

Report: Satellite tagged birds of prey visiting Gujarat

Nirav Bhatt: H-52, GIDC Residential Plots, Wadhwan 363035. birdwatchernrb@gmail.com

The technological improvements in electronics and communications in the recent years have revolutionized bird migration studies. The latest Platform Transmitter Terminals (PTTs) are small enough to allow birds as light as 100 gms to be tracked. The PTTs transmit basic data about their functioning that is picked up by the Argos satellites as they pass overhead. Due to the Doppler Effect, a shift in wavelength of these radio transmissions occurs as the satellite passes overhead and this allows the ground-based part of the satellite system to calculate the positions of the PTT and the bird carrying it. This is not as accurate as GPS – typically the best locations are accurate to within 500 mts, whereas GPS has an accuracy of a few meters. It is, however, very accurate on a global and regional scale and provides a far more reliable and detailed track than other, slightly smaller, tracking devices such as geolocators (BTO 2017). The transmitters usually work for 10 hrs before going to 'sleep' mode for 48 hrs to allow the solar panel to recharge the battery. This continues till the tag fails or the bird dies.

The data collected by the PTTs is now freely available on the internet and can be seen by everyone. Based on the data shared by many different researchers in various parts of the world, we are now able to see, in real time, that some satellite tagged birds of prey are visiting Gujarat. I present here data collected from various sources regarding satellite tagged birds of prey visiting Gujarat.

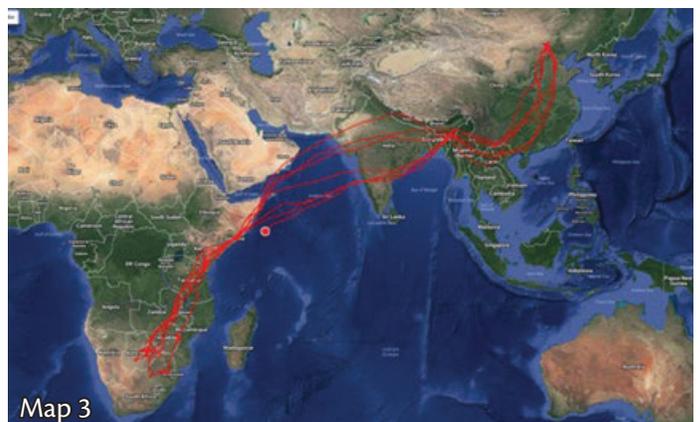
Part 1 – Eagles (*Aquila* sp.) from Russia

Bird 1 – named 'Zava' – a female Greater Spotted Eagle (*Aquila clanga*) – transmitter currently inactive.

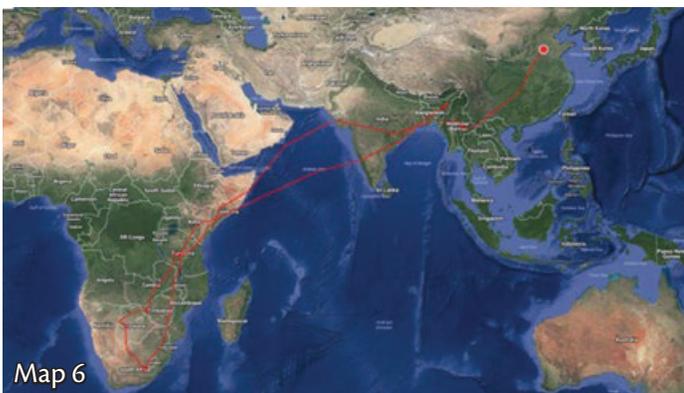
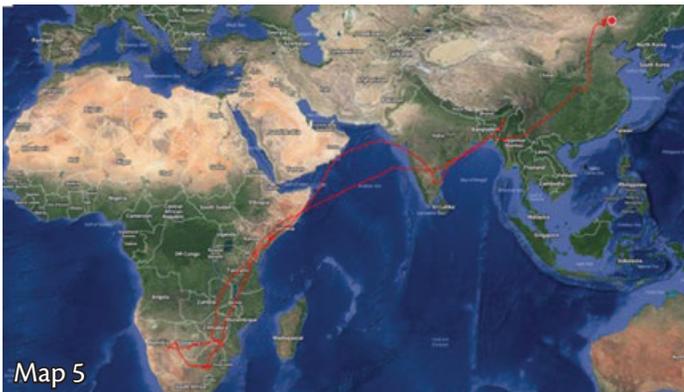
This female Greater Spotted Eagle was tagged when it was in its nest as a fledgling in Russia on 18 July 2013. It started migrating from 18 September 2013, and travelled south. It visited Gujarat on 28 and 29 November 2013, when it was located near Navagam and Deesa, in north Gujarat. It travelled further south till Andhra Pradesh, passing through Madhya Pradesh and Maharashtra. Its journey in Gujarat is given in Map 1 (Source: Russian Raptor Research and Conservation. Website URL: <http://rrrcn.ru/en/migration/eagles/2>)

Bird 2 – named 'Eva' – a young fledged Steppe Eagle (*Aquila nipalensis*) – transmitter currently active.

A recently fledged Steppe Eagle was tagged in Russia on 22 July 2016. It visited the Little Rann of Kachchh, from 28 October 2016 to 2 November 2016, and returned back to Pakistan, where it spent the winter. On 25 March 2017, it began to migrate back to its breeding grounds and the last location obtained was near Uzbekistan. The interesting part regarding its migration was its presence in the Little Rann of Kachchh,



tagged birds....



and eastern part of Greater Rann of Kachchh (north of Adesar) for almost one week at the end of October 2016. The migration route of this eagle, including its travels in Gujarat, is given in Map 2a and Map 2b (Source: Russian Raptor Research and Conservation. Website URL: <http://rrrcn.ru/en/migration/eagles2016/3>)

Part 2 – Amur Falcons (*Falco amurensis*) passing through Gujarat

Amur Falcon is a migratory falcon breeding in North-east Asia and wintering in South-east Africa (Rasmussen & Anderton 2012). It is a passage migrant in India, passing through the Peninsula during both spring, and autumn, passage migration. There was a lot of interest in the migration routes of Amur Falcon and recently, a few Amur Falcons were tagged in

Nagaland, India. This is an ongoing project by the Wildlife Institute of India, Government of Nagaland, and various other international organizations.

The data obtained from these satellite tagged Amur Falcons shows that during autumn migration, these falcons prefer a route through southern India, with majority of them crossing India through Maharashtra, Karnataka and Goa. While on return (spring) migration, they prefer a route through Gujarat & Rajasthan. This is detailed below as follows:

Bird 1 – named 'Naga' – transmitter currently inactive.

The transmitter on this bird was active for three years. The bird passed through Gujarat twice and once through Rajasthan during spring migration. The migration route for this individual is given in Map 3.

Bird 2 – named 'Pangti' – transmitter currently inactive

This individual was tracked over two years, and during spring migration in both the years, the bird passed through Gujarat (Map 4).

Bird 3 – named 'Longleng' – transmitter currently active

This individual also passed through Gujarat during spring migration, touching southern Saurashtra and then proceeding further to its breeding grounds (Map 5).

Bird 4 – named 'Hakhizha' – transmitter currently active.

This individual also passed through Gujarat during spring migration (Map 6).

Discussion

The migration routes of birds of prey are still not very well known. Many migratory birds of prey spend the winter months in India. These are reports of only a few individuals, of three-four species, on which studies have been made. The data gathered from PTTs fitted on these birds has provided valuable insights into the migration routes taken by these birds of prey. As can be seen from the above details, the Greater Spotted Eagle and Steppe Eagle visited Gujarat during winter. More individuals were tagged by the Russian Raptor Research and Conservation (RRRCN 2017); one Greater Spotted Eagle and three Eastern Imperial Eagles (*Aquila heliaca*) tagged in Russia, wintered in southern Pakistan, at the mouth of the Indus river delta, very near to Greater Rann of Kachchh, Gujarat. The Greater Spotted Eagle visited this same area in southern Pakistan for three consecutive years in the winter. Thus, these individuals tagged in Russia, visited Gujarat or wintered very near the state border.

The data gathered from the migrating Amur Falcons is fascinating. It appears that during autumn migration, the birds prefer a more southern route, passing through South India while on their way to their wintering grounds in southern

Africa. However, during spring migration, they prefer a more northern route, wherein they cross the Arabian Sea and make landfall in Gujarat, and cross the Peninsula on the onward journey to their breeding grounds. This data is in line with the known sightings of Amur Falcon in Gujarat. There are records of the Amur Falcon from Gujarat during autumn as well as spring migration, and it is an uncommon passage migrant here (Ganpule 2011). Recently, a flock of 18 birds was noted in Velavadar NP during spring passage in April 2016 (Maheria 2016), and there are a few photos/reports of the species on websites (Oriental Bird Images, eBird) during autumn and spring migration from Gujarat in the past two-three years.

There have been reports of ringed/tagged birds of prey from Gujarat recently; a ringed Peregrine Falcon released in May 2009 in Kazakhstan was photographed in Little Rann of Kachchh (Bhatt 2010), while an Eastern Imperial Eagle, which was wing-tagged in Kazakhstan, was seen in Little Rann of Kachchh (Sangha *et al.* 2016). A Pallid Harrier (*Circus macrourus*) tagged in Velavadar NP in March 2008, travelled through Pakistan, Afghanistan, Turkmenistan and Uzbekistan, to spend the summer in its central Kazakhstan breeding grounds (Terraube *et al.* 2012). Research is being carried out in India also to study the migration of raptors; an adult and a juvenile Montagu's Harrier (*Circus pygargus*) were fitted with PTTs in Nannaj grasslands, near Solapur, Maharashtra, in December 2016 (Pune Mirror 2017). Both these harriers migrated to Kazakhstan for breeding in the summer and one bird is back in the same area for the winter this season (in 2017). More birds are to be tagged in Rajasthan too for migration studies.



Nirav Bhatt

Satellite tagging is revealing more details about the migration route, duration of migration, the number of days spent wintering in a particular area and also the return migration

route. These birds of prey cover long distances and undertake perilous journeys to come here in the winter. The conservation and habitat requirements of these wonderful birds are being studied by scientists by using satellite telemetry. However, it would be prudent to point out that there are also negative effects of PTTs on the birds. A recent study in tagged Red Kites (*Milvus milvus*) found that 22% birds had moderate to severe lesions due to radio transmitters fitted on their backs (Peniche *et al.* 2011). In Saker Falcons (*Falco cherrug*), it was found that harness mounted transmitters resulted in decreased survival rates and the birds suffered from other detrimental physical effects (Dixon *et al.* 2016).

Hence, it is advisable to use PTTs judiciously, balancing the need for information with the welfare of the birds. Gujarat is a well known destination for birds of prey in the winter and bird watchers are urged to look out for such satellite tagged birds.

References

- Bhatt, N., 2010. Ringed Peregrine Falcon *Falco peregrinus* in Gujarat. *Indian BIRDS* 6 (4&5): 97
- British Trust for Ornithology. 2017. <https://www.bto.org/science/migration/tracking-studies/cuckoo-tracking/tracking-technology> [Accessed on 30 August 2017].
- Dixon, A., Ragyov, D., Purev-Ochir, G., Rahman, M. L., Batbayar, N., Bruford, M. W., & Zhan, X. 2016. Evidence for deleterious effects of harness-mounted satellite transmitters on Saker Falcons *Falco cherrug*. *Bird Study* 63(1): 96-106
- Ganpule, P., 2011. The status and distribution of Amur Falcon *Falco amurensis* in Gujarat, India. *Indian BIRDS* 7 (2): 45-46
- Maheria, P. 2016. Amur Falcons at Velavadar. *Flamingo* 14 (4): 21
- Peniche, G., Vaughan-Higgins, R., Carter, I., Pocknell, A., Simpson, D., & Sainsbury, A. 2011. Long-term health effects of harness-mounted radio transmitters in red kites (*Milvus milvus*) in England. *Veterinary Record* 169 (12): 311-316
- Pune Mirror, 2017. <http://punemirror.indiatimes.com/pune/others/journey-of-montagus-harrier-to-be-charted/articleshow/56285770.cms> [Accessed on 30 August 2017].
- Rasmussen, P. C. & Anderton, J. C. 2012. *Birds of South Asia: The Ripley Guide*. 2 vols. 2nd Ed. Smithsonian Institution and Lynx Edicions, Washington D. C. and Barcelona.
- Russian Raptor Research and Conservation Network (RRRCN). 2017. Website URL: <http://rrrcn.ru/en/migration> [Accessed on 30 August 2017].
- Sangha, H. S., Ganpule, P., & Raote, N., 2016. Wing-tagged Eastern Imperial Eagle *Aquila heliaca* in the Little Rann of Kachchh, Gujarat, India. *Indian BIRDS* 12 (2&3): 73
- Terraube, J., Mougeot, F., Cornulier, T., Verma, A., Gavrillov, A., & Arroyo, B. 2012. Broad wintering range and intercontinental migratory divide within a core population of the near threatened Pallid Harrier. *Diversity and Distributions* 18(4): 401-409 □