Public awareness campaign to enhance the conservation of avifauna and their habitats in Gadi-Siraichuli Forest, central Nepal



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Summary

Gadi-Siraichuli, an Important Bird and Biodiversity Area (IBA), lies in the Chepang Hills of the Mahabharat Range, Chitwan District, central Nepal. It has some of the best remaining subtropical Sino-Himalayan mixed broadleaved forest in the region, is the only known Nepalese locality of the nationally critically endangered Red-faced Liocichla *Liocichla phoenicea*, and scrubby areas harbour the endemic Spiny Babbler *Acanthoptila nipalensis*. The avifauna includes four globally threatened (i.e. Vulnerable/Endangered) species, plus two that are globally near-threatened and 20 nationally threatened. The main aim of our conservation awareness program, as presented here, was to raise awareness within local communities regarding the importance of bird conservation (as-well-as other wildlife) and their forest and scrub habitats. In January 2021, we carried out our program in eight schools, one in each of eight project sites/villages, namely Hattibang, Jyandela, Bhotegau, Kaule, Worylang, Mayatar, Upardang Gadi and Kalar, within the Gadi-Siraichuli Forest area.

In total, 1,041 school students attended, as well as their teachers; 136 members of local communities from the periphery of the IBA also participated. Student interest and engagement was enhanced through a drawing competition. To provide a lasting visual reminder, the rare and important birds (i.e. species of higher conservation concern) of the area were highlighted in colour brochures (3,000) and posters (500) that were distributed to participants and schools. The bird conservation message and importance of conservation of the environment in general was also summarised on visually attractive and informative hoarding boards entitled '*Save birds and their habitats*', installed at five locations. At the end of the awareness program, the performance of the students and others was evaluated through comparison of answers to 'before' and 'after' questions. This demonstrated that the participants had successfully gained knowledge (to varying extents) on the birds and other wildlife of their area. Four 'avifauna ambassadors' (from four villages) were nominated, selection based primarily on their interest in coordination of people within the local communities and keenness to engage in conservation activities. It is hoped to support and work with them in the future.

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1. Introduction

Gadi-Siraichuli Forest is one of 37 Important Bird and Biodiversity Areas (IBAs) identified in Nepal (Inskipp *et al.* 2019). Gadi-Siraichuli is the only known locality of the nationally critically endangered Red-faced Liocichla *Liocichla phoenicea*, recently rediscovered in Nepal after 178 years of absence of confirmed records (Baral *et al.* 2018), and is prime habitat of the Nepalese endemic Spiny Babbler *Acanthoptila nipalensis*. It also supports other significant populations of several other bird species characteristic of the now much-reduced Sino-Himalayan subtropical forest biome. Its avifauna includes four globally threatened species (i.e. 3 'Vulnerable' and 1 'Endangered'), plus two globally near-threatened and 20 nationally threatened species (Inskipp *et al.* 2019; Table 1).

Species	Global status	National status
Mountain Imperial Pigeon Ducula badia		CR
Himalayan Vulture Gyps himalayensis	NT	VU
Indian Spotted Eagle Clanga hastata	VU	VU
Greater Spotted Eagle Clanga clanga	VU	VU
Steppe Eagle Aquila nipalensis	EN	VU
Common Barn Owl <i>Tyto alba</i> ¹		VU
Red-headed Trogon Harpactes erythrocephalus		EN
Red-breasted Parakeet Psittacula alexandri	NT	VU
Alexandrine Parakeet Psittacula eupatria		NT
Blue-naped Pitta Hydrornis nipalensis		EN
Hooded Pitta Pitta sordida		VU
Little Spiderhunter Arachnothera longirostra		CR
Black-headed Bunting Emberiza melanocephala		VU
Sultan Tit Melanochlora sultanea		EN
Grey-crowned Prinia Prinia cinereocapilla	VU	CR
White-throated Bulbul Alophoixus flaveolus		EN
Black-chinned Yuhina Yuhina nigrimenta		VU
Lesser Necklaced Laughingthrush Garrulax monileger		VU
Greater Necklaced Laughingthrush Garrulax pectoralis		VU
Silver-eared Mesia Leiothrix argentauris		EN
Red-faced Liocichla Liocichla phoenicea		CR

Table 1. Bird of global importance and/or national conservation concern in Gadi-Siraichuli IBA.

¹Asian form sometimes considered a separate species, i.e. Eastern barn owl *Tyto javanica*.

Gadi-Siraichuli IBA is connected with the internationally well-known 'Chitwan National Park' via the 'Barandabhar Corridor Protected Forest'. This represents an important north-south habitat linkage with Chitwan and its buffer zone within the highly biodiverse 'Terai Arc Landscape' and 'Chitwan Annapurna Linkage', two landscape-level initiatives identified and prioritized by the government of Nepal for conservation (WWF Nepal, 2019a, b).

Although recognised as an IBA, the avifauna faces enormous pressure, with some species threatened by anthropogenic activities including hunting/trapping of birds for food, the illegal collection of birds to sell in local pet-trade market, and habitat loss and degradation due to infra-structure development activities, e.g. a new road construction (now stopped) resulting in landslips (Inskipp *et al.* 2019). There have been virtually no previous conservation education awareness initiatives in the local communities. Therefore, we aimed to enhance the level of understanding of their environment within the local communities, including importantly targeting school pupils and their teachers, about the value of avifauna and biodiversity in general, through our conservation outreach awareness program.

2. Objectives

The main aim of the education program was to raise awareness within local communities regarding the importance of conservation of avifauna and other wildlife, and their habitats in the Gadhi-Siraichuli forest area. Primary objectives were to:

i) identify the existing threats to birds, especially those of higher conservation concern, and encourage local people to reduce or cease harmful activities (in part, balanced by alternative livelihood initiatives);

ii) enhance conservation awareness and strengthen the conservation capacity of the local communities;

iii) deliver to policymakers, recommendations to assist in formulation of sustainable management plans/policies for long-term conservation of wildlife and forest and scrubland within the IBA.

3. Study area

Location: The project was carried out in Gadi-Siraichuli IBA (30.95 sq. km), located in the Chepang Hills of the Mahabharat Range, Chitwan District (27.80–27.74°N, 84.57–84.65°E; Fig. 1), central Nepal (approx. 70 km west of Kathmandu; driving distance about 158 km). Within the IBA, the highest point is the peak of Siraichuli hill at 1,945 m asl, the lowest point is about 250 m asl. Of historical interest, the 300 year-old 'Upardang Gadi' fortress (that served as the headquarters of Chitwan District until the 1960s) lies within the IBA and at 1,275 m asl. Features including a 2 m-wide moat and 7 m-tall stone walls.

Habitats: The forest comprises dense subtropical mixed broadleaved forest above about 1,000 m asl and tropical broadleaved forest, mainly of Sal *Shorea robusta* below 1,000 m.

Parts of the area are cultivated, but abandoned terraces overgrown with scrub and grasses (providing habitat for e.g. Spiny Babbler and Grey-crowned Prinia) occur widely.

Wildlife: Within the IBA (up to February 2019), 318 bird species had been recorded, including 21 globally and/or nationally threatened (Table 1). Mammals include Leopard *Panthera pardus*, Black Giant Squirrel *Ratufa bicolor* and Assamese Macaque *Macaca assamensis*; at least 56 butterfly species also occur (Inskipp *et al.* 2019).

Local people: The main inhabitants in the area are of the Chepang ethnic group that reside in the upper Mahabharat Range. Traditionally they led a nomadic lifestyle as hunters and gatherers, living off the formerly more extensive forests. They are now mostly subsistence farmers but still engaged in hunter-gatherer activities - many local people, through necessity, are involved in hunting and extraction of timber and non-timber forest products for their own use and income generation. There is little employment generally in the region.



Figure 1. Map of the IBA study area showing land cover types and settlements. (Source: BCN).

4. Activities / Procedures

4.1 Conservation awareness materials

4.1.1. Brochures

A three-folded colour brochure in the Nepali language was designed and entitled "Gadi-Siraichuli IBA" (Figs. 2a, b). The brochure contains: an introduction to the IBA; a list of its important birds; a biodiversity profile of the IBA; a summary of its importance for

birds; the main threats to them; and some proposed conservation measures to be adopted. A total of 3,000 copies were printed and distributed during the project period.



Figure 2a. Front side of the Gadi-Siraichuli IBA brochure...



Figure 2b. ... and reverse side of the brochure.

4.1.2. Posters

A colourful and visually attractive poster (in Nepali) entitled "Important birds of Gadi-Siraichuli IBA" (sub-headed "Save birds and their habitats") was designed and 500 copies were printed for the program (Fig. 3). The poster highlights nine rarer bird of the IBA

i.e. Spiny Babbler, Red-faced Liocichla, Red-headed Trogon *Harpactes erythrocephalus*, Himalayan Griffon *Gyps himalayensis*, Grey-crowned Prinia *Prinia cinereocapilla*, Black-chinned Yuhina *Yuhina nigrimenta*, Silver-eared Mesia *Leothrix argentauris*, Sultan Tit *Melanochlora sultanea* and Black-headed Bunting *Emberiza melanocephala*.



Figure 3. Important birds of Gadi-Siraichuli IBA poster.

4.1.3. Hoarding boards

An eye-catching text was prepared for the five Nepalese-language educational hoarding boards (Fig. 4) that presented a conservation message about birds and their habitats in

Gadi-Siraichuli. It incorporated photographs of the endemic Spiny Babbler and the nationally critically endangered Red-faced Liocichla. The hoarding boards were installed at the entry points of Gadi-Siraichuli IBA, Hugdi Khola, Shaktikhor, Hattibang and Upardang Gadi villages, and viewed by many locals (Fig. 5).



Figure 4. Educational hoarding board incorporating photos of Spiny Babbler and Red-faced Liochicla.



Figure 5. Local people viewing the hoarding board at Shaktikhor village (401 m asl), Chitwan District.

4.2. Conservation outreach program at Schools

The school conservation outreach program (Figs. 6a-d) was conducted during 15-28 January 2021. The program was conducted at eight schools and held during regular hours (between 10:00 to 16:00h). In total, 1,041 students participated (see Appendix 1 for participating schools and student numbers), as-well-as teachers from each school also attending.

Due to the remoteness and no electricity available, we chose to use banners, brochures and posters as presentation aides to deliver the bird and wildlife conservation message to the students, teachers and other members of the local communities. Through the program, we disseminated information following a format comprising: a general introduction to birds and their habitats; bird identification; the role and importance of birds in ecosystems; birdwatching and ecotourism; the conservation status of birds at national and global levels; and the IBA program. Then there was a specific section on the birds of Gadi-Siraichuli IBA, highlighting the area's importance for birds, major threats to birds in the area, and informing of protective legislation and penalties for involvement in illegal activities (e.g. hunting and bird-catching for the pet trade). In addition, we explained to students and others, the role that they could perform to benefit birds and promote biodiversity conservation through simple measures (e.g. cessation of deliberate killing for 'fun'). We explained the activities performed by organisations such as the 'Biodiversity Research and Conservation Society', 'Bird Education Society' and the 'Oriental Bird Club' (as funders) in biodiversity conservation.





Figures 6a-d. Some photos of awareness program at the schools in the project area.

4.2.1. Drawing competition

A drawing competition (Figs. 7a-d) was carried out at four schools. Students were asked to draw a picture of a Spiny Babbler (as the endemic bird of Nepal). The stationery materials (paper, pencils, erasers etc.) required were provided to the participants. Teachers from each school judged the drawings. Small prizes were given to the participants who secured the first, second and third positions in the competition.





Figure 7a-d. Some photos of the drawing competition and (bottom right) prize presentation.

4.3. A case story: Sujan Chepang and his catapult.

Walking, on the way from Worylang to Mayatar, we met a boy with a catapult. He conceded that he used it to kill wild birds, mainly for fun. The boy was 8 year-old Sujan Chepang from Mayatar village. We talked with him and it became rapidly apparent that he was unaware of the importance of the wild birds around him, and that, also (unsurprisingly) he did not know that the Spiny Babbler was found in no other country other than Nepal. We showed him the poster and brochure, and gently explained about the importance of birds and other wildlife within the Gadi-Siraichuli area. He admitted that he had killed many birds, including unknowingly, some rare species. He understood and promised that he would not kill wild birds and other fauna in future. He gave up his catapult to us and committed to becoming involved in the nature conservation in his area (as much as one could, given age and circumstance). We gave a poster and brochures in return (Figs. 8 a-d).



Figure 8a. Sujan Chepang, a boy with a catapult he used for killing birds and small mammals.



Figure 8b. Delivering an 'on the hoof' conservation message, and using the education poster and brochure to assist in this.



Figure 8c. Sujan Chepang gave-up his catapult and received posters and brochures in exchange.



Figure 8d. Sujan Chepang committed to not killing wild birds in future and to become involved in nature conservation.

4.4. Conservation awareness program in local communities

The conservation awareness program was also conducted in eight local communities (Appendix 2), with 136 people attending. Brochures, posters and hoarding boards were distributed to assist in dissemination of the conservation message. The program format was similar to that for schools, being based on an introduction, and factors/threats affecting birds and biodiversity, protected bird species in a Nepal context, and the importance of the remnant forest area of Gadi-Siraichuli IBA. It however, additionally emphasised the potential for income generation through birdwatching ecotourism (including homestays and guides). The program focussed on how simple measures to assist in bird and wildlife conservation in general, could be achieved through straightforward commitments by local people (e.g. reducing hunting and cessation of capture of wildlife for pets). Information on legislation and penalties for those involved in illegal wildlife activities was also disseminated. We highlighted the importance of the area as the only known locality in Nepal of the Red-faced Liocichla and a stronghold for the endemic Spiny Babbler.

This was the first ever conservation education awareness program conducted in the area. The local people were very appreciative that such a program was organized 'at their place', and showed enthusiasm to extend cooperation for bird and biodiversity conservation in the area. Also, they expressed deep gratitude to the organizers and funding organizations as they were so unused to such attention and educational endeavor.



Figure 9a-d. Some photos of awareness program in local communities.

4.4.1 Avifauna ambassadors

Four avifauna ambassadors were nominated, one from each of four villages in the project area (Jyandala, Hattibang, Tallo Kaule and Worylang). The ambassadors (aged between about 20 to 35 years old) were selected based on their interest in the coordination of local people and keenness to engage in nature conservation initiatives. The aim of formation of avifauna ambassadors was to carry on encouraging, educating and raising awareness amongst local people about birds and environmental conservation generally, and to get youths engaged as 'citizen scientists' (e.g. collecting basic data about wildlife and habitats etc. in their localities). It is hoped that the ambassadors will also play a role as citizen scientists, as well as teaching to others about wildlife monitoring methods e.g. bird survey techniques.

4.5. Awareness materials distribution

The brochures and posters summarising and depicting the conservation messages were distributed to the program participants, schools and others within the local community (see examples, Figs. 10a-f). In addition, a copy of the "Helm Field Guide - Birds of Nepal" (English version), the "Bird Checklist of Chitwan" and "The Chepang Hill Siraichuli Trek" (see 6: 'Alternative income generation', below) were also given to each school.



Figures 10a-f. Some photos of distributing awareness materials to schools.

4.6. Evaluation

Before starting the program, we asked nine bird-related questions to participants to test their level of knowledge of birds at that time. After the program, we asked the same questions through random selection among (most of) the participants. We (thankfully) found a significant improvement in their knowledge of birds of the region and their conservation, after the presentation (Table 1). The main reason behind the success was the great general interest and enthusiasm of participants in the education programs, intrinsic to which was the combination of methods used to deliver the conservation message.

Number of participants giving correct answer <i>before</i> program	Category		
45	l = 7-9 question		
319	II = 4-6 question		
556	III = 1-3 question		

Table 2.	Summary	/ of I	oartici	pants' <i>k</i>	oefor	e and	after	resp	onses	to	bird-	related	auestions.
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Number of participants giving correct answer <i>after</i> program	Category
535	I = 7-9 question
302	II = 4-6 question
123	III = 1-3 question

5. Conclusions

Gadi-Siraichuli IBA is located in the remote northern part of Chitwan District. Many of the people in the area are illiterate and unaware of the importance of the conservation of birds and wildlife in general. Thus, through this project, we aimed to make them more aware of the ecological importance of birds (and other wildlife), conservation issues, habitat management and their potential role in nature conservation. Also, we attempted to motivate them to appreciate biodiversity and engage in simple measures to assist in avifauna conservation (e.g. by reducing hunting pressure, cessation of killing for fun and cessation of collection for pets). We were able to convince them (it appeared the majority at least) through the awareness program that conservation of birds is beneficial for them, i.e. in helping to maintain ecosystem balance and the potential to increase their income through birdwatching ecotourism (local off-road transportation is available to reach the IBA). They showed great interest and commitment to the conservation of birds and habitats in their area. This was a main achievement of the project. In addition, the conservation promotional materials (brochures, posters and banners) helped them to better understand the importance of birds and wildlife generally, and their display will provide a lasting reminder of the education program. The avifauna ambassadors nominated will also carry on the message and it is hoped to support and work with them in the future.

6. Recommendations

The following are recommendations and thoughts based on our program and views of people within the local communities for the conservation of birds, other wildlife, and habitats within Gadi-Siraichuli IBA.

i) Alternative energy

Local people are heavily dependent on the forest of Gadi-Siraichuli IBA for livestock fodder and firewood for cooking. To reduce such anthropogenic pressure, a more efficient agroforestry system for fodder supplement should be implemented (guided by relevant experts), and alternatives to firewood should be introduced, e.g. biogas, and solar devices installed to generate electricity for cooking, as well as other uses.

ii) Ban on hunting birds

Agriculture productivity is limited due to the steep terrain and the Chepang are still part-dependent on gathering for food. Therefore, large number of wild birds (e.g. Kalij Pheasant *Lophura leucomelanos*, Hill Partridge *Arborophila torqueola* and columbids) are hunted for food and to sell in the local markets as a source of income. Hunting is considered a main factor detrimental to conservation in the area and is probably having a significant impact on densities of favored target species resulting in long-term decreases in numbers (in combination with habitat degradation) and potential extirpation. Thus, such activities should be banned in the area. However, alternative food sources/income generation needs to be encouraged and initiatives implemented if this is to be really effective (see below).

iii) Make nature-friendly homestays

Close to homestays (i.e. where tourists/visitors can stay in rooms provided by local by local people to supplement their income) at Upperdang Gadi and Jyandala, is habitat that supports Spiny Babblers. Guests who stay at these homestay often drink alcohol and make much noise (singing, music and dancing) thus disturbing the natural environment, especially during night time; these activities should be reduced or prohibited. A homestay-monitoring mechanism should be implemented and support/advice given to those who would like to become involved in providing homestays.

iv) Infrastructure development activity

Road construction has fragmented the core habitat of birds in the Uppardang Gadi area and has damaged the water resources, caused localised landslides and erosion. This is another factor considered contributing to wildlife declines. Local governing bodies should implement surveys to assess environmental impacts (i.e. Environmental Impact Assessments – EIAs) before any development activity proceeds, and if they are to proceed, implement appropriate mitigation measures. The construction of a new road that has resulted in such environmental problems has been stopped in the area (at least temporarily).

v) Further conservation awareness programs

The community outreach program was a first step in promoting nature conservation in the area and appeared to be an effective method to increase conservation awareness amongst the local people. However, the program duration was short and ideally such education programs should be continued, perhaps at 1-2 yearly intervals.

vi) Alternative income generation

Most of the people in the area are subsistence farmers and engaged in other subsistence activities, there is little real employment. So many, through necessity, are actively involved in hunting and extraction of forest products to supplement their income. Thus realistic initiatives for alternative income generation are required, e.g. beekeeping (including training and a set-up fund), employment as guides for tourists, and more homestays to accommodate tourists. Such measures would help to reduce the involvement of local people in detrimental environmental activities and thus ultimately help to conserve wildlife and habitats. One current initiative is the 'Chepang Hill Siraichuli Trek'. This is a part of national development effort to empower rural communities and women through the promotion of sustainable eco-tourism, initiated by the 'Tourism for Rural Poverty Alleviation Program'. This new trail has been developed to improve the socio-economic standing of local communities while conserving the environment. There is an emphasis on using local porters, homestays, hence integration with the indigenous inhabitants, with minimal environmental impact/resource consumption. In addition, it is hoped to train selected locals as bird guides to increase the likelihood of birdwatching tours visiting the area, and again to help in alternative income generation.

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Appendices

Appendix 1. List of schools engaged in the avian conservation awareness program and the number of student participants (teachers from each school also attended).

	Name of School	Address	Number of
			participants

1	Shree Rastriya Madyamik Bidyalaya	Ichchhakamana Rural Municipality, Ward no: 01, Hattibang	305
2	Shree Siraichuli Aadharbhut Bidyalaya	Ichchhakamana Rural Municipality, Ward no: 01, Jyandela	66
3	Shree Rastriya Aadharbht Bidyalaya	Ichchhakamana Rural Municipality, Ward no: 02, Bhotegau	35
4	Shree Janapriya Madyamik Bidyalaya	Ichchhakamana Rural Municipality, Ward no: 02, Kaule	211
5	Shree Rastriya Aadharbhut Bidyalaya	Ichchhakamana Rural Municipality, Ward no: 02, Worylang	65
6	Shree Rastriya Aadharbhut Bidyalaya	Ichchhakamana Rural Municipality, Ward no: 02, Mayatar	218
7	Shree Rastriya Aadharbhut Bidyalaya	Ichchhakamana Rural Municipality, Ward no: 07, Upardang Gadhi	45
8	Shree Mahakali Aadharbhut Bidyalaya	Kalika Municipality, Ward no: 09, Kalar	96
	Total:		1,041

Appendix 2. The local communities engaged in the avian conservation awareness program and the number of participants.

	Address	Number of participants
1	Ichchhakamana Rural Municipality, Ward no: 01, Hattibang	15
2	Ichchhakamana Rural Municipality, Ward no: 01, Jyandela	30
3	Ichchhakamana Rural Municipality, Ward no: 02, Bhotegau	13
4	Ichchhakamana Rural Municipality, Ward no: 02, Kaule	17
5	Ichchhakamana Rural Municipality, Ward no: 02, Worylang	9
6	Ichchhakamana Rural Municipality, Ward no: 02, Mayatar	14
7	Ichchhakamana Rural Municipality, Ward no: 07, Upardang Gadhi	22
8	Kalika Municipality, Ward no: 09, Kalar	16
	Total:	136

Appendix 3. Photographs of the project area and some education program activities.



a. General views of the study area.



b. The conservation awareness program in action – some of the participants from the local schools and communities.



c. Educational materials being presented to Krishna Kumar Dallakoti (Chief of District Coordination Committee, Chitwan) about Gadi-Siraichuli IBA conservation.



d. A local government representative of the project sites regarding Gadi-Siraichuli IBA conservation being given a selection of conservation awareness materials.