

**PENGELOLAAN PENANGKARAN DAN KUALITAS SUARA CUCAK RAWA  
(*Pycnonotus zeylanicus* Gmelin, 1789) DI MEGA BIRD AND ORCHID FARM, BOGOR**

**(Management of Captive Breeding And Song Quality Of Straw Headed Bulbul (*Pycnonotus Zeylanicus* Gmelin, 1789) In Mega Bird And Orchid Farm, Bogor)**

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**ABSTRACT**

The background of this research is population of straw headed bulbul (*Pycnonotus zeylanicus*) in the nature has decreased sharply. The effort should be done is ex-situ conservation by means of captive breeding of straw headed bulbul. The aim of the research was to identify captivation technique, success indicator, song training techniques and distribution sound quality of straw headed bulbul. This research was conducted in Mega Bird and Orchid Farm, Bogor from March to April 2014. Descriptive and quantitative data analysis was applied in this research. The results showed that straw headed bulbul has three types of cage, they are cage for growing periode, ge of reproduction, and cage of incubator. Foods given to the bird were banana, papaya, voer and cricket. The types of diseases recorded were diarrhea, white-colored feces, green-colored feces, flu, and paralyzed feet. The criteria and success rate in captivating were consist of medium-scaled egg hatching rate (68.69%), high breed rate (77.38%), and low mortality (10.34%). Distribution song quality of straw headed bulbul was varies. Based on the results of the study, it can be concluded that breeding management for success breeding of straw headed bulbul comprised of such aspects as cage system management, feed management, health and care management, result utilization management, and song quality management.

Keywords: captive breeding, management, straw headed bulbul

**ABSTRAK**

Penelitian ini dilatarbelakangi oleh menurunnya populasi cucak rawa di alam, sehingga upaya yang dapat dilakukan yakni konservasi ek-situ melalui penangkaran cucak rawa. Tujuan dari penelitian ini adalah untuk mengidentifikasi teknik penangkaran, ukuran keberhasilan, teknik pelatihan suara dan sebaran kualitas suara cucak rawa. Penelitian dilakukan di Mega Bird and Orchid Farm, Bogor pada Maret sampai April 2014. Analisis data dilakukan secara deskriptif dan kuantitatif. Hasil dari penelitian ini yakni cucak rawa memiliki tiga jenis kandang diantaranya kandang pembesaran, kandang reproduksi, dan inkubator. Pakan yang diberikan pada cucak rawa pisang kepok, pepaya, pur, dan jangkrik. Jenis penyakit yang pernah di derita cucak rawa yakni diare, feses berwarna putih, feses berwarna hijau, flu, dan kaki seperti lumpuh. Persentase dan kriteria keberhasilan penangkaran cucak rawa meliputi daya tetas telur sedang (68.69%), tingkat perkembangbiakan tinggi (77.38%), dan angka kematian rendah (10.34%). Sebaran kualitas suara cucak rawa bervariasi. Simpulan dari penelitian ini bahwa manajemen penangkaran untuk menunjang keberhasilan penangkaran cucak rawa terdiri dari berbagai aspek diantaranya manajemen perkandangan, manajemen pakan, manajemen kesehatan dan perawatan, manajemen pemanfaatan hasil, dan manajemen kualitas suara.

Kata kunci: cucak rawa, manajemen, penangkaran

**INTRODUCTION**

Straw headed bulbul (*Pycnonotus zeylanicus* Gmelin, 1789) is a type of bird that belongs to Pycnonotidae family. According to Iswanto (2008) and Turut (1999), this family is classified as song bird whose song is melodious and various, so that this bird is very popular and a lot of commercialized.

Holmes (1995) in the Bird Life International (2001) reported that the straw headed bulbul population declined sharply and had become a pet in Indonesia. Iswanto (2008) added that the straw headed bulbul population declined due to the destruction of forest ecosystems and their natural habitats. The impact is that this bird is

becoming hard to find in the nature and will possibly extinct if there are no appropriate and sustainable conservation efforts.

International Union for Conservation of Nature and Natural Resources (IUCN) version 3.1 2002 stated that straw headed bulbul was in the status of being vulnerable. Convention on International Trade in Endangered Species of wild fauna and flora (CITES) in 1998 stated that straw headed bulbul was included in Appendix II, so the trade needs to be regulated and restricted, only allowed from the result of a captive breeding (Iswanto 2008). Gunarso *et al.* (2009) explained that this species was not protected in Indonesia, so it was necessary to have conservation

efforts and the regulation to ban straw headed bulbul hunting in their natural habitat.

One of the conservation efforts to increasing the straw headed bulbul population outside their natural habitat is through the ex-situ conservation by captive breeding. As far as a captive breeding is concerned, Mega Bird and Orchid Farm (MBOF) in Bogor, West Java, has been success. Therefore, conducting a study on captive breeding management of straw headed bulbul in MBOF is important.

The sound patterns of straw headed bulbul in MBOF are considered important to identify because of the high demand for straw headed bulbul in MBOF for this issue. If the manager can identify of straw headed bulbul that have beautiful song, the selling price of straw headed bulbul in MBOF will increase. The aim of this study is to identify captive breeding management, breeding success parameter, and sound patterns straw headed bulbul at MBOF.

### METHOD

This research was conducted from March to April 2014 at the captive breeding of Mega Bird and Orchid Farm (MBOF) which is located in Cijujung Tengah Village, Sukaraja District, Bogor Regency, West Barat. The materials used as objects of the research were the straw headed bulbul at MBOF. The tools used in this study included stationery, cameras, interview guide, thermometer dry-wet, manual scales, ruler, calipers, recorder and microphone, bird sound analysis program (gold wave version 5.6 and raven pro version 1.4.).

The data collection was done by conducting direct observation in the field and an interview with the manager. The factors determining the success of straw headed bulbul breeding were cage system, feed management, health and care management, reproductive management, breeding success parameter, utilization or

management of the results, the history of straw headed bulbul captive breeding, breeding organization, and the population of straw headed bulbul at MBOF.

The data of sound patterns were grouped into several categories straw headed bulbul, they are trainers (bird has beautiful sounds), natural sound, the straw headed bulbul which had been trained to produce beautiful sound at the captivity breeding place (successful and not yet successful). The recording was done in the early morning from 7:00 AM to 09:00 AM. According to Lundberg and Atallo (1992) in Rusfidra (2004), the peak activity of warbling generally occurs in the morning and decline in the afternoon and evening. The sounds of straw headed bulbul were recorded using a recorder and a microphone. The recording was then edited using gold wave 5.6 program and the sound patterns were identified using raven pro versi 1.4. The parameters of the sound patterns observed were based on a study conducted by Rusfidra (2004), they are syllables, frequency (Hz), the sound duration (second), tempo (syllable/second), and amplitude (song strength).

The supporting data obtained from the interview and breeding techniques were analyzed descriptively. The data of breeding management descriptively analyzed included adaptation technique, cage system, feed management, health and care management, reproductive management, utilization of the results, and identification of sound patterns. The analysis of foods nutrition was also quantitatively (Table 1).

The data on the parameters of breeding success was also analyzed quantitatively using the analysis of success factors that referred to Suprijatna *et al.* (2008) (Table 2). The recording data of the bird chirp sound was analyzed with a program of gold wave version 5.6 for editing process and raven pro version 1.4 to identify the sound patterns of straw headed bulbul. The recording results were visualized in the form of wave forms to illustrate the sound patterns.

Table 1. Analysis of food nutrition

Consumption amount	Palatability	Food consumption
JK = B-R	$\% P = \frac{G0-G1}{G0} \times 100\%$	<ul style="list-style-type: none"> <li>Protein consumption (%):  <math>\frac{\Sigma \text{one of feed consumption}}{\text{completely feeds consumption}} \times \% \text{ protein}</math> </li> <li>Calory consumption (Kcal):  <math>\frac{\Sigma \text{one of feed consumption}}{\text{completely feeds consumption}} \times \text{calory (kcal)}</math> </li> </ul>
Notes: JK : consumption amount B : weight food before eating R : residual food weight	Notes: % P : palatability G0 : weight food before eating G1 : residual food	

Table 2. Analysis of of breeding success factors

Percentage of hatchibility	Percentage of mortality	Percentage of breeding
$\frac{a}{b} \times 100\%$	$\frac{M}{Mt} \times 100\%$	$\frac{I}{It} \times 100\%$
Notes: a : $\Sigma$ eggs successfully hatched b : $\Sigma$ total egges produced	Notes: M : $\Sigma$ dead birds Mt : $\Sigma$ total birds	Notes: I : $\Sigma$ laying mothers It : $\Sigma$ total parents

Specification criteria of breeding success factors: 0 – 30% : low  
 31 – 70% : medium  
 71 – 100% : high

**RESULTS AND DISCUSSION**

**1. Captive Breeding**

a. History and condition captive breeding

The breeding of straw headed bulbul at MBOF was begun in 1997. Actually, hobby and high market demand had triggered the breeding activities. Initially, there were only two pairs of straw headed bulbul which were obtained from buying in the other captive breeding at Medan. During the research, the total number of straw headed bulbul birds had reached 71 birds, indicating that MBOF could breed straw headed bulbul well. Mas'ud (2002) explained that a captive breeding was considered successful if it could breed the animals.

b. Population of Straw headed bulbul at MBOF




The population of straw headed bulbul at MBOF in 2013 was 73 birds and until April 2014 it reached 84 birds. However, after selling that population are 71 birds. This indicated that the straw headed bulbul population at MBOF would grow every year and the demand is high.

c. Cage System

c.1 Type, size, construction, and facilities

The cages of straw headed bulbul at MBOF consisted of three parts, they are cage for growing periode, cage of reproduction, and cage of incubator. The cages have different sizes, constructions, and facilities (Table 3).

Table 3. Type, size, construction, and cage facilities

Type of cage	Cage size and construction	Cage facility	Picture
Cage for growing periode	<ul style="list-style-type: none"> <li>40 cm x 40 cm x 60 cm</li> <li>Polywood, wood, dan iron</li> </ul>	Containers of feed and drink, wood for perching	
Cage of reproduction	<ul style="list-style-type: none"> <li>3 m x 3 m x 1,5 m</li> <li>Brick walls, wire mesh and asbestos roof, ground floor</li> </ul>	Containers of feed, drink and bath, perching places (wood and palm tree), nest	
Incubator	<ul style="list-style-type: none"> <li>110 cm x 45 cm x 47 cm</li> <li>Plywood base, wooden walls, ventilation/window in the form of wire mesh</li> </ul>	Nest, 5 watt light, thermometer, humidity controler (water basin and cloth), ventilation, supporting pot	

The size of cage for growing periode at MBOF is ideal size of straw headed bulbul cage which Soemarjoto (2003) described that the ideal size of cage for growing periode is ± 50 cm x 50 cm x 60 cm with a rectangular shape. The cage of reproduction at MBOF was comperatively good because the size and construction of the cage can fulfill requirement for straw headed bulbul to carry out reproduction. According to Mas'ud (2002), the minimum size of cage of reproduction is ± 2 m x 1.5 m x 2.5 m. Mas'ud (2002) and Soemarjoto (2003) explain that an ideal cage of reproduction has good ventilation, uses wire mesh and asbestos on the other side as a

shelter, and applies soil as floor so that the feces are easily degradable. The cage should be maximally exposed to morning sunlight and free from floods and the disturbance of the predators. Suprijatna *et al.* (2008) explains that a good incubator should be able to manage air circulation. The cage incubator at MBOF has good air circulation because have vents on the walls of the cage that made of wire mesh.

The food and drink containers in each cage made by plastic or aluminum. Sudrajad (1999) describes that the food and drink containers of straw headed bulbul should not leak and are not made of easily broken materials. The

material for roosting of straw headed bulbul is wood with a diameter of 1.5-2 cm. According to Turut (1999), the material for roosting of straw headed bulbul is wood with a diameter of approximately 2 cm. A nest of straw headed bulbul made from coconut fiber with a diameter of 10 cm, a depth of 2-2.5 cm, and a height of 1.5 m from the ground. Sudrajad describes that the nest materials can be from coconut fiber and hay. According to Mas'ud (2002), the nest of straw headed bulbul is cup shaped, with a diameter of 10 cm and a depth of 2.5 cm, and with a height of 1.5-4.5 meters from ground level. All types of cages at MBOF could support the good breeding of straw headed bulbul.

The purpose of the cage maintenance is to avoid the diseases from dirty cages (Setio and Takandjanji 2007). The cage maintenance activities at MBOF included the outside and inside cage. The outside maintenance activities included the daily cleaning of garbage outside the cage in the morning, incidentally trimming and planting plants to make captive breeding beautiful.

The inside maintenance activities included cleaning and drying nest (for cage of incubator), cleaning the food and drinking containers, cleaning bird feces and leftover food, replacing and repairing damaged wire mesh. The inside maintenance activities are done every morning, but for the repair of the damaged wire mesh is done incidentally.

Based on observations, the temperature inside the cage of reproduction of straw headed bulbul at MBOF ranged from 26.5-31°C. The humidity inside the cage of straw headed bulbul at MBOF ranged from 85-92%.

d. Feed Management

d.1 Feeding food and drink

The types of food given to young straw headed bulbul (ages 5 to <12 months) and to mature bird (capable of reproduction) at MBOF are papaya/ banana and pur (main food) and cricket (additional food). The

birds aged 0 month and <1 month called chick. They are given porridge of voer which is a mixture of fish oil and supplement. The drinking for chick of straw headed bulbul is mineral water, while starting 5 months old of straw headed bulbul is given groundwater. The food source of straw headed bulbul at MBOF comes from a special supplier.

According to Turut (1999), the straw headed bulbul living in the nature consume types of fruits that are found in the forest, such as banana, papaya, cherry, and guava. Feeding the bird with banana and papaya by the management is in accordance with the foods eaten by the straw headed bulbul which lives in the wild. Straw headed bulbul animal food in the nature includes snail, bee, red ant eggs, termites, grasshoppers, and worms (Mas'ud 2002). Feeding the bird with cricket by the management is in accordance with the straw headed bulbul life in the nature that requires animal protein.

The way to give fruit to the bird is by cutting off the fruit in a rectangular shape and washing it first, then top of the fruit is sliced to make easy eating. Crickets are given by eliminating the legs because its sharply that can damage the vocal of straw headed bulbul (Sudrajad 1999). The way to feed chick is by spoon-feeding with slowly while the drinking water is applied using a small pipette.

Food and drink straw headed bulbul are given every morning everyday, with a frequency of one time. However chicks are given food four times a day (morning, noon, afternoon, and evening) because chicks need to have some more nutrition.

d.2 The average of consumption and palatability

Average consumption is the amount of the food consumed. Palatability is the level of the preference for a particular type of food. The average of consumption and the palatability are different between cage for growing periode and cage of reproduction (Table 4).

Table 4. The average food consumption and palability

Level	Type of food			
	Papaya (g)	Banana (%)	Cricket (g)	Voer (%)
1. Cage for growing periode				
• Average consumption day/bird	44	17.5	8	1
• Average palatability day/bird	33.33	30.97	100	3.70
2. Cage of reproduction				
• Average consumption day/bird	29.5	26.25	5	6.75
• Average palatability day/bird	54.63	52.5	62.5	44.26

The highest average of food consumption in cage of growing periode and cage of reproduction is papaya. This is because at the time of the study the average daily temperature reached 28.5°C, so straw headed bulbul needed water from their food source. The water content in papaya is higher than other types of food. The straw

headed bulbul at both cages did not like voer because it has high fiber that makes it difficult to digest. Therefore, the average of consumption voer is the smallest. On average, the palatability of crickets in the cage of growing periode and cage of reproduction is high because cricket is not the main food (additional food).

d.3 Analysis of nutrient content

The largest nutrient content of papaya is water, while the nutritional content of bananas, crickets, and voer are energy (Table 5). Water is classified into nutrients that are important for wildlife because the water content in the body of living organisms by 70% (Kateran 2010). Water functions include to help the process of metabolism and body physiology (Tilmen *et al.* 1789). According to Kateran (2010), energy is beneficial nutrients to support activities.

d.4 Protein consumption and energy

Protein is needed by animals to increase productivity and hatchability of eggs (Kateran 2010). Hatchability of eggs at MBOF is categorized as high, so it can be said that protein consumption of straw headed bulbul at MBOF is fulfilled. According to Yunanti (2012), the energy consumption of *Leucopsar rothschildi* at MBOF amounted to 1909.1 kcal, so that it can be said the straw headed bulbul energy consumption at MBOF is already good. Protein and energy consumption of straw headed bulbul at MBOF can be seen in Table 6.

Table 5. Contain nutrition of food straw headed bulbul

Nutrition value	Papaya (a)	Banana (b)	Cricket (c)	Voer (d)
Dusty rate (%)	0.5	2.65	-	5.90
Protein rate (%)	0.5 <sup>(a1)</sup>	4.30	13.70	21.05
Harsh fibre (%)	0.7	1.33	2.90	4.19
Fat rate(%)	0.1 <sup>(a1)</sup>	0.19	5.30	7.21
Energy (kcal)	39.4	3969.30	117	4753.03
Water rate (%)	86.6	66.48	76	8.82
Vitamin A (IU)	365 <sup>(a2)</sup>	439 <sup>(b1)</sup>	-	-
Vitamin B (mg)	0.04 <sup>(a2)</sup>	0.14 <sup>(b1)</sup>	-	-
Vitamin C (mg)	78 <sup>(a2)</sup>	2 <sup>(b1)</sup>	-	-
Ca (%)	10,47	0.03	-	1.08
P (%)	3.39	0.09	-	0.75

Table 6. Protein and energy consumption of straw headed bulbul

Type of food	Crude fibre (%)	Energy (Kcal)
Papaya	0.22	17.49
Bananan	1.68	1558.15
Cricket	1.02	8.74
Voer	1.86	420.78
Amount	4.79	2005.19

e Health and Care Management

Types of diseases that had attacked straw headed bulbul at MBOF were diarrhea, white stool, green

colored stool, flu, and paralyzed-like disease. All types of diseases that were once suffered by straw headed bulbul at MBOF were treated with one drug, it is tonic treasure. The healing treatment chick is done by mashing the medicine and then mixed into a drink, while for the old bird it is directly inserted into the straw headed bulbul peak. Supplements and fish oil are given to chicks. The aim is to assist the growth and development of chick. The old straw headed bulbul is given vitamin to produce good quality eggs.

f. Reproduction Management

f.1 Determining the bird sex

The MBOF manager can distinguish male or female straw headed bulbul at one year to see the song, behavior, and the morphology of the chest feather (Table 7).

Table 7. Determining the bird sex

Distinguishing	Male	Female
Song	Very loud	Not loud
Behavior	More active	More quite
Chest feather	Unclear black colour of chest feather	Distinct black and white colour of chest feather

f.2 Parent selection

MBOF selects straw headed bulbul birds which are healthy, fat, and not disabled as parent for breeding. The sound does not become the main requirement in the selection of the parent for breeding. The ratio of female and male birds at MBOF is 1:1 that males and females are always paired in a single cage. The total of straw headed bulbul parents at MBOF is 28 pairs.

A pair formation process is undertaken by matching a number of pairs of straw headed bulbul in a cage, and then their behavior is observed. The matching process last for 2-3 months. MBOF conducted the activities of pairing straw headed bulbul when their ages reach 2-3 years.

f.3 Egg laying and hatching

The eggs produced by a pair of straw headed bulbul in MBOF is 2 eggs. The process of egg hatching at MBOF last for 14 days by female. Mas'ud (2002) added the proportion of female hatching is more than the male parent. Straw headed bulbul chick which had been hatched are put in the cage of reproduction for 5-7 days after hatching. After that, they are moved into cage of incubator cage for the treatment by manager. The time needed for the straw headed bulbul to lay eggs after the chicks were taken out by the manager is 14 days.

f.4 Chicks raising

The chicks of straw headed bulbul that have been hatched in the cage of reproduction are left with their

their mother, but after 5-7 days the chicks are transferred to the cage of incubator (hand rearing system). This is done to minimize chicks death, to ensure chicks health, to control their growth easily, and for mother birds to start reproduction. The young straw headed bulbul which have reached <1 month old will be raised and cared for in the incubator cage. When the straw headed bulbul chicks reach 1 month old, they will be moved into the cage for growing periode so that they can be independent and increase the growth of the body.

f.5 Chicks growth

The results of chick growth for two weeks showed that there are differences between generations F1A growth (both parent derived from nature) with F1B (parent comes from nature and breeding) (Table 8).

Tabel 8. Comparison of chick growth

Avarage of Morphometric measurement	Generation F1a		Generation F1b	
	Week 1	Week 2	Week 1	Week 2
Total body length	67	115	67.7	125.7
Length of wing span	37.4	73	38.5	81.3
Tail length	0.3	30	4.3	37.6
Head length	27	31.7	27.2	36.8
Beak length	15.1	16.7	15.1	17.4
Beak height	13.5	14.7	13.1	13.8
Feet height	20.8	21.7	20.8	22.9

F1b generation has a relatively longer morphometric size compared to F1A because the straw headed bulbul from a captive breeding have better body performance than the straw headed bulbul derived from the nature. This is because the food management at MBOF is well arranged according to bird age class, so that the chick have better quantitative morphological characteristics.

Table 10. Selling price of straw headed bulbul in MBOF

Bird classification	Old	Song quality	Price (Rp)
Chick	2 weeks-1 month	Not yet have song	5 000 000-8 000 000
Have been reproduction	≥ 3 years	Not better song	15 000 000
Young	≥ 2 years	The best song ( <i>roppe</i> )	50 000 000– 80 000 000

The demand of chicks is highest, because they are cheaper and easier to train warbling. The buyers of straw headed bulbul at MBOF varying, they are from Jakarta, Bogor, Depok, Tangerang, Bekasi, Java, and outside Java. The birds that will be sold to outside Java are put into the box that made of plywood and manager use a a delivery service or cargo. If the buyer comes from Java, buyers come to captive breeding to bought bird and than the birds are just put into cage for growing periode which the cage covered with newspaper.

g. Parameters Succeeding of Captive Breeding

The percentage rate of breeding success of the the straw headed bulbul at MBOF in 2013 and 2014 is different (Table 9).

Table 9. Percentage of the successful rate of a captive breeding at MBOF from 2013-2014

Year	Percentage (%)		
	Hatchibility	Breeding	Mortality
2013	58.06	71.43	10.96
2014	79.31	83.33	9.72
Average	68.69	77.38	10.34
Criteria	Medium	High	Low

The captive breeding at MBOF was successful because medium hatchability, high breeding, and low mortality. The factors that influence the hatchability of eggs are the nutrients in the food straw headed bulbul. Sudrajad (1999) explained that if the nutritional is fulfilled, bird will produce quality eggs and high hatchability. The average level of the straw headed bulbul breeding was high because of the successful pairing activities at MBOF, so straw headed bulbul increase every year. High mortality occur in chick straw headed bulbul because of the bird weak condition. The mortality of the straw headed bulbul at MBOF was low because chick monitoring at incubator cage was intensively to prevent chick from hunger.

h. Result Utilization and Selling Price

Sudrajad (1999) reported that demand for straw headed bulbul on markets is high every year. Selling prices offered by manager have included cage for growing periode, but not include delivey expense to outside of Java (Table 101).

2. Identification of Sound and Pattern

According to Mas'ud (2002) criteria for a good sound is determined by the loud of sound, volume of sound, and density of sound. Soft-loud song is interpreted by amplitude. Rusdin (2007) explains that the amplitude influence on the strength of sound. The size of the volume is measured by the frequency generated. According to Purnamasari (2006), frequency can describe the volume of the sound produced. The density of sound is described by a fast tempo, there is no interval

between the sound elements. The density of the sound is known as *ropel* that there is no interval in the sound of the front, middle, and end, so that the sound is repeated (Mas'ud 2002). Turut (1999) added that the the best song

quality (*ropel*) is no distance between sound elements and sounded loud. Based on the criteria, the characteristic of the sound pattern of straw headed bulbul at MBOF can be seen in Table 11.

Table 11. Song pattern-characteristics of straw headed bulbul

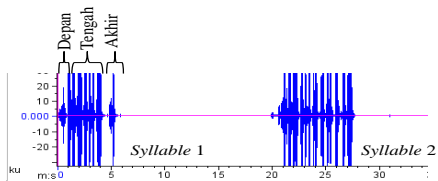
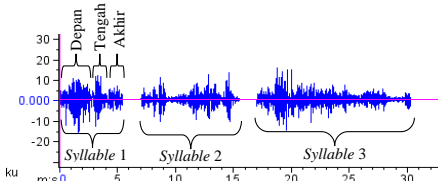
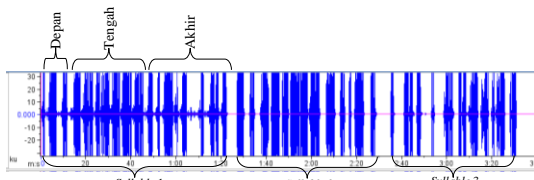
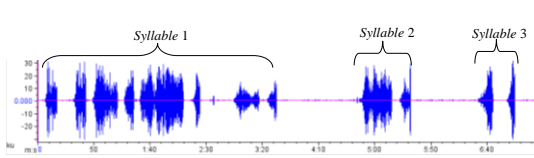
Sound type	Syllable	Frequency (Hz)	Duration (second)	Tempo	Amplitudo
Trainer (bird has beautiful sound)	9	0-22050	6.55	1.37	81.75
Natural	9	0-22050	8.96	1.00	64.56
Training: successful	23	0-22050	38.81	0.59	80.42
Training: not yet successful	10	0-22050	16.15	0.61	69.15

Beside Tabele 12, all kinds of straw headed bulbul at MBOF have a high frequency, but a different tempo and amplitude. Straw headed bulbul tariner has a fast tempo and high amplitude. The straw headed bulbul that were successfully trained have the second highest amplitude after trainer. It is indicates that the straw headed bulbul trained will have a sound characteristics such as trainer.

thick and no interval between the sound elements, while the straw headed bulbul that has successfully trained has thick patterns and there is an interval between the sound elements. It is indicates that the straw headed bulbul trained will have a sound characteristics like the trainer that has beautiful sound. The straw headed bulbul that not yet successfully has the song of front, middle, and end, therefore it is necessary to get intensive training. The sound wave form can be seen in Table 12.

The trainer have wave form similar with bird that has been successfully trained. The trainer wave form is

Table 12. Wave form of straw-headed at MBOF

Type of bird	Waveform
Trainer The bird has beautiful sound)	
Natural	
Trainer: success ful	
Trainer: not yet success ful	

## CONCLUSION

Based on the results of the study, it can be concluded that management of captive breeding of straw headed bulbul at MBOF comprised of such aspects as cage, feed, health, reproduction, and utilization which are considered to be good. The captive breeding of straw headed bulbul at MBOF can be categorized as successful because the percentage hatchability of eggs is medium (68.69%), the percentage of breeding is high (77.38%), and percentage of mortality is low (10.34%). Distribution of straw headed bulbul sound quality at MBOF varies.

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