LAKE RARA NATIONAL PARK BIRD SURVEY, 1990. — I. BARBER.

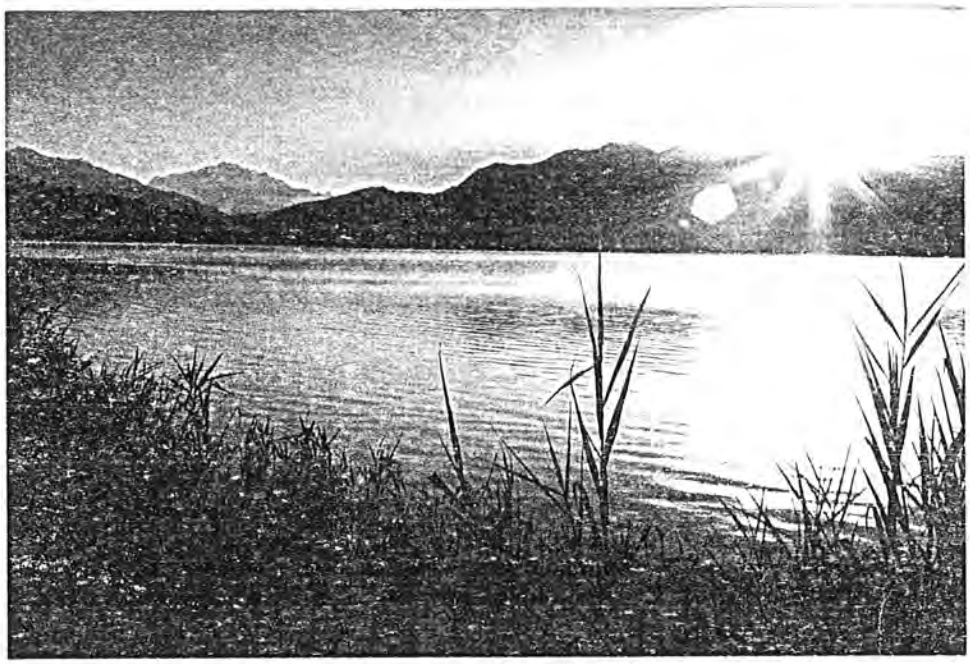
PLEASE CHECK THE FOLLOWING RECORDS:

1. Great-crested Grebe – 1st summer/breeding season record for Nepal.
2. Baikal Teal – 2nd record for Nepal.
3. Common Pochard – 1st summer record.
4. Long-legged Buzzard — " —
5. White-throated Needletail – 2nd winter record. X no in the west
6. Collared Sand Martin – ~~most~~/the only ~~westerly~~ record/~~for~~ Nepal.
7. Western Crowned Warbler – 1st autumn record.

Little Forktail *

Common Cuckoo *

LAKE RARA NATIONAL PARK BIRD SURVEY



A report to the Department of National Parks
and Wildlife Conservation in Nepal
by Ian Barber

January 1990

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ACKNOWLEDGEMENTS

The author is thankful to Dr.B.N.Upreti, Director General of the Department of National Parks and Wildlife Conservation for allowing the survey to be undertaken.

Warmest thanks go to the staff of the National Park who provided invaluable assistance, advice, generous hospitality and good humour and without whom the survey would have been more difficult and less enjoyable. These include, Shiva Raj Bhatta (Warden), Ramesh Thapa (Ranger - Rara), Ram Dev Chaudari (Ranger - Bhulbhule), Baikunth Kuikel (Administration Officer) and all the Peons too numerous to mention.

I am grateful to Major Shiva Raj Thapa, Lieutenant Purna Thapa and the staff of the Royal Nepalese Army, Lake Rara National Park Security Group for their kind hospitality.

Special thanks go to Carol and Tim Inskipp and Tom Prescott for their encouragement, advice and assistance throughout.

FUNDING

The author would like to thank the British Ornithologists' Union for providing a research grant towards the cost of the survey and the production of this report.

INTRODUCTION

This report is based upon a survey undertaken by the author during 1989 for the Department of National Parks and Wildlife Conservation in Nepal. Lake Rara National Park is situated in a very remote and largely inaccessable part of northwestern Nepal and as a result the flora and fauna of the area are greatly under-recorded.

The lake provides an important staging point for migratory water birds as well as playing host to a wide variety of forest birds during the summer and winter months. The park is especially important as it provides the only protected area representative of the Humla/Jumla region which is an ecologically distinct part of the Nepal Himalaya.

With generous assistance from Carol and Tim Inskipp, who undertook a similar survey at Khaptad National Park in 1988, the staff of the Department of National Parks and Wildlife and Conservation as well as financial assistance from the British Ornithologists' Union the author was able to visit the park on two separate occasions for a total of nearly six weeks to study and record the birdlife at the park.

It is hoped that this report will not only prove benefitial to the individual birdwatcher but also provide useful information upon which to build a more clear picture of the highly diverse and interesting wildlife of the region.

CONTENTS

LIST OF FIGURES

1. GENERAL INFORMATION

1.1 LOCATION (see Fig.1)

Lake Rara National Park is located in northwestern Nepal south of the Himalayas approximately 371 km (232 miles) from the capital Kathmandu. It lies between 29° 26′ - 29° 34′ N and 82° 00′ - 82° 10′ E and is situated in the Mid-Western Developement Region in the Mugu and Jumla disricts of the Karnali zone.

1.2 DESCRIPTION (see Fig.2)

The National Park is a compact area of land covering 106 sq.km (41 sq.miles) representing the smallest National Park in Nepal. The clear blue waters of Lake Rara are the largest in Nepal, covering an area of 10 sq.km (4 sq.miles), and are located in the northern part of the park. Lake Rara lies at an altitude of 2990 m (9810 ft.) and has a maximum depth of 167 m (548 ft.).The lake is approximately oval in shape with a maximum length of 5 km (3.1 miles) and maximum width of 3 km (1.9 miles).

The lake lies in a deep basin, the northern and eastern rims of which form part of the north and east boundaries of the park respectively. To the western end of the lake the Nisa Khola, the only outfall, flows westwards to join the Karnali River some 19 km (12 miles) beyond the park. To the south of the lake a belt of lakeside pasture gives way to the steep slopes of a section of the Ghurchi Lekh. The crest of the lekh culminates in the Chuchamara Danda (hill) over 914 m (3,000 ft.) above the lake and forms a horseshoe opening to the south by the drainage of the Jiun river. In the west the ridge is cut through by river valleys which form a natural and effective boundary to the park.

Cultivation has destroyed most of the natural forest north of the lake and around a few villages, some of which are now deserted. However, for the most part the park is well forested up to an elevation of about 3660 m (12,000 ft.). Mixed trees of conifers dominate the general appearance of the forest with narrow zones of rhododendron and low birch below the open alpine pastures of the highest ridges.

1.3 CLIMATE

The seasons at Lake Rara follow those common throughout Nepal, namely winter, summer and the monsoon. The winter is quite severe with ground frosts occurring from October and snow falling from December through until April and the minimum temperature dropping below freezing during this period. April normally sees the start of the warmer weather which steadily increases to a pleasant temperature in the mid 20's °C (77°F) from May until September. The monsoon is

generally very short, occurring between the months of July and October, with the rainfall not usually exceeding 51 cm (20 in.).

The rainfall, snowfall and temperatures recorded at the park headquarters for the year preceeding the survey are illustrated in Fig.3.

1.4 FORMATION AND DRAINAGE OF THE LAKE

The formation of Lake Rara is believed to be the result of river capture (T.Hagen 1969) and this is best explained by reference to Fig.2

It is thought that the Mugu Karnali river, to the north, once flowed through the lake. The Mugu Karnali was at that time a separate tributary of the Humla Karnali river further north and having its bed very deeply eroded, captured the Mugu Karnali in the vicinity of Ruga. The Mugu was thus diverted and continued to erode its bed leaving its old course, the lake and the Nisa Khola, high above it. The gorge of the Nisa Khola today makes it difficult to believe that it could have been cut to such a depth simply by the overflow of the lake.

The drainage pattern of the park is very simple. There is no inflow to the lake just the rain catchments from the surrounding hills and the lake itself. There is a fairly symmetrical drainage system from the slopes of the Chuchamara Danda and some streams to the north side flowing directly into the lake.The only outflow from the lake is the Nisa Khola.

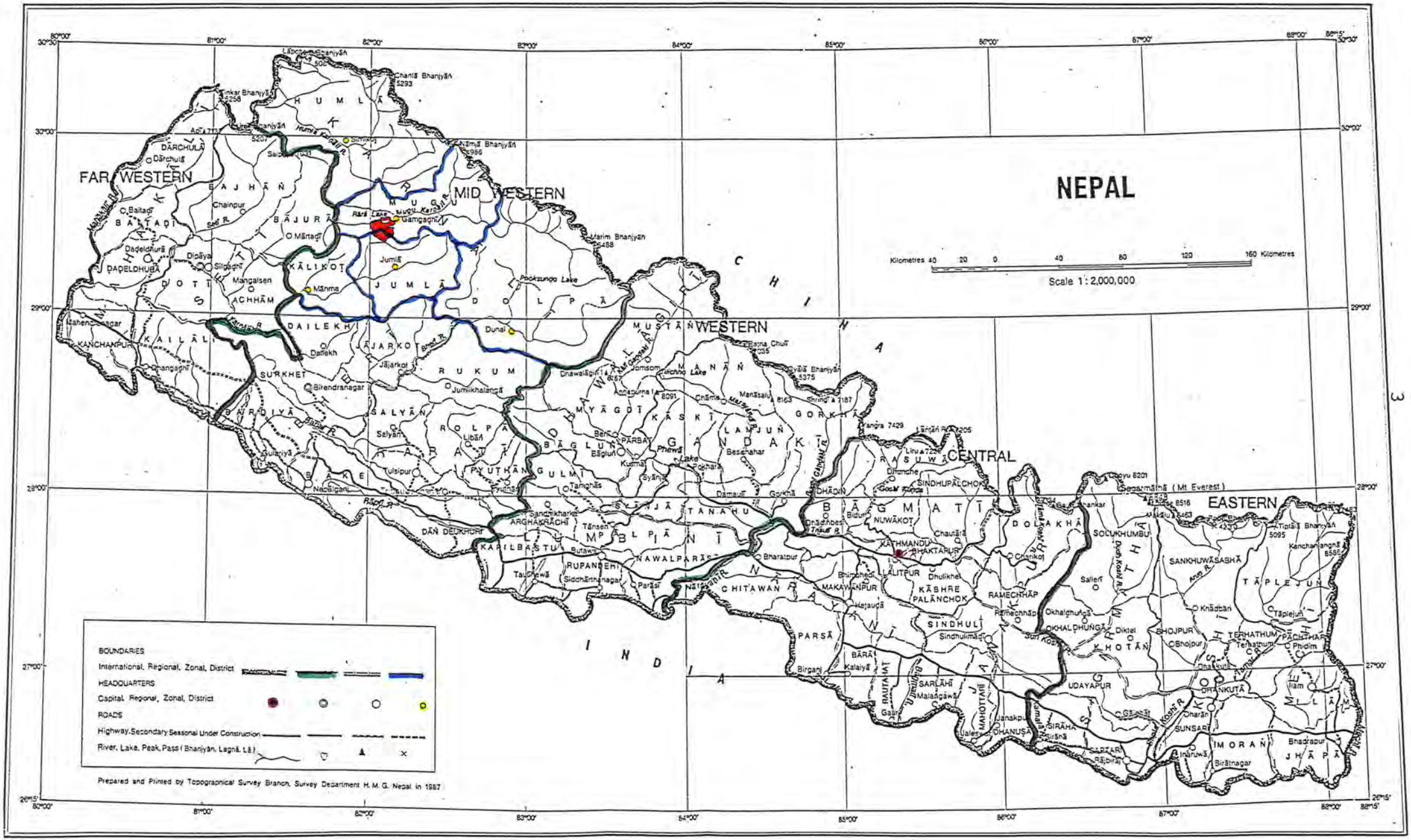
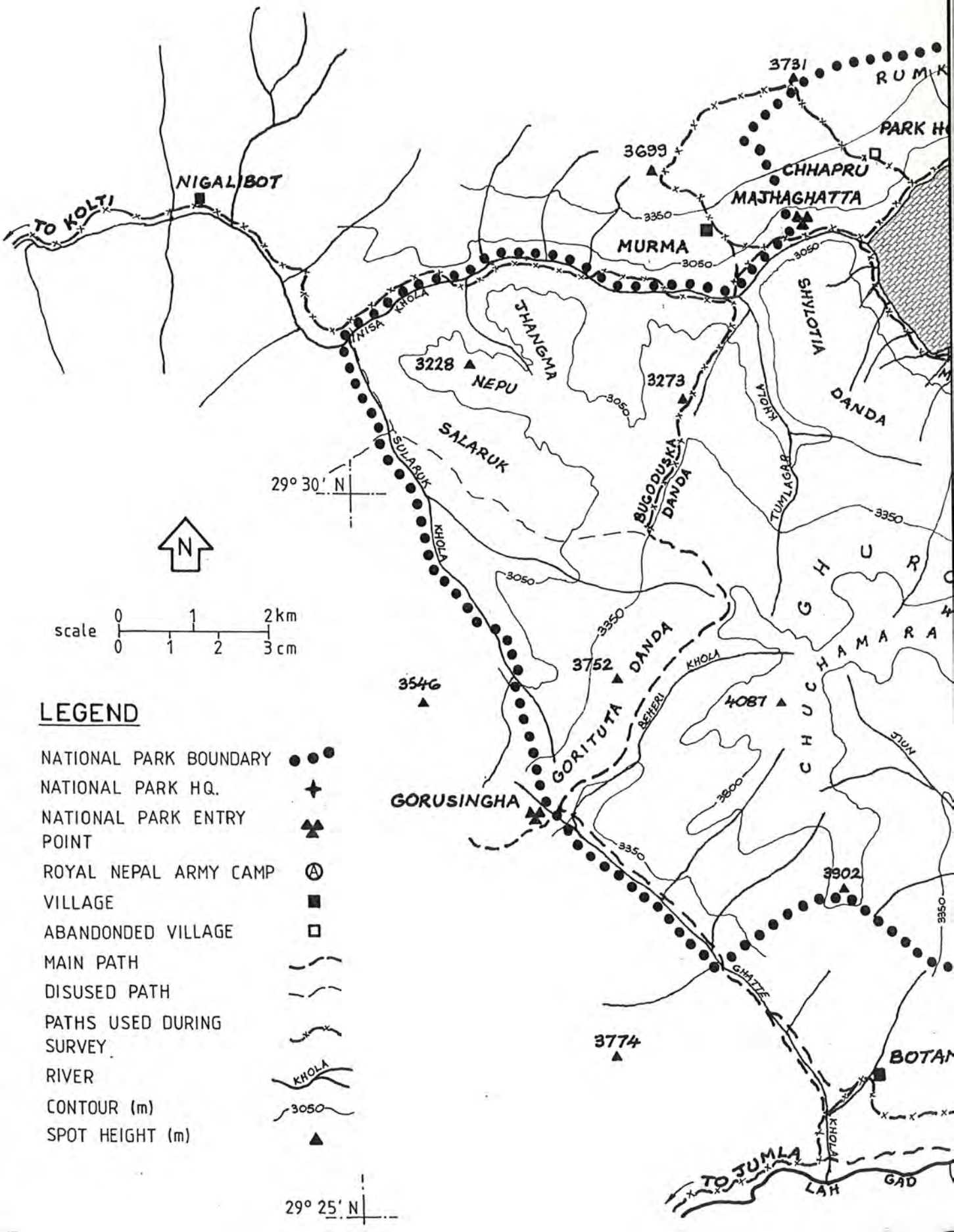


Fig.1 - MAP OF NEPAL

29° 35' N

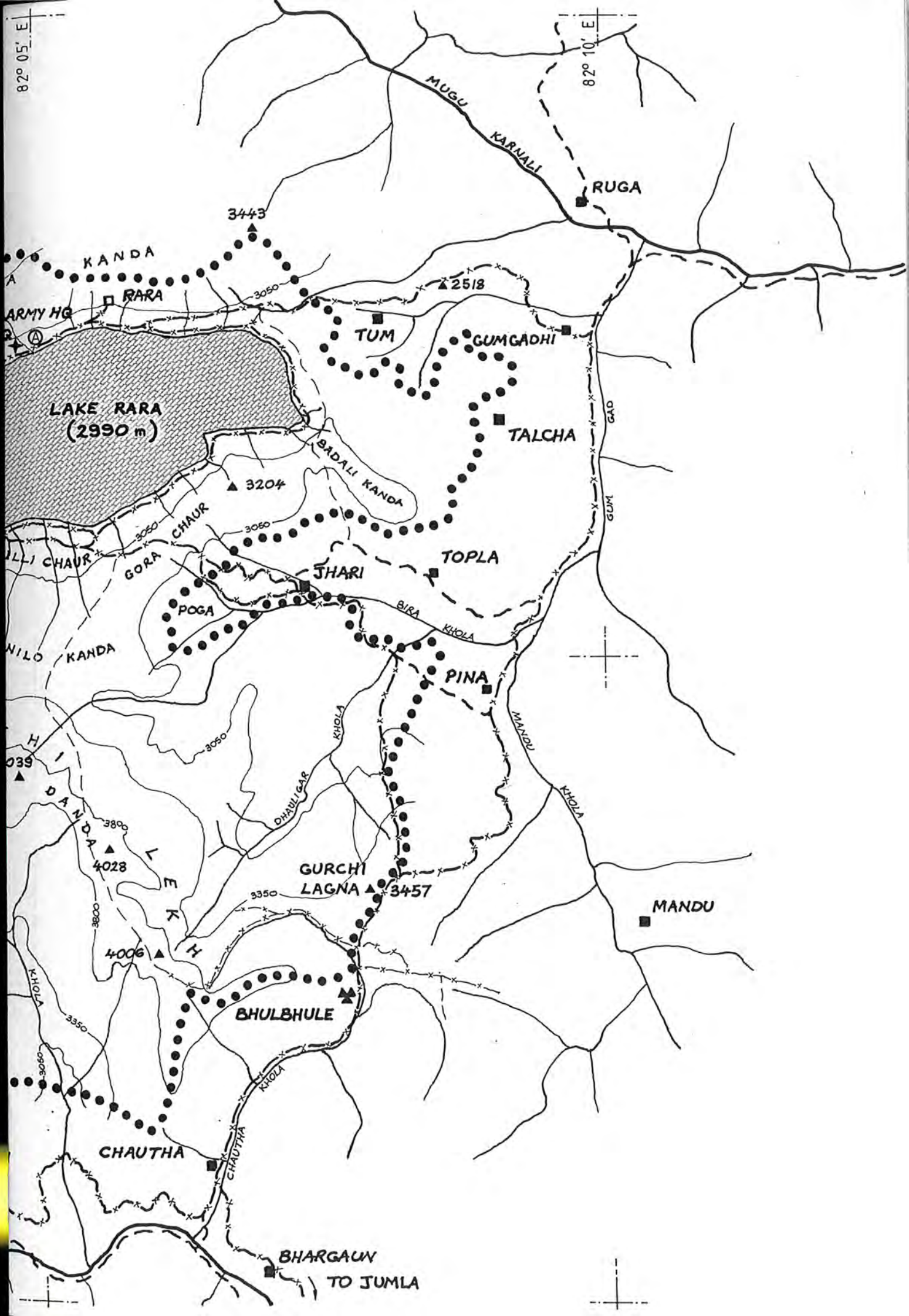
82° 00' E

FIG. 2 – LAKE RARA NATIONAL PARK SHOWING TOPOGRAPHY, VILLAGES & MAIN PATHS.



LEGEND

- NATIONAL PARK BOUNDARY
- NATIONAL PARK HQ.
- NATIONAL PARK ENTRY POINT
- ROYAL NEPAL ARMY CAMP
- VILLAGE
- ABANDONDED VILLAGE
- MAIN PATH
- DISUSED PATH
- PATHS USED DURING SURVEY
- RIVER
- CONTOUR (m)
- SPOT HEIGHT (m)


82° 05' E
82° 10' E
MUGU KARNALI
RUGA
3443
KANDA
RARA
3050
2518
ARMY HQ
TUM
GUMGADHI
LAKE RARA
(2990 m)
TALCHA
GAD
BADALI KANDA
3204
GUM
GORA CHAUR
3050
TOPLA
JHARI
POGA
BIRA KHOLA
NILO KANDA
PINA
KHOLA
MANDU
KHOLA
3050
DHAULIGAR
3800
4028
GURCHI
LAGNA
3457
3350
MANDU
3800
4006
BHULBHULE
KHOLA
3350
3050
CHAUTHA
KHOLA
CHAUTHA
BHARGAUN
TO JUMLA

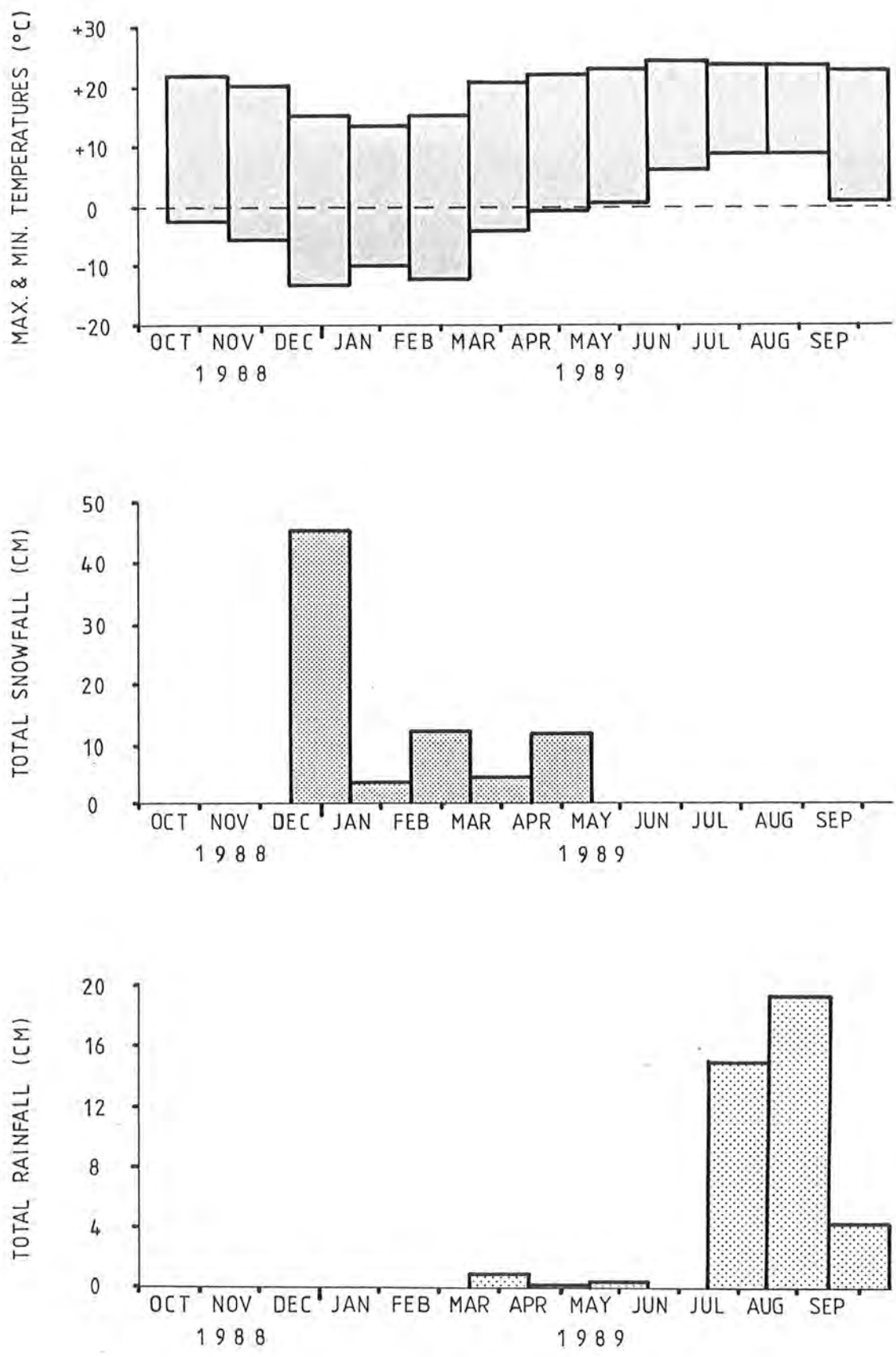


FIG. 3 – METEOROLOGICAL INFORMATION FOR THE PERIOD OCTOBER 1988 TO SEPTEMBER 1989

2. HISTORY AND DEVELOPMENT OF THE PARK

2.1 NATIONAL PARKS AND WILDLIFE CONSERVATION PROJECT

The National Parks and Wildlife Conservation Project was established in 1973 by His Majesties Government of Nepal (HMG.Nepal) with assistance from the United Nations Development Programme (UNDP) and The Food and Agricultural Organisation of the United Nations (FAO). The long range objectives of the project are to ensure the most effective conservation and management of the countries national parks and reserves which in addition to thier conservation role, will play a part in the tourist industry so important to the economy of Nepal.

There are various reasons for establishing a scheme of parks and wildlife reserves and among them are the importance of scientific, educational, aesthetic and recreational value. The relative importance of these considerations will, however, differ from one area to another.

Ideally a national conservation scheme should protect examples of each major vegetation type and its associated wildlife.The flora and fauna will be influenced by many local factors such as geology, soil, aspect, human interference, etc., but taken on a large enough scale the natural vegetation will generally reflect the climatic zone in which it occurs.

2.2 ESTABLISHMENT OF LAKE RARA NATIONAL PARK

Lake Rara National Park was established in 1976 and was one of the first four area selected for development as a National Park and the first in western Nepal. It is situated in the Humla-Jumla area, an ecologically distinct part of the Nepal Himalaya which is very different from the Midland areas of Nepal with the forests even differing from those of the West Midlands which ajoin them to the south.

The most important reason for locating the park in the precise area was obviously Lake Rara itself. The scenic beauty of the lake could not be found in any other National Park and constituted a valuable tourist attraction. However, due to the parks small size and scenic importance it was essential that the administration should be in the interest of the natural vegetation and wildlife. There was not enough space for an effective system to include villages and the associated cultivation, deforetation and grazing, as has been successful at other National Parks, and so it was decided to resettle the populations of the two villages located within the park, namely Chhapru and Rara, both north of the lake.

Approximately 600 villagers were moved some 145 km (90 miles) southwest of Rara to Chisapani on the terai. Although

the topography, climate and culture are very different the transformation appears to have been successful and was completed by 1980.

The park headquarters are located on the northern shore of the lake with a main office building and accommadation for the Warden, Park Rangers and the Administration Staff. Situated between the office and accommadation buildings there is a guesthouse for visitors. At Bhulbhule, the main entrance to the park from Jumla, and at Majhaghatta, on the path from the west, there are other small guardposts with a Park Ranger.

As is common in all of the National Parks of Nepal there is a small HMG.Nepal army prescence. The headquarters are situated next to the park headquarters by the side of the lake and at Jhari and Gorusingha, there are small outposts.

2.3 MANAGEMENT OF THE PARK

The management objectives are firstly, to conserve and protect the flora, fauna, and landscape of the region represented by the park and to maintain tne natural environment of the lake. Secondly, to encourage and support tourism so long as it is compatible with the conservation of the area.

Chhapru and Rara were not the only settlements close to the park and several villages lay just outside the park boundaries, the most densely populated being Murma and Jhari. It was obviously not possible nor desirable to exclude all of these people, particularly as there are three main paths within the park area, so certain concessions have been made to the local people.

Apart from the right of way through the park, the collection of leaf litter for compost, mainly pine needles, and the cutting of dry grass is allowed during October. Secondly, the villagers can graze their livestock in certain areas of the park.

However, the villagers are still generally disatisfied as the land for grazing is insufficient and there is a complete restriction on the cutting of trees for firewood within the park. This necessitates walking much greater distances for these essential requirements. Another complaint is that protected animals, such as the wildboar, cause widespread damage to crops leaving the villagers powerless to deal with the situation.

2.4 CONSERVATION EDUCATION

As is common in many of the National Parks a main problem is the vested interests of the local people whose livlihood is at worst threatened and at best made harder by the restrictions placed upon them. The problem is compounded

by the fact that the district has one of the lowest literacy rates in the country making conservation education an even more difficult concept for them to understand.

Efforts are being made to emphasise the importance of the park to the local community through representation on the district level Co-ordinating Committee meetings. Annual park orientation meetings are held with local leaders and teachers and park tours and lecture programmes are regularly organised in local schools. However, a more concerted effort is needed if the villagers are to understand the importance and relevance of the park not only on a local level as a provider of resources and the benefits of tourism but also on a national level as an outstanding example of a unique area of natural beauty and the protection of a diverse flora and fauna system.

2.5 TOURISM

The revenue generated by tourism to the park at present is very small. The entrance fee to all National Parks has recently been raised to a more realistic level of R's 250/- (£6) but with the park attracting only 200 visitors per year it is still a small amount of money compared to the running costs. The main obstacle to the potential visitor to Lake Rara is one of access.

At present the nearest airport to the park is at Kolti, about two days walk to the west. This route is rarely used by tourists however, due to the lack of facilities and food along the relatively easy path. Most tourists fly to Jumla to the south and take three days to reach the lake using the more difficult but better supplied route over Danphe Lekh and Ghurchi Lekh. The main problem with this route is the difficulty in obtaining tickets for the flight from Kathmandu. It is notoriously hard getting to the busy district headquarters of Jumla direct from Kathmandu and most tourists are not prepared to fly halfway to Nepalganj and try to get an onward ticket from there.

A solution to the problem will be the new airsrip which is under construction at Talcha, about two hours from the park headquarters above Gumgadhi, the district headquarters of Mugu. However, the exact completion date is uncertain as work on the airstrip has been very sporadic since the early 1980's.

An increasingly popular tourist route is to combine Lake Rara in a trek from Simikot in Humla, north west of the park, through to Jumla. This route is very arduous and requires food supplies and porters and can take up to two weeks to complete.

On a national scale, the priority of attarcting tourists to Lake Rara must be low compared with the larger parks such as Sagarmatha National Park, which contains Mount Everest and sees over 9,000 visitors a year. Consequently, very

little funds are available for this purpose, particularly for spending outside the park boundaries. This, along with the possibility that there may be a nearby airstrip makes it difficult for the park management to improve the situation. A more realistic approach would be through the conservation education programme which should emphasise the possible benefits to the local community of increased tourism.

Although a lot of the tourists' money goes into the pockets of the trekking agencies in Kathmandu, there is still a wide scope for local people to benefit by providing porters, guides, food and essential supplies along the main paths. It was encouraging to see an enterprising local family has established a shop near to the park headquarters thereby making food available for the first time.

2.6 FUTURE DEVELOPMENT OF THE PARK

A summary report by Dr. B. N. Upreti, the Director General of the Department of National Parks and Wildlife Conservation (DNPWC.), outlines the future developments of the park.

In responce to the villagers request for more grazing land the park management are considering the use of Chuchamara Danda for pasture, and an easing of the restriction on collecting firewood. A long term solution under consideration is the resettling of some of the nearby villagers. Some of the communities have been enquiring about the possibility of resettlement, particularly those from Murma and Jhari, and the villagers from Tum may also be resettled to protect the forest on the eastern rim of the lake.

Further expansion of the park area to the south is being proposed which may include some small villages. It is anticipated that the limited size of the communities will allow the surrounding forests to be designated as 'Utility Zones' which will operate under separate management and thereby restrict the disturbance to these peolpe.

3. VEGETATION

3.1 THE LAKE

Rooted vegetation is confined entirely to the margins and is patchy in its distribution as the rocky edges of the lake shelve steeply in places and support no rooted plants at all. Rushes and reeds occur in marginal belts, the latter in water up to 1 m (3.25 ft.) deep. A sedge and pondweed occur in moist patches and a common feathery underwater plant grows entirely submerged. There are no free-floating higher plants and algae covers the submerged rocks.

3.2 GRASSLAND

Except for a moist marshland on the south shore of the lake the pastures are mainly tussock grasslands on the ridges and above the treeline. A few species appear to be generally predominant with Agrostis pilosula and Danthonia schneideri being particularly widespread around the Gorituta Danda and Bugoduska Danda. A fesque, Festuca valesiaca a typical upland tussock grass is also abundant in these localities.

The lakeside pastures are cropped to a low turf of grasses and other plants with Agrostis pilosula being common and Arundinella hookeri found on the higher ground around Gora Chaur.

A number of common herbs (forbs) are abundant in almost all pastures from the lakeside to the tops of the ridges. These include Gentiana species notibly Gentiana indurata, Fragaria vesca (wild strawberry), Anaphalis contorta (everlasting), Ranunculus sp. (buttercup), Potenilla sp. (cinquefoil), Taraxacum sp. (dandelion), Hemiphragma heterophylla (a small creeping herb), and Rumex spp. (docks and sorrels). Irises and primulas are common on moister, more sheltered aspects and a small yellow flower, Oxygraphia polypetula, is particularly abundant in the lakeside pastures.

3.3 FOREST TYPES (see Fig.4)

If the Humla-Jumla region is viewed over a wide enough area then there is a definite zonation of species domination as described by Stainton (1972). It would be misleading however, to describe the forests of the park in terms of strict altitudinal zones, as the local effects of aspect, drainage and other factors obscure the pattern. There are some obvious tendancies, with blue pine (Pinus wallichiana) predominating in large areas and the forest composition differing markedly above and below 3350 - 3415 m (11,000 - 11,200 ft.)

3.3.1 Blue Pine (Pinus wallichiana)

The areas around the lake and Bandali Kanda are dominated by blue pine up to about 3200 m (10,500 ft.). Other minor species include rhododendron (Rhododendron arboreum), black juniper (Juniperus wallichiana), West Himalayan spruce (Picea smithiana), brown oak (Quercus semecarpifolia) and Himalayan cypress (Cupress torulosa). On the Ghurchi Lekh, pines do grow up to 3350 m (11,000 ft.) but only as a minor component of mixed forests.

Blue pine is clearly the most successful tree to colonise previously exposed ground. Thus, where forest has been cleared for cultivation and then left, pine becomes established often with some West Himalayan spruce.

3.3.2 Upper Temperate Forest Below 3350 m (11,000 ft.)

Between the pine belt and the tree line the forests are usually a mixture of at least three or four major tree species. Generally, the pine forests become increasingly mixed with spruce and silver fir (Abies spectabilis) on ascending the north-facing slopes of Chuchamara Danda. The black juniper is also quite common in this zone and at about 3200 m (10,500 ft.) the brown oak, White Himalayan birch (Betula utilis), maple (Acer coesium) and occasionally yew (Taxus wallichiana) are present.

Towards 3350 m (11,000 ft.) pine and spruce are far less common whilst the silver fir becomes the dominant conifer with oak and birch much more plentiful.

In the valley of the Nisa Khola, just below the lake, the steep north-facing side is covered mostly with pine and spruce which is sometimes mixed. A few hemlocks (Tsuga dumosa) appear near to the river. On the south-facing slopes the footpath runs through steep coniferous forests with spectacular rugged cliffs below and subalpine pastures above. Attractive mixed woodland containing deciduous trees such as the Indian horse chestnut (Aesculus indica), walnut (Juglans regia) and Himalayan popular (Populus ciliata) border the stream in the valley bottom.

3.3.3 Subalpine Forest Above 3350 m (11,000 ft.)

On the north-facing slopes of Chuchamara Danda at between 3350 - 3415 m (11,000 - 11,200 ft.) pine and spruce finally give way to fir, oak and birch species as mentioned above. Both Rhododendron campanulatum and R. arboreum occur in this zone as do dense brakes of small mountain bamboo (Arundinaria intermedia). On the hills to the west of Chuchamara, forests of this type also occur at similar elevations.

In the gulleys of the larger streams, such as the Tumlagar, a significant proportion of the vegetation down to 3200 m (10,500 ft.) is formed by birch, bamboo and rhododendron.

Around 3660 m (12,000 ft.), the upper limit of this vegetation zone, the fir disappears and the birch and rhododendron form a shrub along with a black juniper shrub. On the north-facing slopes of Chuchamara Danda this zone is distinct but narrow and soon gives way to a belt of dwarf rhododendron (R. lepidotum and R. anthopogon) which fringes the alpine grassland on the crest of the ridge.

On the south face of Chuchamara, at the head of the Jiun Khola this birch-rhododendron shrub zone is occupied by precipitous rock outcrops. Above these cliffs only scattered juniper and dwarf rhododendron shrub occur at the edge of the grassland.

KEY

terrace land  - terraced cultivation near to inhabited village

marshland  - boggy area to the south of the lake

abandoned land  - abandoned land with predominantly blue pine (Pinus wallichiana) regeneration

grazing land 1  - grazing land with predominantly blue pine (Pinus wallichiana) regeneration in the upper temperate zone (2600-3000 m)

grazing land 2  - grazing land with predominantly blue pine (Pinus wallichiana) regeneration in the subalpine zone (3000-4000 m)

grazing land 3  - grazing land with predominantly blue pine (Pinus wallichiana) regeneration in the alpine zone

rock outcrop  - rock outcrop in alpine zone

con. forest 1  - coniferous forest with blue pine (Pinus wallichiana) and silver fir (Abies spectabilis and A. pindrow) predominant and sometimes brown oak (Quercus semecarpifolia), West Him. spruce (Picea smithiana), and Him. cypress (Cupressus torulosa) as minor species

con. forest 2  - coniferous forest with silver fir (Abies spectabilis and A. pindrow) predominant and sometimes blue pine (Pinus wallichiana) and West Him. spruce (Picea smithiana) as minor species

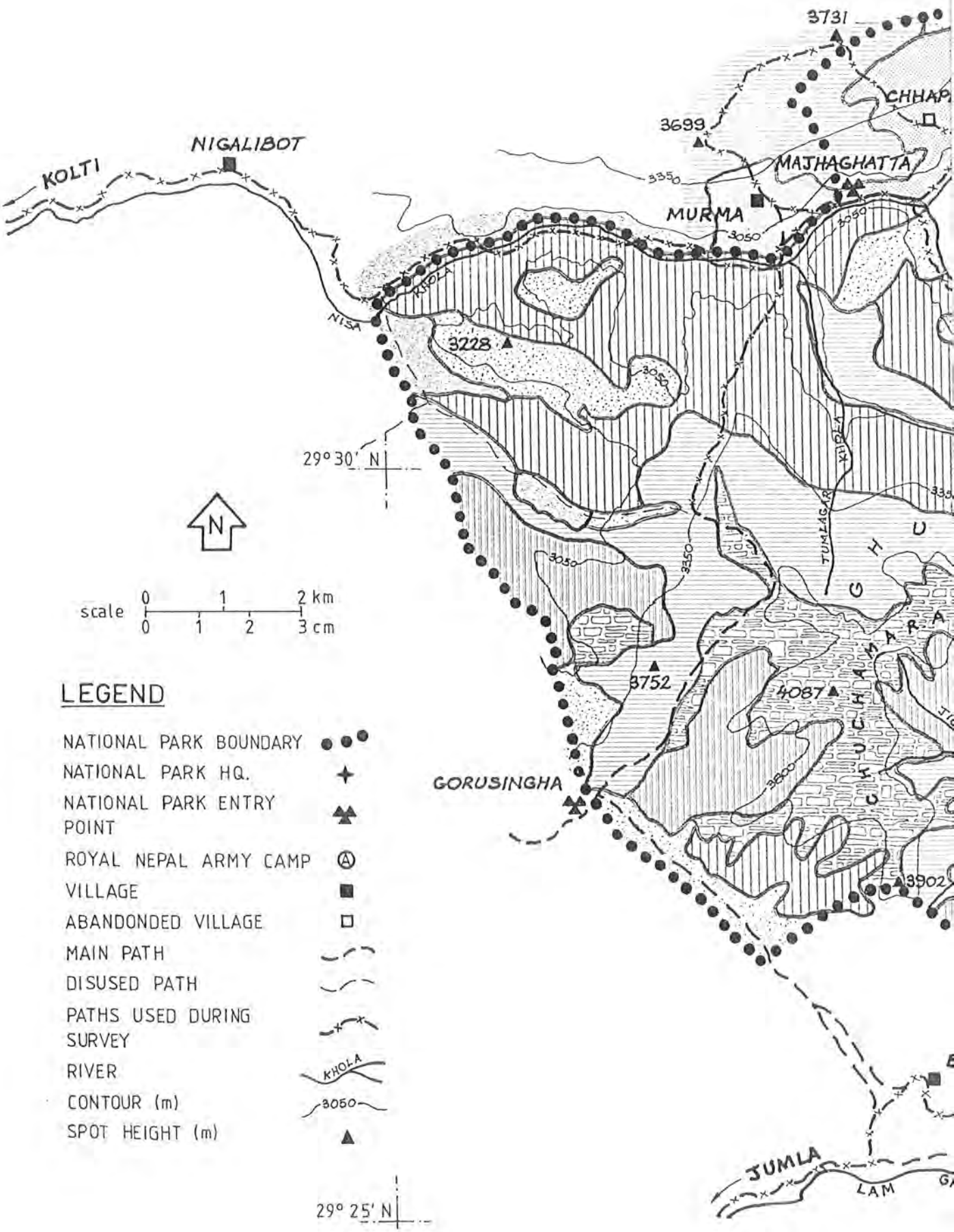
mixed forest  - mixed forest with silver fir (Abies spectabilis and A. pindrow), brown oak (Quercus semecarpifolia) and West Him. birch (Picea smithiana) predominant

Source : Canadian Assistance Program to Nepal by the Topographical Survey branch, Survey Department of the Ministry of Land Reform of His Majesties Government of Nepal.

29° 35' N

82° 00' E

FIG. 4 – LAKE RARA NATIONAL PARK SHOWING VEGETATION



LEGEND

- NATIONAL PARK BOUNDARY
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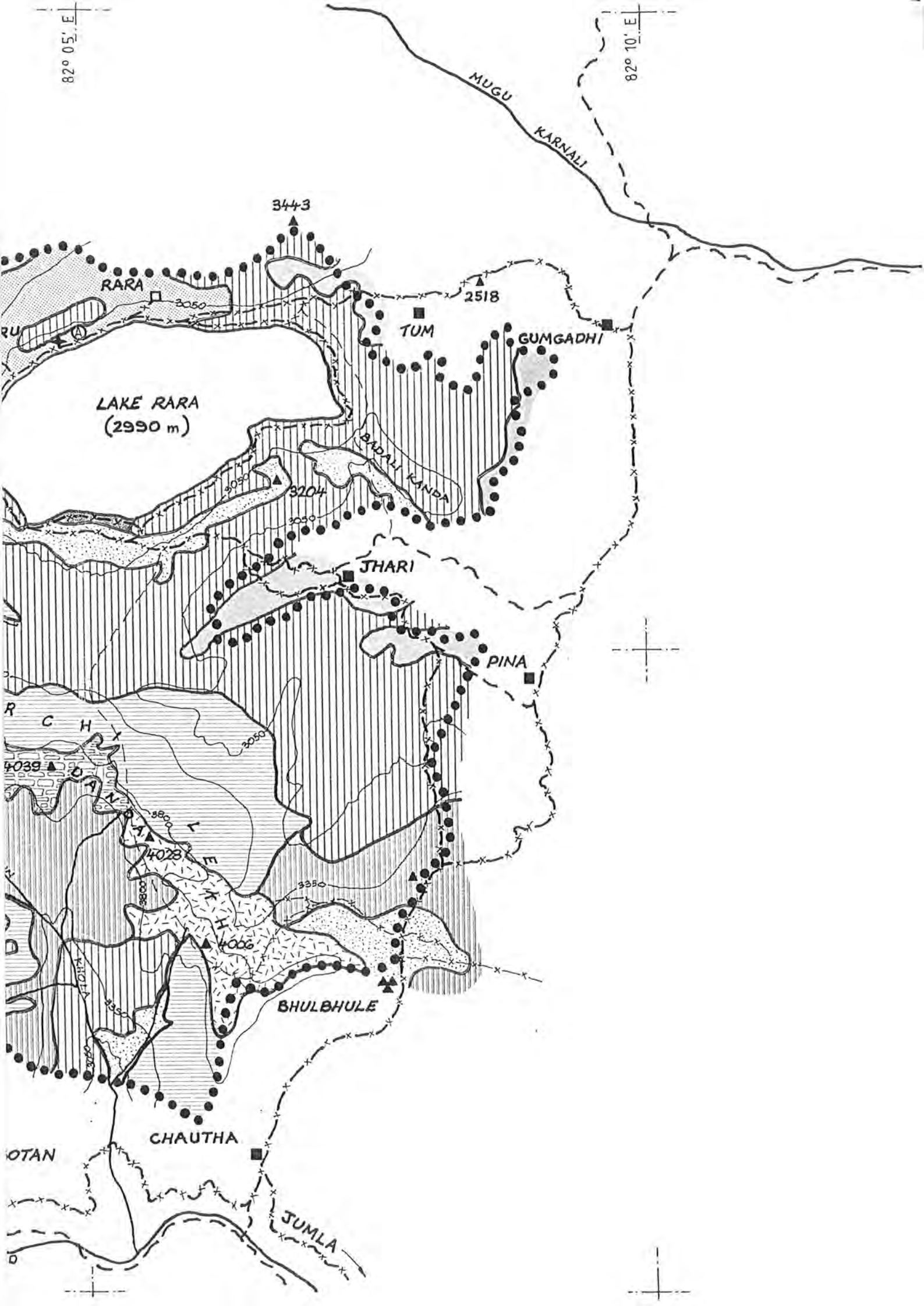
- NATIONAL PARK ENTRY POINT
- ROYAL NEPAL ARMY CAMP
- VILLAGE
- ABANDONDED VILLAGE
- MAIN PATH
- DISUSED PATH
- PATHS USED DURING SURVEY
- RIVER
- CONTOUR (m)
- SPOT HEIGHT (m)


82° 05' E
82° 10' E
MUGU KARNALI
3443
RARA
3050
2518
TUM
GUMGADHI
LAKE RARA
(2990 m)
BADALI KANDA
3104
JHARI
PINA
4039
4028
4006
BHULBHULE
CHAUTHA
JUMLA

4. SURVEY INFORMATION

4.1 DETAILS OF SURVEY

The survey was completed on two separate occasions totalling 38 days. An initial visit was made to the park in July 1989, with 1 day spent at Bhulbhule and 3 days at the lake between 16th and 23rd. The main part of the survey was completed later in the year between 16th September and 19th October. For the first 11 days of this period the area around the lake was surveyed before taking the path through Jhari to Bhulbhule where 7 days were spent. The next 14 days were passed around the lake and the surrounding area before finally returning to Bhulbhule for the last 2 days. The routes taken and areas covered are shown in Fig.2.

Bird species, abundance, altitude, habitat and any breeding information were recorded. A total of 127 species were identified including 35 new species for the park.

Records were also kept of all mammals seen.

Special thanks must go to Ram Dev Chaudari, the park ranger at Bhulbhule, who accompanied the author on several days both around Bhulbhule and Lake Rara.

4.2 BIRD SPECIES RECORDED

The following species were recorded during the survey. Abundance, status (except for (b)) and habitat is given for each species within the National Park only. The names used and nomenclature follow Inskipp and Inskipp 'A Guide To The Birds Of Nepal' (1985).

KEY

Abundance:
- c - common
- fc - fairly common
- o - occasional
- uc - uncommon
- sc - scarce

Status:
- r - resident
- s - summer visitor
- w - winter visitor
- m - passage migrant
- v - vagrant
- b - known to breed in National Park
- (b) - known to breed in Nepal
- ? - uncertain

Status in Nepal:
- + - breeding species with significant world populations in Nepal.
- * - breeding species for which Nepal is especially important.

Habitat:

terrace land - terraced cultivation near to inhabited village

marshland - boggy area to the south of the lake

abandoned land - abandoned land with predominantly blue pine (Pinus wallichiana) regeneration

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con. forest 2 - coniferous forest with silver fir (Abies spectabilis and A. pindrow) predominant and sometimes blue pine (Pinus wallichiana) and West Him. spruce (Picea smithiana) as minor species

mixed forest - mixed forest with silver fir (Abies spectabilis and A. pindrow), brown oak (Quercus semecarpifolia) and West Him. birch (Picea smithiana) predominant

1. GREAT CRESTED GREBE Podiceps cristatus
   Abundance: o Status: r? w Altitude: 2990 m
   Habitat: lake
   Remarks: maximum 3 in summer plumage on 21/7/89 and 2 in winter plumage on 14/10/89

2. BLACK-NECKED GREBE Podiceps nigricollis
   Abundance: uc Status: w Altitude: 2990 m
   Habitat: lake
   Remarks: 2 in winter plumage on 11-12/10/89

3. GREAT EGRET Egretta alba
   Abundance: s Status: m (b) Altitude: 2990 m
   Habitat: lake
   Remarks: 1 on 12/10/89

4. COMMON TEAL Anas crecca
   Abundance: fc Status: w m Altitude: 2990 m
   Habitat: lake
   Remarks: maximum 8 ♀ on 11/10/89

5. BAIKEL TEAL Anas formosa
   Abundance: Status: v Altitude: 2990 m
   Habitat: lake
   Remarks: 1 ♀ on 7/10/89

6. MALLARD Anas platyrhynchos
   Abundance: fc Status: w m (b) Altitude: 2990 m
   Habitat: lake
   Remarks: maximum 70+ on 14-16/10/89

7. NORTHERN PINTAIL Anas acuta
   Abundance: o Status: m Altitude: 2990 m
   Habitat: lake
   Remarks: maximum 3 ♀ on 15/10/89

8. COMMON POCHARD Aythya ferina
   Abundance: o Status: r? m Altitude: 2990 m
   Habitat: lake
   Remarks: maximum 4 ♂ on 12/10/89 and 5 ♀ on 22/7/89

9. FERRUGINOUS DUCK Aythya nyroca
   Abundance: o Status: m Altitude: 2990 m
   Habitat: lake
   Remarks: maximum 15 ♂ on 16/10/89 and 1 ♀ on 17/9/89

10. TUFTED DUCK Aythya fuligula
    Abundance: o Status: w m Altitude: 2990 m
    Habitat: lake
    Remarks: maximum 2 ♂ and 3 ♀ on 16/10/89

11. BLACK KITE Milvus migrans
    Abundance: fc Status: s b? Altitude: 2900-3600 m
    Habitat: abandoned land, con. forest l and mixed forest
    Remarks: maximum 2 pairs on 21/9/89

12. LAMMERGEIER Gypaetus barbatus
Abundance: fc Status: r (b) Altitude: 3400-4000 m
Habitat: only seen in flight
Remarks: maximum 2 on 2/10/89

13. HIMALAYAN GRIFFON VULTURE Gyps himalayensis
Abundance: fc Status: r (b)? Altitude: 3400-4000 m
Habitat: only seen in flight
Remarks: maximum 8 on 1/10/89

14. CRESTED SERPENT EAGLE Spilornis cheela
Abundance: uc Status: s (b) Altitude: 3000 m
Habitat: con. forest 1
Remarks: 1 on 21/9/89

15. MARSH HARRIER Circus aeruginosus
Abundance: uc Status: w m Altitude: 3000-3200 m
Habitat: marshland and grazing land 2 to south of lake
Remarks: 1 ♀ on 17+18/9/89

16. HEN HARRIER Circus cyaneus
Abundance: o Status: w m Altitude: 3000-3600 m
Habitat: marshland, grazing land 2 and mixed forest
Remarks: 1 ♂ on 7/10/89 and 1 ♀ on 3,12,14/10/89

17. NORTHERN GOSHAWK Accipiter gentilis
Abundance: uc Status: r? Altitude: 3300 m
Habitat: over con. forest 1 and mixed forest
Remarks: 2 on 22/9/89

18. COMMON BUZZARD Buteo buteo
Abundance: fc Status: w m (b)? Altitude: 2900-3700 m
Habitat: con. forest 1, mixed forest and grazing land 2
Remarks: maximum 3 on 30/9 & 2+16/10/89, often seen in pairs, possibly light and dark phases

19. LONG-LEGGED BUZZARD Buteo rufinus
Abundance: fc Status: w m Altitude: 2900-3100 m
Habitat: grazing land 2 and con. forest 1
Remarks: single birds seen, both light & dark phases

20. BOOTED EAGLE Hieraaetus pennatus
Abundance: uc Status: r? m (b) Altitude: 2970-3000 m
Habitat: over con. forest 1
Remarks: 1 on 22/7/89 and 1 on 13/10/89

21. BONELLI'S EAGLE Hieraaetus fasciatus
Abundance: uc Status: r? Altitude: 3600 m
Habitat: over mixed forest
Remarks: 2 imm. on 23/9/89

22. OSPREY Pandion haliaetus
Abundance: fc Status: m Altitude: 2950-3050 m
Habitat: con. forest 1 and around lake
Remarks: a pair usually seen around the lake

23. COMMON KESTREL Falco tinnunculus
Abundance: o Status: r? (b) Altitude: 2700-3600 m
Habitat: grazing land 2 and usually clearings in con. forest 1 & 2 and mixed forest
Remarks: ♂ and ♀ seen with maximum 2 on 18/10/89

24. EURASIAN HOBBY Falco subbuteo
Abundance: uc Status: m? (b) Altitude: 3000 m
Habitat: marshland to south of lake
Remarks: 1 on 17/9/89 and 1 on 12/10/89

25. HIMALAYAN MONAL Lophophorus impejanus
Abundance: fc Status: r (b) Altitude: 3400-3600 m
Habitat: terrace land, con. forest 2 and mixed forest
Remarks: maximum 1 ♂ and 2 ♀ on 27/9/89
Status in Nepal: +

26. KALIJ PHEASANT Lophura leucomelana
Abundance: fc Status: s? (b) Altitude: 2900-3000 m
Habitat: con. forest 1
Remarks: maximum 2 ♂ on 13/10/89 and 1 ♀ on 10/10/89

27. COMMON MOORHEN Gallinula chloropus
Abundance: o Status: m? Altitude: 2990 m
Habitat: lake
Remarks: maximum 1 adult with 2 juv. on 14/10/89

28. COMMON COOT Fulica atra
Abundance: c Status: r? w m Altitude: 2990 m
Habitat: lake
Remarks: maximum 30 on 15/10/89

29. DEMOISELLE CRANE Anthropoides virgo
Abundance: uc Status: m Altitude: 3500 m
Habitat: above lake
Remarks: 12 flew over lake after storm on 15/10/89

30. COMMON REDSHANK Tringa totanus
Abundance: uc Status: m Altitude: 2990 m
Habitat: south shore of lake
Remarks: 1 on 15/10/89

31. GREEN SANDPIPER Tringa ochropus
Abundance: uc Status: m Altitude: 2990 m
Habitat: south shore of lake
Remarks: 1 on 14/10/89

32. COMMON SANDPIPER Actitis hypoleucos
Abundance: o Status: m Altitude: 2990 m
Habitat: south shore of lake
Remarks: 1 seen between 7-16/10/89

33. GREAT BLACK-HEADED GULL Larus ichthyaetus
Abundance: fc Status: m Altitude: 2990 m
Habitat: around lake
Remarks: 1st winter, 2nd winter and adult birds seen every day around the lake during Sept. and Oct. with maximum 19 on 6/10/89.

34. ROCK PIGEON Columba livia
Abundance: o Status: r? s? (b) Altitude: 2700-3500 m
Habitat: terrace land and grazing land 1
Remarks: seen in all 3 months with maximum 20 on 17/10/89 above Bhulbhule.

35. SNOW PIGEON Columba leuconota
Abundance: o Status: r? (b) Altitude: 3500 m
Habitat: terrace land and grazing land 2 near Bhulbhule
Remarks: only seen above Bhulbhule with maximum 30 on 2/10/89.

36. SPECKLED WOODPIGEON Columba hodgsonii
Abundance: o Status: r? Altitude: 3050 m
Habitat: abandoned land north of lake
Remarks: maximum 30 on slopes above park HQ's on 7/10/89
Status in Nepal: +

37. ORIENTAL TURTLE DOVE Streptopelia orientalis
Abundance: c Status: r? s (b) Altitude: 2700-3600 m
Habitat: terrace land, abandoned land, grazing land 1 & 2 and con. forest 1
Remarks: most abundant dove

38. SPOTTED DOVE Streptopelia chinensis
Abundance: uc Status: s (b) Altitude: 3000 m
Habitat: abandoned land north of lake
Remarks: 1 seen on 17/10/89

39. COMMON CUCKOO Cuculus canorus
Abundance: o Status: s b Altitude: 3200 m
Habitat: small patch of mixed forest on terrace land
Remarks: juv. being fed by 2 Leaf Warblers on 21/7/89

40. TAWNY OWL Strix aluco
Abundance: fc Status: r? (b)? Altitude: 3000-3450 m
Habitat: abandoned land and con. forest 2
Remarks: single bird heard on several occasions

41. WHITE-THROATED NEEDLETAIL Hirundapus caudacutus
Abundance: uc Status: m? Altitude: 2990-3250 m
Habitat: above lake
Remarks: 1 with Collared Sand Martins on 11/10/89 after storm

42. CRESTED KINGFISHER Ceryle lugubris
Abundance: uc Status: s? Altitude: 2970 m
Habitat: stream just below lake
Remarks: 1 seen at this unusually high altitude on 22/7/89

43. COMMON KINGFISHER Alcedo atthis
Abundance: uc Status: r? (b) Altitude: 2990 m
Habitat: in lakeside tree
Remarks: 1 on 17/9/89 and 11/10/89

44. HOOPOE Upupa epops
Abundance: fc Status: s m (b) Altitude: 2900-3300 m
Habitat: marshland, abandoned land and grazing land 2
Remarks: maximum 7 on 20/9/89

45. SCALY-BELLIED GREEN WOODPECKER Picus squamatus
Abundance: fc Status: r (b) Altitude: 3000-3700 m
Habitat: abandoned land, con. forest 1 & 2 and mixed forest
Remarks: usually single bird but occasionally in pairs

46. HIMALAYAN PIED WOODPECKER Dendrocopos himalayensis
Abundance: fc Status: r Altitude: 3000-3450 m
Habitat: con. forest 1 & 2
Remarks: only single birds but both ♂ and ♀ seen
Status in Nepal: +

47. HUME'S SHORT-TOED LARK Calandrella acutirastris
Abundance: sc Status: s m? (b)? Altitude: 2990 m
Habitat: marshland to south of lake
Remarks: 1 on 7/10/89

48. ORIENTAL SKYLARK Alauda gulgula
Abundance: o Status: s? (b)? Altitude: 2990-3500 m
Habitat: marshland and grazing land 2
Remarks: maximum 6 on 29/9/89

49. COLLARED SAND MARTIN Riparia riparia
Abundance: sc Status: m Altitude: 2990-3250 m
Habitat: above lake
Remarks: 40+ on 11/10/89 after storm

50. OLIVE-BACKED PIPIT Anthus hodgsoni
Abundance: o Status: s? (b) Altitude: 2990-3500 m
Habitat: terrace land, marshland and grazing land 2
Remarks: maximum 15 on 29/9/89

51. CITRINE WAGTAIL Motacilla citreola
Abundance: o Status: m Altitude: 2990 m
Habitat: marshland to south of lake
Remarks: maximum 6 on 9/10/89

52. GREY WAGTAIL Motacilla cinerea
Abundance: o Status: s (b) Altitude: 2990-3200 m
Habitat: shores of lake and streams
Remarks: single birds only

53. WHITE WAGTAIL Motacilla alba
Abundance: fc Status: s m? Altitude: 2990 m
Habitat: marshland and shores of lake
Remarks: maximum 6 ssp. personata on 17/9/89 and 1 ssp. baicalensis on 20/9/89

54. LONG-TAILED MINIVET Pericrocotus ethologus
Abundance: fc Status: s r? b Altitude: 3000-3100 m
Habitat: abandoned land
Remarks: maximum 2 ♂ and 3 ♀ on 12/10/89

55. WHITE-CHEEKED BULBUL Pycnonotus leucogenys
Abundance: o Status: r (b) Altitude: 2600 m
Habitat: con. forest 1
Remarks: 3 on 16/9/89

56. BLACK BULBUL Hypsipetes madagascariensis
Abundance: o Status: r? (b) Altitude: 2700 m
Habitat: con. forest 1
Remarks: maximum 6 on 3/10/89

57. BROWN DIPPER Cinclus pallasii
Abundance: fc Status: r (b) Altitude: 2800-3200 m
Habitat: streams
Remarks: maximum 3 on 10/10/89

58. NORTHERN WREN Troglodytes troglodytes
Abundance: fc Status: r Altitude: 3000-3450 m
Habitat: con. forest 2
Remarks: maximum 3 on 18/10/89 above Bhulbhule

59. RUFOUS-BREASTED ACCENTOR Prunella strophiata
Abundance: o Status: r? Altitude: 2950-3450 m
Habitat: abandoned land and grazing land 2
Remarks: maximum 2 on 18/10/89
Status in Nepal: +

60. INDIAN BLUE ROBIN Luscinia cyane
Abundance: o Status: s (b) Altitude: 2950 m
Habitat: abandoned land
Remarks: 1 on 21+22/7/89 Status in Nepal: +

61. ORANGE-FLANKED BUSH-ROBIN Tarsiger cyanurus
Abundance: fc Status: s? (b) Altitude: 2990-3450 m
Habitat: abandoned land and con. forest 1
Remarks: maximum 1 ♂ and 3 ♀ on 29/9/89

62. BLUE-CAPPED REDSTART Phoenicurus caeruleocephalus
Abundance: o Status: s? b Altitude: 3200 m
Habitat: abandoned land
Remarks: maximum 3 imm. ♂ on 28/9/89

63. BLACK REDSTART Phoenicurus ochruros
Abundance: fc Status: s? m? (b) Altitude: 2990-3500 m
Habitat: abandoned land and grazing land 2
Remarks: maximum 2 ♂ (summer plummage) on 27/9/89, 3 ♂ (winter plummage) on 29/9/89 and 3 ♀ on 2/10/89

64. BLUE-FRONTED REDSTART Phoenicurus frontalis
Abundance: fc Status: r? (b) Altitude: 2990-3500 m
Habitat: abandoned land and grazing land 2
Remarks: maximum 10 on 18/10/89
Status in Nepal: +

65. PLUMBEOUS REDSTART Rhyacornis fuliginosus
Abundance: fc Status: s? (b) Altitude: 2600-3400 m
Habitat: streams
Remarks: usually seen in pairs

66. COMMON STONECHAT Saxicola torquata
Abundance: fc Status: r? m? b? Altitude: 2990-3450 m
Habitat: abandoned land and grazing land 2
Remarks: maximum 3 imm. between 6-10/10/89

67. GREY BUSHCHAT Saxicola ferrea
Abundance: c Status: s? r? (b) Altitude: 2900-3600 m
Habitat: abandoned land and grazing land 2
Remarks: maximum 10, ♂ and ♀, on 7/10/89

68. WHITE-CAPPED REDSTART Chaimarrornis leucocephalus
Abundance: fc Status: s (b) Altitude: 2600-3300 m
Habitat: streams
Remarks: maximum 4 on 28/9/89

69. BLUE WHISTLING THRUSH Myiophoneus caeruleus
Abundance: fc Status: s (b) Altitude: 2600-3100 m
Habitat: streams
Remarks: maximum 3 on 10/10/89

70. WHITE-COLLARD BLACKBIRD Turdus albocinctus
Abundance: o Status: r? (b) Altitude: 3000 m
Habitat: abandoned land along north shore of lake
Remarks: maximum 4 on 14/10/89
Status in Nepal: +

71. MISTLE THRUSH Turdus viscivorus
Abundance: o Status: r? Altitude: 3500 m
Habitat: grazing land 2
Remarks: maximum 5 above Bhulbhule on 18/10/89

72. LITTLE FORKTAIL Enicurus scouleri
Abundance: o Status: s b Altitude: 2600-3000 m
Habitat: streams
Remarks: 1 ad. with fledgling below Bhulbhule on 28/9/89 and 1/10/89

73. SPOTTED FORKTAIL Enicurus macxlatus
Abundance: fc Status: s? (b) Altitude: 2600-3300 m
Habitat: streams and con. forest 1
Remarks: maximum 3 on 4/10/89

74. GREY-SIDED BUSH WARBLER Cettia brunnifrons
Abundance: o Status: s (b) Altitude: 2900-3450 m
Habitat: abandoned land and grazing land 2
Remarks: single birds only Status in Nepal: +

75. GOLDEN-SPECTACLED WARBLER Seicercus burkii
Abundance: o Status: s (b) Altitude: 2900-3450 m
Habitat: abandoned land and grazing land 2
Remarks: single birds only

76. GREY-HOODED WARBLER Seicercus xanthoschistos
Abundance: o Status: r? s (b) Altitude: 2600-3000 m
Habitat: abandoned land and con. forest 1
Remarks: single birds only
Status in Nepal: +

77. WESTERN CROWNED WARBLER Phylloscopus occipitalis
Abundance: uc Status: s? m Altitude: 2900-3300 m
Habitat: abandoned land and con. forest 1 near streams
Remarks: maximum 3 on 22/9/89

78. GREENISH WARBLER Phylloscopus trochiloides
Abundance: uc Status: s? m (b) Altitude: 2900-3450 m
Habitat: abandoned land and con. forest 1
Remarks: single birds only

79. ORANGE-BARRED LEAF WARBLER Phylloscopus pulcher
Abundance: fc Status: r? (b) Altitude: 2900-3450 m
Habitat: abandoned land, grazing land 2, and con. forest 1 & 2
Remarks: single birds only
Status in Nepal: +

80. GREY-FACED LEAF WARBLER Phylloscopus maculipennis
Abundance: o Status: r? s (b) Altitude: 2950-3000 m
Habitat: abandoned land and con. forest 1
Remarks: single birds only

81. PALLAS'S LEAF WARBLER Phylloscopus proregulus
Abundance: c Status: r? s m (b) Altitude: 2700-3600 m
Habitat: abandoned land, grazing land 2, con. forest 1 & 2 and mixed forest
Remarks: most abundant warbler

82. YELLOW-BROWED WARBLER Phylloscopus inornatus
Abundance: o Status:s? w? m? Altitude: 2800-3000 m
Habitat: abandoned land and con. forest 1
Remarks: single birds only

83. DUSKY WARBLER Phylloscopus fuscatus
Abundance: fc Status: w? Altitude: 2950-3450 m
Habitat: abandoned land and grazing land 2
Remarks: most birds heard with maximum 3 on 25/9/89, unusually high altitude

84. TICKELL'S WARBLER Phylloscopus affinis
Abundance: fc Status: s? m? (b) Altitude: 2800-3600 m
Habitat: abandoned land, grazing land 2, con.forest 1 and mixed forest
Remarks: maximum 5 on 29/9/89

85. GOLDCREST Regulus regulus
Abundance: uc Status: r? (b) Altitude: 3000-3450 m
Habitat: con. forest 1 & 2
Remarks: maximum 2 on 18/10/89

86. ASIAN SOOTY FLYCATCHER Muscicapa sibirica
Abundance: o Status: s (b) Altitude: 2800-3400 m
Habitat: con. forest 1
Remarks: single birds only

87. SLATY-BLUE FLYCATCHER Ficedula tricolor
Abundance: c Status: s r? (b)? Altitude: 2600-3450 m
Habitat: abandoned land, grazing land 1 & 2, con. forest 1 & 2 and mixed forest
Remarks: usually seen in pairs

88. ULTRAMARINE FLYCATCHER Ficedula superciliaris
Abundance: o Status: s (b) Altitude: 2600-3000 m
Habitat: terrace land, abandoned land, and con. forest 1
Remarks: ♂ and ♀ seen seperately
Status in Nepal: +

89. ORANGE-GORGETTED FLYCATCHER Ficedula strophiata
Abundance: o Status: s (b) Altitude: 3100-3300 m
Habitat: mixed forest
Remarks: single ♂ and maximum 3 ♀ on 29/9/89

90. YELLOW-BELLIED FANTAIL Rhipidura hypoxantha
Abundance: fc Status: s (b)? Altitude: 2600-3300 m
Habitat: abandoned land, grazing land 2 and con. forest 1
Remarks: maximum 3 on 23/9/89
Status in Nepal: +

91. GREATER SCALY-BREASTED WREN-BABBLER Pnoepyga albiventer
Abundance: uc Status: s (b) Altitude: 3000 m
Habitat: con. forest 1
Remarks: 1 light phase on 1/10/89
Status in Nepal: +

92. VARIEGATED LAUGHING-THRUSH Garrulax variegatus
Abundance: c Status: r (b) Altitude: 2600-3600 m
Habitat: abandoned land, grazing land 1 & 2, con. forest 1 and mixed forest
Remarks: most abundant laughing-thrush
Status in Nepal: +

93. STREAKED LAUGHING-THRUSH Garrulax lineatus
Abundance: c Status: s? r? (b) Altitude: 2600-3300 m
Habitat: abandoned land, grazing land 1 & 2, con. forest 1 and mixed forest
Remarks: maximum 6 on 24/9/89

94. CHESTNUT-CROWNED LAUGHING-THRUSH Garrulax erythrocephalus
Abundance: o Status: s (b) Altitude: 3000 m
Habitat: abandoned land north of lake
Remarks: 2 on 4+6/10/89

95. CHESTNUT-TAILED MINLA Minla strigula
Abundance: o Status: s (b) Altitude: 2900-3300 m
Habitat: abandoned land
Remarks: maximum 5 on 24/9/89

96. WHITE-BROWED FULVETTA Alcippe vinipectus
Abundance: c Status: r? (b) Altitude: 2900-3300 m
Habitat: abandoned land, con. forest 1 and mixed forest
Remarks: maximum 10 on 14/10/89
Status in Nepal: +

97. BLACK-CAPPED SIBIA Heterophasia capistrata
Abundance: o Status: s (b) Altitude: 3000 m
Habitat: abandonded land north of lake
Remarks: single birds only
Status in Nepal: +

98. STRIPE-THROATED YUHINA Yuhina gularis
Abundance: fc Status: r? (b)? Altitude: 3000 m
Habitat: abandoned land below Rara village
Remarks: maximum 10 on 6/10/89
Status in Nepal: +

99. WHITE-THROATED TIT Aegithalos niveogularis
Abundance: uc Status: r? Altitude: 3450 m
Habitat: con. forest 2
Remarks: 4 on 29/9/89 above Bhulbhule
Status in Nepal: *

100. BLACK-THROATED TIT Aegithalos concinnus
Abundance: o Status: r? (b) Altitude: 2600-3000 m
Habitat: abandoned land and edge of con. forest 1
Remarks: maximum 5 on 3/10/89

101. GREY-CRESTED TIT Parus dichrous
Abundance: c Status: r (b) Altitude: 2800-3450 m
Habitat: abandoned land, grazing land 2, con. forest 1 & 2 and mixed forest
Remarks: maximum 6 on 29/9/89
Status in Nepal: +

102. RUFOUS-VENTED BLACK TIT Parus rubidiventris
Abundance: c Status: r (b) Altitude: 2700-3500 m
Habitat: abandoned land, grazing land 2, con. forest 1 & 2 and mixed forest
Remarks: maximum 10 on 5/10/89
Status in Nepal: +

103. SPOT-WINGED BLACK TIT Parus melanolophus
Abundance: c Status: r (b) Altitude: 2600-3500 m
Habitat: abandoned land, grazing land 2, con. forest 1 & 2 and mixed forest
Remarks: most abundant tit
Status in Nepal: +

104. GREEN-BACKED TIT Parus monticolus
Abundance: fc Status: s? (b) Altitude: 2600-3200 m
Habitat: abandoned land and con. forest 1
Remarks: maximum 3 on 10/10/89

105. BLACK-LORED TIT Parus xanthogenys
Abundance: uc Status: s (b) Altitude: 2700 m
Habitat: grazing land 1
Remarks: 1 on 16/7/89, unusually high altitude

106. WHITE-CHEEKED NUTHATCH Sitta leucopsis
Abundance: o Status: r? Altitude: 3000-3300 m
Habitat: con. forest 1
Remarks: single birds only
Status in Nepal: +

107. KASHMIR NUTHATCH Sitta cashmirensis
Abundance: o Status: r? Altitude: 3450 m
Habitat: con. forest 2
Remarks: single birds only
Status in Nepal: +

108. BAR-TAILED TREECREEPER Certhia himalayana
Abundance: fc Status: r? (b) Altitude: 3000-3450 m
Habitat: abandoned land, grazing land 2 and con. forest 1 & 2
Remarks: single birds only

109. COMMON TREECREEPER Certhia familiaris
Abundance: fc Status: r? (b) Altitude: 3000-3450 m
Habitat: grazing land 2 and con. forest 1 & 2
Remarks: maximum 3 on 18/10/89

110. GREEN-TAILED SUNBIRD Aethopyga nipalensis
Abundance: uc Status: r? Altitude: 3000 m
Habitat: abandoned land
Remarks: 1 ♀ on 19+24/9/89

111. LONG-TAILED SHRIKE Lanius schach
Abundance: o Status: s (b) Altitude: 3000 m
Habitat: grazing land 2
Remarks: single birds only
Status in Nepal: +

112. GREY-BACKED SHRIKE Lanius tephronotus
Abundance: c Status: s b? Altitude: 2900-3400 m
Habitat: terrace land, abandoned land and grazing land 2
Remarks: most abundant shrike, adult seen with juv. on several occasions

113. ASHY DRONGO Dicrurus leucophaeus
Abundance: o Status: s (b) Altitude: 2700 m
Habitat: con. forest 1
Remarks: maximum 6 on 16/9/89

114. YELLOW-BILLED BLUE MAGPIE Urocissa flavirostris
Abundance: o Status: s (b) Altitude: 3000 m
Habitat: con. forest 1
Remarks: maximum 2 on 22/7/89 chasing a Booted Eagle
Status in Nepal: +

115. EURASIAN NUTCRACKER Nucifraga caryocatactes
Abundance: c Status: r? (b) Altitude: 2900-3600 m
Habitat: abandoned land, grazing land 2, con. forest 1 & 2 and mixed forest
Remarks: maximum 6 on 29/9/89

116. RED-BILLED CHOUGH Pyrrhocorax pyrrhocorax
Abundance: fc Status: r? (b) Altitude: 3400+ m
Habitat: grazing land 2 but usually in flight
Remarks: maximum 40+ on 28/9/89

117. JUNGLE CROW Corvus macrorhynchos
Abundance: c Status: r (b) Altitude: 2600-3600 m
Habitat: terrace land, abandoned land, grazing land 1 & 2, con. forest 1 & 2 and mixed forest
Remarks: maximum 50+ flighing to roost on 6/10/89

118. COMMON MYNAH Acridotheres tristis
Abundance: uc Status: s (b) Altitude: 3000 m
Habitat: over grazing land 2 to west of lake
Remarks: 2 in flight on 21/7/89

119. EURASIAN TREE SPARROW Passer montanus
Abundance: o Status: r (b) Altitude: 2600-3400 m
Habitat: terrace land
Remarks: only seen near habitation

120. YELLOW-BREASTED GREENFINCH Carduelis spinoides
Abundance: c Status: s (b) Altitude: 2600-3450 m
Habitat: terrace land, abandoned land and grazing land 1 & 2
Remarks: maximum 100+ on 11/10/89

121. DARK-BREASTED ROSEFINCH Carpodacus nipalensis
Abundance: uc Status: r? (b)? Altitude: 3000 m
Habitat: abandoned land
Remarks: 1 ♀ on 13/10/89 Status in Nepal: +

122. COMMON ROSEFINCH Carpodacus erythrinus
Abundance: fc Status: s (b)? Altitude: 2900-3400 m
Habitat: terrace land, abandoned land and grazing land 2
Remarks: maximum 1 ♂ and 2 ♀ on 10/10/89

123. BEAUTIFUL ROSEFINCH Carpodacus pulcherrimus
Abundance: o Status: r (b) Altitude: 3000 m
Habitat: abandoned land
Remarks: 1 ♀ on 16/10/89

124. PINK-BROWED ROSEFINCH Carpodacus rhodochrous
Abundance: o Status: r? (b)? Altitude: 2950-3300 m
Habitat: abandoned land
Remarks: both ♂ and ♀ seen
Status in Nepal: +

125. RED-BREASTED ROSEFINCH Carpodacus puniceus
Abundance: uc Status: m? r? (b)? Altitude: 2950 m
Habitat: abandoned land
Remarks: 1 ♀ on 23/ 9 /89

126. RED-HEADED BULLFINCH Pyrrhula erythrocephala
Abundance: c Status: r? (b)? Altitude: 2950-3500 m
Habitat: abandoned land, grazing land 2, con. forest 1 and mixed forest
Remarks: usually in pairs with maximum 4 pairs on 30/9/89
Status in Nepal: +

127. ROCK BUNTING Emberiza cia
Abundance: c Status: r (b) Altitude: 2700-3500 m
Habitat: terrace land, abandoned land and grazing land 1 & 2
Remarks: maximum 3 ♂ and 2 ♀ on 13/10/89

4.3 SIGNIFICANCE OF RESULTS

Approximately 850 birds have so far been recorded in Nepal and many more are likely to occur considering that 64 species have been found within 100 km of Nepals borders. There are still large areas which are rarely visited and therefore under-recorded particularly in the west and new species are discovered each year. Migrant species are the ones most likely to occur and with the lake being an important staging point for migratory waterbirds the National Park could prove to be a beneficial hunting ground for new species.

Nepal supports 124 breeding species which may have significant world populations within the country. These birds have breeding distributions restricted to an area encompassing the Himalaya, north-east India, northern south-east Asia and south-west China (Inskipp and Inskipp 1986). Over 30% of these (39 species) have been found at Lake Rara National Park and of these there are 3 species for which Nepal may be especially important, the Cheer Pheasant Catreus wallichii, White-throated Tit Aegithalos niveogularis and Rusty-flanked Treecreeper Certhia nipalensis.

The Cheer Pheasant is a Red Data Book species whose category of threat as defined by the International Union for Conservation of Nature and Natural Resources (Collar and Stuart 1985) is Indeterminate (I). This states that "taxa known to be Endangered (E), Vulnerable (V) or Rare (R) in Nepal, but where there is not enough information to say which of the three categories is appropriate."

A total of 127 birds were recorded during the survey of which 86 have been known to breed in Nepal and could therefore possibly breed at the National Park. This brings to 187 the total number of bird species recorded including 110 which could breed and many more species would be found particularly from April to June during the breeding season. Over 30 species are included in the list of possible records for which conformation is desirable and most of these are very likely to occur.

If it is accepted that there are probably well over 200 species at the park then this represents nearly a quarter of all the birds seen in Nepal. The importance of the park can therefore be easily recognised when such a large proportion of the countries birds visit such a small area approximately 0.07% of the total area of the country.

The National Park around Lake Rara holds an important position in the countries overall national conservation scheme. The Humla-Jumla region is an ecologically distinct part of the Nepal Himalaya and the park and lake itself provides a protected habitat for the unique flora and fauna of the area.

As discussed earlier in chapter 3, it would be misleading to divide the forests of the park into distinct altitudinal zones. Blue pine predominates in many areas below 3200 m (10,500ft) mixed with fir, oak and birch, above this altitude the blue pine is increasingly dominated by the fir and the oak and birch are more plentiful. This similarity in forest types together with the problem of access to many areas of the park made clear distinctions between forest types difficult and consequently the problem of identifying the exact habitat of each bird was compounded.

It was found that many forest birds visited a variety of forest types including abandoned and grazing land (with blue pine regeneration), coniferous and mixed forests and most birds appearing to differ from this pattern were seen too infrequently to be able to draw any positive conclusions. However, it would be worthwhile analysising the results in terms of birds of forest and shrubland and those of the lake, streams and wetlands.

The park is well forested throughout and even the deforested areas to the north of the lake around the abandoned villages are showing possitive signs of regeneration with blue pine. The pastures are mainly tussock grasslands with an abundance of common herbs (forbs) and plants.

A large proportion of the birds were observed in forest grassland or shrub habitats emphasising the devastating effect that deforestation has had on the birdlife in other parts of the country. Almost 78% (99 species) of all birds recordedrelied upon this type of habitat. Of these, 75 were possible breeding species, 87% of all breeding species recorded during the survey.

Notable species included the White-throated Tit Aegithalos niveogularis, abreeding species for which Nepal is especially important. A pair of warblers were observed feeding a juvenile Common Cuckoo Cuculus canorus in July below Murma providing a positive breeding record. Other possible breeding species include the Common Stonechat Saxicola torquata and Grey-backed Shrike Lanius tephronotus, juveniles of which were regularly seen with adults. A wide variety of warblers were seen particularly Phylloscopus species but several more remain unrecorded due to lack of positive identification including one species observed with a fledgling.

The lake, streams and marshland also provides an important habitat for wetland birds and small birds of prey. About 22% (28 species) of all birds remained exclusively within this type of habitat and of these, 11 species (13%) were possible breeding species. The Little Forktail Enicurus scouleri was proved to breed when an adult was observed with a fledgling on the stream below Bhulbhule. Another possible breeder was the Common Moorhen Gallinula chloropus as two juveniles were regularly seen

with an adult.

Other records included the first summer/breeding season record for the Great-crested Grebe Podiceps cristatus in Nepal and the first summer/autumn (monsoon) sighting of the Common Pochard Aythya ferina. The Baikel Teal Anas formosa was only the fourth record for Nepal. The storm in October which brought the White-throated Needletail Hirundapus candacutus and the Collared Sand Martin Riparia riparia was quite significant as it was the first autumn record of the former and the most westerly sighting in Nepal for the latter.

The migration of birds both to and through Nepal is an area of study that has so far been largely neglected although general information about the migration of birds through Asia is known.

Many birds originate from the Palearctic to the north and winter in Nepal ie. ducks, birds of prey, waders, gulls, terns, pipits, wagtails, thrushes, warblers, bush-warblers, finches and buntings. Some winter further south in the Indian sub-continent, south Asia and south-east Asia. However, fewer birds make the latter journey compared to those which travel to Africa. From the west-palearctic about 137 species go to Africa and 10 to India and from the mid-palearctic 82 species go to Africa and 50 to India.

One reason for fewer migrants coming south to India is the harsh region of the Tibetan plateau flanked by the gigantic Himalaya which acts as an effective barrier to migrants. Usually non-passerines undertake the arduous trans-himalayan migration with passerines probably skirting around the east and west ends of the Himalaya to migrate south. However, a few passerines maybe an exception notably Hume's Short-toed Lark, White Wagtail, Black Redstart and Tickell's Warbler all of which were seen during the survey.

The picture that emerges from the limited information already available is that the lake provides an important staging point for waterbirds although the numbers involved are relatively small. Almost a third (58 species) of all species so far recorded are passage migrants and of these 47 species are waterbirds. A few of these stay to winter at the lake but most move to the warmer climate in the south. A more detailed study of the migrants at Lake Rara would be most valuable and help to provide a clearer understanding of the migration patterns throughout the region.

4.4 CHECK LIST OF BIRD SPECIES AND POSSIBLE RECORDS

The following is a check list of all the birds recorded at Lake Rara National Park at the time of writing this report.

KEY

Status within park:
- r - resident
- s - summer visitor
- w - winter visitor
- m - passage migrant
- v - vagrant
- b - known to breed in National Park
- (b) - known to breed in Nepal
- ? - uncertain

Status in Nepal:
- + - breeding species with significant world populations in Nepal.
- * - breeding species for which Nepal is especially important.

Little Grebe *Tachyabaptus ruficollis*	r?	
Great Crested Grebe *Podiceps cristatus*	r?w	
Black-necked Grebe *Podiceps nigricollis*	r?w	
Great Cormarant *Phalacrocorax carbo*	s?	
Eurasian Bittern *Botaurus stellaris*	m	
Great Egret *Egretta alba*	m	(b)
Grey Heron *Ardea cinerea*	m	
Greylag Goose *Anser anser*	m	
Bar-headed Goose *Anser indicus*	m	
Ruddy Shelduck *Tadorna ferruginea*	m?	(b)
Eurasian Wigeon *Anas penelope*	wm	
Gadwell *Anas strepera*	m	
Common Teal *Anas crecca*	wm	
Baikel Teal *Anas formosa*	v	
Mallard *Anas platyrhynchos*	wm	(b)
Northern Pintail *Anas acuta*	m	
Northern Shoveler *Anas clypeata*	m	
Red-crested Pochard *Netta rufina*	wm	
Common Pochard *Aythya ferina*	r?m	
Ferruginous Duck *Aythya nyroca*	m	
Tufted Duck *Aythya fuligula*	wm	
Common Goldeneye *Bucphala clangula*	wm	
Goosander *Mergus merganser*	w	
Black Kite *Milvus migrans*	s	b?
Lammergeier *Gypaetus barbatus*	r	(b)
Himalayan Griffon Vulture *Gyps himalayensis*	r	(b)?
Crested Serpent Eagle *Spilornis cheela*	s	(b)
Marsh Harrier *Circus aeruginosus*	wm	
Hen Harrier *Circus cyaneus*	wm	
Pallid Harrier *Circus macrourus*	m	
Northern Goshawk *Accipiter gentilis*	r?	
Northern Sparrowhawk *Accipiter nisus*	s?	

Common Buzzard Buteo buteo	wm	(b)?
Long-legged Buzzard Buteo rufinus	wm	
Black Eagle Ictinaetus malayensis	r	
Booted Eagle Hieraaetus pennatus	r?m	(b)
Bonelli`s Eagle Hieraaetus fasciatus	r?	
Osprey Pandion haliaetus	m	
Common Kestrel Falco tinnunculus	r?	(b)
Eurasian Hobby Falco subbuteo	m?	(b)
Himalayan Snowcock Tetraogallus himalayensis	r	(b)
Chukar Partridge Alectoris chukar	r?	(b)
+Blood Pheasant Ithaginis cruentus	r	(b)
+Himalayan Monal Lophophorus impejanus	r	(b)
Kalij Pheasant Lophura leucomelana	s?	(b)
*Cheer Pheasant Catreus wallichii	r	
Common Moorhen Gallinula chloropus	m?	
Common Coot Fulica atra	r?wm	
Demoiselle Crane Anthropoides virgo	m	
Pheasant-tailed Jacana Hydrophasianus chirugus	m	(b)
Lesser Sand Plover Charadruis mongolus	m	
Little Stint Calidris minuta	m	
Temminck's Stint Calidris temminckii	m	
Common Snipe Gallinago gallinago	m	
Common Redshank Tringa totanus	m	
Common Greenshank Tringa nebularia	m	
Green Sandpiper Tringa ochropus	m	
Wood Sandpiper Tringa glareola	m	
Common Sandpiper Actitis hypoleucos	m	
Red-necked Phalarope Phalaropus lobatus	m	
Great Black-backed Gull Larus ichthyaetus	m	
Common Black-headed Gull Larus ridibundus	m	
Brown-headed Gull Larus brunnicephalus	m	
Herring Gull Larus argentatus/ Lesser Black-backed Gull Larus fuscus	m	
Gull-billed Tern Gelochelidon nilotica	m	
Rock Pigeon Columba livia	r?s?	(b)
Hill Pigeon Columba rupestris	w	(b)
Snow Pigeon Columba leuconota	r?	(b)
+Speckled Woodpigeon Columba hodgsonii	r?	
Oriental Turtle Dove Streptopelia orientalis	r?s	(b)
Spotted Dove Streptopelia chinensis	s	(b)
Common Cuckoo Cuculus canorus	s	b
Tawny Owl Strix aluco	r?	(b)?
White-throated Needletail Hirundapus caudacutus	?	
Crested Kingfisher Ceryle lugubris	s?	
Common Kingfisher Alcedo atthis	r?	(b)
Hoopoe Upupa epops	sm	(b)
Scaly-bellied Green Woodpecker Picus squamatus	r	
+Himalayan Pied Woodpecker Dendrocopos himalayensis	r	
Hume`s Short-toed Lark Calandrella acutirastris	sm?	(b)?
Oriental Skylark Alauda gulgula	s?	(b)?
Collared Sand Martin Riparia riparia	m	
Olive-backed Pipit Anthus hodgsoni	s	(b)
Red-throated Pipit Athus cervinus	m	
Yellow Wagtail Motacilla flava	m	
Citrine Wagtail Motacilla citreola	m	
Grey Wagtail Motacilla cinerea	s	(b)
White Wagtait Motacilla alba	sm?	

Long-tailed Minivet Pericrocotus ethologus	r?s	b
White-cheeked Bulbul Pycnonotus leucogenys	r	(b)
Black Bulbul Hypsipetes madagascariensis	r?	(b)
Brown Dipper Cinclus pallasii	r	(b)
Northern Wren Troglodytes troglodytes	r	
+Rufous-breasted Accentor Prunella strophiata	r?	
Brown Accentor Prunella fulvescens	?	
Black-throated Accentor Prunella atrogularis	w	
Altai Accentor Prunella himalayana	w	
Alpine Accentor Prunella collaris	w?	(b)
+Indian Blue Robin Luscinia cyane	s	(b)
Orange-flanked Bush-Robin Tarsiger cyanurus	s?	(b)
Rufous-backed Redstart Phoeicurus erythronotus	w	(b)
Blue-capped Redstart Phoenicurus caeruleocephalus	s?	b
Black Redstart Phoenicurus ochruros	s?m?	(b)
+Blue-fronted Redstart Phoenicurus frontalis	r?	(b)
Plumbeous Redstart Rhyacornis fuliginosus	s?	(b)
Common Stonechat Saxicola torquata	r?m?	(b)
Grey Bushchat Saxicola ferrea	r?s?	(b)
Desert Wheatear Oenanthe deserti	m?	
White-capped Redstart Chaimarrornis leucocephalus	s	(b)
Blue Whistling Thrush Myiophoneus caeruleus	s	(b)
+Long-tailed Mountain Thrush Zoothera dixoni	s	(b)
+Tickell's Thrush Turdus unicolor	m?	(b)
+White-collared Blackbird Turdus albocinctus	r?	(b)
Dark-throated Thrush Turdus ruficollis	w	
Mistle Thrush Turdus viscivorus	r?	
Little Forktail Enicurus scouleri	s	b
Spotted Forktail Enicurus maxlatus	s?	(b)
+Grey-sided Bush Warbler Cettia brunnifrons	s	(b)
Golden-spectacled Warbler Seicercus burkii	s	(b)
+Grey-hooded Warbler Seicercus xanthoschistos	r?s	(b)
Western Crowned Warbler Phylloscopus occipitalis	s?m?	
Greenish Warbler Phylloscopus trochiloides	s	(b)
+Large-billed Leaf Warbler Phylloscopus magnirostris	s	(b)?
+Orange-barred Leaf Warbler Phylloscopus pulcher	r?	(b)
Grey-faced Leaf Warbler Phylloscopus maculipennis	r?s	(b)
Pallas's Leaf Warbler Phylloscopus proregulus	r?s	(b)?
Yellow-browed Warbler Phylloscopus inornatus	s?w?m	
Dusky Warbler Phylloscopus fuscatus	w?	
Tickell's Warbler Phylloscopus affinis	s?	(b)
Goldcrest Regulus regulus	r?	(b)
Asian Sooty Flycatcher Muscicapa sibirica	s	(b)
+Rufous-tailed Flycatcher Muscicapa ruficauda	s	(b)
Slaty-blue Flycatcher Ficedula tricolor	r?s	(b)?
+Ultramarine Flycatcher Ficedula superciliaris	s	(b)
Orange-gorgetted Flycatcher Ficedula strophiata	s	(b)
+Yellow-bellied Fantail Rhipidura hypoxantha	s	(b)?
+Greater Scaly-breasted Wren-Babbler Pnoepyga albiventer	s	(b)
+Variegated Laughing-Thrush Garrulax variegatus	r	(b)
+Spotted Laughing-Thrush Garrulux ocellatus	r	(b)
Streaked Laughing-Thrush Garrulax lineatus	r?s?	(b)
Chestnut-crowned Laughing-Thrush Garrulax erythrocephalus	s	(b)
Chestnut-tailed Minla Minla strigula	s	(b)
+White-browed Fulvetta Alcippe vinipectus	r?	(b)

+Black-capped Sibia Heterophasia capistrata	s	(b)
+Stripe-throated Yuhina Yuhina gularis	r?	(b)?
*White-throated Tit Aegithalos niveogularis	r?	
Black-throated Tit Aegithalos concinnus	r?	(b)
+Grey-crested Tit Parus dichrous	r	(b)
Rufous-naped Tit Parus rufonuchalis	r?	(b)
+Rufous-vented Black Tit Parus rubidiventris	r?	(b)
+Spot-winged Black Tit Parus melanolophus	r?	(b)
Great Tit Parus major	s?	(b)
Green-backed Tit Parus monticolus	s?	(b)
Black-lored Tit Parus xanthogenys	s	(b)
+White-cheeked Nuthatch Sitta leucopsis	r?	
+Kashmir Nuthatch Sitta cashmirensis	r?	
Bar-tailed Treecreeper Certhia himalayana	r?	(b)
*Rusty-flanked Treecreeper Certhia nipalensis	r	(b)
Common Treecreeper Certhia familiaris	r?	(b)
Green-tailed Sunbird Aethopyga nipalensis	r?	
Long-tailed Shrike Lanius schach	s?	(b)
+Grey-backed Shrike Lanius tephronotus	s?	b?
Ashy Drongo Dicrurus leucophaeus	s	(b)
+Lanceolated Jay Garrulus lanceolatus	s?	(b)
+Yellow-billed Blue Magpie Urocissa flavirostris	s?	(b)
Red-billed Blue Magpie Urocissa erythrorhyncha	m	(b)
Eurasian Nutcracker Nucifraga caryocatactes	r?	(b)
Red-billed Chough Pyrrhocorax pyrrhocorax	r?	(b)
Jungle Crow Corvus macrorhynchos	r	(b)
Common Raven Corvus corax	r	
Common Mynah Acridotheres tristis	s	(b)
Eurasian Tree Sparrow Passer montanus	r	(b)
Common Chaffinch Fringilla coelebs	w	
Brambling Fringilla montifringilla	w	
Red-fronted Serin Serinus pusillus	r?	
Yellow-breasted Greenfinch Carduelis spinoides	s	(b)
Eurasian Goldfinch Carduelis carduelis	s	
Plain Mountain Finch Leucosticte nemoricola	r	(b)
+Dark-breasted Rosefinch Carpodacus nipalensis	r?	(b)?
Common Rosefinch Carpodacus erythrinus	s	(b)?
Beautiful Rosefinch Carpodacus pulcherrimus	r	(b)
+Pink-browed Rosefinch Carpodacus rhodochrous	r?	(b)?
+Crimson-eared Rosefinch Carpodacus rubiccilloides	w?	(b)
Red-breasted Rosefinch Carpodacus puniceus	r?w?	(b)?
+Red-headed Bullfinch Pyrrhula erythrocephala	r?	(b)?
+Collared Grosbeak Mycerobas affinis	r?	(b)
Rock Bunting Emberiza cia	r	(b)

The following is a list of possible records for which conformation is desirable.

Pallas's Fishing Eagle Haliaeetus leucoryphus
Grey-headed Fishing Eagle Ichthyophaga ichthyaetus
Egyptian Vulture Neophron percnopterus
Oriental White-backed Vulture Gyps bengalensis
Eurasian Black Vulture Aegypius monachus
Upland Buzzard Buteo hemilasius
Steppe Eagle Aquila rapax nipalensis
Golden Eagle Aquila chrysaetos
Mountain Hawk-Eagle Spizaetus nipalensis

Red-thighed Falconet Microhierax caerulescens
Lesser Kestrel Falco naumanni
Peregrine Falco peregrinus
Snow Partridge Lerwa lerwa
Tibetan Partridge Perdix hodgsoniae
Purple Gallinule Porphyrio porphyrio
Common Crane Grus grus
Wood Snipe Gallinago nemoricola
Caspian Tern Sterna caspia
Oriental Cuckoo Cuculus saturatus
White-breasted Kingfisher Halcyon smyrnensis
Common Woodshrike Tephrodornis pondicerianus
Short-billed Minivet Pericrocotus brevirostris
White-throated Redstart Phoenicurus schisticeps
Rufous-bellied Niltava Niltava sundara
White-throated Laughing-Thrush Garrulax albogularis
Grey-sided Laughing-Thrush Garrulax caerulatus
Black-faced Laughing-Thrush Garrulax affinis
Coal Tit Parus ater
Mrs. Gould's Sunbird Aethopyga gouldiae
House Sparrow Passer domesticus
Spot-winged Grosbeak Mycerobas melan ozanthos
Thick-billed Warbler Acrocephalus aedon

4.5 CHECK LIST OF MAMMALS (source Bolton 1976)

Species marked thus * were recorded during the survey.

RHESUS MACAQUE *Macaca mulatta*

* COMMON LANGUR *Presbytis entellus*

* GOLDEN JACKAL *Canis aureus*

INDIAN WILD DOG *Cuon alpinis*

INDIAN FOX *vulpes bengalensis*

* HIMALAYAN BLACK BEAR *Selenarctos thibetanus*

RED PANDA *Ailurus fulgens*

YELLOW-THROATED MARTEN *Martes flavigula*

* HIMALAYAN WEASEL *Mustela sibirica*

COMMON OTTER *Lutra lutra*

* JUNGLE CAT *Felis chaus*

LEOPARD *Panthera pardus*

* WILD BOAR *Sus scrofa*

MUSK DEAR *Moschus moschiferus*

SEROW *Capricornis sumatraensis*

GORAL *Nemorhaedus goral*

FLYING SQUIRREL *Petaurista sp.*

VOLE *Microtus sp.* (*sikimensis*?)

* HIMALAYAN MOUSE HARE (PIKA) *Ochotona roylei*

Golden jackal, wild boar and Himalayan mouse hare were common. The common langur was recorded several times and Himalayan weasel, jungle cat and Himalayan black bear were seen on one occasion. Droppings from the black bear were noted near to the old village of Chhapru as well as on the path just below Ghurchi Lagna.

5. RECOMMENDATIONS FOR FUTURE SURVEYS.

All aspects of the flora and fauna at the park are under-recorded and therefore any type of survey work would be beneficial.

Valuable information regarding bird species would be gathered from a survey undertaken between April and June at the height of the breeding season. The most interesting period for migrants at the lake are early winter (October/November) and late winter (March/April) which also corresponds to the easiest months to see wintering birds.

There is great scope for research into the wide range of mammals and insects, particularly butterflies, present inside the park.

Further detailed survey work of the rich and varied species of grasses, herbs and plants is needed and just before and during the monsoon (June to September), when the majority of species are in flower, would be the best time.

6. REFERENCES

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