Birding Backyard: Birdwatching in Andalas University

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Abstract. Andalas University campus complex in Limau Manis area is renowned for its beautiful scenery and close-to-nature environment due to its attachment to the forest of Bukit Barisan mountainous chain in Sumatera. Here in this paper, we descriptively discuss the ornithological aspects of the Andalas University campus complex in its relation for being a birdwatching destination. It combined the literature study on previous ornithological publications made from this area with recent observation exhaustively conducted in some strategic birding sites in the campus complex. In overall, we recorded 160 bird species from surrounding of Andalas University with possibility for more increasing new species sighted in given time; they belong to 44 families and 14 orders. Included in species inventory 1 species with Appendix I and 15 species Appendix II of CITES; 31 species protected by Indonesian Law; 1 species with Critically Endangered status, 2 species with Vulnerable status, 20 species with Near Threatened status of IUCN Red List; 16 migrant species from North and 6 migrant species from south hemisphere. There are five major bird habitats in this area; ponds, rivers or tributaries, green spaces, secondary and primary forests. We also identified direct and indirect threats for bird diversity in this area, such as illegal logging, illegal hunting and poaching, introduced predators, as well as animal abusing. Further attention needs to be paid for protecting bird species and their habitats in Andalas University campus complex through the enforcement of campus conservation policy.

1. Introduction

Andalas University (hereinafter Unand) is the oldest university outside of Java, which officially operated on 23 December 1955. After decades of up and down following regional situation in Sumatra, Unand inaugurated its 500 ha campus complex located on Bukit Karamunting, Kenagarian Limau Manis on 4 December 1995 [1]. This comprehensive complex accommodates and units 15 faculties of the university, which previously scattered in all over places in West Sumatra Province. The campus area attached to the protected forest of Bukit Barisan mountainous chain, where more than 150 ha of forested area is kept intact for various purposes, including as water catchment area, become the extension of the protection forest of Bukit Barisan mountainous chain, as well as to be the practice area for many faculties in the university [2].

After almost three decades since its establishment on early 1990s, the Andalas University’s Limau Manis campus complex (hereinafter LMCC) has become the major scientific centre in Sumatra where various researches and academic activities run. Many researchers also did their works on the field of ornithology in this area which result in a considerably concise inventory of birds in LMCC [3]. On the other hand, ecotourism based on birdwatching activity become recent trending in tourism sector with
certain potential to be source of income for either the management of tourist attraction, local community and other parties [4]. Recall that ecotourism has degree of flexibility to be assimilated with various existing elements in an area, it is interesting to see the prospect of avitourism to be implemented in LMCC.

This paper outlined the ornithological aspects of the LMCC related to avitourism conduct, including the threats and opportunity for avifauna diversity in the area. The feasibility of avitourism therein was also discussed

2. Materials and Methods

2.1. Study Site
Primary data collection has been conducting in an ongoing observational survey started since 2016. Survey is carried out in and around the Limau Manis Campus Complex (0°54’46”S, 100°27’39”E). Survey and data collection were based on the standardized survey method using transect line [5] and any sighting on bird was recorded using MacKinnon species list [6]. Bird survey was arranged in accordance to the birds’ active time, which were in between 6.30-10.00 am and 03.00-05.00 pm, by walking through available hiking paths in campus and in the surrounding area. Bird sighting was enhanced using Bushnell 8x42 binocular, while Nikon P900 was in use to document any sighting through digiscoping technique. Species identification was guided with suitable references [7, 8], while species conservation and distribution status referred to proper guideline [9].

Secondary data used in this study were extracted from many previous study conducted in this area. They included published articles, bachelor thesis, project reports conducted in the forested area in adjacent to the campus complex [10-14] and those performed within the campus complex itself [15-17]. The data from these sources were sorted and reconfirmed using aforementioned proper guidebooks, in order to ensure its correctness, as of the publications from before 2000 relied more on visual encounters without proper sufficient documentation which useful for further confirmation on species identification.

2.2. Data Analysis
All sorted and confirmed bird records in LMCC were input into table along with its conservation and distribution status. The table also listed year of observation, type of habitat where the observation conducted as well as other important information. The number of species, family and order recorded in each observation were then projected to see the trend of species increment per observation period. We also sought the habitats where birds frequently observed. Other ornithological-related aspects, especially about threats, conservation efforts and others were recorded directly during the ongoing observation between 2016-2018. The result then outlined descriptively to show the current ornithological conditions in LMCC, especially in its relation to the birdwatching activity which is potentially developed further.

3. Result and Discussion

3.1. Bird Inventory
Combining the data sorted from published articles, thesis, reports, along with the sighting records made during 2016-2018 direct survey, we recorded 160 bird species from Limau Manis campus complex (see Appendix). These species belong to 44 families and 14 orders, presumably the most update and complete list of avifauna for this area. Since the first ornithological publication in Limau Manis area [10] until the ongoing research conducted by the author, there was significant increase of species recorded. Three significant leaps on species increment were shown after the three initial observations [10-12], as well as on the current study (between 2016-2018). Each of three initial studies improved species record into 47, 98 and then 129 species respectively (see Figure 1 below).
As shown by Figure 1, LMCC holds a considerable number of bird species, with certain potential to reach more species to be recorded, given the more study and observation conducted in this area in the future. Above figure also indicates that ornithological studies in human-interfered area, such as the studies on 2002, 2012 and 2014 [16, 17, 18] still yielded a handful of species which later pooling more new species recorded for LMCC. It is feasible to assume, from these observations, that most parts of the university establishment somehow synchronize with its surrounding nature, in which various bird species can live among these man-made structures. The record of new bird sighting, hence, can occur in every part of LMCC, while the forested area contributes more than human-interfered area [3]. This inventory list, furthermore, reasonably put LMCC as the most studied campus area for its avifauna diversity. 

The LMCC area also harbors various birds with high conservation status. The inventory reveals that there are 31 birds protected by Indonesian regulation (Law no. 5 year 1990, Government Regulation no. 7 & 8 year 1999), 23 species listed as Critically Endangered (CR), Vulnerable (Vu) or Near Threatened (NT) species under IUCN Red List, and 16 species marked as Appendix I and II according to Convention on International Trade on Endangered Species or CITES (see Figure 2 below). Some species may have been assigned more than one conservation status, such as Helmeted Hornbill (Rhinoplax vigil) which has just raised its conservation status into CR level as well as included as Appendix I species. Furthermore, the LMCC’s bird list also recorded 16 migrant species (all from northern hemisphere) and 6 endemics. In overall, the existence of high conservation status species has highlighted the importance of LMCC for avifauna conservation, recall that this area is more to accommodate the activity of scholars.
Figure 2. Number of birds with highlighted conservation and distributional status in LMCC

Birds within the proximity of LMCC may have been so far only regarded from its academic value, while its potential for avitourism yet far from being fully explored. The LMCC actually has what required for holding an avitourism activity, in exception of the management system for it. It has walking trails (semi- or non-permanent ones), as well as a progressively growing bird lists [19]. The endemic birds along with the migrant species are potential to provide attraction for specific birdwatchers for their exclusiveness on timing or geographical range. As most of the migrant species in LMCC area are from the northern hemisphere, they will be on their wintering ground around the period between as early as September up until late April on the subsequent year which give an amount of time for watching them. While the endemic species are more local and resident in this area. Regardless to its specificity, this type of avitourism promises potential significant revenue [20].

This study has been able to identify some potential sites for birdwatching in Limau Manis campus complex, either from ongoing bird survey or based on the literature studies. Green open spaces in between campus structures, the green shading along campus roads and its arteries provide habitat for high- to moderate-tolerance bird species, such as Yellow-vented Bulbul (Pycnonotus goiavier), Scarlet-backed Flowerpecker (Dicaeum cruentatum), Orange-bellied Flowerpecker (D. trigonostigma) and Green Iora (Aegithina viridissima), although some uncommon species had been as well recorded from these types of habitat [16, 17, 18]. Lately, the campus authority has been actively conducting the landscape arrangement, adding some artificial ponds and dams into the complex, which later facilitate the kingfishers and other aquatic species to forage more into the campus complex. Meanwhile, a more challenging habitats for birdwatching are provided in the forested area in the proximity of campus complex. These habitats mainly consisted of secondary forest which characterized with dense ground cover mixed with leftover tree stands and a permanent concreted pathway access [14, 15] or primary forest that bordered with campus area with dense tree community and limited access [10-13]. Each of this forested area has rivers or tributary network within, as result from being the water catchment area with dense vegetation standing. In both habitat types, many forest interior bird species can be observed, such as hornbills (Bucerotidae), flycatchers (Musciicapidae) or babblers (Timaliidae). Birds identified as migrant and endemic species were mostly observed from these habitats.

Adversely to above facts, the LMCC area also faces some serious threats which impact not only birds, but also other biodiversity, environment and the people within. The threats are categorized into direct and indirect impacting bird community; the first comes from hunting and poaching many species for caged birds or as mere food item. The indirect threats may be in the form of illegal logging, poor
campus waste management, and introduced feral predators that specifically prey upon birds that live near human settlement. Managing birdwatching activity in a human-impacted environment may come collided with classical aforementioned environmental issues, yet the trade-off from implementing it can present much larger benefit for conservation of birds and their habitat [21].

3.2. Suggestion for birdwatching activity in campus area
The LMCC area possesses most of the requirements needed in setting up a professional birdwatching activity inside the campus area, except for the lack of management system obliged in conducting the avitourism. Some favourable efforts, such as reforestation of barren land in campus, prohibition of bird hunting and bird poaching inside campus area will need to be continuously emphasized; while the disadvantageous activities toward bird communities should be minimized through systematic efforts. Campus authority has to start involving various stake holders in this regard, such as outsourcing manpower for managerial structure, preparing a continuous training system for students and other manpower who will potentially become the manpower for the avitourism. Meanwhile, the loggers, bird poachers or hunters should be controlled with and embraced through some sort of university’s Corporate Social Responsibility program, where their experience with nature (including with birds) can be optimally in use for avitourism. The prospectus of professional birdwatching activity in LMCC is in line with the entrepreneurship spirit embedded in the vision and missions of Unand, hence it should be among the potential items of future campus development plan. Ecotourism through birdwatching activity in LMCC can be an alternative to reduce impact of human exploration (such from hunting, poaching, even from logging activities), as the doers of these adverse activities will be shifted into eco-friendlier activities through community-based conservation which also serve as income-generating for any involved party [22].

4. Conclusion
There have been recorded 160 bird species belong to 44 families and 14 orders, observed from the surrounding of Unand with possibility for finding more new species in more given time. The Limau Manis campus complex harbors birds with conservation status, as well as migrant and endemic species, which suggest the importance of this area for birds and their habitat conservation. The study identified major bird habitats in this area, namely ponds, rivers or tributaries, green open spaces, secondary and primary forest. Recent development activities in campus were in favor for bird community; some threats were, unfortunately, also recorded. Despite having both opportunity and threats over the possibility for avitourism activity, Unand needs to develop specific management system to run avitourism activity in LMCC, especially by empowering some stake holders, such as students and various parties in the surrounding community.

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5. Appendix
Total bird inventory in Limau Manis campus complex per July 2018.

| No | Taxonomy (Order, Family, Species) | Year of Observation | Status |
|----|---------------------------------|---------------------|--------|
|    |                                 | 89  96  98  02  08  10  12  14  15  16  17  18 |        |
| A  | Ciconiformes                     |                    |        |
| i  | Ardeidae                         |                    |        |
| 1  | Gorsachius melanolophus          | x                   | M      |
| 2  | Ixobrychus cinnamomeus           | x                   |        |
| No | Taxonomy (Order, Family, Species) | Year of Observation | Status |
|----|----------------------------------|---------------------|--------|
|    |                                   | 89  | 96 | 98 | 02 | 08 | 10 | 12 | 14 | 15 | 16 | 17 | 18 |
| B  | **Falconiformes**                 |     |    |    |    |    |    |    |    |    |    |    |    |    |
| i  | Pandioniformes                    |     |    |    |    |    |    |    |    |    |    |    |    |    |
| iii| Pandionidae                       |     |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Pandion haliaetus*               | x   |    |    |    |    |    |    |    |    |    |    |    |    |
| iii| Accipitridae                      |     |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Elanus caeruleus*               | x   |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Spilornis cheela*               | x   | x  | x  | x  | x  | x  |    |    |    |    |    |    |    |
| vi | Falconidae                        |     |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Microhierax fringillarius*      | x   | x  | x  | x  | x  |    |    |    |    |    |    |    |    |
| C  | **Galliformes**                   |     |    |    |    |    |    |    |    |    |    |    |    |    |
| V  | Phasianidae                       |     |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Coturnix chinensis*             | x   |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Gallus gallus*                  | x   |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Argusianus argus*               | x   |    |    |    |    |    |    |    |    |    |    |    |    |
|    |                                   |     |    |    |    |    |    |    |    |    |    |    |    |    |
| D  | **Gruiformes**                    |     |    |    |    |    |    |    |    |    |    |    |    |    |
| vi | Turnicidae                        |     |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Turnix suscitator*              | x   | x  | x  |    | x  |    |    |    |    |    |    |    |    |
| vii| Rallidae                          |     |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Amarourins phoenicurus*          | x   | x  | x  | x  |    |    |    |    |    |    |    |    |    |
| E  | **Charadriiformes**               |     |    |    |    |    |    |    |    |    |    |    |    |    |
| vii| Rostratulidae                     |     |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Rostratula bengalensis*          | x   |    |    |    |    |    |    |    |    |    |    |    |    |
| F  | **Columbiformes**                 |     |    |    |    |    |    |    |    |    |    |    |    |    |
| ix | Columbidae                        |     |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Treron oxyura*                  | x   |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Treron capellei*                | x   |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Treron vernans*                 | x   | x  | x  | x  | x  | x  |    |    |    |    |    |    |    |
|    | *Ptinopus jambu*                 | x   |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Columba livia domestica*        | x   |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Ducula badia*                   | x   |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Macropygia unchall*             | x   | x  | x  |    |    |    |    |    |    |    |    |    |    |
|    | *Macropygia ruficeps*            | x   | x  |    |    |    |    |    |    |    |    |    |    |    |
|    | *Streptopelia chinensis*         | x   | x  | x  | x  | x  | x  |    |    |    |    |    |    |    |
|    | *Geopelia striata*               | x   |    |    | x  | x  | x  |    |    |    |    |    |    |    |
|    | *Calophasps indica*              | x   | x  | x  | x  | x  | x  |    |    |    |    |    |    |    |
| G  | **Psittaciformes**                |     |    |    |    |    |    |    |    |    |    |    |    |    |
| x  | Psittacidae                       |     |    |    |    |    |    |    |    |    |    |    |    |    |
|    | *Loriculus galgulus*             | x   | x  | x  | x  | x  | x  | x  |    |    |    |    |    |    |
| H  | **Cuculiformes**                  |     |    |    |    |    |    |    |    |    |    |    |    |    |
| xi | Cuculidae                         |     |    |    |    |    |    |    |    |    |    |    |    |    |
|    |                                   |     |    |    |    |    |    |    |    |    |    |    |    |    |
| No | Taxonomy (Order, Family, Species) | Year of Observation | Status |
|----|-----------------------------------|---------------------|--------|
| 25 | Clamator coromandus               | x                   | M      |
| 26 | Cacomantis merulinus              | x x x x x           | x x x M |
| 27 | Cacomantis sepulcralis            | x                   |        |
| 28 | Cacomantis sonneratii             | x                   |        |
| 29 | Chrysococcyx maculatus            | x                   |        |
| 30 | Chrysococcyx minitillus           | x                   |        |
| 31 | Surniculus lugubris               | x                   | x      |
| 32 | Eudynamis scolopaceus             | x x x x x x         | x      |
| 33 | Rhopodytes diardi                 | x xNT              | x      |
| 34 | Rhopodytes sumatranus             | x                   | NT     |
| 35 | Rhinorhina chlorocephaus          | x x x x x x         | x      |
| 36 | Zanclostomus javanicus            | x x x              | x      |
| 37 | Rhampococcyx curvirostris         | x x x x x x         | x      |
| 38 | Centropus sinensis                | x x x x x x         | x      |
| 39 | Centropus bengalensis             | x x x x x x         | x      |
| I  | Strigiformes                      |                     |        |
| xii| Tytonidae                         |                     |        |
| 40 | Tyto alba                         | x x C2             |        |
| xiii| Strigidae                        |                     |        |
| 41 | Ketupa ketupu                     | x C2               |        |
| 42 | Otus lempiji                      | x C2               |        |
| J  | Caprimulgiformes                  |                     |        |
| xiv| Caprimulgidae                     |                     |        |
| 43 | Eurostopodus temminckii           | x x               | x      |
| 44 | Caprimulgus affinis               | x x                |        |
| K  | Apodiformes                       |                     |        |
| xv | Apodidae                          |                     |        |
| 45 | Hydrochous gigas                  | x x                | NT     |
| 46 | Collocalia fuciphagus             | x x                |        |
| 47 | Collocalia maximus                | x                   |        |
| 48 | Collocalia esculenta              | x x x x x x        | x x    |
| 49 | Apus nipalensis                   | x x x x            |        |
| xvi| Hemiprocnidae                     |                     |        |
| 50 | Hemiprocnene longipennis          | x x x x            |        |
| 51 | Hemiprocnene comata               | x                   |        |
| L  | Coraciiformes                     |                     |        |
| xvii| Alcedinidae                       |                     |        |
| 52 | Alcedo atthis                     | x x x x x AB       |        |
| 53 | Alcedo meninting                  | x x x X x AB       |        |
| 54 | Alcedo euryzona                   | x Vu AB            |        |
| 55 | Ceyx erithaca                     | x x                | AB, M  |
| No | Taxonomy (Order, Family, Species) | Year of Observation | Status |
|----|----------------------------------|-------------------|--------|
| 56 | *Ceyx rufidorsa* | X | 96 98 02 08 14 15 16 17 18 | X x AB |
| 57 | *Lacedo pulchella* | X | 96 98 02 08 14 15 16 17 18 | AB |
| 58 | *Halcyon coromanda* | X | 96 98 02 08 14 15 16 17 18 | AB |
| 59 | *Halcyon smyrnensis* | X | 96 98 02 08 14 15 16 17 18 | x x x AB |
| 60 | *Todiramphus chloris* | X | 96 98 02 08 14 15 16 17 18 | x x x AB |

**Meropidae**

| 61 | *Merops phillippinus* | X | 96 98 02 08 14 15 16 17 18 | M |
| 62 | *Merops viridis* | X | 96 98 02 08 14 15 16 17 18 | X x |
| 63 | *Nyctornis amictus* | X | 96 98 02 08 14 15 16 17 18 | |

**Coraciidae**

| 64 | *Eurystomus orientalis* | X | 96 98 02 08 14 15 16 17 18 | |

**Bucerotidae**

| 65 | *Berenicornis comatus* | X | 96 98 02 08 14 15 16 17 18 | NT, C2, AB |
| 66 | *Anorrhinus galeritus* | X | 96 98 02 08 14 15 16 17 18 | C2, AB |
| 67 | *Rhyticeros undulatus* | X | 96 98 02 08 14 15 16 17 18 | C2, AB |
| 68 | *Anthracoceros albirostris* | X | 96 98 02 08 14 15 16 17 18 | C2, AB |
| 69 | *Buceros rhinoceros* | X x x | 96 98 02 08 14 15 16 17 18 | NT, C2, AB |
| 70 | *Rhinoplax vigil* | X | 96 98 02 08 14 15 16 17 18 | CR, C1, AB |

**Piciformes**

**Capitonidae**

| 71 | *Megalaima mystacophanos* | X x x | 96 98 02 08 14 15 16 17 18 | NT |
| 72 | *Megalaima australis* | X x | 96 98 02 08 14 15 16 17 18 | x x |
| 73 | *Megalaima haemacephala* | X x x | 96 98 02 08 14 15 16 17 18 | |

**Picidae**

| 74 | *Sasia abnormis* | X | 96 98 02 08 14 15 16 17 18 | |
| 75 | *Micropterus brachyurus* | X | 96 98 02 08 14 15 16 17 18 | E |
| 76 | *Picus canus* | X | 96 98 02 08 14 15 16 17 18 | |
| 77 | *Picus flavinucha* | X | 96 98 02 08 14 15 16 17 18 | E |
| 78 | *Dinopium javanense* | X | 96 98 02 08 14 15 16 17 18 | |
| 79 | *Meiglyptes tukki* | X x | 96 98 02 08 14 15 16 17 18 | NT |
| 80 | *Dendrocopos canicapillus* | X x | 96 98 02 08 14 15 16 17 18 | x x |
| 81 | *Hemicircus concretus* | X x x | 96 98 02 08 14 15 16 17 18 | |

**Passeriformes**

**Eurylaimidae**

| 82 | *Cymbirynchus macrorhynchos* | X x | 96 98 02 08 14 15 16 17 18 | x x |
| 83 | *Eurylaimus javanicus* | X | 96 98 02 08 14 15 16 17 18 | NT |
| 84 | *Eurylaimus ochromalus* | X x x | 96 98 02 08 14 15 16 17 18 | |

**Pittidae**

| 85 | *Pitta moluccensis* | X | 96 98 02 08 14 15 16 17 18 | AB, M |
| No | Taxonomy (Order, Family, Species) | Year of Observation | Status |
|----|----------------------------------|--------------------|--------|
| xxv | Hirundinidae                      |                    |        |
| 86  | Hirundo rustica                   | x x x M            |        |
| 87  | Hirundo tahitica                  | x x x M            |        |
| 88  | Delichon dasypus                  | x                  |        |
| xxvi| Motacillidae                      |                    |        |
| 89  | Motacilla flava                   | x                  |        |
| 90  | Motacilla cinerea                 | x x X X x x x     |        |
| 91  | Anthus novaeseelandiae            | x x x             |        |
| xxvii| Campephagidae                    |                    |        |
| 92  | Pericrocotus divaricatus          | x                  |        |
| 93  | Pericrocotus flammeus             | x                  |        |
| 94  | Hemipus hirundinaceus             | x x x x x         |        |
| xxviii| Aegithinidae                     |                    |        |
| 95  | Aegithina tithia                  | x x x x x x x     |        |
| 96  | Aegithina viridissima             | x x x x x x x x   | NT     |
| xxix | Chloropidae                      |                    |        |
| 97  | Chloropsis cyanopogon            | x                  | NT     |
| 98  | Chloropsis cochinchinensis       | x                  |        |
| xxx | Pycnonotidae                      |                    |        |
| 99  | Pycnonotus melanoleucus           | x                  | NT     |
| 100 | Pycnonotus atriceps              | x x x x x         |        |
| 101 | Pycnonotus melanicterus          | x x x x           |        |
| 102 | Pycnonotus aurigaster            | x X x x           |        |
| 103 | Pycnonotus euthalotus             | x                  | NT     |
| 104 | Pycnonotus goaivier              | x x x x x x x     |        |
| 105 | Pycnonotus simplex               | x x x x           |        |
| 106 | Pycnonotus bruneus               | x x x x           |        |
| 107 | Pycnonotus erythropthalmos       | x x x x           |        |
| 108 | Trichoesthes criniger            | x x x             |        |
| xxxi| Oriolidae                        |                    |        |
| 109 | Irena puella                     | x                  |        |
| xxxii| Laniidae                         |                    |        |
| 110 | Lanius tigrinus                  | x x x x x x x     | M      |
| 111 | Lanius cristatus                 | x x x             | M      |
| xxxiii| Turdidae                         |                    |        |
| 112 | Copsychus saularis               | x x x x           |        |
| 113 | Enicurus ruficapillus            | x x x             | NT     |
| xxxiv| Timaliidae                       |                    |        |
| 114 | Pellorneum buettikoferi          | x                  | NT, E  |
| 115 | Trichastoma bicolor              | x                  | NT     |
| 116 | Malacocincla malaccense          | x x               |        |
| No | Taxonomy (Order, Family, Species) | Year of Observation | Status |
|----|----------------------------------|---------------------|--------|
| 117 | Stachyris poliocephala           | x x x              |        |
| 118 | Stachyris erythroptera           | x                  |        |
| 119 | Macronous gularis                | x x x              |        |
| 120 | Macronous pilosus                | x                  | NT     |
|     | Sylviidae                        |                     |        |
| 121 | Cisticola juncidis               | x                  |        |
| 122 | Prinia familiaris                | x x x x x x x      | E      |
| 123 | Prinia flaviventris              | x x x x            |        |
| 124 | Orthotomus atrorugularis         | x                  |        |
| 125 | Orthotomus sericeus              | x                  |        |
| 126 | Orthotomus ruficeps              | X x x x x x x      |        |
|     | Muscicapidae                     |                     |        |
| 127 | Rhinomias olivacea               |                     | M      |
| 128 | Muscicapa sibirica               | x x                | M      |
| 129 | Muscicapa daurica                | x x x              | M      |
| 130 | Muscicapa ferruginea             | x x                | M      |
| 131 | Eumyias thalassina               | x x                |        |
| 132 | Ficedula zanthopygia             |                     | x M    |
|     | Monarchidae                      |                     |        |
| 133 | Terpsiphone paradisi             | x                  |        |
|     | Dicaeidae                        |                     |        |
| 134 | Prionochilus maculatus           | x x x              |        |
| 135 | Prionochilus percussus           | x x                |        |
| 136 | Dicaeum agile                    | x x                |        |
| 137 | Dicaeum trigonostigma            | x x x x            | x x    |
| 138 | Dicaeum concolor                 | x x                |        |
| 139 | Dicaeum ignipectus               | x                  |        |
| 140 | Dicaeum crucatum                 | x x x x            | x x x x|
| 141 | Dicaeum trochileum               | x                  | E      |
|     | Nectarinidae                     |                     |        |
| 142 | Anthreptes simplex               | x x x              | x AB   |
| 143 | Anthreptes malacensis            | x x x x            | x x AB |
| 144 | Anthreptes rhodolaema            | x                  | NT, AB |
| 145 | Anthreptes singalensis           | x x                | x x AB |
| 146 | Hypogramma hypogrammicum         | x                  | AB     |
|     | Cinnyris jugularis               | x x x x            | x x AB |
| 148 | Aetophyga siparaja               | x x x x            | AB     |
| 149 | Arachnothera longirostra         | x x x x            | AB     |
| 150 | Arachnothera chrysogenys         | x                  | AB     |
|     | Estrildidae                      |                     |        |
| No  | Taxonomy (Order, Family, Species) | Year of Observation | Status |
|-----|---------------------------------|---------------------|--------|
| 151 | Lonchura striata                 | 89 96 98 02 08 10 12 14 16 17 18 | x x x x x x x x x x |
| 152 | Lonchura malacca                 |                     | x      |
| 153 | Lonchura punctulata              | 89 96 98 02 08 10 12 14 16 17 18 | x x x x x x x x x x |
| 154 | Lonchura maja                    | 89 96 98 02 08 10 12 14 16 17 18 | x x x x x x x x x x |
| 155 | Passer montanus                  | 89 96 98 02 08 10 12 14 16 17 18 | x x x x x x x x x x |
| 156 | Ploceus philippinus              | 89 96 98 02 08 10 12 14 16 17 18 | x x x x x x x x x x |
| 157 | Aplonis panayensis               | 89 96 98 02 08 10 12 14 16 17 18 | x x x x x x x x x x |
| 158 | Sturnus sturninus                | 89 96 98 02 08 10 12 14 16 17 18 | x x x x x x x x x x |
| 159 | Dicurus paradiseus               | 89 96 98 02 08 10 12 14 16 17 18 | x x x x x x x x x x |
| 160 | Artamus leucorhynchus            | 89 96 98 02 08 10 12 14 16 17 18 | x x x x x x x x x x |

Remarks of the table: capital Roman numeral signifies bird orders, lower case Roman numeral points out families and Arabic numbers are for the species. Year of observation: 89, 96 and 98 from before 2000, the rest are from afterward. The conservation status based on IUCN Red List, where CR = Critically Endangered, Vu = Vulnerable, NT = Near Threatened; CITES (Convention on International Trades on Endangered Species, where C1 = Appendix 1 organism, C2 = Appendix 2 organism; Indonesian Regulation, where A = Indonesian Law No. 5 Year 1990, B = Government Decree No. 7&8 Year 1999. The letter M = Migrant species, E = Endemic species.

References
[1] Anonim. (2010). Salingka Unand. Unand Publisher. Padang.
[2] Anonim. (2017). Universitas Andalas – Sejarah Ringkas. Diakses pada http://www.unand.ac.id/id/tentang-unand/selayang-pandang/sejarah pada 30 Agustus 2017.
[3] Janra, M.N., SME. Ananta, D.A. Saragih, AAA. Faturrahman, R. Septiavi & G. Komonich. (2017). Ekologi burung di kawasan Kampus Limau Manis Padang, dengan catatan beberapa jenis baru untuk Kawasan Kampus Unand. Proceeding Konferensi Peneliti dan Pemerhati Burung Indonesia 3, 2-4 Februari 2017. Universitas Udayana, Bali.
[4] Wood, M.E. (2002). Ecotourism: Principles, practices & policies for sustainability. The International Ecotourism Society. United Nation Environment Program. Burlington, USA.
[5] Bibby, C., M. Jones & S. Marden. (2000). Teknik-Teknik Ekspedisi Lapangan Survey Burung. BirdLife. Bogor.
[6] MacKinnon, J., Phillips, K., 1993. A Field Guide to the Birds of Borneo, Sumatra, Java and Bali, the Greater Sunda Islands. Oxford University Press, Oxford.
[7] MacKinnon J, K. Phillips & S. van Balen. (2010). Burung-Burung di Sumatera, Jawa, bali dan Kalimantan. Puslitbang Biologi-LIPI, Bogor.
[8] Eaton, J.A., S. van Balen, N.W. Brickle & F.E. Rheindt. (2016) Birds of the Indonesian Archipelago. Greater Sundas and Wallacea. Lynx Edicions, Barcelona.
[9] Sukmantoro, W., M. Irham, W. Novarino, F. Hasudungan, N. Kemp & M. Muchtar. (2007). Daftar Burung Indonesia No. 2. Indonesian Ornithologists’ Union. Bogor.
[10] Rahman, M., R. Tamin & A. Salsabila. (1989). Komposisi flora dan fauna di hutan hujan tropika Bukit Limau Manis, Padang.
[11] Aswad, D. (1996). Aspek avifauna di HPPB Universitas Andalas. Laporan Kuliah Lapangan
Singkat Taksonomi Hewan Vertebrata. [Unpublished]

[12] Azmardi. (1998). Jenis-jenis Burung di Hutan Pendidikan dan Penelitian Biologi. Skripsi Sarjana Biologi FMIPA Universitas Andalas, Padang.

[13] Sari, N.F. (2008). Jenis-jenis burung yang ditemukan di sekitar sarang buatan dan yang memanfaatkan sarang buatan di hutan pendidikan dan penelitian Biologi (HPPB) Universitas Andalas. Skripsi Sarjana Biologi. Universitas Andalas. Padang. Unpublished.

[14] Sukmawati, S. (2010). Jenis-jenis burung di kawasan kebun tanaman obat farmasi (KTOF) dan arboretum Kebun Raya Universitas Andalas. Skripsi Sarjana Biologi. Universitas Andalas. Padang. Unpublished.

[15] Mardianti, F.S. (2015). Interaksi burung dengan tumbuhan benalu di Kebun Raya Andalas. Skripsi Sarjana Biologi. Universitas Andalas, Padang. [Unpublished]

[16] Afriyeni, V. (2002). Jenis-jenis burung yang memanfaatkan Macaranga javanica (Bi.) M.A. yang sedang berbuah di Kampus Universitas Andalas Limau Manis Padang. Skripsi Sarjana Biologi. Universitas Andalas. Padang. Unpublished.

[17] Surya, D.C., W. Novarino & A. Arbain. (2013). Jenis-jenis burung yang memanfaatkan Euryia acuminata DC di kampus Universitas Andalas Limau Manis. Jurnal Biologi Universitas Andalas 2(2): 90-95.

[18] Andira, A, J. Nurdin & W. Novarino. (2014). Struktur komunitas burung pada tiga tipe habitat di kampus Universitas Andalas, Jurnal Biologi Universitas Andalas 3(3): 227-230.

[19] Conradie, N. (2015). Profiling the international avitourist: preferences of avitourists at the British and Dutch birdwatching fairs. African Journal of Hospitality, Tourism and Leisure 4(1): 1-26.

[20] Callaghan, C.T., M. Slater, R.E. Major, M. Morrison. J.M. Martin & R.T. Kingston. (2017). Travelling birds generate eco-travellers: The economic potential of vagrant birdwatching. Human Dimensions of Wildlife: 1-12.

[21] Steven, R. 2015. The relationships between birders, avitourism and avian conservation. Doctoral Thesis. Griffith University, Australia.

[22] Sekercioglu, C.H. (2002). Impacts of birdwatching on human and avian communities. Environmental Conservation 29(3): 282-289.