Supplementary information

Live fences, pastures and riparian forests: how agricultural lands contribute to bird diversity in northern Costa Rica

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Appendix A

Table S1. List of bird species recorded in La Balsa farm, northern Costa Rica, with their status in the country indicated as resident (R), migratory (M), or regionally endemic (END), along with their conservation status. Global conservation status is indicated according to IUCN categories: Vulnerable (VU) and Near Threatened (NT). National conservation status is shown as superscripts: [1]Threatened, [2]Near Threatened, [3]Endangered. CITES listings are also shown, indicating whether a species is included in Appendices I, II or III of the Convention. All species with an assessed conservation status or classified as regionally endemic are highlighted in bold. Nomenclature and classification follow the Official List of Birds of Costa Rica 2024-2025 (Garrigues et al. 2025). Taxonomic orders are listed in alphabetical order.

Orden	Familia	Especie	Estado	Protection level
Accipitriformes	Accipitridae	*Buteo plagiatus*	R	LC
Accipitriformes	Accipitridae	*Geranospiza caerulescens*	R	LC
Accipitriformes	Accipitridae	*Parabuteo unicinctus*	R	LC
Accipitriformes	Accipitridae	*Rupornis magnirostris*	R	LC
Anseriformes	Anatidae	*Cairina moschata*	R	LC
Anseriformes	Anatidae	*Dendrocygna autumnalis*	R	LC
Apodiformes	Apodidae	*Chaetura cinereiventris*	R	LC
Apodiformes	Apodidae	*Streptoprocne zonaris*	R	LC
Apodiformes	Trochilidae	*Amazilia tzacatl*	R	LC, II
Apodiformes	Trochilidae	*Anthracothorax prevostii*[1]	R	LC, II
Apodiformes	Trochilidae	*Florisuga mellivora*	R	LC
Apodiformes	Trochilidae	*Heliomaster longirostris*	R	LC, II
Apodiformes	Trochilidae	*Heliothryx barroti*	R	LC, II
Apodiformes	Trochilidae	*Phaeochroa cuvierii*	R	LC, II
Apodiformes	Trochilidae	*Phaethornis longirostris*	R	LC, II
Apodiformes	Trochilidae	*Phaethornis striigularis*	R	LC, II
Caprimulgiformes	Caprimulgidae	*Nyctidromus albicollis*	R	LC

Cathartiformes	Cathartidae	*Cathartes aura*	R	LC
Cathartiformes	Cathartidae	*Coragyps atratus*	R	LC
Charadriiformes	Charadriidae	*Vanellus chilensis*	R	LC
Charadriiformes	Jacanidae	*Jacana spinosa*	R	LC
Charadriiformes	Scolopacidae	*Actitis macularius*	M	LC
Ciconiiformes	Ciconiidae	*Mycteria americana*	R	LC
Columbiformes	Columbidae	*Columbina talpacoti*	R	LC
Columbiformes	Columbidae	*Leptotila verreauxi*	R	LC
Columbiformes	Columbidae	*Patagioenas flavirostris*	R	LC
Coraciiformes	Alcedinidae	*Chloroceryle amazona*	R	LC
Coraciiformes	Alcedinidae	*Chloroceryle americana*	R	LC
Coraciiformes	Alcedinidae	*Megaceryle torquata*	R	LC
Coraciiformes	**Momotidae**	***Electron carinatum***	**R**	**VU**
Coraciiformes	Momotidae	*Electron platyrhynchum*	R	LC
Coraciiformes	Momotidae	*Momotus lessonii*	R	LC
Cuculiformes	Cuculidae	*Crotophaga sulcirostris*	R	LC
Cuculiformes	Cuculidae	*Piaya cayana*	R	LC
Falconiformes	Falconidae	*Caracara plancus*	R	LC, II
Falconiformes	Falconidae	*Herpetotheres cachinnans*	R	LC, II
Falconiformes	Falconidae	*Milvago chimachima*	R	LC, II
Galbuliformes	Galbulidae	*Galbula ruficauda*	R	LC
Galliformes	Cracidae	*Ortalis cinereiceps*	R	LC
Galliformes	**Cracidae**	***Penelope purpurascens***	**R**	**NT, III**
Gruiformes	Rallidae	*Aramides albiventris*	R	LC
Gruiformes	Rallidae	*Laterallus albigularis*	R	LC
Passeriformes	Cardinalidae	*Habia fuscicauda*	R	LC
Passeriformes	Cardinalidae	*Piranga olivacea*	M	LC
Passeriformes	Cardinalidae	*Piranga rubra*	M	LC
Passeriformes	Cotingidae	*Lipaugus unirufus*	R	LC
Passeriformes	Fringillidae	*Euphonia gouldi*	R	LC
Passeriformes	Fringillidae	*Euphonia hirundinacea*	R	LC
Passeriformes	Furnariidae	*Automolus cervinigularis*	R	LC
Passeriformes	Furnariidae	*Dendrocolaptes sanctithomae*	R	LC
Passeriformes	Furnariidae	*Glyphorynchus spirurus*	R	LC
Passeriformes	Furnariidae	*Lepidocolaptes souleyetii*	R	LC
Passeriformes	Furnariidae	*Xiphorhynchus susurrans*	R	LC
Passeriformes	Hirundinidae	*Stelgidopteryx serripennis*	R	LC
Passeriformes	Icteridae	*Agelaius phoeniceus*	R	LC
Passeriformes	Icteridae	*Amblycercus holosericeus*	R	LC
Passeriformes	Icteridae	*Dives dives*	R	LC
Passeriformes	Icteridae	*Icterus galbula*	M	LC
Passeriformes	Icteridae	*Icterus spurius*	M	LC
Passeriformes	Icteridae	*Molothrus aeneus*	R	LC

Passeriformes	Icteridae	*Molothrus oryzivorus*	R	LC
Passeriformes	Icteridae	*Psarocolius montezuma*	R	LC
Passeriformes	Icteridae	*Quiscalus mexicanus*	R	DD
Passeriformes	**Icteridae**	***Sturnella magna***	**R**	**NT**
Passeriformes	Parulidae	*Geothlypis poliocephala*	R	LC
Passeriformes	Parulidae	*Geothlypis semiflava*	R	LC
Passeriformes	Parulidae	*Leiothlypis peregrina*	M	LC
Passeriformes	Parulidae	*Myiothlypis fulvicauda*	R	LC
Passeriformes	Parulidae	*Parkesia noveboracensis*	M	LC
Passeriformes	Parulidae	*Setophaga dominica*	M	LC
Passeriformes	Parulidae	*Setophaga fusca*	M	LC
Passeriformes	Parulidae	*Setophaga pensylvanica*	M	LC
Passeriformes	Parulidae	*Setophaga petechia*	R	LC
Passeriformes	Parulidae	*Setophaga pitiayumi*	R	LC
Passeriformes	Parulidae	*Setophaga ruticilla*	M	LC
Passeriformes	**Parulidae**	***Setophaga striata***	**M**	**NT**
Passeriformes	Passerellidae	*Arremon aurantiirostris*	R	LC
Passeriformes	Passerellidae	*Arremonops conirostris*	R	LC
Passeriformes	Passeridae	*Passer domesticus*	R	LC
Passeriformes	Picidae	*Dryobates fumigatus*	R	DD
Passeriformes	Pipridae	*Manacus candei*	R	LC
Passeriformes	Polioptilidae	*Ramphocaenus melanurus*	R	LC
Passeriformes	Thamnophilidae	*Microrhopias quixensis*	R	LC
Passeriformes	Thamnophilidae	*Poliocrania exsul*	R	LC
Passeriformes	Thamnophilidae	*Taraba major*	R	LC
Passeriformes	Thamnophilidae	*Thamnophilus doliatus*	R	LC
Passeriformes	Thraupidae	*Chlorophanes spiza*	R	LC
Passeriformes	Thraupidae	*Coereba flaveola*	R	LC
Passeriformes	Thraupidae	*Cyanerpes cyaneus*	R	LC
Passeriformes	Thraupidae	*Cyanerpes lucidus*	R	LC
Passeriformes	**Thraupidae**	***Heterospingus rubrifrons***	**R-END**	LC
Passeriformes	Thraupidae	*Ramphocelus passerinii*	R	LC
Passeriformes	Thraupidae	*Ramphocelus sanguinolentus*	R	LC
Passeriformes	Thraupidae	*Saltator atriceps*	R	LC
Passeriformes	Thraupidae	*Saltator grandis*	R	LC
Passeriformes	Thraupidae	*Saltator maximus*	R	LC
Passeriformes	Thraupidae	*Sporophila corvina*	R	LC
Passeriformes	Thraupidae	*Sporophila morelleti*	R	LC
Passeriformes	Thraupidae	*Stilpnia larvata*	R	DD
Passeriformes	Thraupidae	*Thraupis episcopus*	R	DD
Passeriformes	Thraupidae	*Thraupis palmarum*	R	DD
Passeriformes	Thraupidae	*Tiaris olivaceus*	R	LC
Passeriformes	Thraupidae	*Volatinia jacarina*	R	LC

Passeriformes	Tityridae	*Pachyramphus cinnamomeus*	R	LC
Passeriformes	Tityridae	*Tityra inquisitor*	R	LC
Passeriformes	Tityridae	*Tityra semifasciata*	R	LC
Passeriformes	Troglodytidae	*Cantorchilus nigricapillus*	R	LC
Passeriformes	**Troglodytidae**	***Cantorchilus thoracicus***	**R-END**	LC
Passeriformes	Troglodytidae	*Cyphorhinus phaeocephalus*	R	LC
Passeriformes	Troglodytidae	*Henicorhina leucosticta*	R	LC
Passeriformes	**Troglodytidae**	***Pheugopedius atrogularis***	**R-END**	LC
Passeriformes	Troglodytidae	*Troglodytes aedon*	R	LC
Passeriformes	Turdidae	*Catharus ustulatus*	M	LC
Passeriformes	Turdidae	*Hylocichla mustelina*	M	LC
Passeriformes	Turdidae	*Turdus grayi*	R	LC
Passeriformes	Tyrannidae	*Attila spadiceus*	R	LC
Passeriformes	Tyrannidae	*Capsiempis flaveola*	R	LC
Passeriformes	**Tyrannidae**	***Contopus cooperi***	**M**	**NT**
Passeriformes	Tyrannidae	*Contopus virens*	M	LC
Passeriformes	Tyrannidae	*Elaenia flavogaster*	R	LC
Passeriformes	Tyrannidae	*Empidonax traillii*	M	LC
Passeriformes	Tyrannidae	*Empidonax virescens*	M	LC
Passeriformes	Tyrannidae	*Legatus leucophaius*	R	LC
Passeriformes	Tyrannidae	*Megarynchus pitangua*	R	LC
Passeriformes	Tyrannidae	*Myiarchus tuberculifer*	R	LC
Passeriformes	Tyrannidae	*Myiodynastes luteiventris*	R	LC
Passeriformes	Tyrannidae	*Myiozetetes granadensis*	R	LC
Passeriformes	Tyrannidae	*Myiozetetes similis*	R	LC
Passeriformes	Tyrannidae	*Pitangus sulphuratus*	R	LC
Passeriformes	Tyrannidae	*Poecilotriccus sylvia*	R	LC
Passeriformes	Tyrannidae	*Rhytipterna holerythra*	R	LC
Passeriformes	Tyrannidae	*Sayornis nigricans*	R	LC
Passeriformes	Tyrannidae	*Todirostrum cinereum*	R	LC
Passeriformes	Tyrannidae	*Todirostrum nigriceps*	R	LC
Passeriformes	Tyrannidae	*Tolmomyias sulphurescens*	R	LC
Passeriformes	Tyrannidae	*Tyrannus melancholicus*	R	LC
Passeriformes	Tyrannidae	*Tyrannus savana*	R	DD
Passeriformes	Vireonidae	*Pachysylvia decurtata*	R	LC
Passeriformes	Vireonidae	*Vireo philadelphicus*	M	LC
Pelecaniformes	Ardeidae	*Ardea alba*	R	LC
Pelecaniformes	Ardeidae	*Ardea herodias*	M	LC
Pelecaniformes	Ardeidae	*Bubulcus ibis*	R	LC
Pelecaniformes	Ardeidae	*Butorides virescens*	R	NE
Pelecaniformes	Ardeidae	*Tigrisoma mexicanum*	R	LC
Pelecaniformes	Threskiornithidae	*Mesembrinibis cayennensis*	R	LC
Pelecaniformes	Threskiornithidae	*Platalea ajaja*	R	LC

Piciformes	Picidae	*Dryocopus lineatus*	R	DD
Piciformes	**Picidae**	***Melanerpes hoffmannii***	**R-END**	DD
Piciformes	Picidae	*Melanerpes pucherani*	R	LC
Piciformes	Picidae	*Picumnus olivaceus*	R	LC
Piciformes	Ramphastidae	*Pteroglossus torquatus*	R	LC
Piciformes	Ramphastidae	*Ramphastos ambiguus*	R	LC
Piciformes	**Ramphastidae**	***Ramphastos sulfuratus***[2]	**R**	**NT, II**
Psittaciformes	Psittacidae	*Amazona autumnalis*	R	DD
Psittaciformes	Psittacidae	*Amazona farinosa*	R	LC
Psittaciformes	Psittacidae	*Ara macao*[3]	R	LC, I
Psittaciformes	Psittacidae	*Brotogeris jugularis*	R	LC
Psittaciformes	Psittacidae	*Pionus senilis*	R	LC
Psittaciformes	Psittacidae	*Pyrilia haematotis*	R	LC
Suliformes	Anhingidae	*Anhinga anhinga*	R	LC
Suliformes	Phalacrocoracidae	*Nannopterum brasilianum*	R	LC
Trogoniformes	Trogonidae	*Trogon caligatus*	R	NE
Trogoniformes	Trogonidae	*Trogon collaris*	R	LC
Trogoniformes	Trogonidae	*Trogon massena*	R	LC
Trogoniformes	Trogonidae	*Trogon tenellus*	R	DD

[1] *Anthracothorax prevostii* is protected and regulated by Wildlife Conservation Law No. 7317, Organic Environmental Law No. 7554 and Decree No. 26435-MINAE.

[2] *Ramphastos sulfuratus* is classified as Near threatened. https://www.museocostarica.go.cr/nuestro-trabajo/investigaciones/historia-natural/tucanes-costa-rica/conservacion/

[3] *Ara macao* is classified as endangered at the national level, according to Vaughan (2019).

References

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