achieves its minimum (0.069) with one factor.

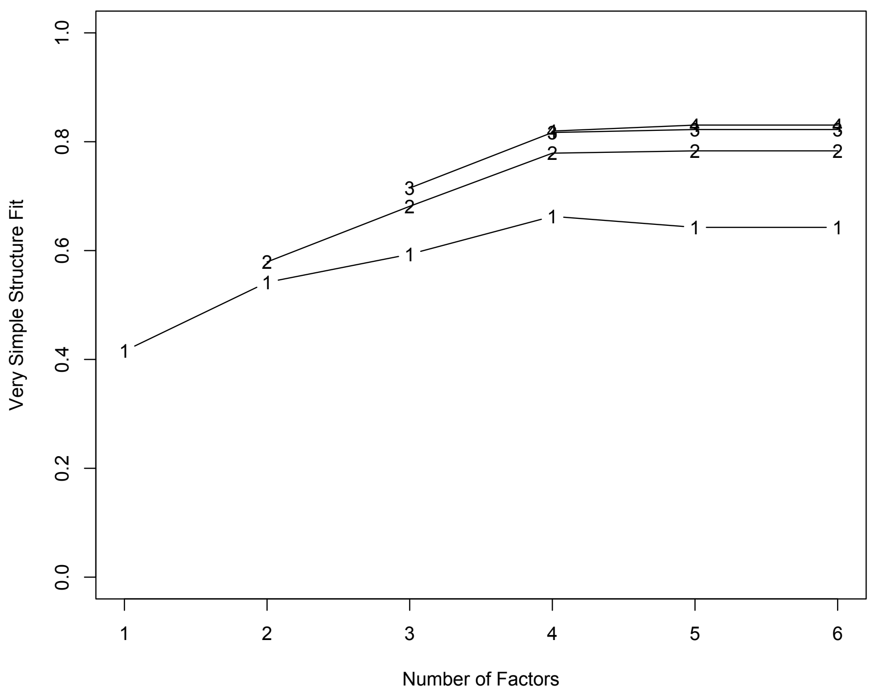

Figure S3. Very Simple Structure (VSS) fits with different complexities of an exploratory factor analysis to depict environmental constructs from rural interviewees and environmental specialists in the Brazilian Cerrado savannas.

We also made hierarchical cluster analyses (using the function *iclust*), essentially a VSS factor model of complexity one. We could recover the climate change and sustainability/conservation awareness constructs with clusters C3 and C4, respectively (Figure S4). We can further split the C4 cluster in one cluster of importance value and another of knowledge (C1 and C2, respectively).

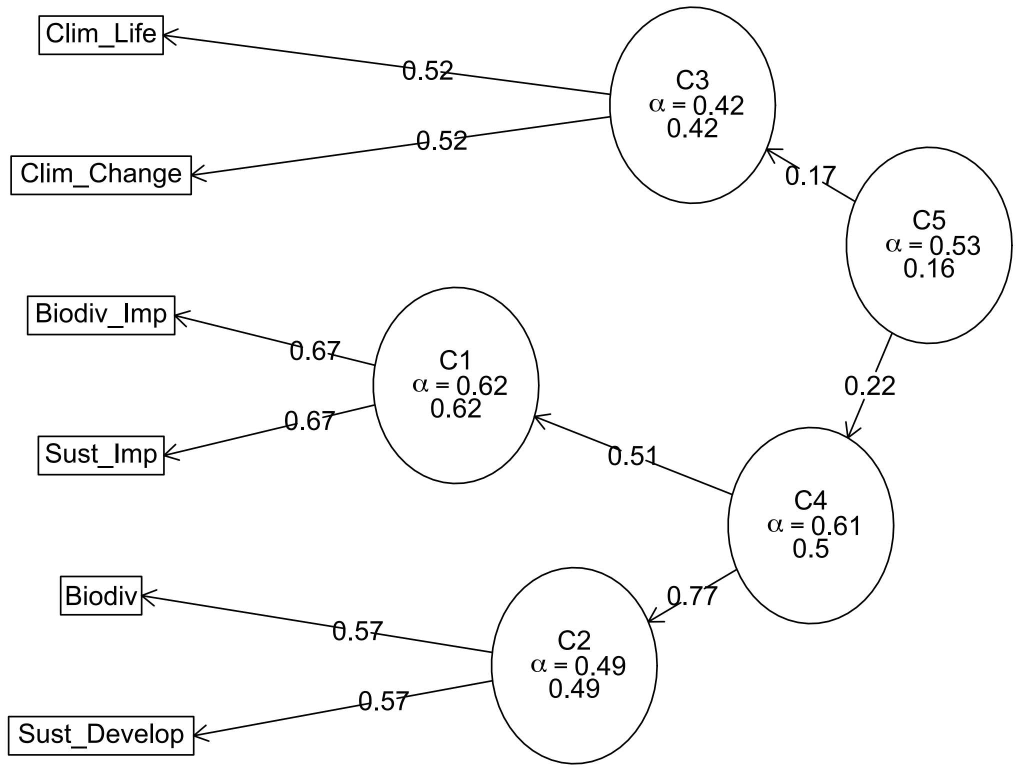

Figure S4. Hierarchical cluster analysis of the survey items to depict environmental constructs from rural interviewees and environmental specialists in the Brazilian Cerrado savannas. The values in the arrows indicate the correlations between the clusters and items. Alpha and Beta values are estimates of the reliability and general factor saturation of the test.

Later, we calculated Mcdonald's omega estimates of general and total factor saturation and hierarchical factor analyses with two and three factors using the function *omega*. The omega measures the reliability of the general model considering the hierarchical structure of the inventory (McDonald, 1999). The general model with two specific factors recovers only one general factor (Figure S5) with omega total = 0.61 and hierarchical = 0.07. However, with three specific factors the omega total increases to 0.73 and hierarchical to 0.41 with the general factor relating more to the sustainability/conservation awareness construct (Figure S6). Despite the data suggest more than two constructs, we preferred to use a simpler model because they are hierarchically related, as the bifactor and cluster analyses reveal. Therefore, our exploratory analyses agree with our hypothesis of two environmental constructs, one related to sustainability/conservation awareness and another to climate change awareness.

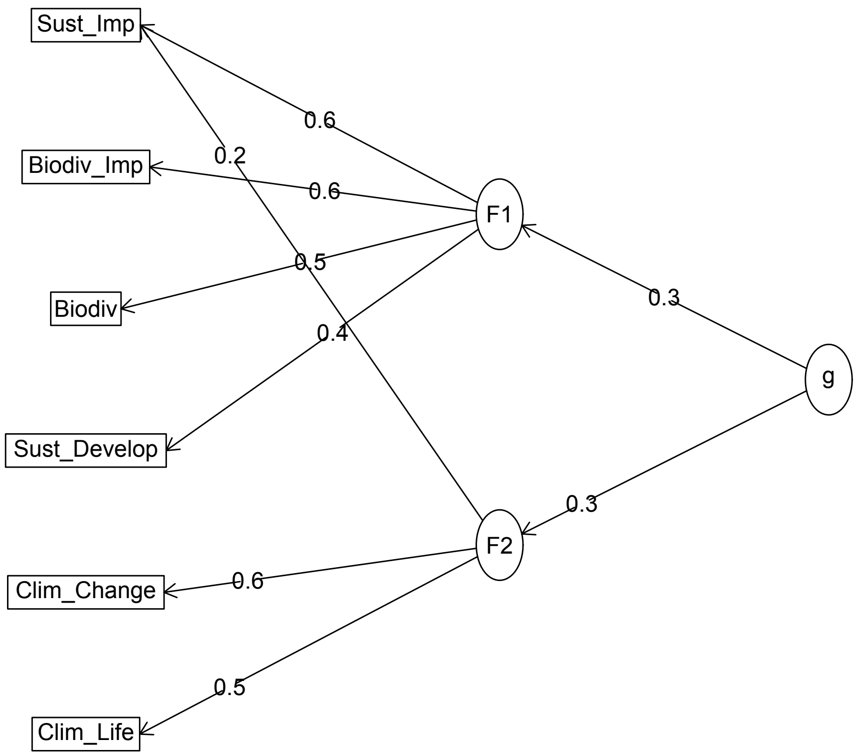

Figure S5. Hierarchical factor analysis with two factors (F1 and F2) and a general factor (g) of the survey items to depict environmental constructs from rural interviewees and environmental specialists in the Brazilian Cerrado savannas.

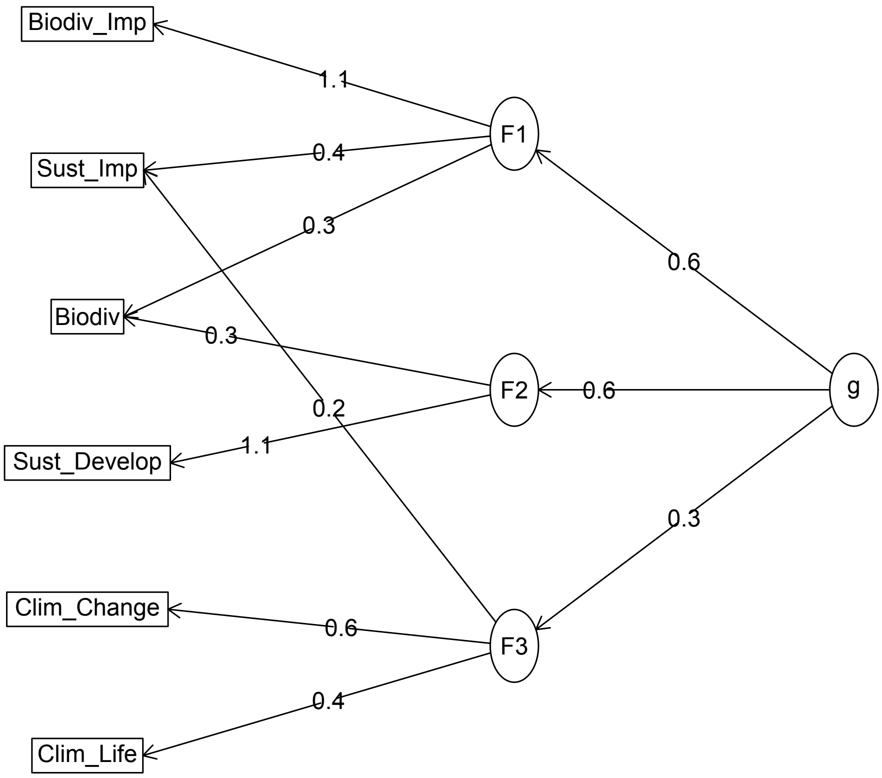

Figure S6. Hierarchical factor analysis with three specific factors (F1, F2, and F3) and a general factor (g) of the survey items to depict environmental constructs from rural interviewees and environmental specialists in the Brazilian Cerrado savannas.

We can observe the factor analysis recovers the same constructs the PCA and cluster analysis revealed (Figure S5). We also present some summary statistics from the factor analysis with two factors we used in the subsequent analyses (Table S1). The two factors had a correlation of 0.17.

Table S1. Summary statistics of the exploratory factor analysis of the survey items to depict environmental constructs from rural interviewees and environmental specialists in the Brazilian Cerrado savannas.

Variable/Statistic	Factor 1	Factor 2	h^2	u^2	Complexity
Sust_Develop	0.4	0.03	0.17	0.83	1
Biodiv	0.53	-0.15	0.28	0.72	1.2
Sust_Imp	0.59	0.26	0.47	0.53	1.4
Biodiv_Imp	0.62	-0.05	0.37	0.63	1
Clim_Change	-0.09	0.56	0.3	0.7	1.1
Clim_Life	0.05	0.46	0.22	0.78	1
SS loadings	1.2	0.62	-	-	-
Proportion of variance	0.2	0.1	-	-	-
Proportion explained	0.66	0.34	-	-	-
Correlation of regression scores with factors	0.81	0.69	-	-	-
Multiple R^2 of scores with factors	0.66	0.48	-	-	-
Minimum correlation of possible factor scores	0.31	-0.04	-	-	-

Consistency Ratios of the Analytical Hierarchical Process (AHP)

We present the variation of the priority rankings of the general priorities (Figures S7 and S8) and fire management goals (Figures S9 and S10) with the total sampling and removing individuals with low consistency ratio (truncated). We can observe the main patterns in prioritization do not change between rural residents and environmental specialists. The truncated data resemble the Bayesian multilevel model estimates, indicating the inter-individual variance and inconsistencies were appropriately accounted.

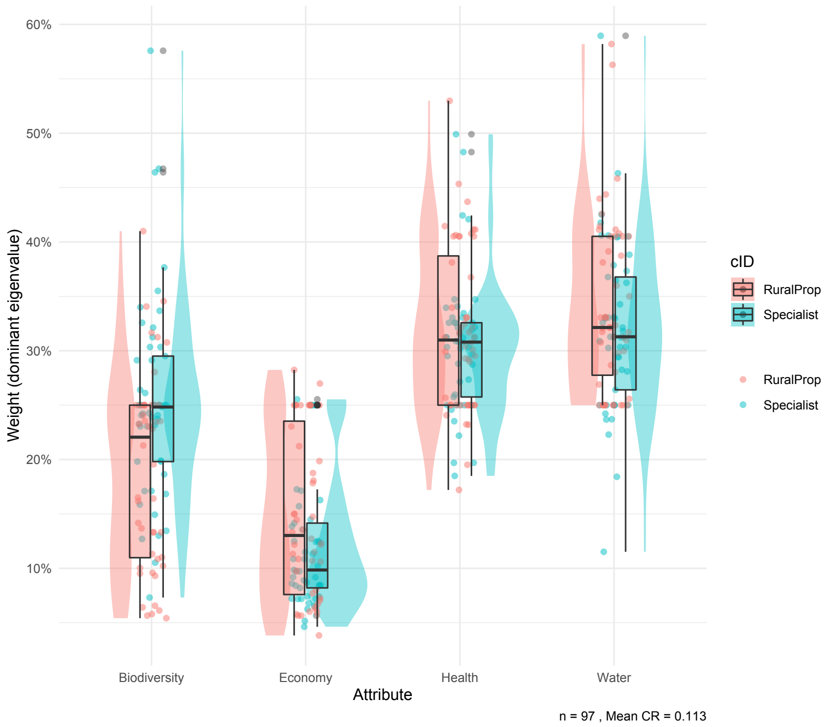

Figure S7. Boxplot and density of the total sampled ranking weights of rural interviewees and environmental specialists to prioritize general priorities in the Brazilian Cerrado savannas.

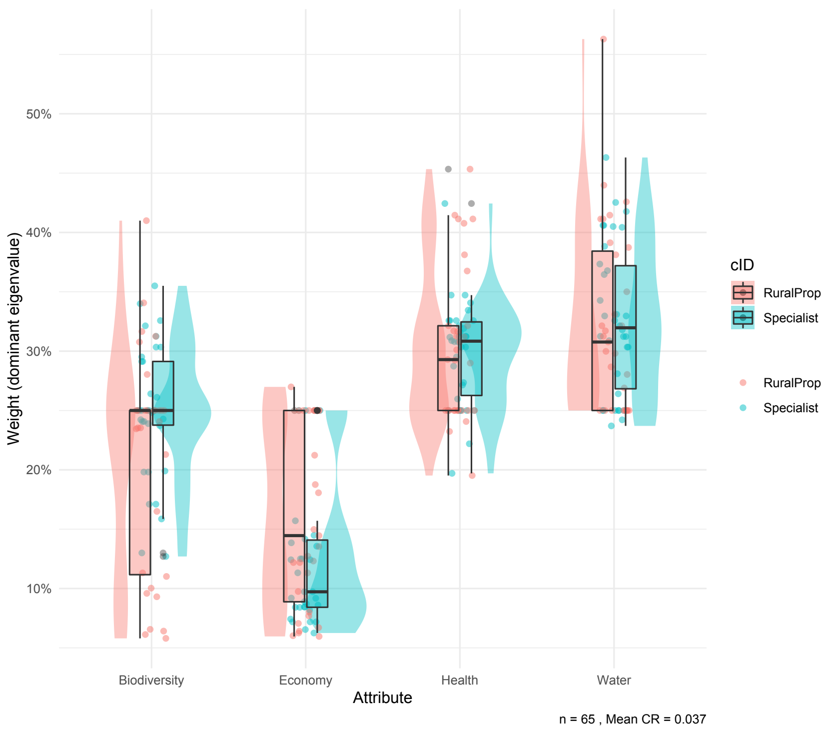

Figure S8. Boxplot and density of the truncated ranking weights of rural interviewees and environmental specialists to prioritize general priorities in the Brazilian Cerrado savannas.

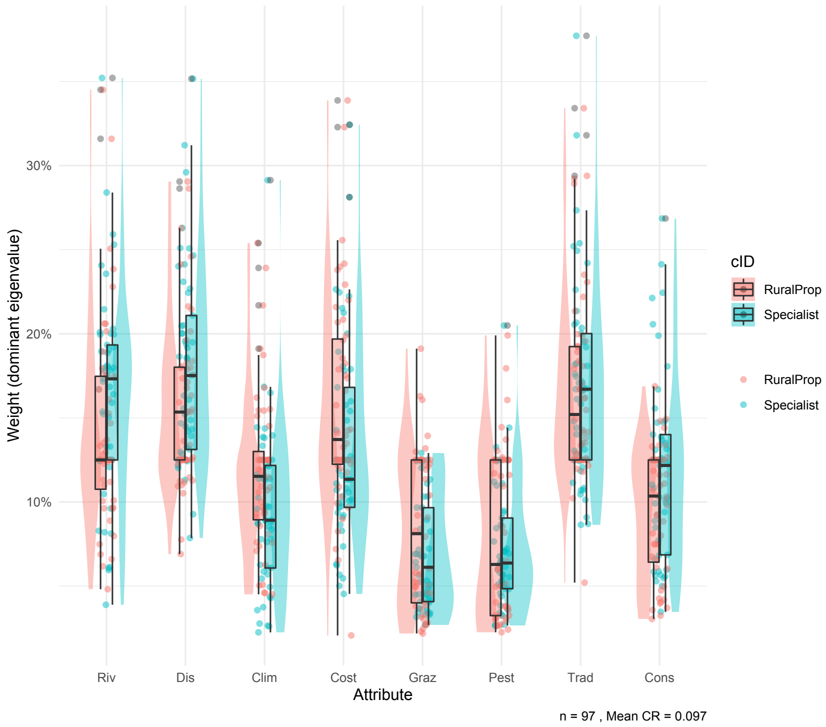

Figure S9. Boxplot and density of the total sampled ranking weights of rural interviewees and environmental specialists to prioritize fire management goals in the Brazilian Cerrado savannas.

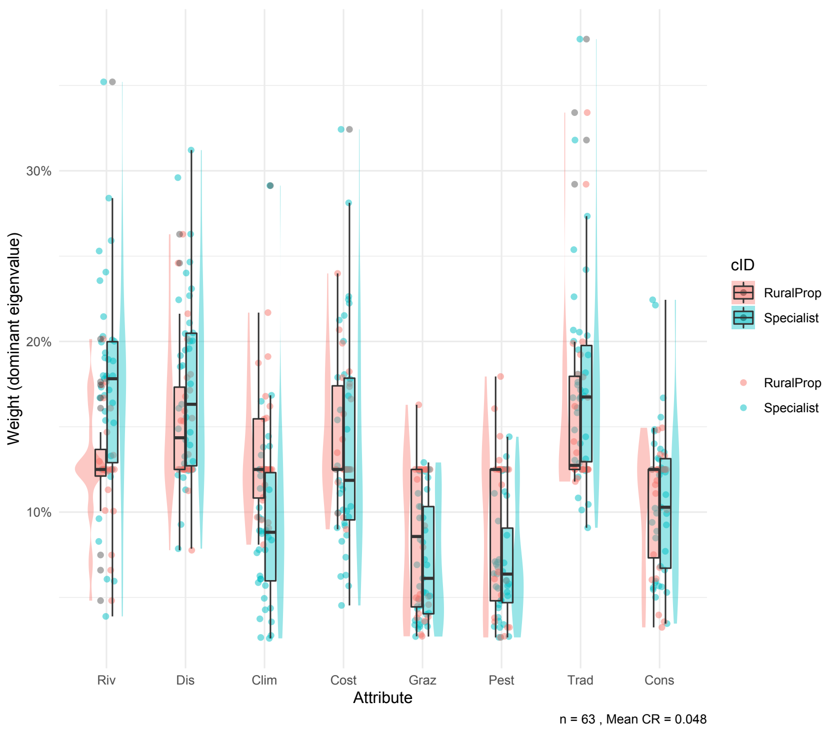

Figure S10. Boxplot and density of the truncated ranking weights of rural interviewees and environmental specialists to prioritize fire management goals in the Brazilian Cerrado savannas.

Leave-One-Out (LOO) Cross Validations

In our Bayesian multilevel models to assess group (rural interviewees and environmental specialists), socioeconomic (gender, age, income, and educational level), and environmental constructs (sustainability/conservation and climate change awareness) effects on the probability of rural interviewees and environmental specialists to prioritize general priorities (Table S2) and fire management goals (Table S3) and judge fire importance use (Table S4) we compared with Leave-One-Out (LOO) cross validations. We can observe that all the effects we assessed on the general priorities have better explanation than a null model (Table S2). The socioeconomic effects alone are better than a full model with all predictors (Table S2).

Table S2. Bayesian Leave-One-Out estimates and standard errors of the expected log pointwise predictive density (ELPD) of models assessing *group* (rural interviewees and environmental specialists), socioeconomic (*gender*, *age*, *income*, and *educ*—educational level), and environmental constructs (*sust/cons*—sustainability/conservation and *clim*—climate change awareness) effects on the probability of rural interviewees and environmental specialists to prioritize general priorities ($AHP_{general}$) in the Brazilian Cerrado savannas. Higher ELPD estimates mean higher predictive ability.

Model	ELPD estimate	SE	ELPD diff.	SE diff.
$AHP_{general} \sim gender + age + income + educ$	356.9	14.2	0	0
$AHP_{general} \sim group + sust/cons + clim + gender + age + income + educ$	350.6	15	-6.3	6.1
$AHP_{general} \sim group$	348.7	11.8	-8.2	6.3
$AHP_{general} \sim sust/cons + clim$	344.8	12.8	-12.1	8
$AHP_{general} \sim 1$	343.4	12.5	-13.5	7.6

Regarding the ranking prioritization of fire management goals, we can observe that the environmental constructs do not affect them significantly (Table S3).

Table S3. Bayesian Leave-One-Out estimates and standard errors of the expected log pointwise predictive density (ELPD) of models assessing *group* (rural interviewees and environmental specialists), socioeconomic (*gender*, *age*, *income*, and *educ*—educational level), and environmental constructs (*sust/cons*—sustainability/conservation and *clim*—climate change awareness) effects on the probability of rural interviewees and environmental specialists to prioritize fire management goals (AHP_{fire}) in the Brazilian Cerrado savannas. Higher ELPD estimates mean higher predictive ability.

Model	ELPD estimate	SE	ELPD diff.	SE diff.
AHP_{fire} ~ *group + sust/cons + clim + gender + age + income + educ*	1113.7	17.2	0	0
AHP_{fire} ~ *gender + age + income + educ*	1112.4	16.1	-1.3	8.3
AHP_{fire} ~ *group*	1104	15.7	-9.7	11.3
AHP_{fire} ~ *1*	1101.7	15.1	-12	11.1
AHP_{fire} ~ *sust/cons + clim*	1097.1	17.1	-16.6	10.4

Like the main priorities, all the effects we studied have significant effects on the individuals' judgment of fire importance (Table S4).

Table S4. Bayesian Leave-One-Out estimates and standard errors of the expected log pointwise predictive density (ELPD) of models assessing *group* (rural interviewees and environmental specialists), socioeconomic (*gender*, *age*, *income*, and *educ*—educational level), and environmental constructs (*sust/cons*—sustainability/conservation and *clim*—climate change awareness) effects on the probability of rural interviewees and environmental specialists to judge fire importance in the Brazilian Cerrado savannas. Higher ELPD estimates mean higher predictive ability.

Model	ELPD estimate	SE	ELPD diff.	SE diff.
Fire importance ~ group + sust/cons + clim + gender + age + income + educ	-76.9	5.7	0	0
Fire importance ~ gender + age + income + educ	-104.6	5.7	-27.7	4.2
Fire importance ~ group	-116.8	7.1	-39.9	2.8
Fire importance ~ sust/cons + clim	-129.4	5.4	-52.5	4
Fire importance ~ 1	-133.8	4.2	-56.9	4.1

Gender effects

We did not find differences between genders on the probability of rural interviewees and environmental specialists to prioritize general priorities (Figure S11a) and fire management goals (Figure S11b) and judge fire importance use (Figure S11c).

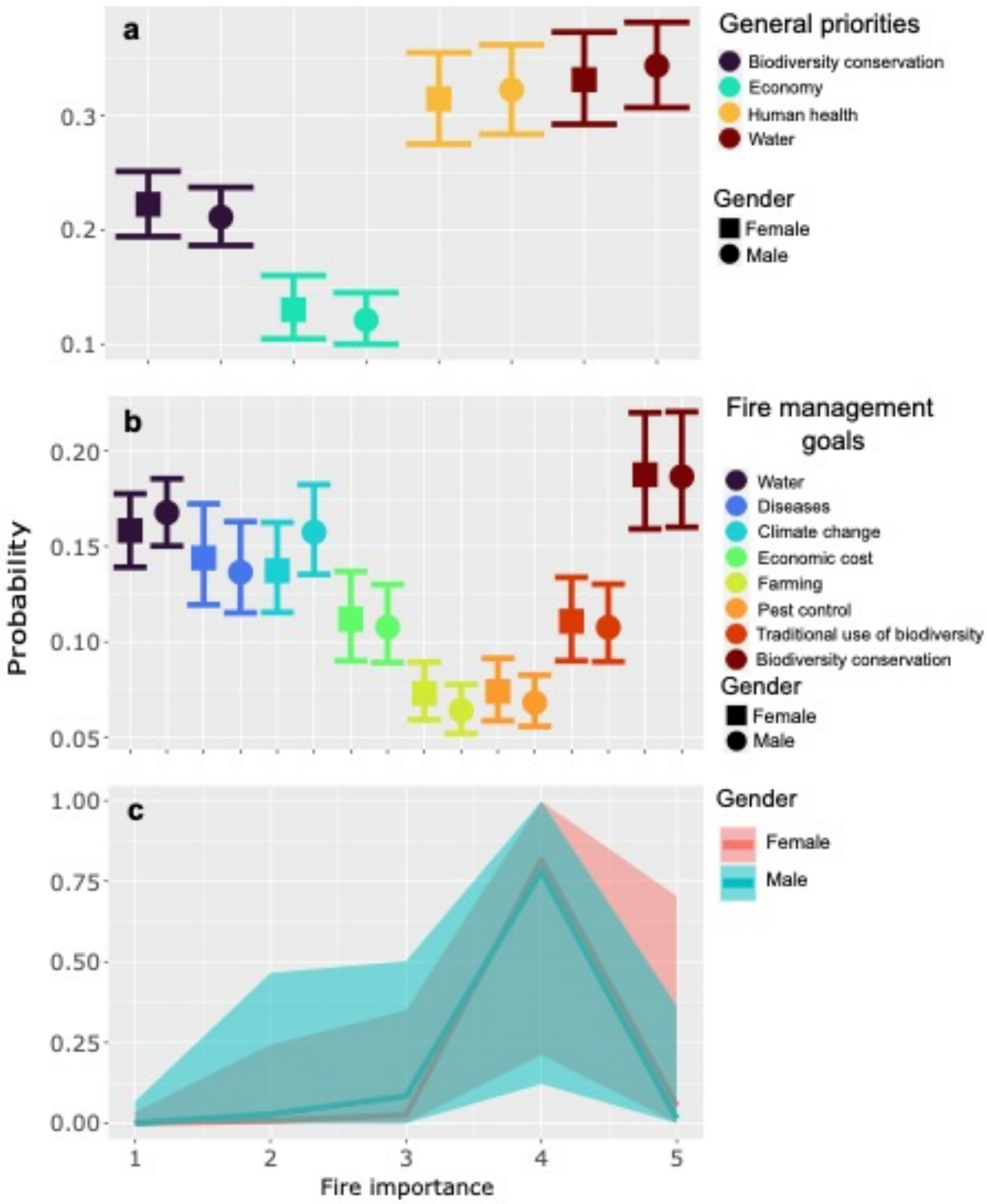

Figure S11. Differences between genders on the probability to prioritize general priorities (a) and fire management goals (b) and judge fire importance use (c) in the Brazilian Cerrado savannas.

Deepening the prioritization of fire management goals (AHP$_{fire}$)

To deepen our comprehension of the choices of prioritization regarding the fire management goals (AHP$_{fire}$) from rural interviewees and environmental specialists, we also investigated some factors. For rural interviewees, we tested whether their perceptions about their attitudes towards fire frequency use, applying early fires, and avoiding late fires explained their fire management goals ranking. For environmental specialists, we tested whether their perceptions of fire importance for biodiversity, fire regimes effects (current, early-, and late-dry season fires), and IFM (use in protected and private areas, and its current evaluation) explained their fire management goals ranking.

Rural interviewees who used fire more frequently had higher priorities for the fire management goal to decrease human diseases in detriment to biodiversity conservation (Fig. S12a). Rural interviewees who had higher predispositions to apply early dry season fires ranked higher the biodiversity conservation and decrease the occurrence of pulmonary diseases and lower the goals to mitigate climate change and protect the traditional use of biodiversity (Fig. S12b). Rural interviewees who had higher attitudes to avoid late dry season fires prioritized more fire management goals to conserve biodiversity in detriment to control pests (Fig. S12c).

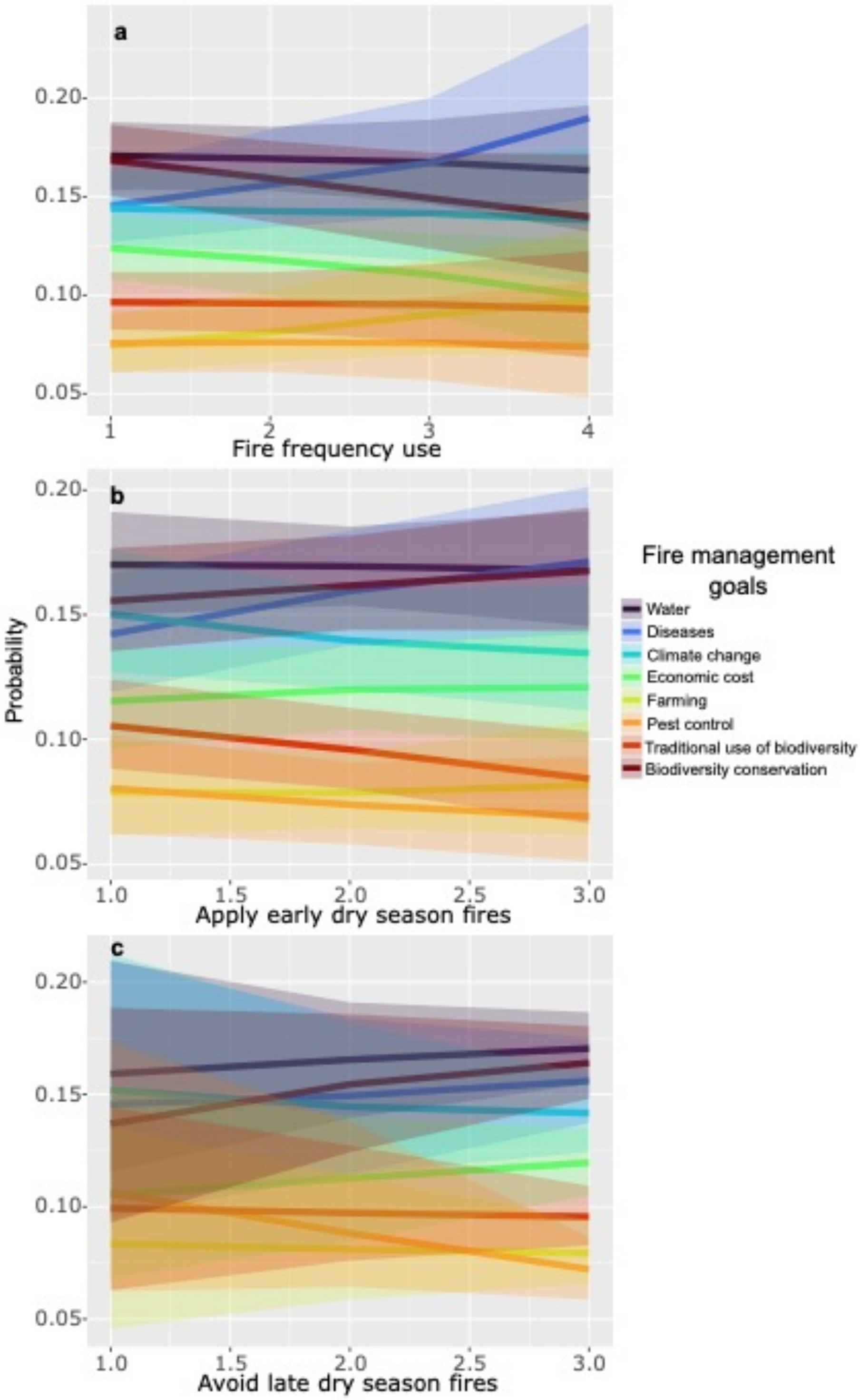

Figure S12. Relationship between rural interviewees' attitudes towards fire frequency use (a), applying early dry season fires (b), and avoiding late dry season fires (c) with the probability to prioritize fire management goals in the Brazilian Cerrado savannas.

Specialists who considered fire highly important to biodiversity ranked higher goals related to the protection of water resources, conservation of biodiversity, and its traditional use (Fig. S13a). Specialists who thought current fire regimes are beneficial to the Cerrado ecosystem ranked lower the fire management goals to protect water courses and higher to protect the traditional use of biodiversity (Fig. S13b). Specialists who thought early dry season fires are beneficial to the Cerrado ecosystem ranked higher the fire management goals related to tackle climate change and protect the traditional use of biodiversity in detriment to biodiversity conservation and protection of watercourses (Fig. S13c). Specialists who stated late dry season fires are beneficial to the ecosystem ranked lower the fire management goals related to tackle climate change and decrease human pulmonary diseases (Fig. S13d).

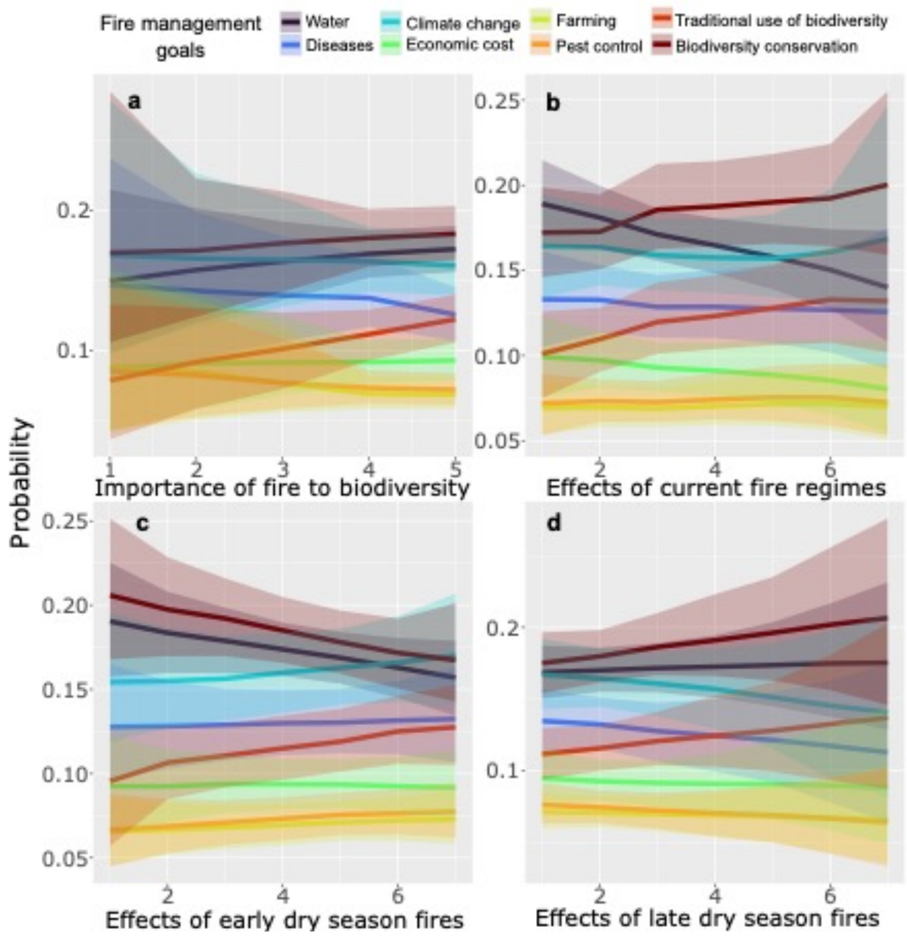

Figure S13. Relationship between environmental specialists' perceptions of the importance of fire to biodiversity (a), effects of current fire regimes (b), early dry season fires (c), and late dry season fires (d) with the probability to prioritize fire management goals in the Brazilian Cerrado savannas.

The degree of approval of the current IFM is positively related to prioritizing fire management goals to conserve biodiversity and protect the traditional use of biodiversity in detriment to decrease climate change and protect the water courses (Fig. S14a). People who had higher approval of IFM use in private areas ranked higher the traditional use of biodiversity and lower the ones related to decreasing human pulmonary diseases and climate change (Fig. S14b). Specialists who highly approved the use of IFM in protected areas ranked higher the fire management goals to conserve biodiversity and to protect the traditional use of biodiversity in detriment to climate change (Fig. S14c).

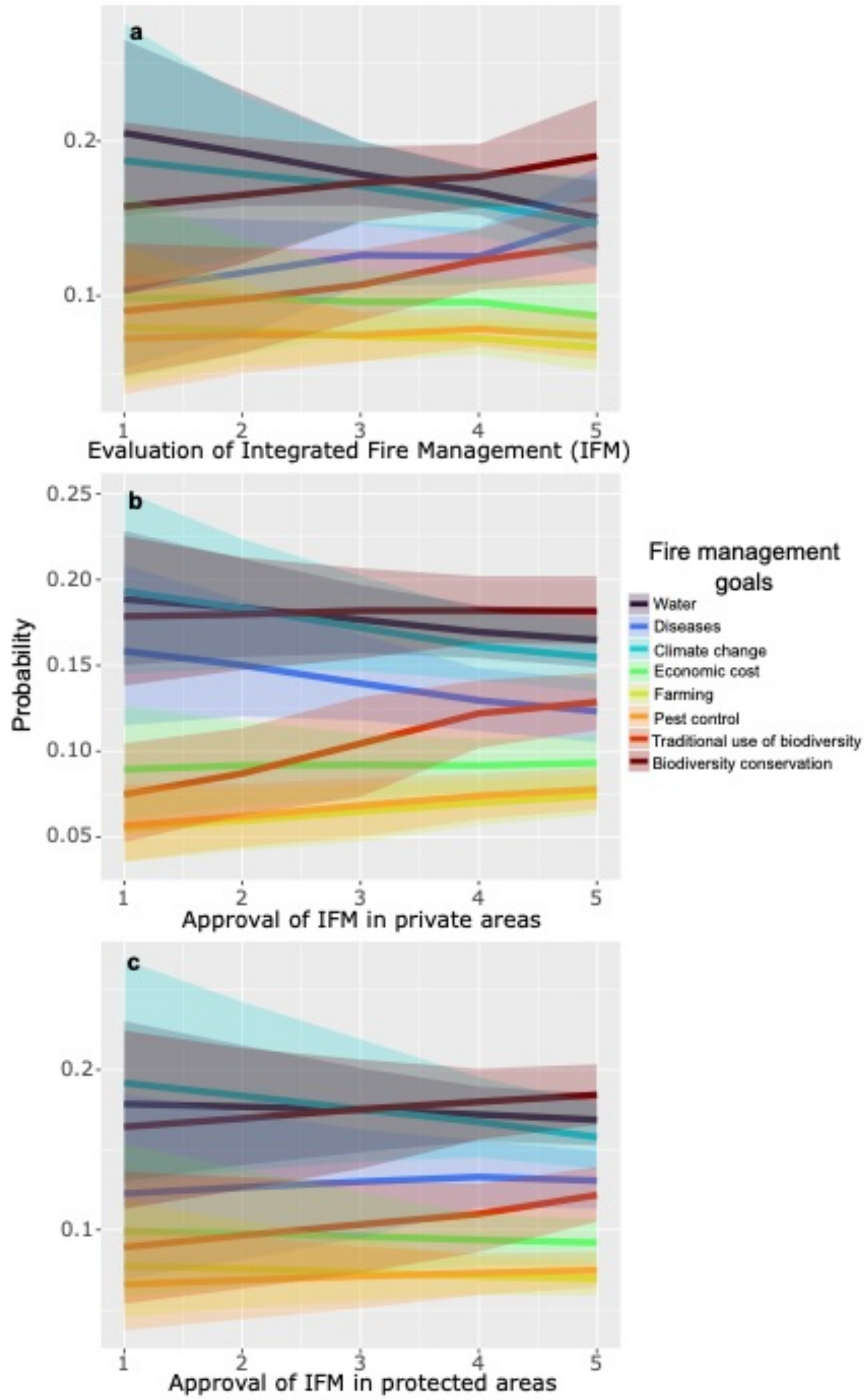

Figure S14. Relationship between environmental specialists' evaluations of the current Integrated Fire Management (a) and the approval of its use in private (b) and protected areas (c) in the Brazilian Cerrado savannas with the probability to prioritize fire management goals in the Brazilian Cerrado savannas.