Recoveries of marked birds from Ujjani Reservoir, Maharashtra

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Despite the advent of technology-driven satellite telemetry studies, traditional bird ringing continues to be an essential method in ornithological studies. We can learn much about the migration patterns, longevity, survival rates, breeding and natal dispersal, and population dynamics of birds by capturing, tagging, and tracking individual birds (Rahmani 2017). For both landscape level as well as site-specific conservation, information obtained through ringing studies about site fidelity, population movements, migratory routes, stop-over sites, and habitat usage are especially helpful (Spina 1999; Anderson & Green 2009).

Ujjani Reservoir (18.074°N, 75.120°E) is created by Ujjani dam built across the Bhima River in Solapur, Pune, and Ahmednagar districts of Maharashtra, India. The shallow water areas of the reservoir, especially near Kumbhargaon (18.265°N, 74.805°E), attract large congregations of shorebirds, ducks, and flamingos. It is identified as an Important Bird Area (IBA) that regularly supports more than 20,000 waterbirds, as well as a potential Ramsar site due to its importance for bird and wetland conservation (Rahmani et. al. 2016). The islands in the reservoir also provides nest sites for River Tern *Sterna aurantia*, Little Tern *Sternula albifrons*, and Small Pratincole *Glareola lactea* (Bharucha & Gogte 1990; Chavan & Kumbhar 2020).

Despite its importance for waterbirds, including resident birds, local migrants and trans-national migrants of the Central Asian Flyway (CAF), no ringing studies have been carried out to identify the migratory paths of birds visiting Ujjani. In the year 2022–2023, we carried out bird ringing near the villages of Kumbhargaon and Shah (18.118°N, 75.089°E), both on the banks of the reservoir. All captured shorebirds were ringed on their right tarsus in even years and left tarsus in odd years with a metal engraved ring from the BNHS with a unique number on it. In addition, each bird was marked with two colour flags on its opposite leg—a white flag with red numbers engraved and a plain white flag—following the protocol followed here in the BNHS **[3]**. For the terns, in addition to the metal rings, they also were marked with a single white flag with red engraving **[4]**. Details of the individual tag and ring numbers are available from the corresponding author on request. Standard protocols for ringing were followed and data about age, sex, moult and morphometric measurements were taken before releasing the bird. A total of 533 individuals of 48 resident and migratory species were marked during the study, fuller details are being prepared (Joshi et al. in prep).

Akash Dolas

3. A Black-winged Stilt marked as per East Asian Australasian Flyway Protocol at Ujjani Reservoir.

Anand Deshpande

4. A River Tern marked with metal ring and plastic flag at Ujjani Reservoir.

In this communication, we summarise re-sightings and recaptures and movement information generated in the last two years, till December 2024 (Table 1). We also included two instances where birds marked elsewhere, were recorded in our study area. There have been many re-sightings of the bird in the immediate neighbourhood of the ringing sites, and these are not listed here.

Kentish Plover *Anarhynchus alexandrinus*: In India, we have two subspecies of the Kentish Plover, the nominate and the *seebohmi*. The nominate subspecies is known to breed in northern Indian subcontinent extending further north into Central Asia and west towards West Asia while the *seebohmi* is, till date, considered a resident or a local migrant in peninsular India and Sri Lanka (del Hoyo et al. 2023). Here, we report two instances where we photographed Kentish Plovers, marked elsewhere, from the banks of the Ujjani reservoir (Figure 1, Table 2). The first individual was marked from Point Calimere, Tamil Nadu (10.298°N, 79.798°E) while the second one was marked from Pulicat Lake, Andhra Pradesh (13.647°N, 80.155°E), both marked as a part of the migration studies of the BNHS. Both were identified as the nominate subspecies at the site of ringing and we had no way to verify the same from the photographs. Birdwatchers have reported nesting of the Kentish Plover on the exposed reservoir banks during April and May (Datta Nagare, pers. comm., May 2022), and the breeding population is likely to be *seebohmi* based on range as they have been reported breeding as far as the Vidarbha region of Maharashtra (Kasambe 2007). However, it remains unclear whether these marked individuals bred in the area or were using Ujjani as a stopover during their northward migration to breeding grounds within India or further north. There has been just one instance of capture-recapture of an individual within India; a ringed bird from Karera, Madhya Pradesh in 1985 was recovered from Alakol region in Kazakhstan in 1987 (Balachandran et al. 2018).

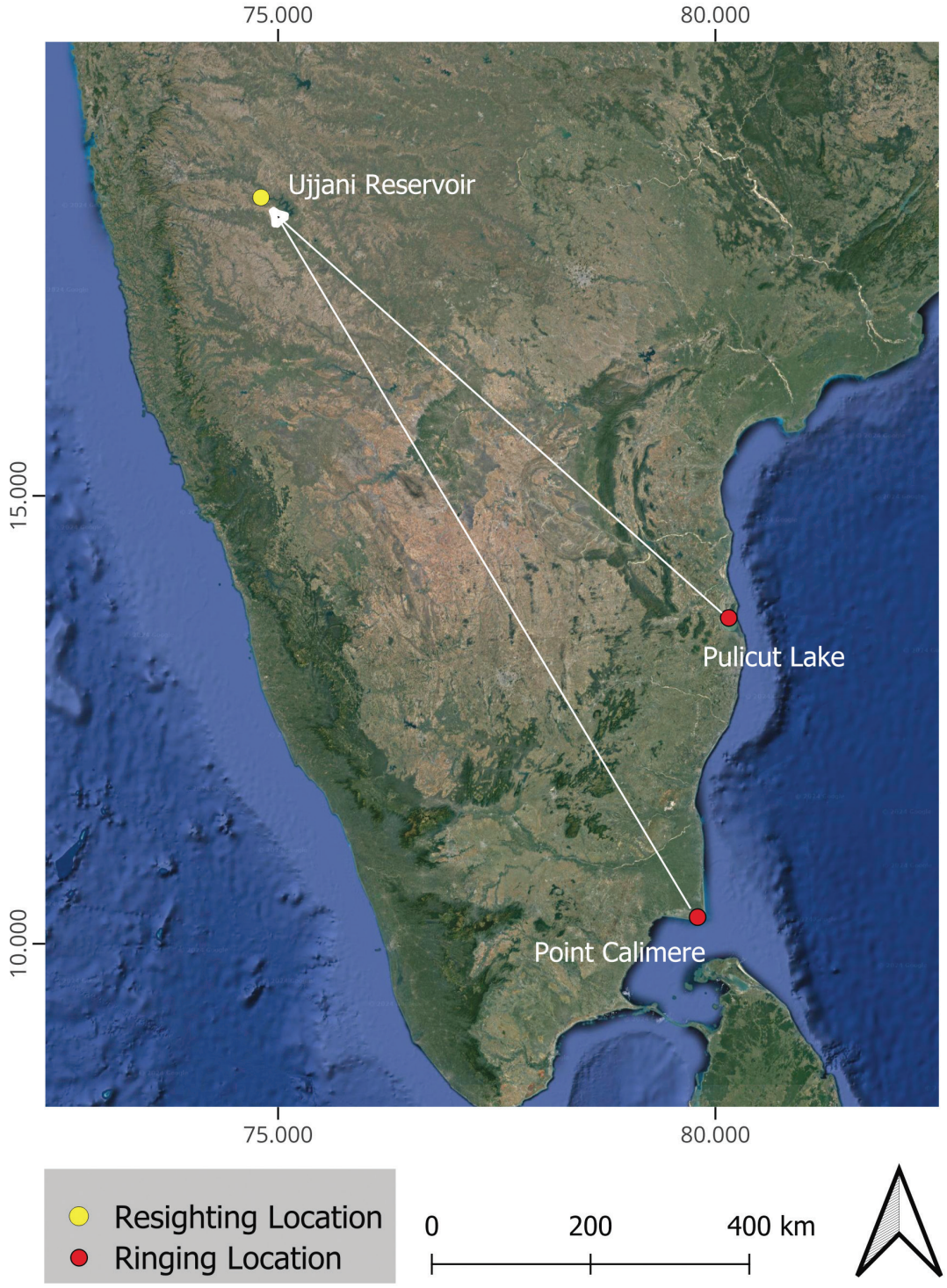

Figure 1: Kentish Plover movements to Ujjani Reservoir from captures sites on the south-eastern coast of India

River Tern *Sterna aurantia*: A species generally consider resident in the river systems in India but facing threats in its breeding grounds and hence listed as Vulnerable under the IUCN (BirdLife International 2020). A chick marked at Ujjani Reservoir was resighted *c.*100 km away at Walki dam near Ahmednagar (Table 2). These provide the first documentation of local

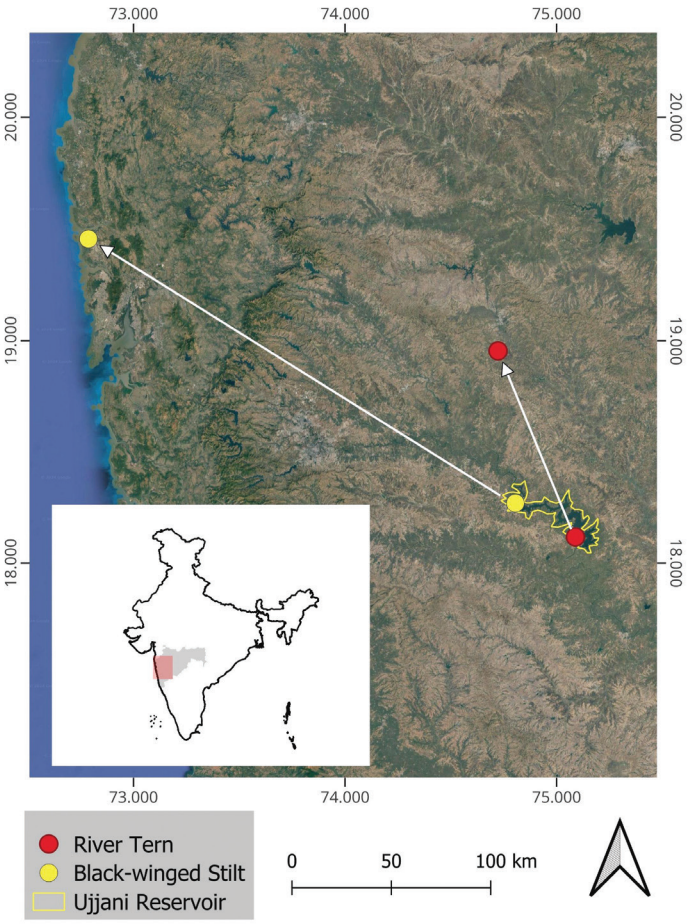

Figure 2: Dispersal of birds marked in Ujjani Reservoir

movement for this species. Another chick marked at Shah Island was recaptured on Chincholi Island, *c.*30 km from its hatching site in the same reservoir, along with the breeding pairs of River Tern (Table 2). We were not able to ascertain if this individual was breeding at the time.

Black-winged Stilt *Himantopus himantopus*: Widely distributed across India, with two populations, a resident and with migratory populations arriving from regions north of India during the northern winter (Maleko et al 2023). A chick was marked at Ujjani Dam and resighted ***c.***250 km away at Virar, near Palghar beach in Maharashtra after just 45 days (Figure 2, Table 2). However, another chick marked at Ujjani Dam was resighted after 18 months at the same place (Figure 2, Table 2).

There are three known mark-recapture instances recorded for this species involving Indian sites. These include one bird ringed from Bharatpur, Rajasthan in March 1969 and recovered in Khyber Pakhtunkhwa, Pakistan, in April 1969. Another bird, ringed at the same location in April 1973, was recovered in Khyber Pakhtunkhwa in March 1980. Additionally, a bird ringed from Bharatpur in October 1970 was recovered near the Caspian Sea in Russia in September 1975 (Balachandran et al 2018).

Wood Sandpiper *Tringa glareola*: A long-distance migratory wader that uses inland and coastal wetlands across India. It breeds in northern Eurasia and migrates to regions south including Africa, South Asia, and Southeast Asia for the non-breeding season (Rasmussen & Anderton 2012).

One individual marked at Ujjani Dam in April 2022, was recaptured one year later at the exact same place (Table 2). Another individual marked at same place was resighted a bit upstream in the reservoir after two years (Table 2).

Balachandran et al. (2018) documented several ringing recoveries of the species. Two birds ringed in West Bengal in April 1967 were later recovered in the Aral Sea and Magadanskaya, Russia, in May 1967. Another bird, ringed in Mandapam in February 1986, was found in Yakutia, Russia, in May of the same year. Among the birds ringed in Bharatpur, two individuals marked in March 1972 were recovered in Ahal, Turkmenistan, in October 1973, while another was recovered from Karagandy,

Table 2. Capture and recovery information of birds from Ujjani Reservoir, Maharashtra

Sl No	Species	Capture date	Recovery date	Days since capture	Capture Site	Recovery Site	Distance of Recovery Site (km)
1	Black-winged Stilt *Himantopus himantopus*	05 May 2024	18 June 2023	45	Kumbhargaon, Ujjani Reservoir	Virar, Near Mumbai, Maharashtra	250 km
2	Black-winged Stilt *Himantopus himantopus*	10 June 2022	16 December 2023	554	Kumbhargaon, Ujjani Reservoir	Kumbhargaon, Ujjani Reservoir	0 km
3	Pacific Golden Plover *Pluvialis fulva*	07 April 2023	25 August 2023	140	Kumbhargaon, Ujjani Reservoir	Kumbhargaon, Ujjani Reservoir	0 km
4	Kentish Plover *Anarhynchus alexandrinus*	29 November 2021	17 May 2022	169	Point Calimere, Tamil Nadu	Ujjani Reservoir	*c.*1,000km
5	Kentish Plover *Anarhynchus alexandrinus*	31 December 2022	13 February 2024	409	Pulicat lake, Andhra Pradesh	Kumbhargaon, Ujjani Reservoir	*c.*800km
6	Wood Sandpiper *Tringa glareola*	12 April 2022	06 March 2023	328	Kumbhargaon, Ujjani Reservoir	Kumbhargaon, Ujjani Reservoir	0 km
7	Wood Sandpiper *Tringa glareola*	27 November 2022	30 November 2024	734	Kumbhargaon, Ujjani Reservoir	Bhigwan, Ujjani Reservoir	5km
8	River Tern *Sterna aurantia*	12 June 2022	30 December 2022	201	Shah, Ujjani Reservoir	Walki, Near Ahmednagar, Maharashtra	100km
9	River Tern *Sterna aurantia*	12 June 2022	06 April 2023	298	Shah, Ujjani Reservoir	Kumbhargaon, Ujjani Reservoir	40km

Kazakhstan, in May 1967. Additionally, six birds were recovered from the Ob River region in Tyumen and Khanty-Mansi, with one found along the Ob Delta in Russia. Eight birds ringed in Bihar and West Bengal were later recovered in the Central Siberian Plateau and Magadan region of Russia. Within India, birds ringed in Bharatpur were recovered in Chennai, Vellore, and Thanjavur in Tamil Nadu, as well as Mahbubnagar in Telangana.

Pacific Golden Plover *Pluvialis fulva*: A migratory shorebird whose Asian populations spend the northern winter in the coastal wetlands, and grasslands of India after breeding in the Arctic tundra, arrive by September–October and departs by March–April (Rasmussen & Anderton 2012).

The Pacific Golden Plover is a passage migrant to the Ujjani reservoir. Up to 20–25 birds are often seen during August–September and March–April while being absent during the intervening months. Two individuals were marked during their northern migration in spring were resighted during their southward migration in autumn, during the subsequent season (Table 2).

Conclusions

Our study offers some insights into the connectivity of Ujjani reservoir with surrounding habitats, including other wetlands, reservoirs, and coastal areas, and how migratory birds are utilising this wetland. It is clear that this wetland is offering multiple uses for individual waterbirds—as breeding sites, wintering habitats, as well as stop-over sites during migration.

It also appears that the local breeding population of River Terns and Black-winged Stilts may be the source population for the neighbouring wetlands and we demonstrated that they disperse locally after breeding. Continued sustenance of this resident population requires the management of Ujjani reservoir as well as the wetlands in the immediate neighbourhood.

While previous ringing studies have demonstrated the trans-national migration of Wood Sandpipers to several sites in northern Asia, here, we demonstrated evidence of their non-breeding site fidelity across a period of two years. The wetlands of the northern Deccan may be serving as important non-breeding habitat for these shorebirds during the winter months.

While it was known that Pacific Golden Plovers are passage migrants through the Deccan, our studies demonstrated that the individuals tend to use the same stop-over sites during their onward and return migration. This is important as wetlands in the northern Deccan tend to dry-up early during harsh summers and may have an impact on the return migration of such waders.

Ujjani Reservoir is managed by the state irrigation department and lacks legal protection. Our observations indicate that shallow water areas of the wetland are drying-up by the second half of March due to extraction of water for irrigation. This results in a reduction of critical feeding sites, and risks forcing birds to leave the area before they may be able to build adequate energy reserves for migration. It may perhaps be crucial to maintain a minimum water level in the reservoir during the northern summer months for offering feeding and nesting sites for the birds. Additionally, disturbances like trampling by grazing livestock, free-ranging dogs, and discarded fishing nets on temporary islands used by ground-nesting waterbirds may compromise the breeding success of resident species. Designating and managing parts of the reservoir as a bird sanctuary could potentially strengthen management of the wetland to mitigate these issues (Bharucha & Gogte 1990).

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