

The Quarterly Newsletter of Ela Foundation for Nature Conservation through Education and Research

## **Editorial**

## **Satish Pande**

2013 AD grandly presented Ela Foundation with a pleasant surprise! It was the recognition of the 'Certificate Course in Basic Ornithology' as a credit course by the University of Pune. This is an important step for ornithology, and it ushers ornithology as a discipline into the academic curriculum of Pune, the Educational Capital of our country. The Ornithology Course is now in the 10th consecutive year and this year we have 105 participants from various walks of life. All these important people are ambassadors of nature conservation.

Another important mile stone for two members of Ela Foundation is the description of a new species of amphibian from Maharashtra. This new species of frog was described by Anand Padhye and he graciously named it in commemoration of his teacher, Hemant Ghate. *Raorchestes ghatei* the new frog species, is a shrub frog which was everywhere, everyone saw it, but only one man understood its significance. Ela Foundation is proud of Anand Padhye, the Associate Editor of Ela Journal.

The International Raptor Conference is at our doorstep. The 8th ARRCN, India, will be hosted jointly by Ela Foundation, IISER, Pune, High Places Management Pvt. Ltd. and the Asian Raptor Research and Conservation Network. The esteemed Platinum Sponsors of this unique conference, to be held for the first time in India are Darode - Jog Properties. We now have over 130 scientific papers from 17 countries including India. This event will give the participants an opportunity to meet stalwarts from the field of raptor research from round the globe and the ornithologists shall exchange thoughts and present their important research on this forum.

In view of declining global raptor populations due to

various reasons like habitat loss, pesticide use, electrocution, human encroachments, hunting, trapping, superstitious beliefs and several other causes, unified efforts are all the more necessary to save our raptors, the apex predators of the avian world. Raptors indicate the state of health of our environment and hence their study has vital importance. They are long lived birds and are vulnerable to human interference. The recent vulture crisis has demonstrated the vulnerability of these large birds. Many species of raptors like the Osprey, Greater Spotted Eagle, Steppe Eagle, Imperial Eagle, Booted Eagle, Golden Eagle, Northern Goshawk, Saker Falcon, Amur Falcon, buzzards, hawks, etc. are trans-continental migrants and unless multi-national efforts are collaboratively implemented, their effective conservation shall not be achieved. The International Raptor Conference aims to bring positive changes by mutual international understanding and exchange of knowledge. We aim to secure the future of raptors. In the safety of raptors is the safety of human race.

I invite the participation of all Ela Foundation members for the 8th ARRCN, India, to be held between 6 and 9 February, 2014. It is an honour bestowed upon us by the international body of raptor experts to host this conference for the first time in India. With this honour also comes a great responsibility. The task is to protect and conserve the habitats that the raptors need for their survival. The answers are hidden in education of masses and the solutions are possible if the minds are sufficiently kindled. If love for everything wild and natural awakens in our hearts, safety of our raptors is assured. Let us try to take this sensible step. Let us look beyond ourselves. The opportunity has knocked at our door... Can we open the door?



## On the Dormancy and life span of *Laccoptera foveolata* (Boheman 1856), Cassidinae – Insecta – Arthropoda.

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Referee: Dr Hemant Ghate and Dr. R. M. Sharma

## **ABSTRACT:**

We recorded dormancy in *Laccoptera foveolata*. These beetles appear only during rainy season when they are very active, feed greatly on the fresh leaves of their host plants, lay eggs and complete the life cycle. The current study also reports a new host plant *Ipomoea triloba* for larvae as well as adults of *Laccoptera foveolata*.

**SCIENCE** 

**Key words:** *Laccoptera foveolata*, Chrysomelidae, Coleoptera, *Ipomoea triloba*, host plant.

## **INTRODUCTION**

Tortoise beetles belong to the sub-family Cassidinae, of the family Chrysomelidae. These leaf eating beetles feed on host plant leaving conspicuous feeding marks on the leaf lamina. These beetles have characteristic



Fig.1: Host plant- Ipomoea triloba



shape like the shield of a tortoise hence the name. They are often brightly coloured. During the recent survey, Laccoptera foveolata (Boheman 1856) was found on a road side climber belonging to family Convolvulaceae, identified as Ipomoea triloba, on Pashan NDA road and near Cummins India Ltd. factory, Kothrud, Pune. Previously this beetle was known from Sinhagad (Ranade et al. 1998) and Lonavala-Khandala (Ranade et al. 1999) near Pune (Ranade et al. 2004). This species was earlier known from Burma (Now Myanmar), (Maulik, 1919, as mentioned by Ranade et al. 2004). According to Ranade et al. (2004), who have also described the life cycle of this species in detail, food plant of this species is Ipomoea nil. In the current study, this beetle was found to complete its life cycle on a different host plant, Ipomoea triloba (Fig. 1) and therefore this is also a report of a new host plant for the species.

## MATERIALS AND METHODS

Larvae as well as adults of Laccoptera foveolata feeding on Ipomoea triloba plants were collected from different localities in Pune such as Pashan, Kothrud, Pune University etc. as shown in map (Fig. 2). They



## Fig.2: Map showing Laccoptera foveolata collection sites in Pune City.

were hand picked and kept in a jar with fresh leaves for observation in captivity. To record the observations of adult beetles, a jar was prepared by adding some moist soil at the bottom and fresh Ipomoea leaves along with some decaying and dried leaves. The moist soil was added to maintain the moisture inside the jar. The jar was maintained by cleaning it after an interval of six days and adding fresh Ipomoea leaves to it regularly.

The Ipomoea triloba plant was maintained in a pot in the terrace garden to ensure the supply of fresh leaves. The photographs were taken in the field as well as in the laboratory using Canon Full HD-50x camera.

## **RESULTS** LIFE CYCLE-

Ootheca- Many oothecae were laid along the midrib of the leaf lamina by the female beetle of the mating pair in captivity (Fig. 3) Oothecae were laid singlely,



**Fig.3: Mating Pair in captivity** 

each ootheca was measuring about 2.5mm in length and it was yellowish brown, covered with a thin papery substance, containing a single egg and partly or completely covered with black faecal matter. (Fig. 4)



Fig.4: Oothecae partly covered with faecal matter.

## Larval Description-

First instar larva- The freshly hatched larvae of Laccoptera foveolata were creamy-white translucent in color with oval, dorso-ventrally flattened body (Fig.5). The larva is widest across the middle, gradually narrows posteriorly. The body is about 1.5 mm in length and



# **SCIENCE**



Fig.5: First instar larvae.

0.7 mm in width. It has 16 pairs of lateral scoli and a pair of supra-anal processes on the last abdominal segment. Larva has well sclerotised hypognathous head.

Fifth Instar Larva- The fifth instar larva appeared dark green in colour with oval, dorso-ventrally flattened body (Fig. 6). Antero-dorsal pair of dark black eyes was



Fig.6: 5th instar larvae collected from the field

clearly seen. The larva moved actively with its several lateral processes and scoli. Each larva carried its excreta on the dorsal side of the last abdominal segment on the supra-anal processes. Segmentation was clearly visible on the larval body. They were continuously under observation and were provided with fresh Ipomoea leaves regularly. They fed on the leaves by scraping the upper and lower surfaces of the leaf lamina.

Pre-pupal larva- The fifth instar larva stops feeding completely and gets transformed to the pre-pupal larva. The larval colour changes from dark green (Fig. 7A) to brown (Fig. 7B). Its activity lowers down and it settles on a leaf to undergo the metamorphosis.

Metamorphosis & Pupal Description- After about 15 days of feeding, larvae metamorphosed into pupae (Fig. 8A & B). They pupated along the margin of the leaf lamina. The pupae appeared grayish black in colour with transparent puparium. They showed faecal matter





Fig.7: Pre-pupal larva A: on the leaf of host plant in field (Shown by Arrow) & B: Closeup (in captivity)

completely covering the dorsal surface of its body. The pupae had dorso-ventrally flattened body with pointed and triangular anterior end. Lateral pupal processes and

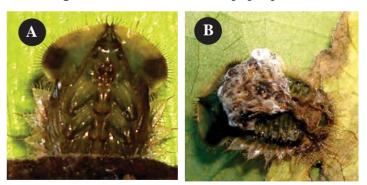


Fig.8: Close up of Pupa A: Dorsal view B: Ventral view

pupal horns can be clearly observed (Fig. 8A). Ventrally the pupae showed a pair of dark black eyes and folded legs (Fig. 8B).

Adult Description- After six days of pupal period both the adults emerged out (Fig. 9). The adults started feeding on fresh *Ipomoea* leaves on the same day. Adult On the Dormancy and life span of *Laccoptera foveolata* (Boheman 1856), Cassidinae - Insecta - Arthropoda.

# **SCIENCE**

length was about 5.1 mm. The adults were oval in shape with dark black colour. They had thick rough elytra having elevations and depressions. The elytra also showed puncturations. They fed on leaf lamina by scraping the upper and lower surfaces with oval markings (Fig. 10 A&B).

## **DORMANCY-**

Two fifth instar larvae were collected from Ipomoea triloba vegetation, on 27th July 2011. After about 15 days of feeding (10th Aug. 2011), one of the larvae metamorphosed into pupa while the second larva pupated on the next day (11th Aug. 2011). After six days of pupal period both the adults emerged out early in the morning on 17th Aug 2011. The beetles fed on Ipomoea leaves till the mid of November month (17<sup>th</sup> Nov. 2011). After this it was observed that the feeding rate of both the adults was decreasing day by day. At the end of November-2011, they stopped feeding completely, even though provided with fresh leaves. Now they remained motionless under the dried leaves. When disturbed and provided with fresh leaves on 18th March 2012, they fed for sometime and once again went into the phase of inactivity on the same day. The dormancy period which was recorded lasted for five months, from 17<sup>th</sup> Nov-2011 up to 18<sup>th</sup> March 2012. After this it was observed that the insects started feeding normally when provided with fresh leaves from 15th April 2012. They fed continuously for a month and half. One of the beetle then died on 27<sup>th</sup> May 2012, the reason is unknown. The surviving beetle was maintained and it was under observation.

On 25th Aug.2012, two fresh adult specimen of Laccoptera foveolata were collected from vegetation on the wired fencing of Cummins India Ltd. factory, Kothrud, Pune. These specimens were introduced with the survived specimen on 1<sup>st</sup> Sept. 2012, and were kept in the same jar under observation. The old survived specimen was marked by making two white spots on the elytra, so that it could be easily identified from the other two newly introduced specimens (Fig.11). All three specimens were provided with Ipomoea leaves, which fed normally but no mating behavior was recorded among the three individuals. Of the two newly introduced beetles, one died on 24th Sept. 2012. The remaining two specimens were observed every day. Once again it was observed that at the end of month of Nov. 2012 these insects stopped feeding gradually day by day though, fresh



Fig.9: Freshly ecloded Adult of Laccoptera foveolata



Fig.10: A – Adults feeding on the leaves (Shown by arrow) of food plant producing large oval feeding marks resembling the body of adult & **B** – Typical adult feeding pattern



On the Dormancy and life span of *Laccoptera foveolata* (Boheman 1856), Cassidinae - Insecta - Arthropoda.



Fig.11: Two new and one old beetle in active condition. The old beetle was marked by white spots (Shown by arrow) on elytra.

*Ipomoea* leaves were provided. During this period they remained at one place under the dried leaves without any movement and feeding. It was observed that the dark shiny black colour of their elytra became slightly dull. They were neither moving nor feeding during this period (Fig.12). This indicates that winter season is the period of no activity. On 19<sup>th</sup> Dec.2012, the two specimens were shifted to two separate jars for observation. The two survived specimens were maintained till 15<sup>th</sup> May 2013. The specimen collected on 25<sup>th</sup> Aug. 2012 died on 15<sup>th</sup> May 2013 which survived for nine months under captive conditions, undergoing one cycle of dormancy. The survived beetle died on 26<sup>th</sup> May 2013. Both the beetles died with unknown reason although those were provided with fresh Ipomoea leaves.

**LIFE SPAN-** The older survived beetle was maintained under captive condition that was collected as fifth instar larva stage on 27<sup>th</sup> July 2011, which ecloded on 17<sup>th</sup> Aug 2011 and died on 26<sup>th</sup> May 2013. This beetle survived for almost one year, nine months and twenty six days, from 17<sup>th</sup> Aug 2011 to 26<sup>th</sup> May 2013. The second beetle, which was collected on 25<sup>th</sup> August 2012, survived till 15<sup>th</sup> May 2013 for over nine months.

Three specimens of *Chiridopsis ventralis* were also collected on 7<sup>th</sup> July 2012 from Mulshi, feeding on *Argyreia hookeri*. These specimens were also tested for the dormancy in the similar way. However, they continued feeding and did not undergo any kind of dormancy. Rather, they died one by one till 19<sup>th</sup> Dec. 2012, and could not survive through the winter season.

### DISCUSSION

Indian Cassidinae beetles are well studied for their host plants (Ghate et al., 2003) from Pune and nearby areas from Maharashtra state. They have also described the feeding behaviour as well as the characteristic feeding marks on the leaf lamina of their host plants. Life cycle stages and bionomy of many of these beetles are also well studied (Rane et al., 2000; Boroviec et al., 2001; Ghate et al., 2004). Studies have also been done on the new locality records and cassidine diversity in Maharashtra state (Ghate & Ranade, 2002).

It is evident from all the previous studies (Ranade et al. 2004) that these beetles appear only during the monsoon when their host plants are abundant. However, it was a mystery that where do these beetles disappear for the rest of the year? Further the question asked was - which stage in lifecycle remains dormant; egg, pupa or adult? This study thus reveals the mystery of their disappearance for the first time. The detail record of adult dormancy suggests the presence of adults in the leaf litter underneath the dried host plants for the remaining dryer parts of the year. The current study holds immense importance as it gives the first concrete evidence for the adult dormancy, at least in Laccoptera foveolata. However, detail studies are needed to reveal the facts regarding dormancy process in other Cassidinae beetles.

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# SCIENCE

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Fig.12: Dormant adults (A-new & B-old), note no feeding marks despite of addition of fresh leaves C: Close-up of the old Dormant adult, note the white markings on elytra, dullness of elytra and overall body, retracted antennae and legs as compared with active beetle (Fig. 10).





## Unique Behaviour of Stoliczka's Bushchat Saxicola macrorhyncha

D. S. Kelkar\*, Sagar Kelkar and Surat Singh Poonia\*\*

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Referee: Dr Satish Pande.

\*Director, Deenanath Mangeshkar Hospital, Pune \*\*Forest Officer, Tal Chapar, Rajasthan. Stoliczka's Bushchat *Saxicola macrorhyncha* is a rare bird found in the desert and grasslands of the Indian subcontinent and is listed as globally threatened. (Collar et al 1994). F. Stoliczka first described this Bushchat (also called White-browed Bushchat) in 1872 from specimens collected in Gujarat. It is recorded from Rajasthan, Gujarat and Haryana in India and Pakistan and Southern Afghanistan. It is a secretive species and there are no records of its nests and breeding habits from India. It is known to exhibit a unique display known as 'puff and roll', the significance of which is not understood. In this paper we have made an attempt to understand the significance of this unique behaviour. We state that it is a feeding strategy and not courtship display or territorial aggression.

**Observations:** We made two field visits to Tal Chapar sanctuary, Rajasthan, the first during December 2012 (winter) and the second in August 2013 (monsoon). We visited Tal Chapar to observe this bird during morning, afternoon and evening. We observed that the Stoliczka's



Female Stoliczka's Bushchat on a perch



Female Stoliczka's Bushchat performing the 'Puff and Roll' display

Bushchat favours white desert plains devoid of grass but studded with small desert shrubs and bushes. The common perch sites were *Calotropis procera* and *Prosopis juliflora* as well as reed grass. We succeeded in photographically recording the unique puff and roll behaviour. Stoliczka's Bushchat eats insects and ants and has not been seen to eat seeds or vegetable matter (Rahmani 1996). We observed two types of feeding behaviour, picking food from the ground and aerial sorties. When the Stoliczka's Bushchat perched on bushtop and made aerial sorties to catch insects, it hovered for 3-5 seconds during each aerial sortie ascending as high as 5 m. Insects were eaten on the wing or on perch. When we observed it feeding on the ground, it first perched on top of shrubs and descended to the ground for foraging for 2-5 minutes at a time. During winter and monsoon it fed actively throughout the day.

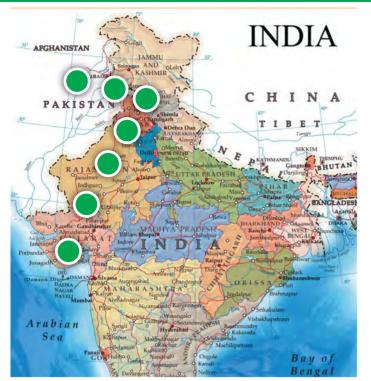
A curious behaviour during the ground feeding was the puff and roll behaviour which we could also photograph. It was not a sign of aggression or territoriality



Female Stoliczka's Bushchat in an arial sortie and on the ground.

### Unique Behaviour of Stoliczka's Bushchat Saxicola macrorhyncha

## **BEHAVIOUR**



Map showing the previous records of Stoliczka's Bushchat

as there was no other bird in sight. Interestingly, we saw the female bird puff up its breast and lower the primary feathers in such a way that the white breast and belly became conspicuous and the feathers were tucked down like a tail-coat. The bird swayed from side to side and rolled on its belly on the ground. This movement disturbed insects in the grass, which it consumed. It is important to note that this behaviour was exhibited by both the male and female Stoliczka's Bushchat. Interestingly, a one month old Stoliczka's Bushchat was also recorded exhibiting the puff and roll display while feeding. We observed this behaviour both during the Monsoon and winter. Hence, we infer that the puff and roll behaviour is a feeding strategy of male, female and juvenile Stoliczka's Bushchat, and is not gender, age or season specific.



Male Stoliczka's Bushchat in breeding plumage

Acknowledgement: We are thankful to The Forest Department and the staff of Tal Chapar Sanctuary, Rajasthan.

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Male Stoliczka's Bushchat in breeding plumage

## Birds in Astronomy 4 Aquila – The Eagle

## Prof. Mujtaba Lokhandwala\*

President, Jyotirvidya Parisanstha, Pune

#### Citation:

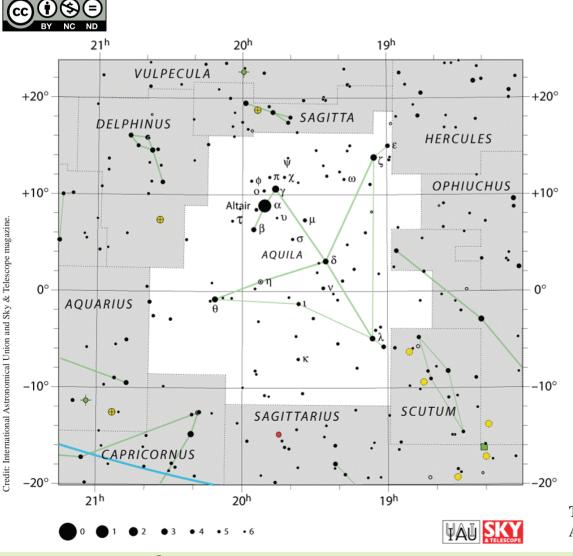
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\*Professor and President, Jyotirvidya Parisanstha, Pune Aquila is a prominent constellation in the northern sky. In Latin it means "the Eagle". In Indian mythology this constellation is associated with "Garuda" the half man – half eagle, mount of Vishnu. The eagle is supposed to be the carrier of thunderbolts of Zeus / Jupiter in Greco-Roman mythology. It is just north of the equator and is seen best in summer. Located near the Milky Way, our own galaxy, it has a number of interesting objects for viewing, including several novae. It occupies an area of 652 square degrees and contains six stars with known planets.



The map of Aquila Constellation



Aquila Urania



NGC 6751 - A Hubble Space Telescope (HST) image of NGC 6751.

 $\alpha$  Aql (Altair) is the brightest star in this constellation and one of the closest naked-eye stars to Earth at a distance of 17 light-years. Its name comes from the Arabic phrase "al-nasr al-tair", meaning "the flying eagle". Altair has a magnitude of 0.76, making it the 12th brightest star.

**Novae:** Two major novae have been observed in Aquila: the first one was seen in 389 BC and was recorded to be as bright as Venus; the other, Nova Aquilae (1918) briefly shone brighter than Altair.

**Deep Sky Objects:** There are some interesting deep sky objects of which the NGC 6751 a Planetary Nebula is beautiful and is also called the "Glowing Eye". It is estimated to be around 0.8 light-years in diameter. The star at the centre of the nebula has a surface temperature of approximately 140,000 K. It has been calculated to be roughly 6,500 light-years away from Earth. It was formed when a star collapsed and threw off its outer layer of gas several thousand years ago.

**Meteor Showers:** There are two meteor showers associated with Aquila: the June Aquilids and the Epsilon Aquilids.

NASA's Pioneer 11 space probe, which flew by Jupiter and Saturn in the 1970s, is expected to pass near the star Lambda ( $\lambda$ ) Aquilae in about 4 million years.

## The Swan and Sarasvati

## Dr. Suruchi Pande\*

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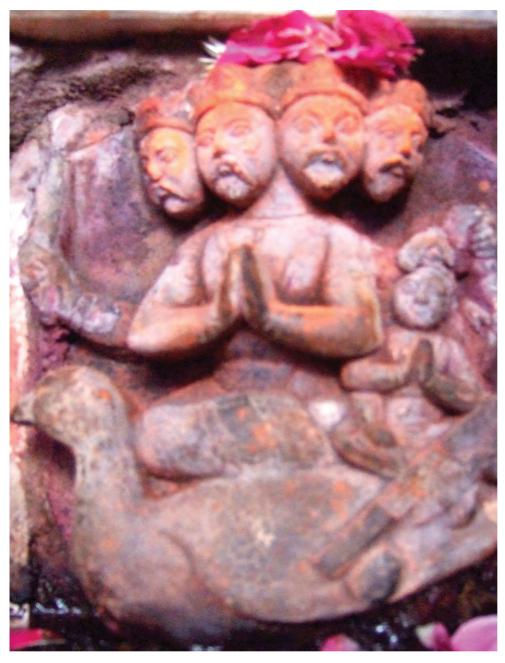
In the literature related to Indian culture the swan is depicted as the carrier vehicle of Sarasvati - the goddess of learning. Presently, swans can be seen in India only on the high altitude frozen lakes of Arunachal Pradesh. However, the migration of geese (which are synonymously treated with swans in our literature) was recorded in the Sanskrit literature. The 'kraunch randhra' (a gap through which cranes fly) mentioned by poet Kalidas, is now identified as the 'Niti Pass'. Through this gate the wild geese take their flight when they cross the Himalayas to winter in India.

We find references to swans from the times of the Rigveda, where, there is an interesting reference to a swan with purple back. It is said,





## **ETHNO-ORNITHOLOGY**



Lord Brahma on the Swan

"In secret, decking the beauty of their forms, the swans with purple backs have flown down hither." (Rigveda 7/59/7)

The symbol of a swan was frequently used in philosophical context. The highly enlightened monks were known as 'hamsa' (swan) or 'parama hamsa' (the supreme swan), for their capacity of selecting the eternal joy instead of being engrossed in momentary things of joy.

The classical Sanskrit literature also contains many references to swans. One of the great Sanskrit writers Kalidasa says,

"This is not the jingling of anklets but the cackling sound of the swans, which seeing the quarters darkened by clouds, are anxious in their hearts to fly to the Manasa Lake." (Vikramorvashiya; 4.30)

There are some reasons for believing that the white swan was the vehicle of Sarasvati, the goddess of learning. The story goes that Brahma - the god of creation and the father of Sarasvati, gave his own carrier vehicle - the swan. to his beloved daughter. It is described at several places in the Sanskrit literature that the swan looks beautiful when it swims on the flowing river. The white colour of the swan symbolizes light and pious tendencies of our mind. It is expected that our intellect should always remain flowing and enriching itself and it should not get stagnated or biased. The swan represents the path of knowledge; hence, it carries the goddess of learning on its back.

We can conclude this note with a beautiful reference from the Buddhist text 'Dhammapada' where the Buddha says,

"Swans fly through the sky; through the air they go by the reason of their intellect."

# TABLE OF CONTENTS

## Editorial Committee

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- Editorial Satish Pande .....01
- Unique Behaviour of Stoliczka's Bushchat Saxicola macrorhyncha
   D. S. Kelkar, Sagar Kelkar and Surat Singh Poonia .....08
- Aquila The Eagle
  Prof. Mujtaba Lokhandwala......11
- Range extension of Grey-headed Lapwing in Konkan
  - First record Ram Mone ..... 15

# **Grey-headed Lapwing - first record for Konkan**

Ram Mone

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Grey-headed Lapwing Vanellus cinereus 37 cm.

**Date of sighting:** 11-01-2014 **Location:** Bhile, **Taluka:** Chiplun, **Dist.:** Ratnagiri. 10 km. from Chiplun. **Habitat:**Vashisthi River Bank. **Activity:** Feeding.

**Other birds:** Great Egret *Egretta alba*, Glossy Ibis *Plegadis falcinellus*, Indian Pond Heron *Ardeola grayii*, Asian Openbill *Anastomus oscitans*, Red-wattled Lapwing *Vanellus indicus*, Little Cormorant *Phalacrocorax niger*, White-breasted Waterhen *Amanurornis phoenicurus*.

