

Friends of the Amur Falcon

Year 1 Report

Bano Haralu, Ramki Sreenivasan



Nagaland Wildlife & Biodiversity Conservation Trust (NWBCT) sincerely thanks all its supporters!





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Bano Haralu and Ramki Sreenivasan

Conservation Success

In a spectacular turnaround, the scene of last year's mass killings of Amur Falcons in Nagaland in India's Northeast revealed a peaceful haven for tens of thousands of the very same birds, congregating in a stopover during their annual migration through the state.

The shocking massacre of the Amur Falcon 2012 is hopefully now behind us all.



Figure 1: The Amur Falcon spectacle over Doyang Reservoir

Killing Fields

In October 2012, Conservation India and associates at the Nagaland Wildlife & Biodiversity Conservation Trust (NWBCT) discovered and documented the shocking massacre of tens of thousands of migratory Amur Falcons (*Falco amurensis*) along the Doyang reservoir in Wokha district of Nagaland. They learnt that this phenomenon was going on for the past several years. Interviews with local community members and hunters revealed that Amur Falcons began roosting in the area after the construction of the Doyang reservoir in early 2000s.



Figure 2: A hunter in 2012, Pangti village

They estimated that during peak migration (mid to late October) 12,000 – 14,000 birds were being hunted for local consumption and commercial sale everyday resulting in a mind-boggling 120,000 to 140,000 birds killed every year during their passage through the state of Nagaland. These figures were corroborated with several hunter interviews done in October 2012 and also during subsequent visits in 2012 and 2013. Also, the total figures were calculated assuming a peak migration of only 10-days while the total migration actually lasts about 6-weeks implying a conservative estimate of the original numbers of the killings. A report was published in SCIENCE journal.

Field Update – December 2013

At the time of this writing, the peak migration of Amur Falcons is over, and there have been absolutely no killings reported so far. Credit for this astonishing conservation turnaround should go to the concerted effort of the Nagaland government as well as the local communities who rose gracefully to occasion and swore to end the killings by becoming ‘Friends of the Amur Falcon’.

Every day, tens of thousands of falcons gather along the banks of the Doyang reservoir in Wokha district of Nagaland in a spectacle that can only be seen to be believed. These are probably the largest congregations of migratory raptors anywhere in the world as they climax in mind-boggling numbers

around the reservoir. Before and after this Doyang 'bottleneck' these birds are never seen in these numbers.



Figure 3: Resting Amur Falcons

The forest department, along with the district administration, local NGOs and the police, set-up ground patrols as well as checks on local markets. The church, which has a big say in Naga social life, has been conducting special services on Sundays to spread the conservation message.

Conservation Interventions

After the reporting of the killings, led by the Conservation India campaign that went viral on the Internet, and the subsequent national and international outcry, several conservation actions were initiated in Nagaland.

Principally, the Government of Nagaland, at every level, committed to end the killings. It created widespread awareness both with the local administration and the forest department as well as with the communities that were involved with the hunting. Over the year, the entire machinery geared up systemically to face the 2013 season. NWBCT associates were in constant touch with the government right through.

2013 saw a coordinated effort by local villagers, the state forest department, Wokha district administration and NGOs. It should be noted that the Deputy Commissioner (DC) of Wokha, Mr. R. Vyasan, was one of the first people in the government administration to stop the killings by reissuing the hunting ban immediately after the issue was reported to his office. The momentum was

maintained right through 2013 and the DC's office played a vital role in keeping the forest department informed of developments in the village and also of NGO interventions in the area.

Forest department and NGOs like NWBCT, WTI and Natural Nagas were actively involved in creating awareness, education and other community activities involving hunting communities, church and schools.



Figure 4: Friends of the Amur Falcon

NWBCT has been in constant touch with the community since the discovering of the killings. NWBCT was generously supported in its flagship conservation education programme by several leading wildlife conservation organisations like Wildlife Conservation Society (WCS), Birdlife International, Bombay Natural History Society (BNHS), Raptor Research and Conservation Foundation (RRCF) and Wildlife Conservation Trust (WCT). They set up base right at the heart of the community in Pangti village (the oldest and the largest village in Wokha) and enlisted support of several local community members to be part of the initiative. Building awareness about the Amur Falcon and its conservation was their core focus.

See annexure 1 'Amur Watch Diary' for a detailed calendar of interventions.

Education Initiative

In August 2013, NWBCT kicked off their 'Friends of the Amur Falcon' campaign with a conservation education programme covering the important villages that witnessed hunting last year. The Nagaland government extended its full encouragement.

In a message of support to NWBCT's 'Friends of the Amur Falcon' initiative, the Chief Minister of Nagaland Mr. Neiphiu Rio stated "The state government is committed to end the unfortunate killings of the migratory Amur Falcons in Nagaland while they are passing through the state. Further, Mr. Rio added, "It is our duty to protect the Amur Falcons and, in true Naga tradition of hospitality, treat them as honoured and esteemed guests". See annexure 2 for full statement by the Chief Minister.

NWBCT formed three Ecoclubs admitting children from the villages of Pangti & Sungro, Ashaa and Doyang.

The formation of these Ecoclubs was preceded by a weeklong workshop for recruiting teachers to create and manage the Ecoclubs. NWBCT engaged two independent specialist groups (Go Wild and Dusty Foot) to design and develop a special manual on the Amur Falcon, which is currently the main resource material which the 70-odd children of the Ecoclubs use as an introduction to the bird as well as a basic introduction to the world of wildlife and nature (See annexure 6 for copies of manuals attached).



Figure 5: A village elder joining our training programme

It has been noticed that the subject of conservation is completely absent not only in the school curriculum but also from the psyche of the community as a whole. In NWBCT's experience with conservation in Nagaland, local communities respond better when the youth become stakeholders and this is possible only through intensive grassroots education. Hence, bringing back focus on the subject with an innovative programme such as "Friends of the Amur Falcon" with the tried and tested "Under the Canopy" training methodology in practice for the last three years in other areas of Nagaland, has succeeded in the concern for environment conservation to a degree where a dialogue has at least begun, when earlier the community was left on its own to deal with the impact of changes in the environment.



Figure 6: 'Under the Canopy': Training the trainers

The essence of NWBCT's initiative was an Amur Falcon specific programme with customised teaching manuals used with teachers and with kids. An intensive 'Under the Canopy' programme trained 20-odd local teachers which really opened their minds. They realised there is so much more to these falcons than cheap meat. These teachers have created and today run four Ecoclubs where children are taught various aspects of the falcons. Ecoclubs have weekly sessions on Saturdays with pre-planned activities for the kids.

Education Material

NWBCT produced a variety of training and awareness collateral for the outreach programme that we believe was effective in building support for the initiative. Some of the collateral included:

Amur Falcon Manual & Passport

Manual: A comprehensive manual was made especially on the Amur Falcon to help teachers and other educators who wish to teach about the bird in Ecoclubs. Each Chapter covered different aspects of the animal from its behaviour and biology to its amazing migratory route over 14 countries covering 20,000kms. To help reinforce each concept the manual has games and activities that go hand in hand with the teachers' notes to make learning interactive and fun. The final chapters deal with the importance of saving the bird and how communities can help do this.

Passport: As an addition to the manual an activity booklet designed like a passport (to subtly highlight that the animal passes so many countries.) was made for the children. 10 activities are to be filled in by the children as they learn about the Amur falcon over several months. As they complete each section they get an Amur falcon sticker and a seal from the educator. After all tasks are complete they get a Visa Certificate signed by the CEO of Birdlife International that they are official friends of the Amur Falcon. This passport also serves as a record of all that they learn for years to come.

Amur Falcon Poster

We produced this massive (4 feet +) poster about the natural history of the Amur Falcon illustrated by one of India's finest wildlife artists, Maya Ramaswamy. These posters were printed in large quantities and were put up in public places across Wokha and Mokokchung districts a few weeks prior to the commencement of the migration. The posters told the entire story of the falcons and their migration and the spectacular visuals were very helpful in building familiarity of the community with the birds.



Figure 7: An Amur Falcon song being composed in an Ecoclub

'Friends of the Amur Falcon' Badges, Stickers and Labels

The badges were given to one and all including the Chief Minister. Labels and stickers were given to children across age groups.

Amur Falcon Documentary

The group felt it was imperative to document on film the story of the Amur Falcon conservation over the years. They invited award-winning filmmaker Rita Banerji of Dusty Foot productions to join during several important events like migration season, training and other community activities. This would build on the hunting footage the team recorded during the 2012 season. A short (5 min) and a longer (15-20min) version would be available soon.

Northeast Survey for Migratory Routes and Hunting Pressures

NWBCT's also conducted a comprehensive Amur Falcon survey in Northeast India in October and November 2013. Shashank Dalvi (wildlife biologist with Centre for Wildlife Studies, Bangalore) led a team of volunteer birders across 13 locations in Northeast India surveying for migrating falcons, their numbers, routes, roosts and potential hunting pressures. Both sections of this survey are attached to this report as annexures 3 & 4.

NWBCT sincerely wishes to thank the volunteers Saurabh Sawant, Ramit Singal, Sathya Chandra Sagar, Pratik Modi, Chandu Bandi and Avishkar Munje.

In summary (see table below), hunting of falcons was observed in three of the thirteen locations. These sites were Ledo in east Assam, Haflong and Umrangso in south Assam. Hunting in Ledo and Haflong was observed to be small scale. However, large scale hunting in Umrangso is a huge cause for concern. (detailed in annexure 3).

Place	State	Volunteer	Falcons observed	Hunting
Jairampur	Eastern Arunachal Pradesh	Ramit Singhal	Observed in passage in hundreds	No
Talle Valley	Central Arunachal Pradesh	Saurabh Sawant	None observed	NA
Mehao	Northeastern Arunachal Pradesh	Ramit Singhal	None observed	NA
Tipi	Western Arunachal Pradesh	Saurabh Sawant	None observed	No
Ledo	Eastern Arunachal Pradesh	Ramit Singhal	Observed as major passage stopover up to 50,000 birds on 30th October, Otherwise up to 20,000 on other days	Yes
Manas	Western Assam	Saurabh Sawant	Occasional individuals sighted	No
Nameri	Northwestern Assam	Pratik Modi	Observed as passage stopover in hundreds	No
Lothabori	Central Assam	Chandu Bandi and Avishkar Munje	Observed as passage stopover in hundreds	No
Haflong	South Assam	Ramit Singhal	Observed as passage stopover in hundreds	Yes
Umrangso	South Assam	Ramit Singhal, Sathya Chandra Sagar and Saurabh Sawant	Observed as major passage stopover	Yes

Place	State	Volunteer	Falcons observed	Hunting
Resubelpara	Meghalaya	Sathya Chandra Sagar	Observed as passage stopover >2700 on single day	No
Doyang reservoir landscape	Nagaland	Rokohebi and others	Observed as major passage stopover accurate. Numbers were impossible to estimate	No

Way Ahead – Ensuring Long-term Sustainability

Many factors influenced the end of the mass massacre of the Amur Falcons, not all of them effective or desirable, such as the signing of an MOU with the village council members of Pangti, Sungro and Ashaa. The terms of the MOU included construction / repair of the village road, provision of solar lighting for the village and compensation to landowners where the falcons came to roost in return for not hunting, as well as the distribution of chicken and rice grains to selected families.

The MOU resulted in a lot of 'confusion' and 'conflict of interest' within the villagers. The main grouse of the villagers (especially the fishermen – who should have been the main beneficiaries) was that they were in the dark about the terms (especially payments) and that the MOUs were unilaterally being signed by the council members without consulting the public.

In the peak of the migration, around third week of October, there was a 'boiling point' in Pangti village when the frustrated fisherman community wanted to challenge the council's MOU and resort to trapping the birds with their nets. It was difficult to gauge how serious they were but the situation was quite tense and it would have been disastrous if had they not been dissuaded. Long conversations that it was imperative to allow a safe passage for the birds and commitments that there would be follow-up wildlife and skill development workshops saw them eventually provide support for the safe passage of the birds.

Summing up his address to the village council chiefs, Chief Minister Mr. Rio clearly stated that there could be no "compensation for conservation; only education".

After the season ended, it has been decided in the village that village council members will sign no such agreements unless it was discussed threadbare with the community.

The positive factors that helped the hunting turnaround included a combination of sensitization workshops, launch of Ecoclubs in September, and the pressure the exposè brought upon the Forest Department and district administration to implement the law, which finally saw the safe passage of the birds in 2013. Overall, there was a definitive mindset change that it was better, for all parties concerned, that the birds stayed alive than dead.

The way forward in 2014 and the years to come to permanently ensure the safe passage of the falcons will have to see the engagement of local communities in alternate livelihoods and in particular measures to assist the fishermen in their profession.

Intervention for Fishermen

There is a need to work toward the well-being of the fishing community by supporting their fishing

industry.

Opportunities to closely look at the economic pressure behind the massacre surfaced rather starkly in 2013. As reported, the hunters are primarily the fishermen (approximately 400) who comprise two fishermen societies and individual hunters who are otherwise engaged as farmers or hold full time government employment. Livelihood opportunities need to be enhanced in these villages through animal husbandry schemes (livestock, poultry and fisheries), which has traditionally been a boon to the rural economy in Nagaland.

In discussion with leaders of the two fishermen societies in Pangti, a startling revelation came to light. Fishing in large / still water bodies like the Doyang reservoir is not a traditional practice. Fishing in fresh / running water, along with crabs, is. The commercial fishing on the reservoir is self-taught and so is the manufacture of boats used by the fishermen. The fishing community here would immensely benefit from the knowledge of fishermen who fish in similar waters in other parts of the country. There needs to be knowledge transfer in best practices related to reservoir health and how to maintain the balance, marketing strategies, pricing, access of nets, etc. The fishing nets are currently being purchased at exorbitant prices and are a drain on the earnings of their annual catch.



Figure 8: Community members discussing conservation challenges

Further, ice required for packing and transporting fish is also being bought from Assam. Ironically, the majority of the catch from Doyang is being sold in Assam as transportation is cheaper compared to other towns in Nagaland.

Needless to say, awareness and education programmes should be maintained till the local community views the falcons as a source of pride, especially the younger generation. Even in the first year, the awareness programmes and the Ecoclubs have resonated positively with the community.

Ecotourism as an Alternative Livelihood

A low-impact ecotourism model could attract nature lovers from all over the world (starting with the Naga people) to witness this fantastic spectacle of tens of thousands of migrating Amur Falcons. This should involve ex-hunters and has the potential to generate revenue for them as guides, homestays, boatmen, etc.

Pangti village in Wokha district despite being the largest village amongst the Lotha tribe has never been a tourist destination in Nagaland. The concept of ecotourism is perhaps as novel and alien as the concept of conservation itself in these parts. Considering this backdrop and the impact that tourism can have on a community so far unexposed to this concept, it is paramount that the community understands the pros and cons of tourism and prepare them (to a degree possible) for the nature of development that this industry will demand.



Figure 9: A lone fisherman amongst the falcons

A pilot by NWBCT this season of bringing a busload of school children from Dimapur was received very well by the fisher community as well as the students.

Such an initiative along with Ecotourism skill development and conservation education workshops will lend itself to finding a holistic approach to long term Amur Falcon conservation success.

See attached annexure 5, 'Framework & guidelines for Ecotourism'.

Annexure 1: Amur Watch Diary – October 2012 to February 2014

Bano Haralu and Ramki Sreenivasan

Timeline	Action / event	Team
October 21 st 2012	<ul style="list-style-type: none"> – A maiden visit to Doyang reservoir, Pangti village and Wokha town. Instead of seeing the flight of thousands of migrating Amur Falcons, we witnessed the open sale of dead birds for meat to the local populace and the shocking trapping of tens of thousands of birds in fishing nets on the banks of the Doyang reservoir when the birds came to roost – Read about the hunting process and the sale: http://www.conservationindia.org/campaigns/amur-massacre 	Ramki Sreenivasan, Shashank Dalvi, Rokohebi Kuotsu and Bano Haralu, driver Supong Jamir
October 22 nd 2012	<ul style="list-style-type: none"> – 4am boat ride to the banks of the reservoir. – Hunters led the team to the sites where they had spread the nets horizontally atop the trees to remove the birds trapped in them when they came to roost the previous evening. 	Shashank Dalvi, Rokohebi Kuotsu
	<ul style="list-style-type: none"> – On the return journey to Kohima we met with the Deputy Commissioner of Wokha district, Mr. Vyasan, in Wokha town. We shared with him our findings for his office to take necessary action. – The DC's office issued (No.CON27/2012/377/1-28, dated: Wokha, 22nd Oct. 2012) within an hour of our visit an order (a reissue of 2011 order) with instructions to treat as violation of the law the hunting and sale of Amur Falcons in Wokha district. See orders: http://www.conservationindia.org/wp-content/files_mf/Both-DC-Orders.pdf – The DC suggested that the team share some more information with the villagers on the Amur Falcons 	Bano Haralu
October 29 th 2012	<ul style="list-style-type: none"> – Team returned to Sungro village to meet with village council members of Sungro, Pangti and Akhotos villages organized by the District Administration. Approximately 30 to 35 representatives attended the meeting – The meeting was also addressed by Divisional forest officer (DFO) of Wokha district, Mr. Supongnaksi, and Extra Assistant Commissioner, (EAC) Mr. Shaying. – In the morning, a team from the Wildlife Division confiscated 60 odd Amur Falcons en route from villagers and also released about a dozen of the birds that could still fly. They also dismantled and destroyed some nets that were used for catching 	Rokohebi Kuotsu and Bano Haralu

	falcons.	
November 2 nd 2012	<ul style="list-style-type: none"> – News of the massacre of the falcons was put up on the Conservation India (CI) website. It went viral with over a 100,000 views of the campaign page and attracted national and International furore. – Covered extensively in International media – See CI campaign video: http://vimeo.com/52660865 	Ramki Sreenivasan
October – November 2012	<ul style="list-style-type: none"> – BNHS director Dr. Asad Rahmani raises the issue with the Minister of Environment & Forests, Ms. Jayanthi Natarajan, specifically highlighting that India, as a signatory to the Convention on Migratory Species (CMS), is duty bound to prevent the massacre, provide safe passage, as well as draw up appropriate action plans for the long-term conservation of the bird. The Minister immediately writes to the Nagaland Forest dept. communicating the urgent and dire need to end the killings. 	Dr. Asad Rahmani, Neha Sinha
November 4 th 2012	<ul style="list-style-type: none"> – Forest Department Wildlife Wing prepared to go to the area to assess the scale of hunting and confiscate and arrest offenders 	Nagaland Department of Forest, Ecology, Environment & Wildlife (Forest department)
November 9 th 2012	<ul style="list-style-type: none"> – Rokohebi made a visit to assess what impact the action of the forest department has on the hunting. He discovered that a sizeable population of the birds had migrated but there were still several hundreds passing through. – Worse still, several nets in the forests surrounding the reservoir had not been removed. He reported the sighting of several dead Amur falcons stuck to the nets. Roko along with a local help was able to remove some nets but it was not possible to remove many more nets still left up in the trees. 	Rokohebi Kuotsu
November 16 th , 2012	<ul style="list-style-type: none"> – News from the scientist team (Dr. Meyburg) in South Africa satellite tracking the Amur Falcons stating that they had signals of the bird from Doyang was communicated to the district EAC Mr. Shaying to further afford protection to the birds. 	Bano Haralu
November 24 th 2012	<ul style="list-style-type: none"> – News that the same bird had reached South Africa was communicated back to the official for further communication to the village elders. 	Bano Haralu
November 29 th 2012	<ul style="list-style-type: none"> – Local dailies in Nagaland published Conservation India's report on the Amur Falcon Massacre. 	
December 1 st – 7 th 2012, Hornbill Festival, Kisema, Nagaland	<ul style="list-style-type: none"> – For the first time at the prestigious Hornbill Festival a stall on Environment and Wildlife of Nagaland was on exhibit. The news of the massacre of the Amur Falcons in October was brought right in the midst of the public as we ran the CI Amur 	Bano Haralu, Rokohebi Kuotsu and other volunteers.

	Falcon Massacre video clip continuously for the entire festival. It became the pitch of the call for the time and need for conservation for other wildlife, even the Hornbill itself.	
December 3 rd 2012	<ul style="list-style-type: none"> – Dr. Asad Rahmani, BNHS organized a meeting with several committed people attending from various organizations. – Nagaland Wildlife & Biodiversity Conservation Trust gets full support to move ahead as lead NGO for the Amur Falcon conservation project 	Ramki Sreenivasan, Dr. Asad Rahmani, Anish Andheria, BNHS team
December 10 th 2012	– The plight of Amur Falcons shared with over 500 students at the annual National Cadets Corps (NCC) meeting in Don Bosco School, Dimapur.	Bano Haralu
January 3 rd – 6 th 2013	– Rokohebi revisited Amur Falcon territory in Wokha district with a New York based research student, Sahela Kudalkar.	Rokohebi Kuotsu
February & March 2013	– Bird guide training workshop held in Khonoma to train participants from all over Nagaland. Six participants trained from Doyang and Pangti villages in Wokha district.	Bano Haralu, Rokohebi Kuotsu, Adesh Shivkar, Saurabh Sawant and Sanjay Sondhi
April 2013	<ul style="list-style-type: none"> – Birdguide workshop participants returned to their villages. Within a week of their return, one couple had begun to invest in building a room for home stay in anticipation of visitors during the Amur Falcon migration season. – The group leader held two meetings with the Chairman of the Pangti Village Council on creating awareness on the Amur Falcon and to call for a ban on hunting the bird. – The group leader was arranging for a meeting between the Village Council members and our team. – Pangti is the largest of village in Wokha district dominated by the Lotha tribe of Nagaland. Any decision by the Council was likely to have far reaching effects in the area. 	R. Lipenthung Lotha & team
	– Nagaland Wildlife & Biodiversity Conservation Trust circulated a proposal amongst supporting NGOs to raise funds for the ongoing project.	Ramki Sreenivasan, Shashank Dalvi
May 2013	– A team of three researchers documenting the Butterflies of Nagaland arrived in Doyang. They were assisted in their work by the Wokha workshop participants, as a continuation of their exposure to conservation needs.	R. Lipenthung Lotha & team
	– We held a meeting with Mr. Abeio Kire, Secretary & Commissioner Department of Forests, Government of Nagaland. He was shown the 3-minute video of the Amur Falcon massacre	Bano Haralu, Ramki Sreenivasan

	<ul style="list-style-type: none"> – Mr. Kire was briefed on the urgent need of an awareness campaign in Wokha district. The Under the Canopy and Ecoclub models were outlined to him. We have his assurance of support in our endeavour. – We also met with PCCF Mr. Panger and A-PCCF Mr. Lokeshwar Rao. By June Mr. Rao will hold office as Principal Chief Conservator of Forests. They both agreed on the need for a pre-awareness campaign in the Amur territory. 	
	<ul style="list-style-type: none"> – As a follow-up to our meeting with Mr. Kire, the Chief Secretary of Nagaland issued a release to the Forest Department and Rural Development (RD) stating that based on the CM's speech on World Environment Day, the following policy was outlined: <ul style="list-style-type: none"> – The Government will review various grants and assistance to the villages that indulge in rampant killing and massacre of Amur Falcons and, if required, the sanctions to such villages will be curtailed. Forest Department and RD Department are required to kindly coordinate to draw up action plans in the matter. – The RD Department also issued a similar notification stating "all villages are responsible for the conservation of the environment and wildlife within their respective village jurisdictions. The villages who destroy the local wildlife will be penalized by stopping their grants-in aid allocation to the Villages and this fund will [instead] be utilized for environmental protection activities by the Government" 	Govt. of Nagaland
June 14th 2013	<ul style="list-style-type: none"> – On the 14th of June Roko and Bano from the Nagaland Wildlife & Biodiversity Conservation Trust visited Pangti village to start the groundwork for the 'Under the Canopy' training module as a precursor for establishing Ecoclubs for students in the area 	Rokohebi Kuotsu and Bano Haralu
July 2013 onwards	<ul style="list-style-type: none"> – Nagaland Wildlife & Biodiversity Conservation Trust will start executing its conservation education program (as outlined in the proposal) covering strategic villages in Wokha district. – Nagaland Wildlife & Biodiversity Conservation Trust will continue to retain pressure on the state machinery to ensure that adequate protection is given to the migrating falcons this year. 	Nagaland Wildlife & Biodiversity Conservation Trust
August 2013	<ul style="list-style-type: none"> – The first "Under the Canopy" trainers' workshop was held at the Sungro community Hall during the last week of August. 	Payal Molur, Shilpi Sharma, Bano Haralu, Ramki Sreenivasan,

	<ul style="list-style-type: none"> – Nineteen trainers who had previously been selected based on their experience and availability and aptitude for the conservation education programme underwent a five day workshop with educator Payal Molur (of Go Wild) and Shilpi Sharma, who also recorded the sessions on video. – The training was held to identify the trainers who would man the three Ecoclubs in Pangti, Doyang and Sungro. – This was the first ever workshop for the participants who participated enthusiastically in the workshop. – During this workshop, the specially developed Amur Falcon Manual and Amur Passport were introduced to the participants. – Three out of the nineteen participants who displayed propensity to conduct the conservation education programme were selected to begin the Ecoclubs in September. 	Visa Kuotsu
September 2013	<ul style="list-style-type: none"> – Ecoclubs in Pangti and Sungro kicked off. Doyang began a few weeks later due to non-availability of classroom. – The Sungro and Pangti Ecoclubs functioned out of the same school in Sungro. – Materials for the children were provided. – No sooner had the classes begun than the children composed a song on the Amur Falcon. – The teachers and coordinators in consultation with the community selected children for the Ecoclubs. – Children of fishermen were a particular section we wanted enrolled. The response was overwhelming from the community as they were happy to let their children learn something new. – With the season of the arrival of the falcons so close the children were observed to eagerly learn as much as they could about the birds. 	R. Lipenthung Lotha & team
October 2013	<ul style="list-style-type: none"> – All three eco clubs became functional with a total of 69 registered children from the age group of 5 to 14. They were divided into two age groups. – The need to have the Ecoclub teachers assisted was felt and two assistants for the club in Doyang and Sungro were appointed. – The birds arrive starting early October and the migration peaks around 15th October. – The arrival of the birds saw the NWBCT team camp in Pangti from early October to the last week of October. – Several sponsors visited us – Dr. Anish Andheria of WCT, Rishad Naoroji and Kiran Srivastava of RRCF 	Rita Banerji, Shilpi Sharma, Bano Haralu, Ramki Sreenivasan, Shashank Dalvi, Rokohebi Kuotsu

	and Director of BNHS Dr. Asad Rahmani and Neha Sinha.	
	– Northeast-wide month long Amur counts kicked off in October covering thirteen locations.	Shashank Dalvi, Saurabh Sawant
	– 40-students from Dimapur school visited Pangti as the first 'ecotourists' to watch Amur Falcon congregations and to stay with the fishermen community paying a nominal fee.	Nagaland Wildlife & Biodiversity Conservation Trust
	– October also saw members of the NWBCT accompany the fishermen who were called by the visiting group of scientists (from Birdlife Hungary and WII-Dehra Dun) and forest department to satellite tag three Amur Falcons.	
November 2013	– The wide reporting given to the safe passage of the birds resulted in the visit of the Chief Minister, Mr. Neiphiu Rio to the Doyang reservoir to watch the birds roosting. Mr. Rio was accompanied by his wife and Minister of Forest, Y Patton as well as Parliamentary Secretary's Dr. Kire and Mr. Yitachu. – CM met with Ecoclub kids and gifted each club with a cash bonus – Migration ended in mid-November.	Bano Haralu, Forest department
December 2013	– Ecoclubs continued to function. Roko from Khonoma followed through with a visit to the Ecoclubs and the classes.	Rokohebi Kuotsu
January 2014	– Payal Molur conducted a 4-day refresher course for the trainers of the Ecoclubs and well as the children. She suggested some mid-course corrections.	Payal Molur
February 2014	– The fishermen had been constantly in touch with NWBCT and had been exploring the possibility of forming a landowners association since they felt that this will ensure that the interests of the landowners, who are also the fishermen, are safeguarded. Their contention was that while the Amur Falcons came to roost in their land, so far no external body had engaged with them.	Bano Haralu

Annexure 2: Message from the Chief Minister of Nagaland

Annexure 2



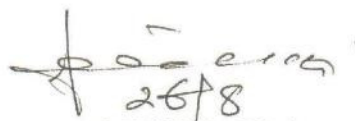
**CHIEF MINISTER
NAGALAND
KOHIMA**

26th August 2013

MESSAGE

1. The Amur Falcons are beautiful migratory birds, that visit Nagaland every year in thousands, in their long migratory journey from Siberia en-route to South Africa, covering upto 22,000 km in a year. It is our duty to protect these wonderful birds while they are passing through Nagaland, and to treat them as our honoured and esteemed guests, in the true Naga tradition of hospitality.

2. The State Government is committed to end the unfortunate killings of the migratory Amur Falcons in Nagaland, while they are passing through the State. I appeal to all the people of Nagaland, particularly the people of Wokha and Mokokchung districts, where the birds used to take some rest during their long journey, to end the killings of these lovely birds. The State Government also fully support the efforts of the Nagaland Wildlife and Biodiversity Conservation Trust and other NGOs to educate the people about these migratory birds, and to give them a safe passage through Nagaland. Let us realise that man and other creations are inter-dependent, and we need each other for our long-term survival on this planet earth.



26/8
(NEIPHIU RIO)

Annexure 3: Amur Falcon Northeast Survey Summary – Hunting

Shashank Dalvi

Amur Falcon (*Falco amurensis*) is a small autumn passage migrant to Indian subcontinent. The discovery of the large scale harvesting of this species during its passage migration at Doyang Reservoir, Nagaland has raised the issue of conservation of migratory species. Removal of approximately 120,000-140,000 individuals (one tenth of estimated world population) at varying rates for past 6 years may have had serious consequences in its breeding and non-breeding areas. Nagaland in northeast of India serves as a major stopover site for this species where it congregates in large numbers. Most of these congregations happen outside protected areas. In the year 2013 a conservation program was put forward which involved high-level government support, patrolling & enforcement, community engagement and a comprehensive conservation education initiative. To complement the main conservation project that took place at Doyang and surrounding areas, we also conducted Northeast-wide field surveys to understand the ecology of the Amur Falcon and gain insights to better protect the bird. This study had two objectives. Firstly to identify hunting pressures on migratory Amur Falcons in Northeast India and secondly to identify their migration patterns in the region.

We identified a total of 13 locations for the survey (shown in the yellow pins in the image below). Sites were chosen based on past records of Amur Falcon gatherings and additional locations added to spatially cover the entire region.

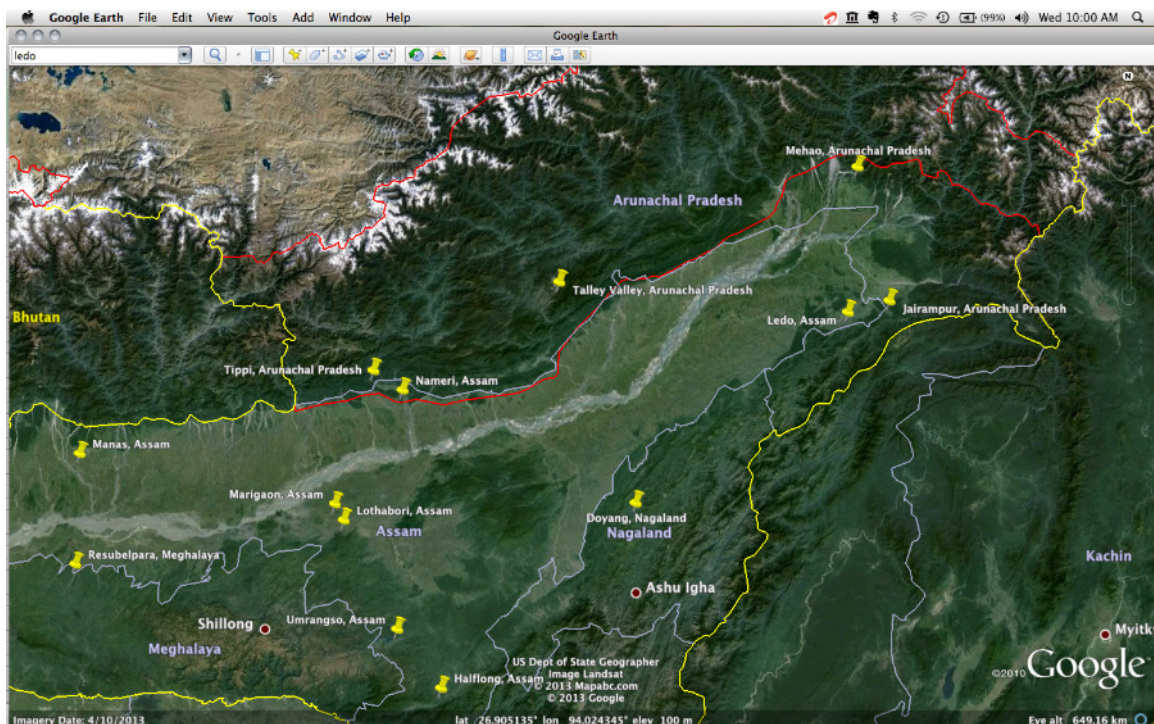


Figure 10: Yellow pins show the 13 survey locations across Northeast.

One volunteer (Rohit Naniwadekar) is still collecting additional social survey data on Amur Falcon hunting in the states of Tripura and Mizoram.

Amur Falcon Migration Strategy

The initial data trends suggest that majority of the Amur Falcons enter northeast India from across the Sino-Himalayas and not from the main Himalayas. During the survey all the large gatherings of Amur Falcons have been noted in and around Sino-Himalayas. Migration peak understandably varies from place to place. However it appears that migration peak within the Northeast lasts for more than three weeks during overall migration period.

Hunting Pressure on Amur Falcons

Hunting was observed at three out of thirteen locations where sampling was carried out during the months of October and November 2013. These sites were Ledo, located in eastern Assam, Umrangso as well as Haflong in south Assam. Hunting at Ledo as well as Haflong was observed to be small scale. However the much larger scale hunting at Umrangso is a cause for worry (see following report). Various methods of Amur Falcon hunting were observed during the survey. Hunting methods varied in the different locations, from using catapults and sticks to catch disoriented birds to even grabbing the falcons simply by hand. Understandably, the method of hunting directly impacts the scale of extraction at each place.

Small-scale Hunting

According to data collected by Ramit Singal, hunting at Haflong was observed to be small scale. Around 4-5 hunters catch Amur Falcons for personal consumption using the 'jatinga mehod', where they used a powerful artificial light on foggy nights to attract disoriented birds and knock them out them with sticks. However it seems that Amur Falcon hunting at Haflong is negligible as only a few of the hundreds of birds observed on overhead high tension wires were extracted.

Another small-scale hunting site was discovered by Ramit Singal at Ledo, located in eastern Assam. Here birds were seen on the morning of 30th October 2013 sitting on low tension electric wires over small paddyfields. On further enquiries in the villages adjoining these fields, it was found that a few young boys captured these falcons for food when they would come in for roosting in the bamboo clumps that dot the landscape (GPS location: N 27.311701°, E 95.747436°). The falcons would use patches of concentrated bamboo clumps in the middle of paddyfields as roosts. The flocks would gather here at around sunset, at ~1700hrs. Multiple videos of falcons arriving at roost sites have been taken including a few of flocks numbering >20,000 birds at one roost. According to locals the peak migration period of Amur Falcons was observed between 15th October to 25th October.

The hunters climbed up the stronger bamboo shoots and took positions by 1630hrs and waited for the falcons to arrive. Then they simply grabbed the falcons by hand if one happened to roost close to them. However, success rates were low with each person managing to get 0-5 falcons on a night. Upto 40 people in total may have been engaged in the hunting. On an average, it is safe to assume that no more than 100 falcons would be caught in a single night over a period of 2 weeks. The hunters were mostly unemployed youth or daily wage labourers in the coalfields. About 50% of the hunters hunted regularly over the migration season, but most hunt Amur Falcons only about once or twice a week.



Unfortunately hunting couldn't be documented directly. The group of hunters decided not to hunt due to the presence of our research team. However, some locals reported that hunting may have continued in other areas and ardent hunters would still move in search of flocks at other locations.

There was also no report of selling meat commercially. The scale of the hunting was very low on the whole. Most villagers were indifferent to the hunting and did not have any opinions about it. It seems unlikely that families supported the boys who went out hunting and the hunters seemed to hunt for self-consumption only. Some farmers were actively against hunting of these falcons and chased away boys who came to the bamboo clumps within their fields.

Amur Falcon Hunting near Umrangso, Dima Hasao District, North Cachar Hills, Assam *Ramit Singal, Saurabh Sawant and Sagar Sathyachandra*

As the 'Friends of the Amur Falcon' initiative was underway in Doyang, Nagaland, NWBCT had set-up 'Amur Counts' in parallel across a dozen locations in Northeast India. The objective of these counts was to document migratory routes, and roosting areas, as well as potential harvesting sites of Amur Falcons in the entire Northeast. NWBCT is the Nagaland-based NGO that, along with Conservation India, discovered the mass killings in Doyang last year and launched the 'Friends of the Amur Falcon' campaign.



Figure 11: Seven dead falcons from a hunter's bag. Photo courtesy: Save Umrangso Club

While the team reported sporadic hunting incidents in a few sites, one site – Umrangso, on the Meghalaya-Assam border – revealed extensive killings. The positive side to these killings was that local NGOs and the forest department were already engaged in education, patrolling and enforcement activities. While the killings seem to have been going on for years, conservation activities commenced

only this season. A large-scale initiative with full government support is needed to put an end to the killings from next year.

This documentation is based on observations by NWBCT's 'Amur Counts' volunteers Ramit Singal, Saurabh Sawant and Sagar Sathyachandra from 11-13 Nov 2013 in Tumbum village, 10km from Umrangso town.



Figure 12: Red pin shows location of Umrangso town

Summary of Observations

Every evening, around 1600 hrs, thousands of falcons would come in to roost by the Umrangso (Kupli) Reservoir. The big flocks would circle above the plantations for about 30 minutes. Almost all of them would have settled to roost by around 1700 hrs. The plantations were of trees that are used by the locals for firewood.

Prior to roosting, early arrivals would feed on emerging termites.

The falcons used trees of medium height (c20-25ft) for roosting in the area observed. Up to 30 birds may roost on a single tree, with some roosting as low as 6ft above the ground. While initially wary, the birds would get used to nearby movement within a couple of hours after settling down.

Hunting

The local tribes – primarily Karbi, followed by Dimasa – have traditionally hunted these falcons for a long time. The Kupli reservoir is about 15-years old and the falcons could have possibly begun roosting in the area after its creation, like in Doyang reservoir, Nagaland. Hunters gather in small groups of up to 4 people (several hunt singly as well) and look for the birds in the trees after 2300hrs. It is reported that hunters keep moving in to hunt even at 0300hrs. The birds are caught by hand where they roost within reach or are simply knocked down by catapults. It is reported that many hunters cook and consume several falcons on the spot as well. This was evident from the signs of feathers, campfires, etc. in the roosting areas.

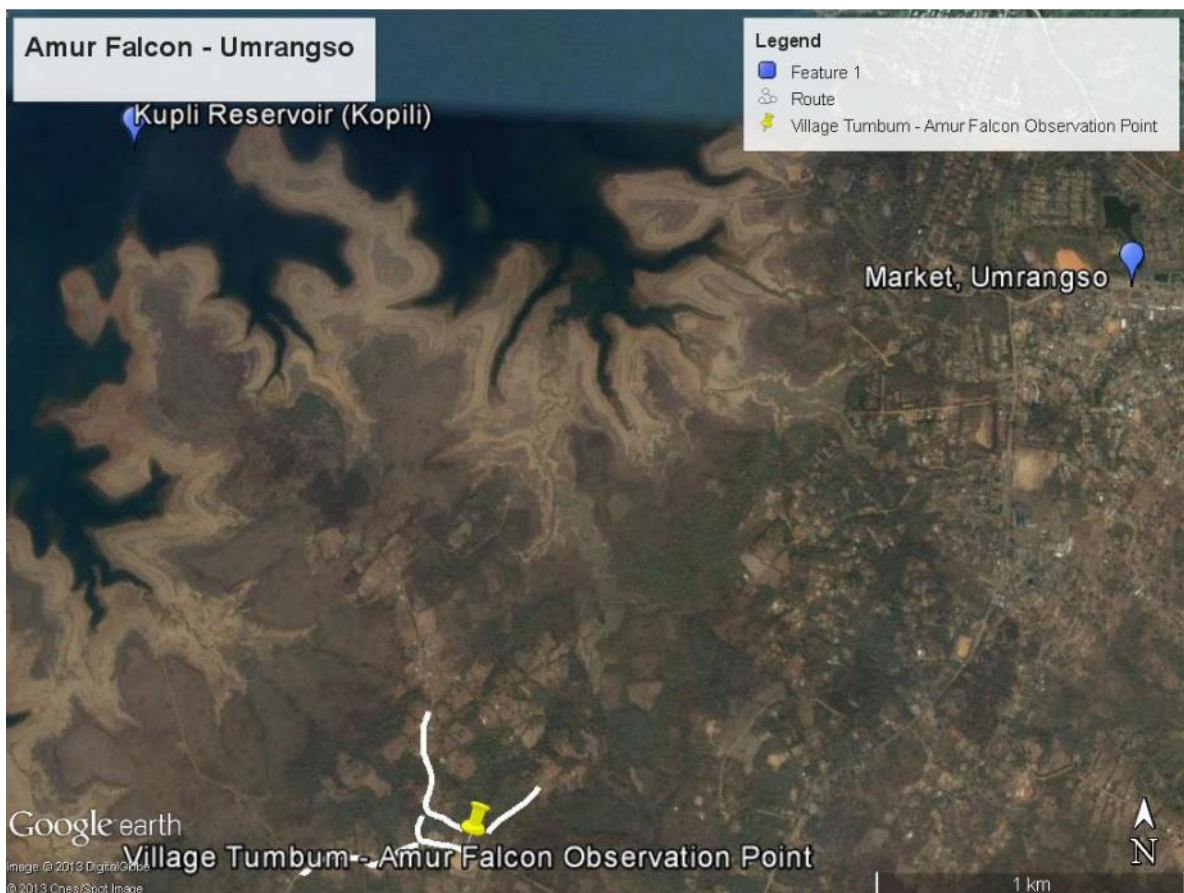


Figure 13: Map showing Tumbum village along the banks of the reservoir with respect to Umrangso town. White lines are hunting routes.

It is estimated that there are at least 100 such hunters and they hunt throughout the migration season. Each hunter catches up to a 100 falcons each night during peak season. This could mean that there might be up to 10,000 falcons killed each night — a shocking scale at par with the Nagaland numbers. This data pertains only to observations in Tumbum village, which is one of several villages on the banks of the Umrangso (Kupli) Reservoir. As per discussions with locals, all villages around the reservoir are involved in hunting falcons during the migration.

Selling

It is reported that birds sell at Rs. 50 each in the local markets strictly in secrecy and only to locals. They are also exported to areas like Meghalaya and Tezpur (Assam) where the meat has great demand amongst Karbis. While we didn't see birds being sold openly, we did see Amur Falcon feathers strewn amongst the roadside garbage in the main town indicating birds are secretly sold to those who ask for it. This was confirmed later after talking to some villagers who told us that "one has to specifically ask in the tribal language for the bird and you will get it".

Action Taken So Far

- Save Umrangso Club: Run by Joybesh Warisa. About 30 volunteers headed by Joybesh have been instrumental in alerting the forest department and nearby locals to the hunting practices that take place. They station themselves at the site late in the evening and stop the hunters from going in to the roosting locations for as long as possible.
- Blue Hills Society: This Haflong-based NGO from that has been working hard to spread awareness about the hunting taking place in Umrangso.
- Forest Dept, Umrangso: After 07 Nov 2013, armed guards have been stationed along the Tumbum village roosting site and they make sure that no hunter gets through up till 0100 hrs.

Conservation India will escalate these findings with officials and NGOs in Assam to ensure that the killings are stopped in 2014.

Annexure 4: Amur Falcon Northeast Survey Summary – Migratory Routes

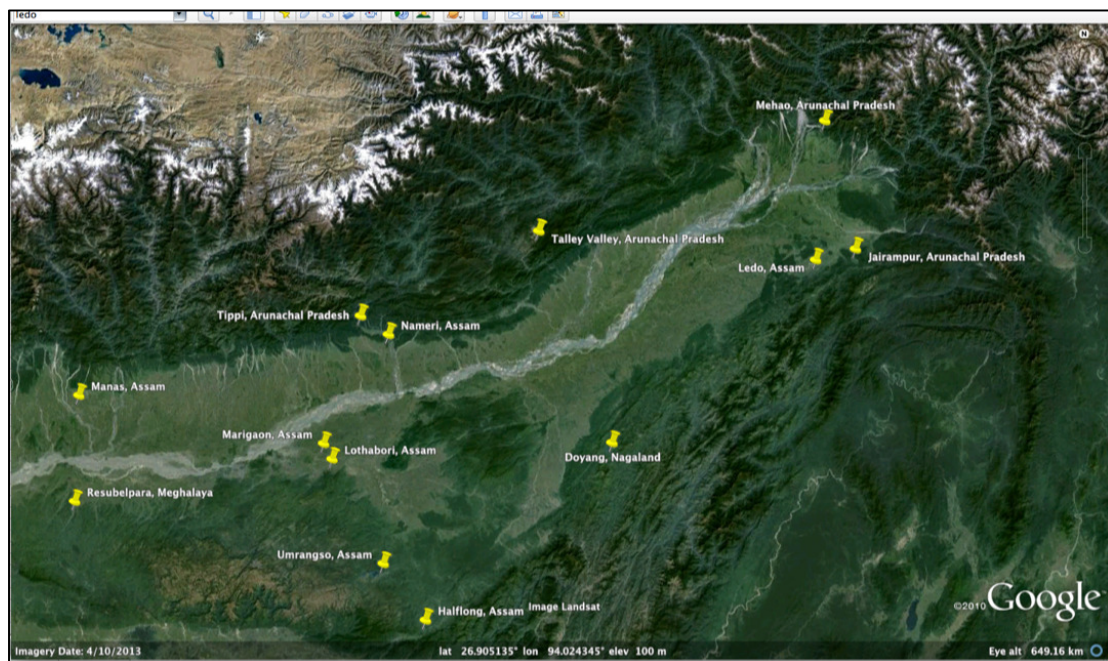
Shashank Dalvi

Summary

The data trends suggest that majority of the Amur Falcons enter northeast India from the Sino-Himalayas and not from the main Himalayas. During the survey all the large gatherings of Amur Falcons have been noted in and around Sino-Himalayas. Migration peak understandably varies from place to place. However it appears that migration peak within northeast lasts for more than three weeks during overall migration period.

Study Areas

We carried out fieldwork at 12 different field sites for the Amur project.



We identified 7 different sites where Amur Falcons were historically known to congregate in large numbers during migration stopovers. At these sites belt transects were walked to measure densities of migrating Amur Falcons.

These sites are approximately spread over a total area of 8,000 sq kms:

1. Doyang Reservoir, Wokha district, Nagaland.
2. Manmao, Eastern Arunachal Pradesh.
3. Ledo, Eastern Assam.
4. Nameri, Northwestern Assam.
5. Lothabori, Central Assam.

6. Manas, Eastern Assam.
7. Resubelpara, Meghalaya.

Of these seven sites, four are in the plains of Assam. Two sites, Nameri National Park and Manas National Park have lowland evergreen forests. The other two are in open areas largely covered by paddy fields and patches of bamboo. All sites within Assam fall entirely below 100 msl. The one site in Nagaland and Meghalaya consist of foothill forests ranging from 400 to 1100 msl. Both the sites have degraded forests with secondary growth. Another location Manmao in Arunachal Pradesh was located in the Himalayan foothills ranging from 500 to 700 msl.

Social survey data and hunting information was collected from 5 more localities across northeast India. These sites were spread across Talle Valley in central Arunachal Pradesh, Mehao in northeastern Arunachal Pradesh, Tipi in western Arunachal Pradesh, Haflong in south Assam, Umrangso in south Assam.

Methods

During the migration of October-November 2013 a team of birder volunteers walked between two to seven 1000*100 meters belt transects located near high-tension electricity wires at each site. These were conducted between 0600-0800hrs when probability of counting optimum number of Amur Falcons is highest. The birds use these wires in the early morning before they disperse for the rest of the day. These belt transects aided in measuring densities of Amur Falcons at every field site. At least six temporal replicates were completed at each transect. We walked a total of 395 belt transects across all 8 field sites. A large proportion of survey effort was concentrated at Doyang Reservoir where 163 belt transects were walked between 15th of October and 27th of November 2014. Following were the number of belt transects walked at the other field sites: Manmao 20, Nameri 42, Ledo 18, Lothabori 112, Manas 26, Rasulbepara 14.

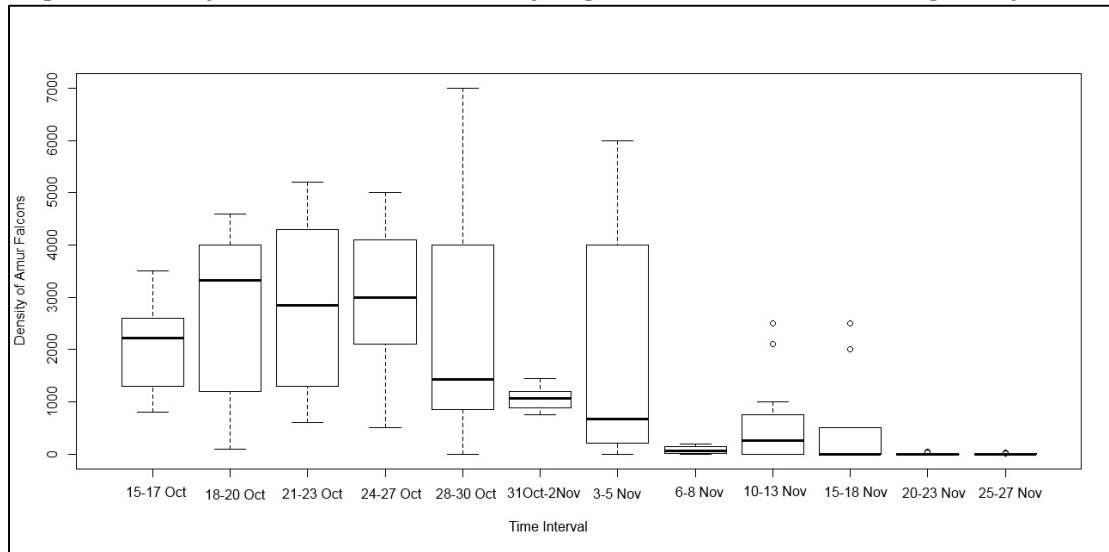
We also collected covariate data involving human disturbance, vegetation types, weather conditions, presence of water, signs of human disturbance and protection effectiveness in all seven field sites.

Additionally we did social survey and hunting assessment of 5 additional sites.

Results

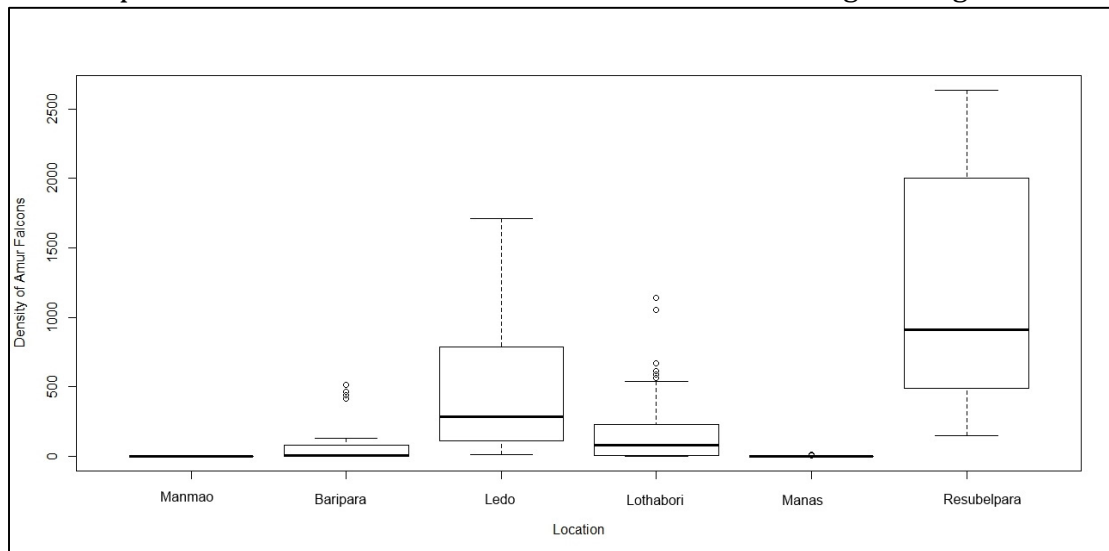
During the migration of October-November 2013 we recorded Amur Falcon sightings from several scattered locations across northeast India. However only 6 out of the 12 surveyed sites were found to be major stop over sites.

Graph 1: Density of Amur Falcons at Doyang Reservoir across the migratory season



The boxplot above shows median densities of Amur Falcons and spread of data for three-day intervals at Doyang Reservoir. It appears that Amur Falcon migration peaks between 15th October to 5th November. The number of birds drops off after 6th of November.

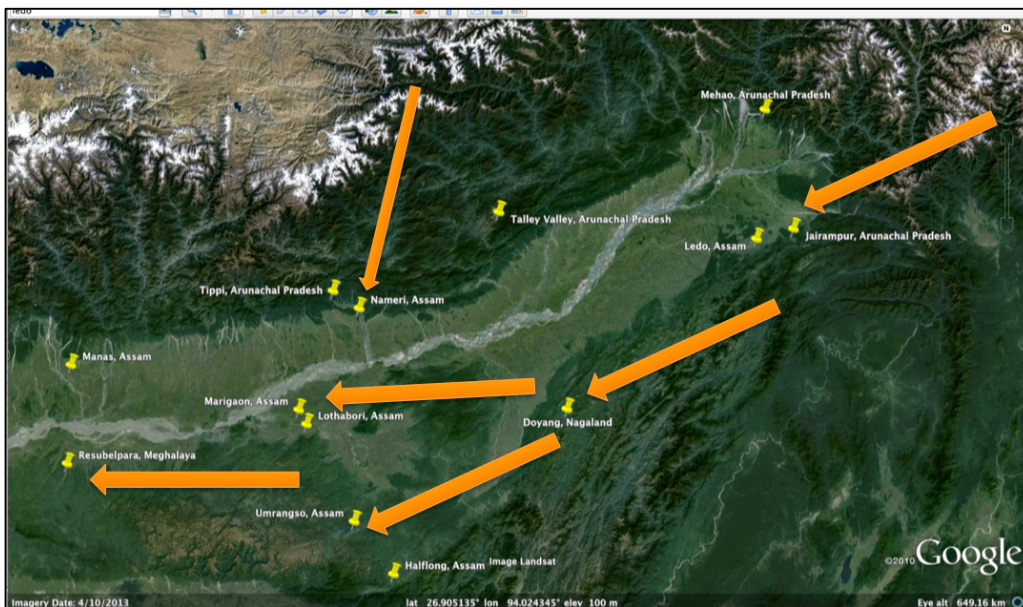
Graph 2: Densities of Amur Falcons at 6 other sites during the migration



Even though hundreds of individuals were sighted in flight at Manmao none of them used this site as a stop over site. Belt transects at field sites located near sino-Himalayas showed higher densities of Amur Falcons than the sites located near Himalayas.

Discussion

Amur Falcon's fall migration in northeast India has previously been known from observations of migrating flocks over a large landscape of northeast India. Most records of large congregations are from Lothabori, Naokata, Kaziranga National Park and Cachar Hills in central and south Assam, Naharlagun in eastern Arunachal Pradesh and Manipur (Naoroji 2008). During the migration of October November 2013 we noted large congregations from Manmao, Ledo, Lothabori, Nameri, Halflong, Umrangso, Resubelpara, and Doyang. In both historic records and in our survey, a common trend was that the large congregations occurred close to the Sino-Himalayan hills and not near the main Himalayas. Our data also suggests that large numbers of Amur Falcons prefer to migrate from the south of the River Brahmaputra and comparatively fewer birds enter India from the north of the river. Since the average height of sino-Himalayas is much lower than main Himalayas, it seems to provide a much easier migratory path into the Indian subcontinent.



At Doyang Reservoir Amur Falcon migration peak lasted for 3 weeks. Migration peak began around 15th of October and continued till 6th of November. All though the Amur Falcon densities at Doyang Reservoir reduced by 6th of November, the migration peak continued in Umrangso and Resubelpara till 14th of November 2014. Both these sites are present further east of Doyang Reservoir. It is likely that Amur Falcons enter in large numbers from the eastern most part of the study region and stopover at Doyang Reservoir to build up energy reserves. From here, the migration moves westwards and the bird flocks spread over a large part of the Indian subcontinent.

This preliminary study has revealed the general migratory path of Amur Falcons within northeast India and the approximate density of birds that pass through this region. A long-term monitoring study needs to be set up involving radio-collaring techniques and intensive capture-recapture studies to further understand the population dynamics and ecology of this

long-distance migrant. Future research will also need to focus on population vulnerabilities to poaching, habitat loss and other human disturbances.

References

Baker, H. R. and C. M. Inglis. The Birds of Southern India including Madras, Malabar, Travancore, Cochin, Coorg and Mysore. Government Press, Madras (1930)

Birdlife International 2013 Amur Falcon factsheet.

Bowman, H., Syes, C. and du Plessis, H. 2012. How to make 2.5 billion termites disappear? A case for protecting the Amur Falcon *Falco amurensis*. *Ornithological Observations*. 3: 232-242.

Cormack, R. M. 1964. Estimates of survival from the sighting of marked animals. *Biometrika*. 51:429-438.

Dalvi, S., Sreenivasan, R. and Price, T. Exploitation in Northeast India *Science* 339:270.

Dixon, A., Nyambayar, B. and Gankhuyag, P. 2011. Autumn migration of an Amur Falcon *Falco amurensis* from Mongolia to the Indian Ocean tracked by satellite. *Forktail*. 27: 86-89.

Halliday, T. R. 1980 The extinction of the Passenger Pigeon *Ectopistes migratorius* and its relevance to contemporary conservation *Biol. Conserv.* 17: 157-162.

Kesterling.com 2013

Kopij, G. 2009. Seasonal variation in the diet of the Amur kestrel (*Falco amurensis*) in its winter quarter in Lesotho. *African Journal of Ecology*. doi 10.1111/j.1365-2028.2009.01130.x.

Meyburg, B.U. and Meyburg, C. 2009. Travels with a Backpack: Satellite tracking of birds. *Der Falke* 56: 256-263

Naoroji, R. *Birds of Prey of the Indian Subcontinent* First Edition, OM BOOK INTERNATIONAL (2008).

Pietersen, D. W., Symes, C.T. 2010. Assessing the diet of Amur Falcon *Falco amurensis* and Lesser Kestrel *Falco naumanni* using stomach content analysis. *Ostrich* 81:39-44.

Zank, C. M., Kemp, A. C. 1996. A comparison of hunting behaviour by lesser kestrels *Falco naumanni* and Eastern Redfooted Falcons *Falco amurensis* in their non-breeding South African range. *Ostrich* 67:63-67.

Annexure 5: Framework and Guidelines for Ecotourism

Bano Haralu and Sanjay Sondhi

Ecotourism is emerging as the most natural and obvious fallout of at this site that hosts the unparalleled conglomeration of Amur Falcons at a single place annually from mid-October to mid-November. This alternative livelihood means during the migration period is crucial for the sustainability of the conservation education intervention by Nagaland Wildlife and Biodiversity Conservation Trust and the enforcement activities by the forest department and the district administration.

To display the potential of tourism linked with the phenomenon of the arrival of birds, NWBCT organized in October 2013 a quick overnight trip of 40 students from a school in Dimapur. The purpose was manifold. One of them was to make the community learn that outside their confines there are people very keen to watch the live birds in all their splendour. The second, that tourism can be a meaningful livelihood during migration and, finally, the livelihood opportunity directly depends on the conservation of the birds i.e. no hunting. The community hosted the forty children in their community hall and earned Rs. 20,000 in less than 2-days. While the visit was hurriedly planned it served as a live pilot to demonstrate the opportunity.



Below are some guidelines and forward plans which can form the strategy to empower those in the community interested in this activity as a means of livelihood. NWBCT's priority remains to focus on conservation education around which value additions can be created for the sustainability of tourism.

Objective

Establish an ecotourism venture in Wokha dist. and surrounding villages as an employment opportunity for the youth, and as an incentive for them to conserve their forests and its associated biodiversity using the Friends of the Amur Falcon Campaign as the centerpiece of this strategy.

Methodology

1. Discuss and establish the eco-tourism venture design – the preferred model involves the community and ensures that the economic benefits are equitably spread. In addition, the venture needs to have a small ecological footprint and be sustainable. Proposed model could be an Eco-Tourism and Bio-diversity Village Council involving different stakeholders from local villages. The first step could be a meeting to brief the local stakeholders on ecotourism, the options, models, and allow them to choose a preferred model. This is best positioned as an alternative livelihood for youth of the area who should be supported to run the eco-tourism.
2. Finalize the “products” – the first products are normally butterfly and bird tourism followed by others (trekking, culture, etc). In Wokha, the Amur Falcon migration can be the mainstay of the tourism venture, but it should be supported by other kinds of tourism – birdwatching, butterflies, adventure, etc. over time.
3. Based on the selected products, conduct surveys to identify the specials, establish the nature trails and seasons.
4. Examine and decide infrastructure options for tourism – homestays, bamboo huts, etc. Essential to involve the community to do this. Preferred option is to have a small eco-logical footprint bamboo huts on community land, managed in turn by different members of the community to spread the earnings. Funding will need to be organised for the infrastructure. A core paid team could be employed manage and maintain the infrastructure from the earnings. A community fee should be charged which should go to support social programs that the council approves annually.
5. Build local capability to conduct tourism including marketing, guiding, accounting, exposure tours, lessons learnt from other ventures, etc. Organise an exposure tour for the team that will lead the venture.
6. Raise funding and establish partnerships to do the above.

Work Plan and Timelines

It is expected that the above will take at least 1-2 years to get to a point that tourism can bring in some visible changes and also include setting up the infrastructure.

First steps:

1. Discussion and agreement within the community to progress with the idea.
2. Discuss the model of the venture. Form a core team to do execute this.
3. Butterfly and bird surveys in Wokha and surrounding areas to help establish the product. However, in the beginning, the Amur Falcon wonder is sufficient to get this going.
4. Exposure visit of the core team to Pakke, Nameri, Eaglenest, Garo hills or any of the other community based ventures in Northeast India.
5. Raise funds for the first stage, especially the infrastructure and training/capability building. Ideally, arrange funding for an honorarium for the core team for the first 12-24 month



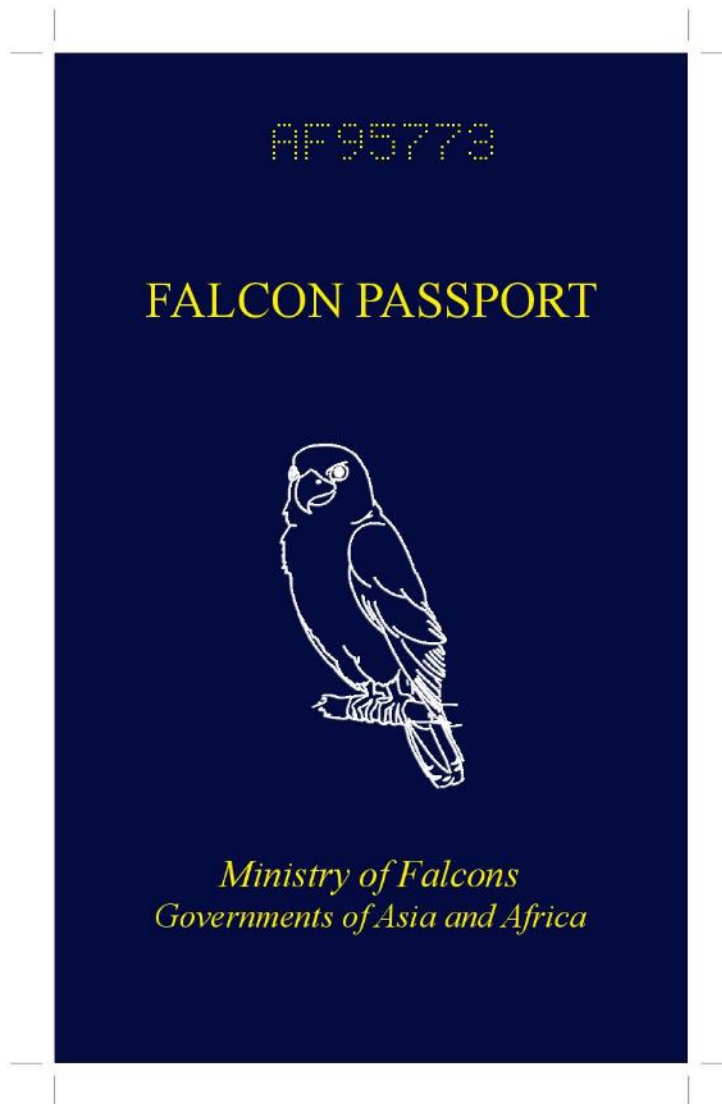
6. Based on the tourism model, decide on the soft skill training needed to manage the eco-tourism venture

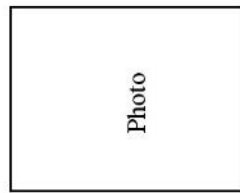
Supporting this proposal

1. The organisations supporting this proposal have no interest in conducting eco-tourism, but intend to handhold the local community in establishing the venture including the operating model, the infrastructure, developing the soft skills, marketing, conducting the first tours, raising funds, managing accounts, conducting the training, guiding, etc.

Annexure 6: The Amur Passport & the Falcon Manual

The Amur Passport





Name:

Address:

.....

Nationality: Sex:

Date of Birth:

Name of the club:

Name of the Organiser:

Date of issue of the Passport:

Place of issue:



TO WHOM IT MAY CONCERN

The owner of this passport is a member of his/her local eco-club and has pledged to learn and protect our wildlife, with particular reference to birds. Kindly allow the bearer to access information about birds and please do provide them with whatever assistance you can.

PRESIDENT

MINISTRY OF FALCONS

CO-ORDINATOR

ECO-CLUB

PASSPORT GUIDELINES

Following and filling in this passport will help you understand how real scientists do field work. You will do important data collection and become a citizen scientist. You can use this passport to jot down things that you have learnt about birds, particularly falcons, as well as note real observations that you have made in the field.

There are different tasks laid out through the pages that you will cover with your eco-club coordinator and as you complete each he/she will stamp your progress report.

During some of the field work you may not see falcons but you may record an interview by a hunter or a bird enthusiast and that is also a form of record keeping.

Once it is all done you will receive a falcon gold visa and your passport will have a falcon stamp of approval .



PLEDGE



I solemnly promise not to hunt or kill
any wild animals from this day forth,
but instead to be a curious naturalist
and do whatever I can
to learn more about our natural world
with a special focus on falcons.

I also promise to become an
'AMUR AMBASSADOR'
by educating as many people as I can
about the global importance
of the Amur falcon,
so as to help these amazing
long distance runners
get a fair chance in life.

5

IMPORTANT SOURCES FOR FALCON INFORMATION

- ★ http://www.conservationindia.org/wp-content/files_mf/31102102-2315.pdf
- ★ <http://news.mongabay.com/2012/1217-szotek-amur-falcon-dalvi.html#rKKFWxlhBDBiVMXY.99>
- ★ “How to make 2,5 billion termites disappear?” first published in *Ornithological Observations*, Henk Bouwman and Hanneline du Plessis, of the University of North-West in Potchefstroom, with Craig Symes, of the University of Witwatersrand
- ★ Last ‘satellite’ falcon returns , 14 Jan 2013 Neels Jackson and Witness Report
- ★ ‘The Star’, MONDAY JUNE 27 2011 The ‘amazing’ saga of this Amur Falcon
- ★ <http://www.arkive.org/amur-falcon/falco-amurensis/>

GLOSSARY OF FALCON TERMS

Bird of prey: Birds of prey, also known as raptors, are birds that hunt for food primarily via flight, using their keen senses, especially vision

Raptors: which basically means to take by force

Falconidae: the family of birds that includes falcons, kestrels and caracaras

Migration: Several species of animals move from one place to another to stay alive.

Insectivorous: an animal that eats insects

Ornithologists: People who study birds

Visual acuity: the clarity or sharpness of vision) measured at a distance of 20 feet.



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TASK 1

Create a fact file on the Amur falcon using information you learn over the course of the class.

KEY FACTS

Order	Family	Genus and Species
-------	--------	-------------------

Size Height _____ Weight _____		
		Breeding Sexual maturity _____ Mating season _____ Gestation _____ No. of young _____
		

8

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Lifestyle

Habit _____

Call _____

Diet _____

Lifespan _____

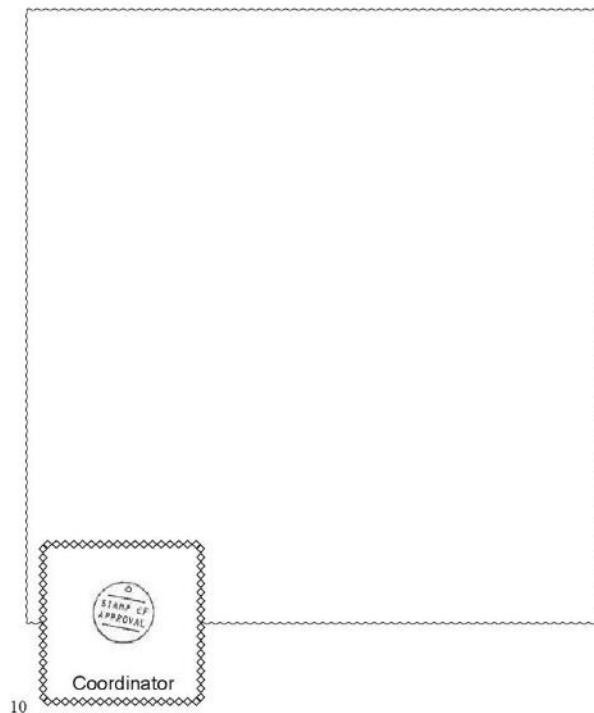
Related Species



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TASK 2

Now using the facts, draw or stick a picture of the Amur Falcon and label the special features you notice about the falcon.



10

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TASK 3

Mark the range and the migratory route of the Amur Falcon (*Falco amurensis*). Write down the countries the animal flies over on its round trip migratory route.

Coordinator

Summer home

Winter home

Known migratory route: _____

Distribution: _____

11

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TASK 4

FIELD PREPARATION: HANDLING EQUIPMENT

How to handle Binoculars

Binoculars are a useful tool when it comes to watching and studying birds. These steps give a brief lesson on binocular basics:

1. Safety first: Put the neck strap of the binoculars around your neck.
2. Look through the binoculars and bend them, using both hands, until you see only a single image.
3. Cover the right lens with your hand and move the focus wheel until the image is sharp.
4. Next, cover the left lens with your hand and move the focus wheel until the image is sharp.
5. Adjust the right eyepiece until the image is sharp.
6. Mark the key features of the bird you are looking at and use a field guide book to identify the animal correctly.

12

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Post use

7. Once you are done using the binoculars ensure that you store it correctly. Close the lens cap and return it to its box.
8. Do not touch the lens with your bare hands. Always use a soft lens cleaner cloth only.

Have your coordinator mark you on the way you handle the binoculars to complete this task.



13

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TASK 5

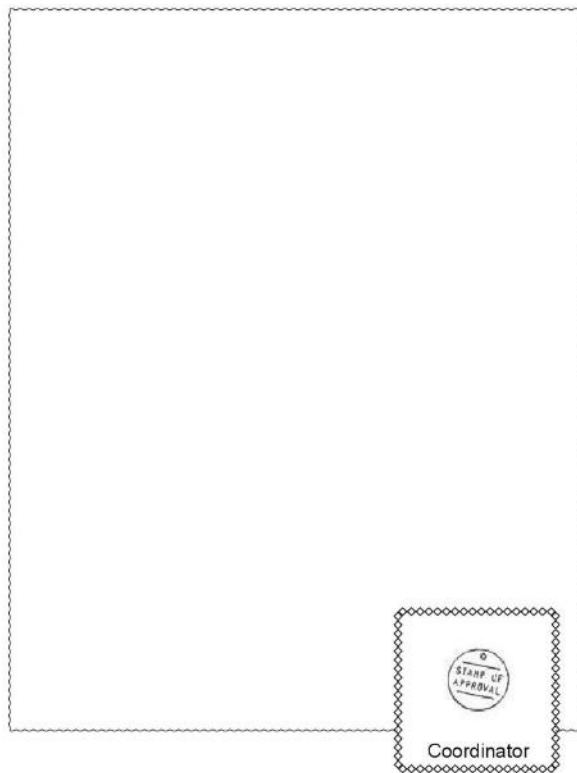
Make a drawing of the bird observed using the binoculars and try and ID it.



14

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Make a drawing of an animal observed using the binoculars.



Coordinator

15

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TASK 6

YOUR BIRD CHECKLIST

There are several birds that you find in your area. In this task you must try and correctly identify at least 21 birds that you have seen with the scientific name, its behavior and where it was seen. If you know their local name, put that in also.

Once you have filled in all the columns show it to your coordinator for verification and assessment.



AF95773

Common Name/ Scientific Name	Local Name	Behaviour	Location/Season				

AF95773

Common Name/ Scientific Name	Local Name	Behaviour	Location/Season

18

AF95773

Common Name/ Scientific Name	Local Name	Behaviour	Location/Season

19

AF95773

TASK 7

FALCONS FOREVER

There are 66 falcons in the world. Note all the names of the ones that come to Nagaland. If you know the local names for any of them do write that down as well.

Scientific Name	Local Name	Seen by you
_____	_____	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>

AF95773

Scientific Name	Local Name	Seen by you
_____	_____	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>



AF95773


TASK 8

ALL ABOUT 'AMUR'

There are at least 20 living things, which include plants and animals that have the word amur in either the common or scientific name. Find as many as you can and note them down here.

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AF95773



Coordinator

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AF95773

TASK 9

MIGRATORY BIRD OBSERVATIONS

Go on field visits on 5 continuous days, to the same location. Note your observations of the Amur falcons here.



Location: _____

Day 1 Date: _____ Time: _____

Weather conditions _____

Counting using the grid format

1/4 had _____ birds

Approx. estimate of all squares _____ birds

Behaviour of the birds _____

Day 2 Date: _____ Time: _____

Weather conditions _____

Counting using the grid format

1/4 had _____ birds

Approx. estimate of all squares _____ birds

Behaviour of the birds _____

24 _____

Day 3 Date: _____ Time: _____

Weather conditions _____

Counting using the grid format

1/4 had _____ birds

Approx. estimate of all squares _____ birds

Behaviour of the birds _____

Day 4 Date: _____ Time: _____

Weather conditions _____

Counting using the grid format

1/4 had _____ birds

Approx. estimate of all squares _____ birds

Behaviour of the birds _____

Day 5 Date: _____ Time: _____

Weather conditions _____

Counting using the grid format

1/4 had _____ birds

Approx. estimate of all squares _____ birds

Behaviour of the birds _____

_____ 25

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TASK 10

FOLLOW THE HUNTER

Interview 2 hunters in your village between the ages of 18 to 40 and note down their answers here.

Date: _____

Name: _____ Age: _____

Educational Qualification: _____

Occupation: _____

When did you start hunting? _____

How long have you been hunting for?

What do you hunt? _____

How much do you hunt? _____

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AF95773

Where do you hunt? _____

How do you hunt? Guns Catapult
 Trap Others

Which season did you hunt for what?

How many days do you go for hunting?

Why do you hunt? Money food
 Cultural prestige
 Leisure Others

Are you aware of Wildlife Protection Act
passed in 1972? Yes No

What will make you stop hunting?

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Date: _____

Name: _____ Age: _____

Educational Qualification: _____

Occupation: _____

When did you start hunting? _____

How long have you been hunting for?

What do you hunt? _____

How much do you hunt? _____

Where do you hunt? _____

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How do you hunt? Guns Catapult
 Trap Others

Which season did you hunt for what?

How many days do you go for hunting?

Why do you hunt? Money food
 Cultural prestige
 Leisure Others

Are you aware of Wildlife Protection Act passed in 1972? Yes No

What will make you stop hunting?

Coordinator

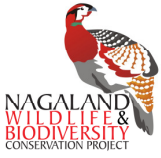
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FIELD NOTES

30

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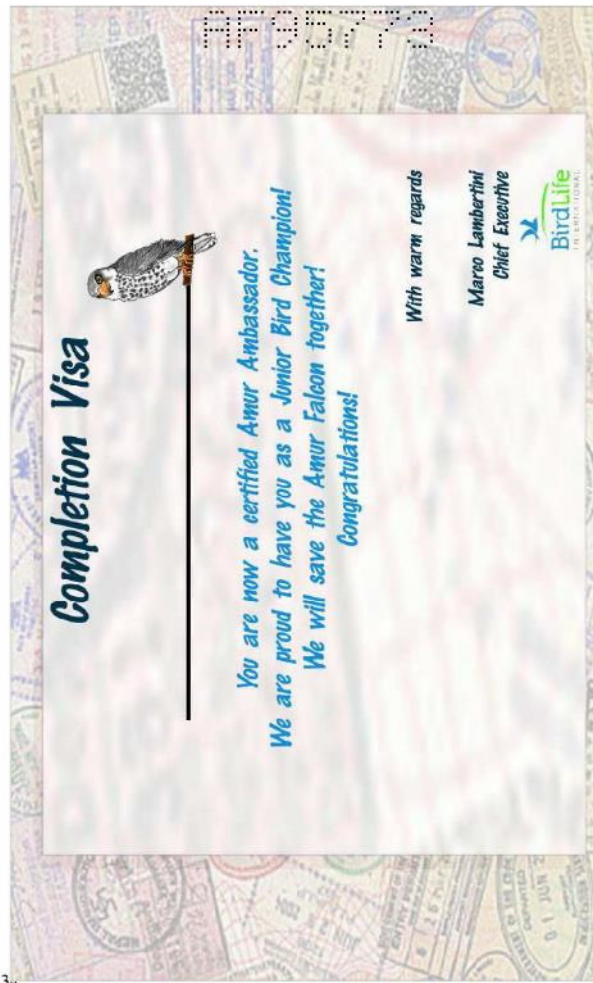
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FIELD NOTES

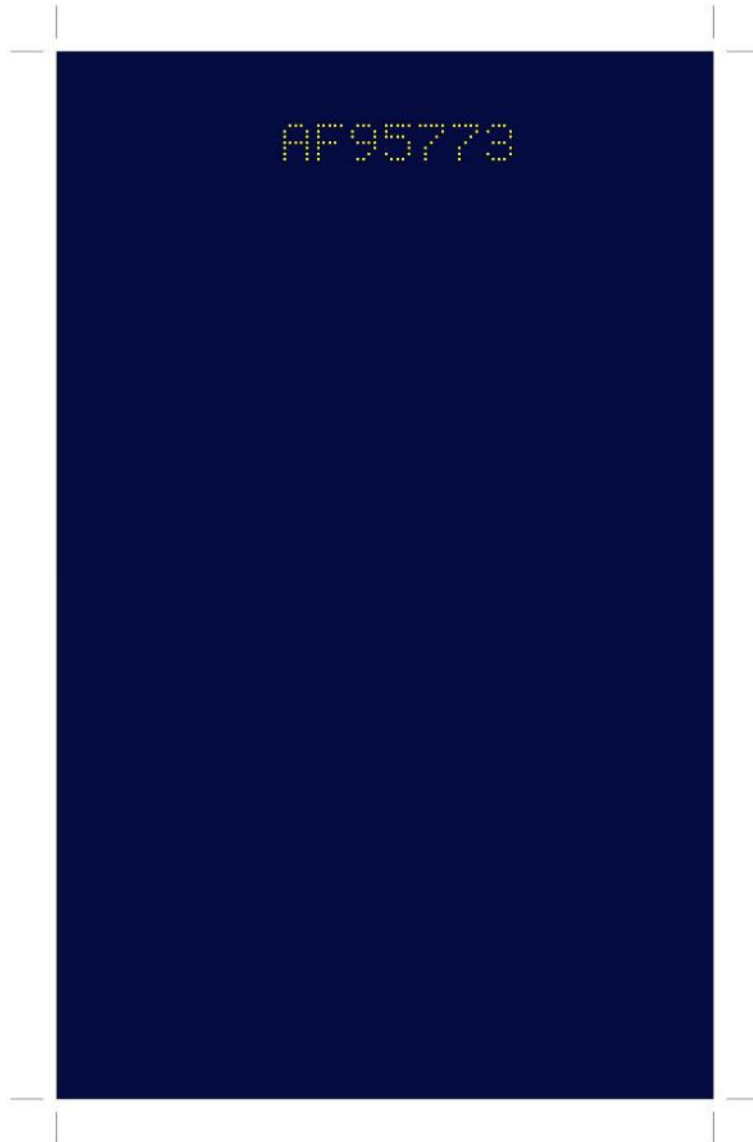
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AF95773

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The Falcon Manual



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CHAPTER 1 - Falcon Files

Teachers Notes

In this chapter you will get a chance to introduce different kinds of falcons to the kids as well as give them a brief insight into the biology of the Amur falcon.



Welcome to the world of the falcon. In this chapter you will get a brief idea about different species of falcons in the world and an introduction in particular to one very special visitor that we have the Amur falcon.

So what are falcons?

There are 45 described species of falcons in the world – each beautifully adapted to being swift and precise birds of prey. Birds of prey are those that hunt for their food while flying using their keen vision and fleetness in flight. All falcons are described as raptors which basically means to take by force.

Falcons are distinguished from other birds by their bullet-shaped bodies, thin tapered wings that are designed to allow them to fly at high speeds and change direction rapidly. In fact

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the fastest animal on earth is a falcon – the peregrine falcon. This amazing bird has been clocked at 320 km/hr as it dives to catch prey in midair.

The Falconidae family includes falcons, kestrels and caracaras. These are small to medium sized diurnal raptors. They differ from the hawks and their allies by the way they kill their prey. They use their beaks instead of their feet. Falconiformes have a hooked bill with a cere (soft mass) near the base. They have long broad wings for soaring. Females are usually bigger than males. As these birds are at the top of the food chain they have a special significance when it comes to conservation issues.

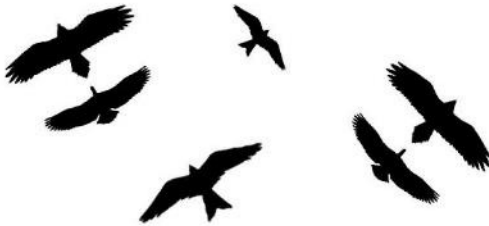
Falcons belong to the family *falconidae*. In North Eastern India, 10 of the 66 falcons have been spotted. They are:

Pied Falconet, *Microhierax melanoleucos*
Lesser Kestrel, *Falco naumanni*
Common Kestrel, *Falco tinnunculus*
Red-necked Falcon, *Falco chicquera*
Amur Falcon, *Falco amurensis*
Merlin or 'Pigeon Hawk', *Falco columbarius*
Eurasian Hobby, *Falco subbuteo*
Oriental Hobby, *Falco severus*
Laggar Falcon, *Falco jugger*
Peregrine Falcon, *Falco peregrinus*



The rest of the 56 have been listed below:

- | | |
|--|--|
| <ol style="list-style-type: none"> 1 African Hobby, <i>Falco cuvierii</i> 2 American Kestrel, <i>Falco sparverius</i> 3 Aplomado Falcon, <i>Falco tectorius</i> 4 Australian Hobby, <i>Falco longipennis</i> 5 Banded Kestrel, <i>Falco zoniventris</i> 6 Barbary Falcon, <i>Falco pelegrinoides</i> 7 Barred Forest-falcon, <i>Micrastur ruficollis</i> 8 Bat Falcon, <i>Falco rufigularis</i> 9 Black Caracara, <i>Daptrius ater</i> 10 Black Falcon, <i>Falco subniger</i> 11 Black-thighed, Falconet <i>Microhierax fringillarius</i> 12 Brown Falcon, <i>Falco berigora</i> | <ol style="list-style-type: none"> 13 Buckley's Forest-falcon, <i>Micrastur buckleyi</i> 14 Carunculated Caracara, <i>Phalacrocorax carunculatus</i> 15 Chimango Caracara, <i>Milvago chimango</i> 16 Collared Falconet, <i>Microhierax caerulescens</i> 17 Collared Forest-falcon, <i>Micrastur semitorquatus</i> 18 Crested Caracara, <i>Caracara cheriway</i> 19 Cryptic Forest-falcon, <i>Micrastur mintoni</i> 20 Dickinson's Kestrel, <i>Falco dickinsoni</i> 21 Eleonora's Falcon, <i>Falco eleonora</i> 22 Fox Kestrel, <i>Falco alopex</i> 23 Greater Kestrel, <i>Falco rupicoloides</i> 24 Grey Falcon, <i>Falco hypoleucos</i> 25 Grey Kestrel, <i>Falco ardosiacus</i> 26 Guadalupe Caracara, <i>Caracara lutosa</i> 27 Gyr Falcon, <i>Falco rusticolus</i> 28 Lanner Falcon, <i>Falco biarmicus</i> 29 Laughing Falcon, <i>Herpetotheres cachinnans</i> 30 Lined Forest-falcon <i>Micrastur gilvicollis</i> |
|--|--|



- | | |
|---|---|
| 31 Madagascar Kestrel, <i>Falco newtoni</i> | 48 Southern Caracara, <i>Caracara plancus</i> |
| 32 Mauritius Kestrel, <i>Falco punctatus</i> | 49 Spotted Kestrel, <i>Falco moluccensis</i> |
| 33 Mountain Caracara, <i>Phalcoboenus megalopterus</i> | 50 Spot-winged Falconet, <i>Spizapteryx circumcincta</i> |
| 34 Nankeen Kestrel, <i>Falco cenchroides</i> | 51 Striated Caracara, <i>Phalcoboenus australis</i> |
| 35 New Zealand Falcon, <i>Falco novaeseelandiae</i> | 52 Taita Falcon, <i>Falco fasciinucha</i> |
| 36 Orange-breasted Falcon, <i>Falco deiroleucus</i> | 53 White-fronted Falconet, <i>Microhierax latifrons</i> |
| 37 Philippine Falconet, <i>Microhierax erythrogenys</i> | 54 White-rumped Falcon, <i>Polihierax insignis</i> |
| 38 Plumbeous Forest-falcon, <i>Micrastur plumbeus</i> | 55 White-throated Caracara, <i>Phalcoboenus albogularis</i> |
| 39 Prairie Falcon, <i>Falco mexicanus</i> | 56 Yellow-headed Caracara, <i>Milvago chimachima</i> |
| 40 Pygmy Falcon, <i>Polihierax semitorquatus</i> | |
| 41 Red-footed Falcon, <i>Falco vespertinus</i> | |
| 42 Red-throated Caracara, <i>Ibycter americanus</i> | |
| 43 Reunion Kestrel, <i>Falco buboisi</i> | |
| 44 Saker Falcon <i>Falco cherrug</i> | |
| 45 Seychelles Kestrel, <i>Falco araea</i> | |
| 46 Slaty-backed Forest-falcon, <i>Micrastur mirandollei</i> | |
| 47 Sooty Falcon, <i>Falco concolor</i> | |



(Source: <http://www.birdlife.org/community/2009/06/list-of-falcon-species/>)

The Amazing Amur - *FALCO AMURENSIS*

One of the prettiest and smallest of the falcons is the Amur falcon (*Falco amurensis*). This amazing bird is just about the size of a pigeon and weighs only 100-180 gms. And it is this very size and lightness of body that makes it one of the most amazing birds of prey that visits our skies. It flies an astonishing 22,000 kms every migration, all the way from its breeding grounds in south-eastern Siberia and Northern China to its wintering area in Southern Africa and back. This bird is an insectivorous animal, which means that its diet consists mainly of insects, such as flying termites, dragonflies, beetles and other winged insects.

This lovely bird enjoys company and is usually found in flocks and one of the most spectacular sights, is when tens of thousands of these birds congregate at their roosting sites in Africa. But surprisingly, in its breeding grounds in May and June, it prefers to nest in small colonies.

An important natural pest controller

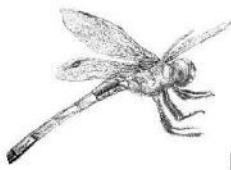


The Amur falcon plays a very important and unique role compared to other birds of prey. They have an entirely insectivorous diet. Scientists have calculated that in South Africa alone, they are responsible for consuming 2.5 billion termites every year. During the rainy season millions of termites fly out of their nests and spread across the nation. These creatures are agricultural pests and can ruin an entire crop. Scientists believe that if the number of Amur falcons reaching South Africa reduces, it will adversely effect South African agriculture.

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Activity 1: Eye Spy With my Little Eye

Begin your class by showing the children the picture of the Amur falcon. Ask them to describe what they see - size of the bird, shape of the wings etc. Initiate a discussion on why they think it is designed like that. Tell them that the Amur falcon belongs to the falconidae family that includes kestrels, hobbies and falcons.



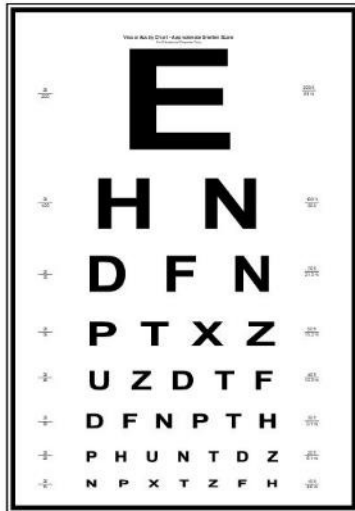
Then start explaining how we humans can see objects. We have our eyes in front of our face and not on the side, so we have what is called binocular vision. Then ask the kids to observe the position of a bird's eyes.

First of all they have especially large eyes. Large eyes let in maximum amount of light, and also allows for a large image. Its eyesight magnifies the image like a pair of binoculars and has extra-fine definition.



A flying bird hunting small prey far below must not only be able to decide how far away the prey is but also its make out its size, shape, position, and how fast it is moving.





A Snellen eye chart is used to determine how 'normal' your vision is. It sets a standard for what most people should be able to see when they stand 20 feet away from the chart. 20/20 vision just means that when you stand 20 feet away from a Snellen eye chart, you see what a normal human being can see. If you see 20/40, that means that when you stand 20 feet away from the chart, you see what a normal person sees standing 40 feet away from it. The higher the second number, the worse your vision is. So if your vision is 20/200 you are almost blind. A falcon can see 2.6 times more than the average human eye which means that what we as humans can see at say 6 feet and falcon would see at 15.6 feet.

In this activity we will see which one of you has 'falcon vision'.

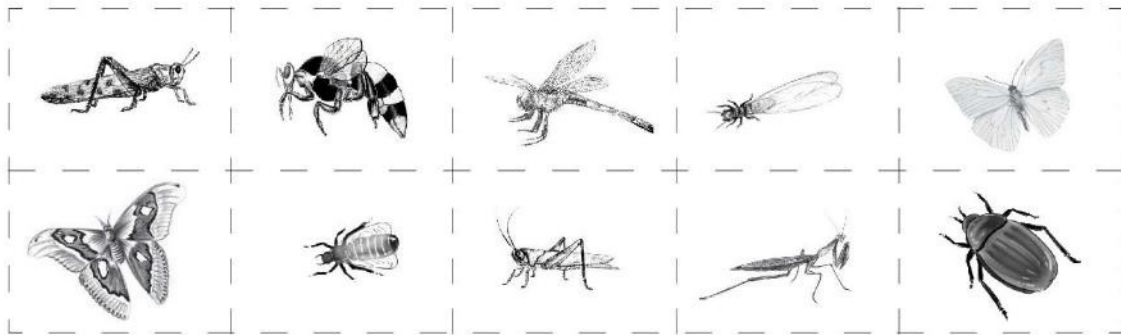
Instructions:

Tape the food chart to a wall, making sure there is plenty of light. Measure twenty feet away from the chart and draw a line. The last line that you are able to read will give you an approximate idea of your vision. If you can read the very bottom line, your vision is 20/10! Now try covering one eye and just testing the other one. Is one eye better than the other? Now multiply whatever you have been able to see into 2.6. Whoever has the highest, is the falcon of the class.

Activity 2: Who, What, Where?

Explain to your kids that birds of prey, not only have to be able to see their prey from great distances, but also have to be able to judge just how far and how big the animal, they are targeting, is. In this game, kids will test their memory and targeting skills.

Divide the class into 5 groups. Photocopy 6 sets of the grid below and cut them. Place one set of pictures randomly on a board for the kids to view for 20 seconds. Then cover it. Distribute 1 set of pictures to each of the groups, face down. After a break of about 5 minutes, give them another 20 seconds to put the pieces back in the same location as they had seen on the board.



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CHAPTER 2 - Migration Mysteries : AF97633

Teachers Notes

In this chapter you will give the children an insight into the travel secrets of the Amur falcon and learn geography and landscape along the way.



What is migration?

Research is very important in wildlife conservation. If we do not understand what we want to save, then how can we save it. It is important for people to know how many animals there are, what their habits are, how they breed, what they need to find food etc. And the same is true for the Amur falcon.

Several species of animals move from one place to another to stay alive. As seasons change, many animals move from cold to warm and vice-versa, so as to find food or a safe place to have their young ones. But the mysteries of migration are still being discovered. From fish to dragonflies, birds to butterflies, all travel huge distances in the day and during the night. Scientists now know that some use the position of the sun and the stars to navigate. Some, they believe, may smell their way home. And still others seem to use the magnetic field of the earth as a compass to get where they need to go.

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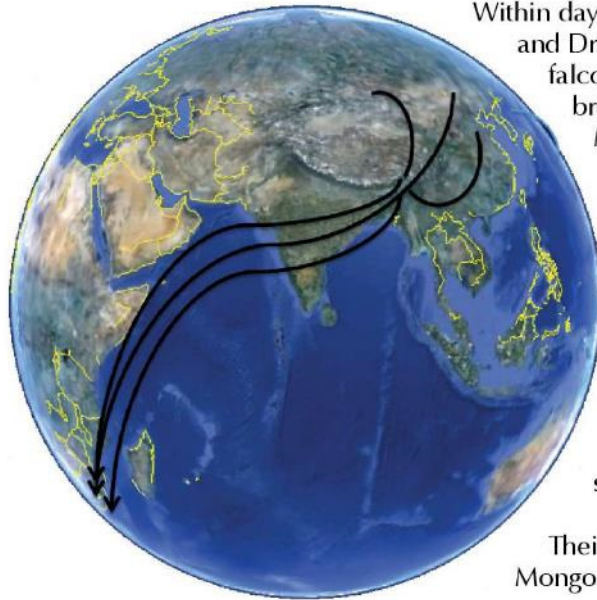
A star is found : AF97633

Till as late as 2008, no one really knew much about the Amur falcon and how it got all the way from Amur land in China to South Africa. There were many questions swirling in the minds of ornithologists (people who study birds). How far did it fly in a day? Where did it rest? Which countries did it cross? How long did it take? and countless more questions. Unfortunately most of the radio collars or satellite tracking devices available were large and heavy or needed constant monitoring and battery power. They had been used by scientists studying turtles, lions, tigers, elephants and even snakes.

In 2009-10 scientists finally managed to design a satellite transmitter that was light enough and small enough to fit on the back of a falcon without harming it or creating a problem for the birds. A German bird lover and expert on falcons Dr. Bernd-U Meyburg, along with his team, funded by Birdlife International, managed to get hold of a solar powered little satellite transmitter, a mere 5gms. But now they had a new challenge. As per ethical guidelines they had to find birds strong enough to carry these transmitters. That meant that the bird had to weigh at least 160gms.

And then suddenly they had her – a beautiful healthy adult female Amur falcon and she was tagged AF97633. In all, they carefully satellite tagged 10 adult birds and released them.





Within days they began getting fascinating information and Dr. Meyburg's team charted the first ever Amur falcon migration from South Africa to their breeding grounds in Mongolia. Dr. Bernd-U Meyburg tracked the birds as they flew north through Mozambique, Tanzania, then Somalia. The birds then changed course and started heading north-east over open sea.

For an average of two days the birds flew non-stop over the Indian Ocean. The fastest and the one with the most endurance was the star female Amur falcon - AF95773, who took off from the coast of Somalia, crossed the Indian Ocean and stopped only five days later, in Burma.

Their journey ended 14,560 km away in Mongolia, where the Amur falcons paired and bred.

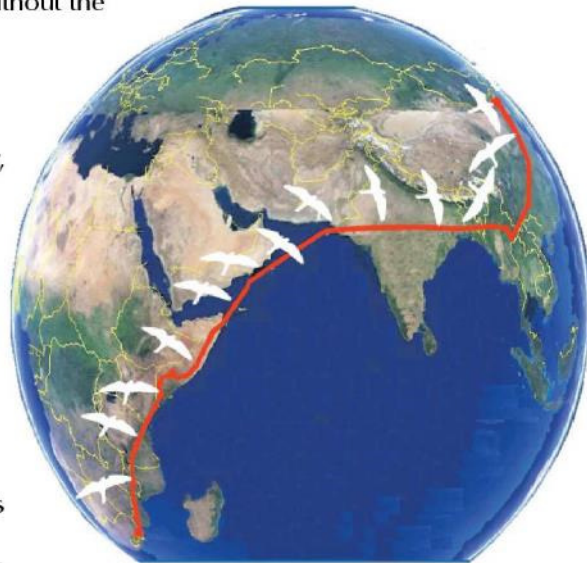
Today only AF95778 is left and has provided information for three years as she has journeyed back and forth. Thanks to her, science has gained a glimpse into the travel secrets of the Amur falcon. (See reading material provided at the end of this booklet)

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The highlights are that she covers 14,500 km each trip as they journey from Mongolia to South Africa. It takes her just about a month. What is truly remarkable is the 5,990 km that takes her just 5 days to travel. Another amazing discovery has been that these birds fly at night as well, making them the only raptors that migrate at night. But brings in new questions of how do they navigate without the sun?

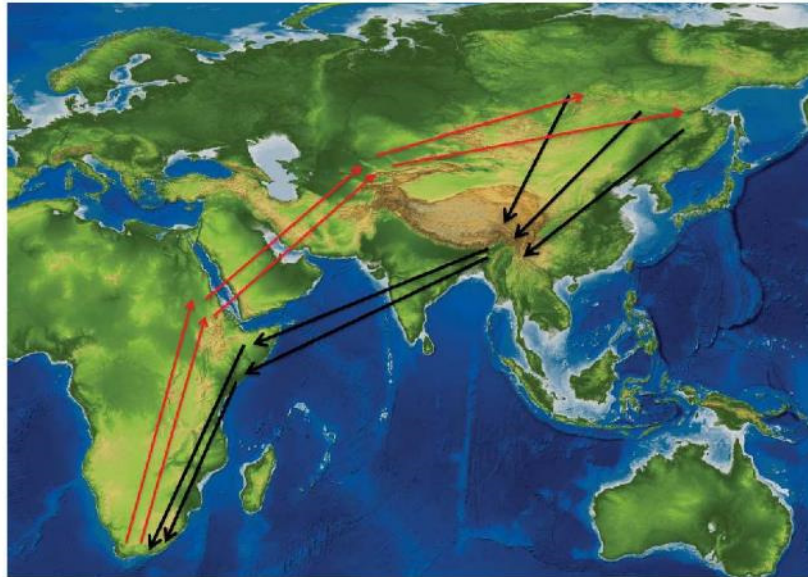
In all, AF95778 on her south bound journey travels from Mongolia to Mandalay-east (Burma), Nagaland, Assam, Nagpur, Bombay, across the Indian ocean, through Somalia, East Africa, Central Africa, Zimbabwe and finally settles near newcastle in South Africa. On her North bound journey travels mostly across land through these countries: South Africa, Botswana, Zambia/Angola, Sudan, Saudi Arabia, Kuwait, Kazakhstan Russia.

But ornithologists have also found that the birds seem to take different routes sometimes coming through Thailand, and sometimes leaving from Karnataka in South India. While



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returning sometimes they come through India and not over China... there are still many mysteries left to unlock about this amazing animal.



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Activity 1: Flight plan

In this activity the children will learn geography while plotting the course of AF95778 as she travels across continents to her feeding grounds in Africa and back to her breeding grounds in China/Mongolia.

Divide the class into groups. Have them plot the route the birds take. Give them the country list and ask them to mark it on the map.

Start a discussion on how many countries the bird crosses, what route it takes while travelling South and which route while travelling North. Tell the children to think about the monsoon patterns and tell them that the birds seem to ride the monsoon winds.



Note: the above map is printed in the passport that the children have in their folders. This activity should be completed on that.



Activity 2: Clear corridors



Explain to the kids that all migratory animals need to rest and store up on food along their journey. For Amur falcons one of the best places for them to stop is in Nagaland. Long-distance journeys demand extra energy — in the case of birds, up to 12 times more than the amount usually required. This area serves as a flyway or corridor and if it is destroyed or if they are disturbed along the way, it is a huge problem for the animals.



Ask the kids to place themselves in the path of the falcon and imagine what landscapes they would see. Have them draw out a top angle view of the village. Then, have the kids mark on a chart what all they would need if they were going on a long trek across different landscapes. Have them compare that list with what a falcon may need.

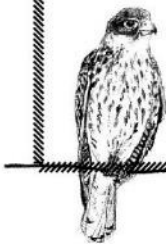


CHAPTER 3 - Birds Count: How to count Amurs

Teachers Notes

In this lesson your students will become junior citizen scientists and learn research techniques that

biologists use in the field.



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In the previous chapters you have taken your kids through the biology and ecology of the Amur falcon. Now that they understand what a remarkable bird it is, you can lead them into more scientific research and conservation techniques, so they, too, can be a part of the global movement to save these amazing animals.

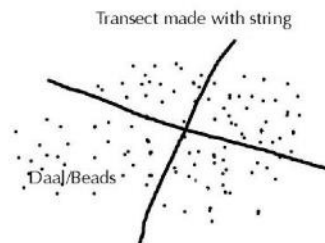
Explain to your students that most migratory animals need a place to rest and feed before carrying on their long arduous journey. The Amur falcon, as we now know, has different routes on its way to South Africa. One of the largest populations comes through Nagaland and rests at the Doyang reservoir. This is a good place to count the birds and conduct a census. Estimating populations is important for scientists, as it gives them an idea of whether the numbers are increasing or decreasing, as well as whether there are any problems the bird may be facing.

Activity: Sack of seeds

It is not an easy task to count birds, so ornithologists (People who study birds) have devised a few different techniques to do so. With migrating birds, one of the methods they use is transects. In this activity you will demonstrate how amateur naturalists can conduct a census.

Begin by discuss with the group how large, flocks of migratory birds can be. Divide the students into small groups and hand out the worksheet. Give each group two strings, 18 inches long, and a cup of seeds/small stones. Ask them to try and guess how many seeds there are in the cup. Then ask them to imagine that each seed represents a bird.

Have them write it down on their activity sheets. Then have them spread out all the seeds on a surface randomly but not count. Instruct them to place the two strings in the form of an X down the center, such that it divides the seeds into quarters or squares. Now have them count the number of seeds in any square and write down the number in the sheet.



Next, have them multiply that number by 4 and write the answer. Finally, tell them to count all the seeds in the other squares as well and add up the numbers.

Once they have filled in their activity sheets, ask them if they have different numbers in answer 3 and 4 and what the reason for that could be. Birds are constantly moving and that makes them even harder to count.

Explain to them that this is an estimate that they are making. Estimates made during these kinds of bird counts are not random. Tell the children that ornithologists conduct such surveys for many years in the same areas and side by side also study the behavior of the birds. They photograph them and use various computer models to determine what the population of the birds could be and if there is any change. This is very important, as knowing whether there are any drastic changes in the population can warn experts that something is wrong.



Additional activities

You can have practice sessions of counting with the children by taking them to a public place such as a busy street and have the children count the number of people walking by in a red shirt, or counting the number of leaves blowing in the wind. This helps to train their observation skills while providing a good challenge.

Activity Sheet

Once you have followed the instructions given, fill in the answers below.

1. How many seeds do you think were in the cup? _____
2. Once you have divided the seeds into four quarters – how many do you think are there in one of the quarters? _____
3. Now multiply that number by 4, what do you get?
_____ x4 = _____
4. Count the number of seeds in the other three sections and see what answer you get.
Section 1+2+3+4 = _____
5. By how much did the numbers differ? _____

CHAPTER 4 - Amur Alert

Teacher's Notes

In this chapter your children will understand how important flight corridors and resting places are for migratory birds and what is happening to these migratory birds.



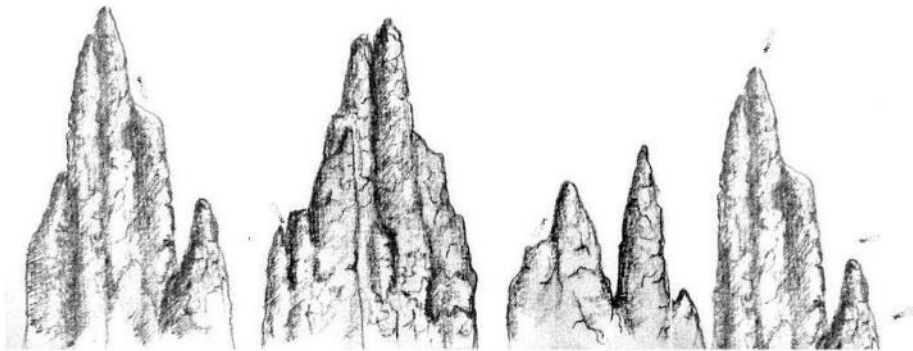
As we know from the data provided by AF95778, the birds have flown almost non-stop for 4 days before they reach Nagaland and are hungry, thirsty and tired. To get through the next leg of their long trip they have to stop and feed. The rich beautiful forests and water bodies in Nagaland provide a rich haven for the Amur falcon. Unfortunately, the habitats most important to these avian migrants are often those most affected by human activity. The loss of a single stopover could mean many birds never reach their destinations.

In 2012, a group of researchers realized, that what was thought to be small scale hunting of the birds, was actually a massacre. Over 12,000 – 14,000 birds are being killed in Nagaland every year, as they take a much needed break from their travel of thousands of kilometers, on their journey south to Africa. The Doyang Hydroproject reservoir was created in the year 2002. According to hunters, since then, the reservoir has attracted

falcons to stop over in huge numbers. Researchers speculate that large number of insects such as dragon flies that breed in the reservoir may be rich source of food for the migrating falcons, craving for fat reserves, for the long journey to Africa.

As mentioned in the earlier chapters, the Amur falcon is an insect eater – or an insectivorous raptor. It has been studied that a single bird could eat up to 200 termites in an hour. This is a huge boon for farmers, who have to battle with pest control year after year. Can you imagine what would happen to food security if 14,000 falcons did not reach these agricultural belts.

Scientists believe that if 130,000 Amur falcons did not reach Africa, almost three tons of termites (2893 kgs) would not be eaten, but go on to breed.



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Activity: Are you pest free?

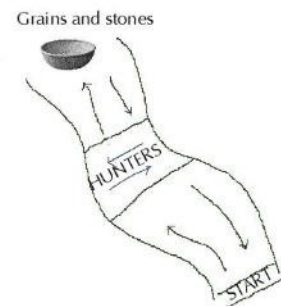
In a basket put some yellow grain that represents food and in it, mix in several small stones to represent pest insects. Place this basket at one end of the playing field. Mark out a path with chalk that leads to the grain.

Divide your class into two with a 1:3 ratio. The smaller group represents hunters and the larger group represents migrating Amur falcons. Instruct the Amur falcons to run along the path to reach the grain and pick up as many stones (and only stones) out of the grain in 10 seconds and then run back to the start.

Select an area along the path of the falcons and place the hunters there. Tell them they are allowed to run only in that area and have to catch as many birds as they can and bring them to the side of the pathway. The hunters can catch them on the way to the grain and back.

Once all the birds have made one full round trip, check the stones left in the grain. For every stone left, add another 5 stones. Again have the surviving birds run the pathway. After each pass multiply the remaining stones.

Once all the birds are out, explain to the kids how each falcon can eat over 200 pests and discuss what would be the consequences on agriculture if these birds are killed.



Chapter 5: Action Amur

What we can do at our eco club level to help save the amazing Amur falcon?

Over the last several pages you have learnt about falcons, in particular about the amazing Amur falcon that visits Nagaland. You would also now realize that the rampant hunting of this raptor is not only detrimental to Nagaland but also has global consequences that could affect food security for many countries.

It's first important to understand that this species is protected under the Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention). CMS aims to conserve land, water and air migratory species throughout their range. It is an intergovernmental treaty, of the United Nations Environment Programme, (UNEP). An organization concerned with the conservation of wildlife and habitats on a global scale. Today there are 119 parties/countries from Africa, Central and South America, Asia, Europe and Oceania that are a part of this. So what can be done at the local level?

Tell your kids that they have already done a great deal by educating themselves about this amazing animal. By faithfully completing their passports and earning their falcon visas from Birdlife International, they are now 'Amur Ambassadors'.

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As Amur Ambassadors here is what you can do to stop the slaughter

Do not buy or consume wild meat in any form.

Hold awareness campaigns in your school on the importance of wild animals - local and migratory.

Write articles in newspapers on the topic to spread awareness.

Convince your immediate family to not kill or consume wild meat.

Learn more about animals.

Help researchers conduct surveys.

Write letters to people in-charge, urging them to help protect these birds.

Hold meetings with the youth of the village to understand why they hunt and what they can do.

Celebrate Environment and Wildlife days, on a large scale, in school, by giving presentations and holding competitions on the topic for others.

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Thanks to Sugandhi Gadadhar & Vikram Hiresavi who helped in the preparation of this report

The Amazing AMUR FALCON!

AMUR FALCON

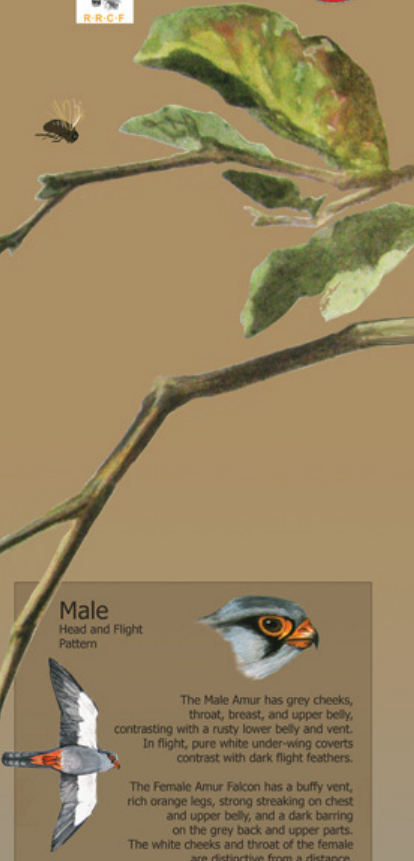
Falco amurensis

The Marathon Migrant.

The Amur Falcon is a handsome little raptor that has one of the longest migration routes of all birds. Its migration is a complete, long-distance, trans-equatorial route of upto 22,000 kilometres a year - from eastern Asia, all the way to Southern Africa, and back. The birds are unusual in that they migrate a large distance over the sea, continuing their journey at night. The birds leave their Asian breeding range (black arrows on map) and travel to Northeast India, where they fatten up while preparing for their long flights over peninsular India. Here, when they are most vulnerable, and in need of sustenance and rest; humans are massacring staggering numbers of them.

Amur Falcons are quite unusual among raptors in being wholly insectivorous. This preference for a diet of insects captured mid-flight, benefits human practices indirectly. Amur Falcons control populations of locusts and other swarming insects which destroy crops.

Once past the Indian Peninsula, they undertake the longest overwater passage of any raptor, crossing over the Indian Ocean and tropical East Africa, a journey of more than 4,000 km - in 3-4 days flat - which includes nocturnal flight. This species is finely attuned to the strong monsoon tailwinds, which results in its late arrival in eastern Africa in autumn. Migrants arrive in their southern African winter range in November - December, and depart by early May. This species is an 'elliptical migrant', and its return route (red arrows) back to its breeding range, is largely overland and to the north and west of its southbound route.



Male



The Male Amur has grey cheeks, throat, breast, and upper belly, contrasting with a rusty lower belly and vent. In flight, pure white under-wings coverts contrast with dark flight feathers.

The Female Amur Falcon has a buffy vent, rich orange legs, strong streaking on chest and upper belly, and a dark barring on the grey back and upper parts. The white cheeks and throat of the female are distinctive from a distance.

Female



Immature Male Flight Pattern



Juvenile

Roosting and Nesting

The long migration of Amur Falcons takes an incredible toll on the energy reserves in their compact little bodies. To replenish these reserves, and rest before continuing their epic journey, Amur Falcons choose Northeastern India as their temporary haven. They assemble on high-tension wires during the day, and come down to roost in trees for the night. During their brief stop-over in NE India, Amur Falcons need all the nourishment and rest they can get, so that they may complete their migration safely and in good health. Amur Falcons are also believed to nest in holes used by corvids and other birds. However, we know relatively little of the ecology, migration, and natural history of the amazing AMUR FALCON!



N - Nagaland



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