

Mauritian Wildlife Foundation Mauritius Fody Recovery Programme Annual Report 2008-09



Mauritius Fody 'Darth Vada' Ile aux Aigrettes. Photo: LucyGarrett

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Season Summary

The aim of the Mauritius Fody *Foudia rubra* recovery programme is to reduce the risk of extinction of this Critically Endangered passerine. Intensive monitoring of the successfully reintroduced population on Ile aux Aigrettes serves to broaden our knowledge of this species which can aid any subsequent future translocation attempts and devise long-term management strategies for this species.

Monitoring of the Ile aux Aigrettes population of Mauritius Fodies has proved incredibly successful and yielded some extremely interesting findings. Over the past five years territory establishment and pair formation has increased each season, and this year was no exception, with a total of 54 pairs at the end of the season. Rates of breeding success and productivity have slowed, but 55 fledglings were still produced. Chances of survival on IAA remain high, at 73% for new recruits, which is similar to last season's findings. However the occurrence of disease was particularly high this season, and increases in vigilance and hygiene were implemented in order to discount any potentially human related causes. The potential for removing the provision of supplementary food in order to reduce the risks of disease transfer is discussed. Supplementary food was implemented in order to boost population success rates, and as these seem to be very low, it is surmised that the provision of supplementary food could be sustaining an unhealthy population size. These findings give indication that the Ile aux Aigrettes population is reaching density dependence, and are encouraging for the long-term self-sustainability of the population. This is also encouraging for future translocation programmes involving the Mauritius Fody, as harvesting nests that are likely to fail through density dependence will not put strain on the population or affect overall population size.

This season saw the completion of the Fody release aviary on Round Island. The harvesting of eggs from Ile aux Aigrettes was a great success and subsequent hand-rearing of these eggs led to further our knowledge and allowed for experimentation with different diets (see hand rearing section). The transfer of six parent raised fledglings from Ile aux Aigrettes was also excellent experience, and subsequent disease screening encouraging. The decision was made to post-pone the releases as several factors led to delays and the translocations would not have commenced until the end of January, a time when the risk of cyclones is high. However, this has been to the advantage of the project, as it has led to the completion several preparative tasks, and increased our knowledge and experience for the future releases.

This season is the first time since 2005 that Mauritius Fody monitoring has been carried out in the upland forests of mainland Mauritius. A total of 38 nesting attempts were monitored from an estimated 27 pairs, which enabled nesting success to be estimated. Nesting success was 24% with nest predation high, suspected to be caused by monkeys. Nesting success was lower than previous years, which could be due to the monkeys having been controlled during the previous monitoring periods. Possibilities for continuing this control should be investigated in order to safeguard the founder population of Mauritius Fodies. Data on feeding ecology was also gained with over 100 feeding observation made, furthering our knowledge of Fody behaviour in the upland remnant population.

Based on discussions on BirdLife's globally threatened bird forums, the decision was taken to downlist the Mauritius Fody to Endangered on the 2009 IUCN Red List (BirdLife International in press.), which will take effect in the coming season (May 2009). This is a major achievement for this project considering the time scale in which it has taken place. However, it does not mean that the Mauritius Fody is completely saved from extinction risk. Close monitoring of the population together with further translocation work is still needed and will remain a priority for the project in the coming years

The objectives for the coming 2009-10 season will be to continue close monitoring of the Ile aux Aigrettes population and maintain preparations for translocations to Round Island.

1.0 Introduction



Mauritius Fody female 'Roger' Ile aux Aigrettes. Photo: Lucy Garrett

Lucy Garrett

Oceanic islands are often formed by volcanic eruptions, resulting in isolation by large stretches of ocean. Mauritius was created by such activity around 10 million years ago (Cheke and Hume, 2008). Located in the Indian Ocean, together with Rodrigues and Reunion, Mauritius forms part of The Mascarene Islands. These islands were so far removed from larger land masses they came to support a unique array of fauna and flora to the extent that each island was very different from its neighbour.

Highly specialised and adapted through thousands of years of evolution, it is likely that much of what once inhabited Mauritius was unique to the island (Cheke and Hume, 2008). Pristine Mauritius was devoid of terrestrial mammals which were replaced by reptiles, birds and land crabs (Cole, 2005; Cheke and Hume, 2008). Such specialised ecosystems are extremely vulnerable to any changes there of, and Mauritius was no exception. Habitation by man

around 1598 resulted in the continual degradation of this ecosystem and sadly today little remains of what would have been one of the most unique systems on earth.

Through continual habitat degradation and the long-lasting effects of introduced predators, a large proportion of species went extinct. Today, we are left with a small and extremely precious collection of animals and plants that are subject to the same pressures which caused the demise of their counterparts. Only 5% of native forest survives (Safford, 1997a), and predation by introduced mammals such as; rats *Rattus rattus* and *R. norvegicus*, Crab-eating macaques *Macaca fascicularis*, cats *Felis domesticus* and mongoose *Herpestes javanicus*, have had a huge impact on the remaining species.

Intensive conservation programmes led by the Mauritian Wildlife Foundation (MWF) and the National Parks and Conservation Services (NPCS) have ensured the continued survival, and given hope for the future of Mauritius's endemic birds, reptiles and plants. Of a total of 41 native and endemic bird species, 17 have gone extinct and 8 of the remaining 24 are threatened (IUCN, 2007; Cheke and Hume, 2008)

The foremost in successful achievements is undoubtedly the Mauritius Kestrel *Falco punctatus*, which was successfully rehabilitated from 4 individuals to a wild population of around 500 (R. Dale pers. Comm.), now almost completely free from human intervention. Other success stories are the Pink Pigeon *Nesoenas mayeri* and Echo Parakeet *Psittacula eques*, both of which were reduced to near extinction (Jones and Hartley, 1995). In more recent years, efforts have focused on the endemic passerines. Most recently the Mauritius Olive White-eye *Zosterops chloronothos* has been the subject of intensive management strategies and translocated to a predator free island in order to establish a sub-population where they have successfully bred (Cole, 2007b; 2008; Maggs et al., 2009). The benchmark for this work followed on the successes of the Mauritius Fody *Foudia rubra* reintroduction programme, established in 2002.

The Mauritius Fody is possibly one of the most charismatic species of endemic passerines in Mauritius, and was once common across the island, occurring in more open areas of the lowlands (Panyandee, 2002; A. Cheke, pers. comm.; J. Hume, pers. comm.). Its' initial demise was undoubtedly the cause of habitat destruction, as the coastal forests were the first to be hit, providing food, livestock grazing, and land for cultivation (Vaughan and Wiehe, 1937; Maunder *et al.*, 2002). By 1911 it had become "a rare bird even in the south-west of the island" (Meinertzhagen, 1912), and continued to decline from an estimated 250 pairs in 1975 (Cheke, 1983) to around 100-120 pairs in 1995 (Safford, 1997c,e). These later dramatic decreases in population size were mainly attributed to the destruction of a *Pandanus* forest at Le Mares and nest failures caused by introduced predators (Safford, 1997e; Cristinacce *et al.*, 2007). Confined to a small area of upland forest, protected from predators mainly by a plantation of introduced Japanese cedar *Cryptomeria japonica* (Safford, 1997d), it was considered a priority species for conservation, and in 2002 work began in an attempt to safeguard this Critically Endangered species from extinction.

Marooning was highlighted as the most feasible method for species recovery (Safford and Jones, 1998), and a captive breeding and release programme was established. Eggs and chicks were rescued from the wild population from nests deemed likely to fail (Switzer *et al.*, 2003). A captive breeding programme using hand-reared individuals was then established at the Gerald Durrell Endemic Wildlife Sanctuary (GDEWS). The first releases onto a predator free offshore Nature Reserve, Ile aux Aigrettes (IAA), began in 2003, and since then the population has successfully increased, and discussions with BirdLife's globally threatened bird forums has led to the downlisting of the species to Endangered on the 2009 IUCN Red

List in May 2009. Now in the fifth breeding season on Ile aux Aigrettes, preparations and trials are underway for the establishment of a second sub-population on Round Island.

1.2 The Story So Far; Season Summaries

Pre 2002

- Monitoring of the wild population of Mauritius Fodies on mainland Mauritius.

2002 – 2003

- The first rescues of Mauritius Fodies from the wild population around the area of Pigeon Wood were carried out.
- Fourteen chicks were rescued, all of which were successfully hand-reared to independence at GDEWS.

2003 – 2004

- Twenty-one chicks were rescued from the Pigeon Wood population and 20 of these were successfully reared to independence.
- A captive breeding programme was established at GDEWS with four pairs of yearlings. All Pairs built nests but only one female laid eggs, which were infertile.
- Fifteen Mauritius Fodies were translocated to IAA and released which was the first time the Mauritius Fody had been present in lowland Mauritius for over 300 years.
- Seven Fodies survived on IAA at the beginning of June 2004.

2004 – 2005

- For the first time eggs were rescued from wild pairs at Pigeon Wood. Seven eggs were harvested and reared to independence.
- Fifteen chicks were rescued from Pigeon Wood, all were successfully reared to independence.
- The captive breeding programme at GDEWS was also successful, being the first programme to breed Mauritius Fodies in captivity – three females produced 51 eggs resulting in 29 fledglings.
- One chick, produced on IAA, was also hand-reared to independence at GDEWS.
- Two female Fodies were released onto IAA at the beginning of the season, forming two pairs which produced 6 fledglings in the wild on the island.
- Fifty-one Fodies that were hand-reared at GDEWS were released onto IAA, and 38 survived to the end of the season.
- Population size reached 51 birds at the end of the season.

2005 – 2006

- A total of 14 eggs and two chicks were rescued from the Pigeon Wood population. All were hand-reared to independence.
- One captive pair produced three fledglings at GDEWS.
- A total of 19 fledglings and 5 adults were released onto IAA, and there are no longer any captive birds at GDEWS.
- Twenty-two pairs were formed and 40 fledglings were produced on IAA.
- Population size was 98 birds at the end of the season.

2006 – 2007

- Rescues from wild pairs, captive breeding, hand-rearing and releases, ceased.
- Forty-two pairs formed on IAA throughout the season, and produced 48 fledglings.
- Population size was 125 at the end of the season.

- Investigation into invertebrate densities and habitat were carried out on Round Island, in view of a potential future release of Mauritius Fodies.

2007 – 2008

- A total of 50 territories were established on Ile aux Aigrettes.
- Fifty fledglings were produced from 18 pairs.
- Population size was 146 at the end of the season.
- Breeding success and survival have decreased, indicating that the population is reaching density dependence.
- The first breeding attempt in lowland mainland Mauritius was discovered between an IAA Mauritius Fody female and a Madagascar Fody male. The chicks were hand reared at GDEWS, where they will be kept for future study.
- Plans for the Round Island translocation were approved by Government bodies.

1.3 Season Aims 2008-09

- Continue monitoring the Ile aux Aigrettes population in order to further our knowledge on behaviour and population structure and monitor the progress of the population.
- Continue to provide Supplementary food and control competitors and predators on Ile aux Aigrettes.
- Monitor breeding success on Ile aux Aigrettes through closely monitoring as many nesting attempts as possible, and ring as many chicks on the nest as possible to ensure life history data.
- Monitor any changes in territory formation, placement, and size.
- Commence preparations for the establishment of a second sub-population of Mauritius Fodies on Round Island.
- Construct a release aviary on Round Island.
- Hand rear birds for translocation from eggs at GDEWS and screen for diseases
- Eradicate House Sparrows on Round Island and screen introduced birds for diseases.
- Monitor breeding success and territory placement in the upland forests of Pigeon Wood in order to establish the possibility of harvesting eggs for future release.

Details and summaries of the April 2008 – March 2009 season are presented in this report.

2.0 Ile aux Aigrettes



Iwan Fletcher taking the morning attendance register at the Mauritius Fody aviaries, Ile aux Aigrettes. Photo: Lucy Garrett

Lucy Garrett

Senior Field Staff: Laura Bambini
Support Team: Heather Dixon, Matthew Gee,
Sarah Lovibond, Iwan Fletcher,

Richard Baxter, and Amanda Ladkoo

2.0 Ile aux Aigrettes

Ile aux Aigrettes is a raised coralline 26ha islet, 625m from the coast of Mauritius. The island is under continuous habitat restoration, and contains some of the most pristine lowland coastal forest in the Mascarenes. It is thought that the Mauritius Fody would possibly have habited the island some 300 years ago, prior to its degradation through clearance and introduced mammalian predators (Cristinacce, 2008). After successful eradication programmes the only introduced mammal that remains is the Indian musk shrew *Suncus murinus* (Varnham *et al.*, 2002). The island has been managed since 1986, and MWF have successfully introduced Pink Pigeons in 1994, reaching numbers of around 80 birds (Bunbury, 2006). More recently, Mauritius Olive White-eyes have been introduced and now stand at a population of 16 birds (Maggs, 2009), along with the Telfair's Skink which were translocated from Round Island in 2006 and 2007 and have now successfully reproduced on the island (Cole, *et al.*, 2007b; N. Cole, pers. comm.). Together with the Mauritius Fody, Ile aux Aigrettes is an important sanctuary for these threatened species. The island is also thought to be a refuge for introduced bird species, which roost and feed on the island (Packman, 2007).

Since their release in 2003, the Mauritius Fody population has continued to grow, with the number of territories increasing from four in 2004-05 (Cristinacce, 2005; Garrett *et al.*, 2008) to a staggering 54 at the present time (March, 2009). Although the number of Fodies and fledglings has increased slightly this season, there have been high mortality rates and nesting success has fallen. This seasons monitoring has revealed some important changes in population dynamics with issues such as disease and inbreeding and has given insights into some remarkable behaviours.

The number of Mauritius Fodies present on Ile Aigrettes has increased from 146 at the start of the season to 157 in March 2009. A total of 206 nesting attempts have been found and monitored, yielding 55 fledglings.

The successful harvesting of eggs also took place this season, which were hand-reared at GDEWS. A total of six parent raised fledglings were also transported to GDEWS for potential release onto Round Island (see sections 4.0 and 5.0).

In order to gain more of an insight into the diet of Mauritius Fodies on IAA, opportunistic feeding observations were made throughout the season. With over 60 observations it has increased our knowledge of feeding behaviour, which will be extremely useful when assessing future release sites.

Details of the findings and outcomes of this season's monitoring are given below, more descriptive information can be found in the Appendix.

2.2 Breeding behaviour

This season, breeding started slightly later than last season, with the first nest found on 18/06/08 and ceased towards the end of February. This is slightly shorter than last season, and was probably curtailed due the bad weather associated with cyclone Gael (Table 2.1).

Table 2.1. Number of months breeding activity was noted on Ile aux Aigrettes from 2004 to 2009.

Season	No. of breeding months
2004-05	6
2005-06	7
2006-07	9
2007-08	11
2008-09	8

Both the male and female participate in this stage of nest construction and exhibit excited behaviours calling and chasing one another as they find material and weave it to the nest, the male being particularly noisy in some cases and displaying aggressive behaviour towards the female, chasing her to the nest. Nests were categorised into five main stages:

- Early nest building – the nest remains see through i.e. daylight can be seen through the nest
- Late nest building – the nest is fully formed and not see through, but is not lined
- Lining – the nest is being lined with feathers or fluff from seed heads an other materials
- Incubation – Eggs are present in the nest, this also includes nests where incubation has not been confirmed, but eggs are present
- Brood – chicks are present in the nest

During the lining, incubation and brood stages, Mauritius Fodies tend to be more secretive, with both male and female remaining quiet when around the nest and just before entering. When exiting the nest after incubating, females did so at a very fast pace and remained silent until a suitable distance from the nest (aprox. 3 to <10m). These behaviours are presumably a method for guarding against predators, by reducing activity at the nest to a minimum. It is presumed that more predator aware birds are quieter at the nest, which may explain the success of the Madagascar Fody, which do appear to be very secretive around their nests (pers. obs.). However, the behaviours displayed by Mauritius Fodies suggest some evidence of predator awareness, but the types of predator that are present on Mauritius today are very different from those that any innate predator defence mechanisms would have been developed from. This area would need further investigation for more accurate conclusions to be made.

Nest watches were usually carried out in the afternoon when the success of nest searches declines. Due to the large number of nests monitored at any one time, the number of days between nest watches varied between 2 and 5 days, depending on the stage and level of management needed for each individual nest. Nest watches were carried out at a suitable distance from the nest, and observers were discreet and quiet at all times so as to cause minimal disturbance to nesting activity. The purpose of a nest watch is to confirm what stage the nest is at, so that predictions can be made as to when to band and ring chicks. If nests were accessible i.e. reachable from standing to the height of a tall ladder, then they were

accessed on a minimal number of occasions in order to confirm the current stage. It is necessary to do this in order to correctly predict when to place colour bands and identification rings on chicks, and also to administer protection against nest parasites during egg and chick stages. Nest mites were found to be a problem for some clutches of chicks this season, and thus, as far as it was possible, all nests that reached incubation stage were treated with Carbaryl. In previous seasons, nest fly larvae caused nests to fail (Cristinacce, 2004) and this season there was also a case of nest fly larvae causing chick fatality (see later section). Pure Carbaryl (100%) was mixed with non-perfumed, white talcum powder to a 5% concentration, and one pinch was sprinkled inside the nest, over the eggs and lining. A second pinch was placed over the nest entrance so that it would collect on the female's feathers and be taken into the nest. On a couple of occasions Carbaryl was added to the nest when chicks were present. This was only done when the nest had been found after the eggs had hatched and where mites or nest flies were a problem. In this case the chicks were removed from the nest prior to the Carbaryl being added, the nest was tapped to ensure good coverage inside the nest and the chicks were then replaced. All nest accesses were carried out when the female was not on the nest whilst at incubation or early chick stage.

Stage when found

Most nests were found in the morning, as this is the most active period in terms of nest building. Searches focused on individual pairs until most pairs had been covered, this usually meant that each pair was visited around twice a week. The early stages of nest building tend to be the most active, making it easier for a nest to be located, this was reflected in the number of nests found at each stage, the highest number being found at early nest building with 31% of nests found at this stage (63/206, Fig. 2.1). In contrast to last season, a large proportion of the nests were found during incubation stage with 25% of the nests (52/206) compared with 14% in 2007/08. This is suggestive of a high turnover rate leading to many nests not being found at the early stages of building. This also fits with the large number of un-rung fledglings that were present this season (see later section). This could be due to several reasons. This season the number of territory holders increased and new pairs were being formed at rapid rates. This makes it very difficult to keep up with the breeding status of each pair. In order to confirm a nest as failed, several watches need to be carried out and due to the large number of nests under observation at any one time (there may be upwards of 30 active nests) a pair may have built a new nest by the time their old nest is confirmed as inactive. A pair can build, line and lay eggs in a new nest in a matter of days, so there is a very small window available to find nests at the early building stages. A positive point to make is that it is extremely difficult to find nests at the incubation stage, as Fodies are a lot more secretive around the nest, and this increase in nests found at this stage suggest a skilled field team. The change in nest discovery rates at varying stages of development is most likely to be a result of increasing density dependence. Rates of pair swapping, divorces, and new pair formation greatly increased this season, making it extremely difficult to keep on top of the rapid nest turn-over rates. Having said this over 200 nests were found and monitored, and these changes in population dynamics are also an incredibly important finding.

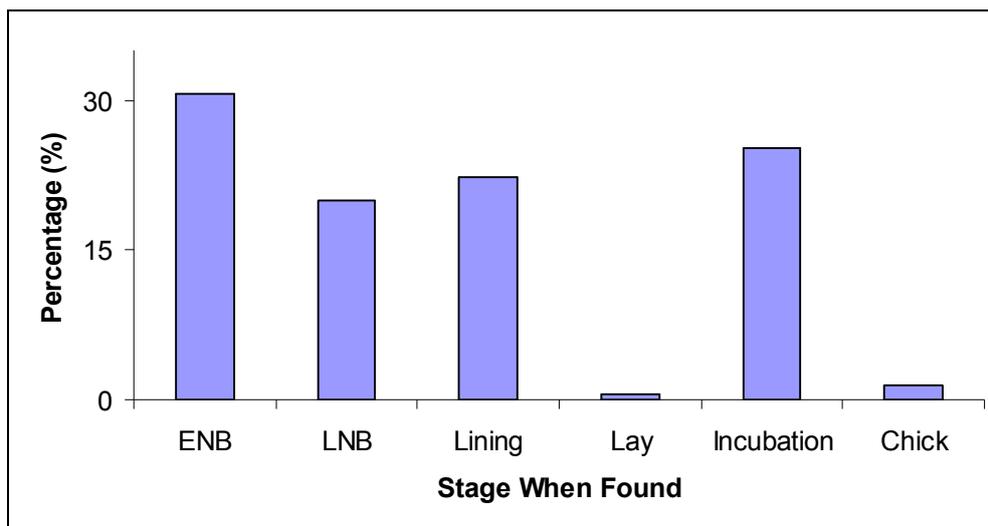


Fig. 2.1. Percentage of nests found at different stages. ENB = Early Nest Building, LNB = Late Nest building. N = 206.

2.2.1 Nest Outcomes

The number of nests found peaked in November 2008, the most active months being September 08 – December 09 (Fig. 2.2). Breeding ceased quite abruptly in February 09 with no new nests found past January, probably due to cyclone Gael and heavy rains. During the entire season a total of 206 nesting attempts were found.

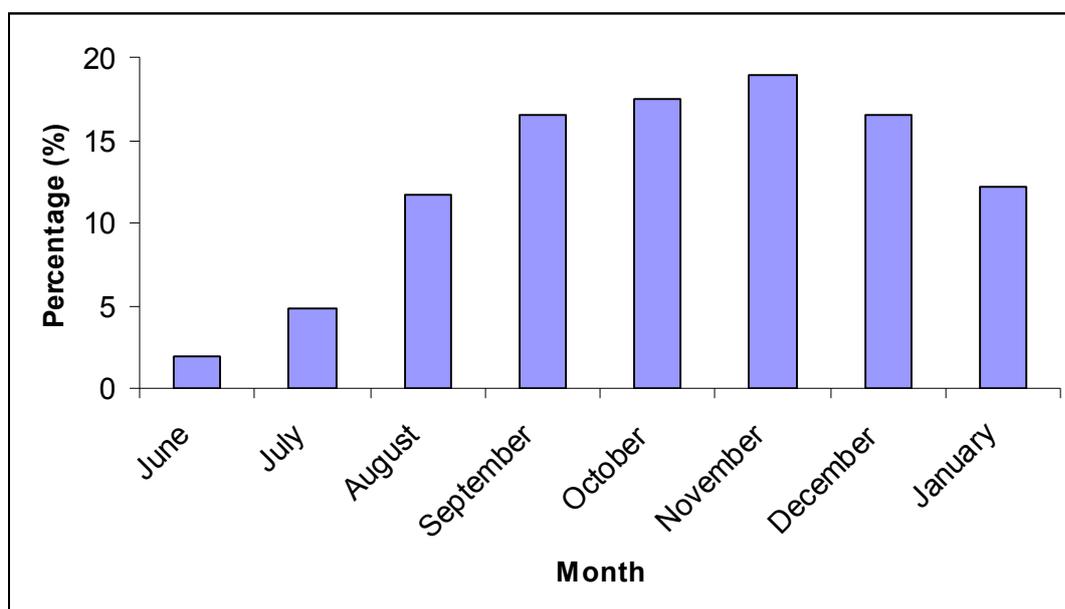


Fig. 2.2. Percentage of nests found each month on Ile aux Aigrettes between June 2008 and January 2009. N = 206.

Nest outcomes were categorised into the following, where the nest is no longer active:

- Abandoned before completion – the nest is not lined and is incomplete
- Abandoned after completion – the nest is lined and completed, but did not contain eggs

- Failed at incubation – eggs were present in the nest and incubation had commenced
- Failed at chick stage – the eggs had hatched and chicks were present in the nest
- Fledged – the nest was successful and chicks have left the nest
- Harvested – the contents of the nest were removed for hand rearing

The outcomes of the 206 nests found this season are summarised in Fig. 2.3 (outcomes of each nest can be seen in Appendix 1). The highest proportion of nest failures occurred at incubation stage with 49% of nests failing at this stage (100/206). Most of the reasons for failures and also abandonment were unknown. In many cases, as for previous seasons, the contents of nests that contained eggs or chicks were missing. The reason for their disappearance could either be due to predation, which was confirmed on several occasions, or to the parents removing eggs or chicks that had died or not hatched from the nest. This behaviour has been seen in Mauritius Fodies held at GDEWS for the captive breeding programme (Cristinacce, 2008). Seven nests were harvested for hand rearing at the Gerald Durrell Endemic Wildlife Sanctuary, Black River, and one nest was rescued at chick stage which would have otherwise failed. This was part of the Round Island translocation programme and details of these nests and hand rearing outcomes can be seen in sections 4.0 and 5.0.

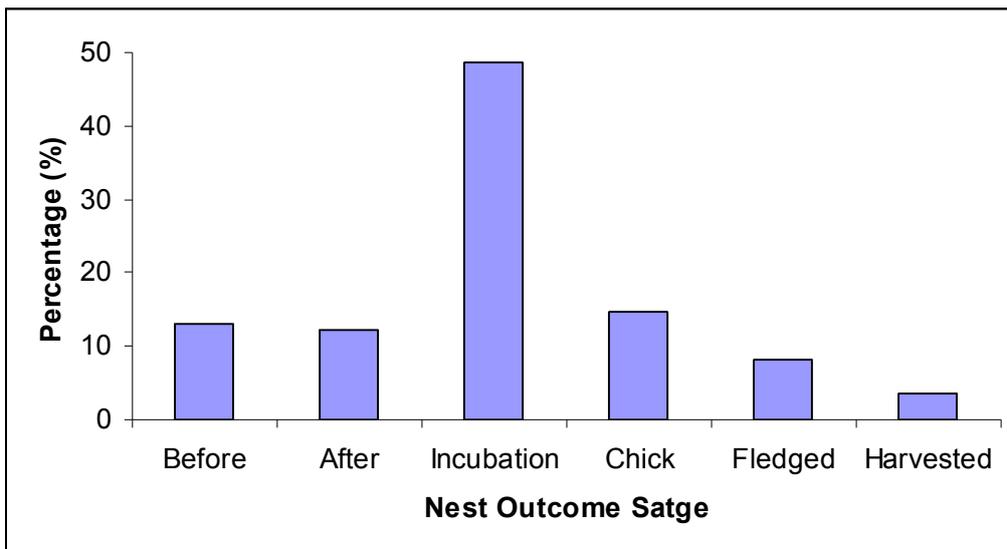


Fig 2.3 Percentage of nest outcomes at different stages on Ile aux Aigrettes between June 2008 and February 2009. Before = nest abandoned before completion, After = nest abandoned after completion, Incubation = nest failed at incubation, Chick = nest failed at chick stage, Fledged = nest successful, Harvested = nest contents harvested for hand rearing. N = 206.

A total of 55 fledglings successfully fledged this season and a further 13 were successfully released following hand-rearing at GDEWS (see section 5.0). A large number of un-rung fledglings occurred this season, possibly due to the reasons stated above (see nests found at different stages). There were 33 un-rung fledglings, 13 of these came from monitored nests which were not accessible or the chicks were too old to ring. A further 13 were seen with their parents in the field before turning up at the Fody aviaries, where they were caught and ringed. A total of 38 chicks were ringed or colour banded on the nest and of these 22 fledged with known parentage.

Nest failure due to predation was suspected in 11 cases. Many of these nests had evidence of predation from large holes, either at the top, back or bottom of the nests, the contents missing. At two nests common Mynah birds *Acridotheres Tristis* were confirmed actually predated the nests and carrying off the chicks and eating them. It is suspected that Mynahs are the main cause of nest predation on IAA, being very intelligent birds and now confirmed predators of Mauritius Fody chicks. Another confirmation of a bird predator came when a group of Red-Whiskered Bulbuls were seen trying to enter a nest and then started pulling off bits of material from the back of the nest, as they were too large to fit in the entrance hole. The pair were defending the nest, but became tired after a while. The nest was then abandoned. Three nests were found with eggshell fragments underneath; a possible indication of predation. One nest was found on the floor below the nest tree, and one chick infested with ants remained inside. It is possible that this nest could have been ripped out of the tree by a Mynah bird. The chick was rescued and used to trial a new hand rearing diet. It also had favourable genes due to its paternal parent never having reproduced successfully on the island (F34540 'Jack' from Sting pair at Pigeon Wood).

Another cause of nest failure came from infestations of tropical nest fly. These flies lay their eggs in nests, the maggots then crawl up the body of the chicks and latch into the nostrils where they gorge themselves on blood. When they are full they drop down, digest, and then crawl up again. This can cause severe anaemia and also reduces begging response due to dehydration. Confirmation of maggot fly can be difficult when the maggots are very small, and can appear as small black dots in the nostrils. In larger birds the maggots can be removed with tweezers, but Fodies are much too small for this when the maggots are small. The only treatment is to use carbaryl powder in the nest, and when the maggots drop off they will die in the bottom of the nest. This was the case for nest FR08IAA136. Both chicks had Maggot fly larvae in the nostrils, and one was attached to the face, digesting. These were large enough to be removed. The chicks were very dehydrated and their begging response was almost zero, they were very thin and pale. Despite attempts to re-hydrate and feed them, this did not recover their begging responses, and although the parents did visit the nest, they did not feed the chicks. The nest failed after two days. A similar case occurred in nest FR08IAA205. Both chicks had small larvae in the nostrils, and despite adding more carbaryl to the nest the chicks were found dead in the nest a few days later. A case of successful treatment of nest fly larvae came from nest FR08IAA273. The chick looked very anaemic and its bones were protruding, it had nest fly larvae in one nostril. The chick was given one colour band as it was thought it would fail. The nest was thoroughly treated with carbaryl and the parents continued to feed the chick. The nest was successful and a healthy fledgling emerged, and was doing well for the remainder of the season. This proves the importance of this type of nest management, and perhaps the number of carbaryl treatments should be increased to cover various stages of development and especially after heavy rains when the carbaryl may be washed away, in order to combat nest parasites and prevent future fatalities.

Heavy rains were also suspected to be the cause of several nest failures, which has been found in other bird species (J. Groombridge, pers. comm.). Rains may cause nest contents to become saturated and cold, or prevent parents from finding food for chicks or themselves. Indeed after a heavy rain spell, nest FR09IAA13 was found with one cold and soggy egg inside, the nest failed. Heavy rain periods were noted towards the end of January and during most of February. Cyclone Gael brought bad weather with rain and strong winds from the 4th Feb – 9th Feb. After these periods, several nests failed, three were found on the ground having been ripped out of the trees by the strong winds.

2.2.2 Nesting Success

Nesting success was calculated using the Mayfield method (Mayfield, 1961; 1975), which uses exposure time rather than simply numbers that fledge. Nesting success was calculated for the 153 nests that contained a clutch i.e. where a nest reached incubation or chick stage.

Nesting success was calculated by: the probability an egg will survive the incubation period \times the probability an egg will hatch \times the probability a chick will survive the nestling period. The incubation period was taken as 14 days (Cristinacce, 2008), and the chick period (from hatch to fledge) was taken as the average time taken for a chick to fledge.

The probability that an egg survived the incubation period was 45% and the probability that a chick would survive the nestling period was 35%. Thirty-five percent of eggs present at hatching time did not hatch, giving an overall nesting success 10%. Compared with previous years nesting data, overall nesting success has decreased (Table 2.2). There are several reasons why this decrease may have occurred, the most obvious being inter-specific competition. As population size increases and density dependence is reached, nesting success is likely to decrease due to the added competition for space and resources. As the IAA population reaches density dependence, it is likely that nesting success will plateau. Other reasons for the decline in nesting success may be related to intra-competition. At the start of this season, there were two more species all competing for resources on IAA, the Mauritius Olive White-eye and the Telfair's Skink. Competition between these species is possible due to overlaps in dietary requirements, however, this needs careful investigation before a conclusion is reached.

Table 2.2. Comparison of nesting success on Ile aux Aigrettes between seasons using Mayfield analysis.

Season	Nesting success
2004-2005	20.4%
2005-2006	30%
2006-2007	30%
2007-2008	12%
2008-2009	10%

In previous seasons nesting success has been highest at the start of the breeding period (Cristinacce et al., 2006, Garrett et al., 2008). This seasons breeding period was split into two time periods: June to September and October to January. Nesting success was highest at the start of the season, and decreased quite dramatically after the first four months (Table 2.3), this has also been found in other bird species (Noris, 1993). This may be explained by the drier weather prevailing annually between October to December.

Table 2.3. Comparison of nesting success for different periods during the 2008-2009 breeding period using Mayfield analysis.

Time Period	Nesting Success
June - September	21%
October - January	3%

2.3 Territories and pair formation

At the end of the season there were a total of 54 pairs on Ile aux Aigrettes (Fig. 2.4), representing 13 pairs from Pigeon Wood. Out of 40 confirmed males, 39 held territories, a staggering 12 males having more than one female. The number of territories has increased each year since release on IAA (Table 2.4). As space becomes a limiting factor, territory size has decreased (Table 2.4).

Table 2.4. Number of territory holders and average territory size (\pm SE) on Ile aux Aigrettes for each season since release.

Season	No. of territory holders	Territory size (ha) \pm SE
2004 – 05	4	0.94 \pm 0.12
2005 – 06	20	1.0 \pm 0.1
2006 – 07	39	0.51 \pm 0.04
2007 – 08	50	0.48 \pm 0.04
2008 – 09	54	0.44 \pm 0.03

Maximum territory size was 7703.67 m² (Fig. 2.4; territory number 49), minimum territory size was 1323.27 m² (Fig. 2.4; territory number 31).

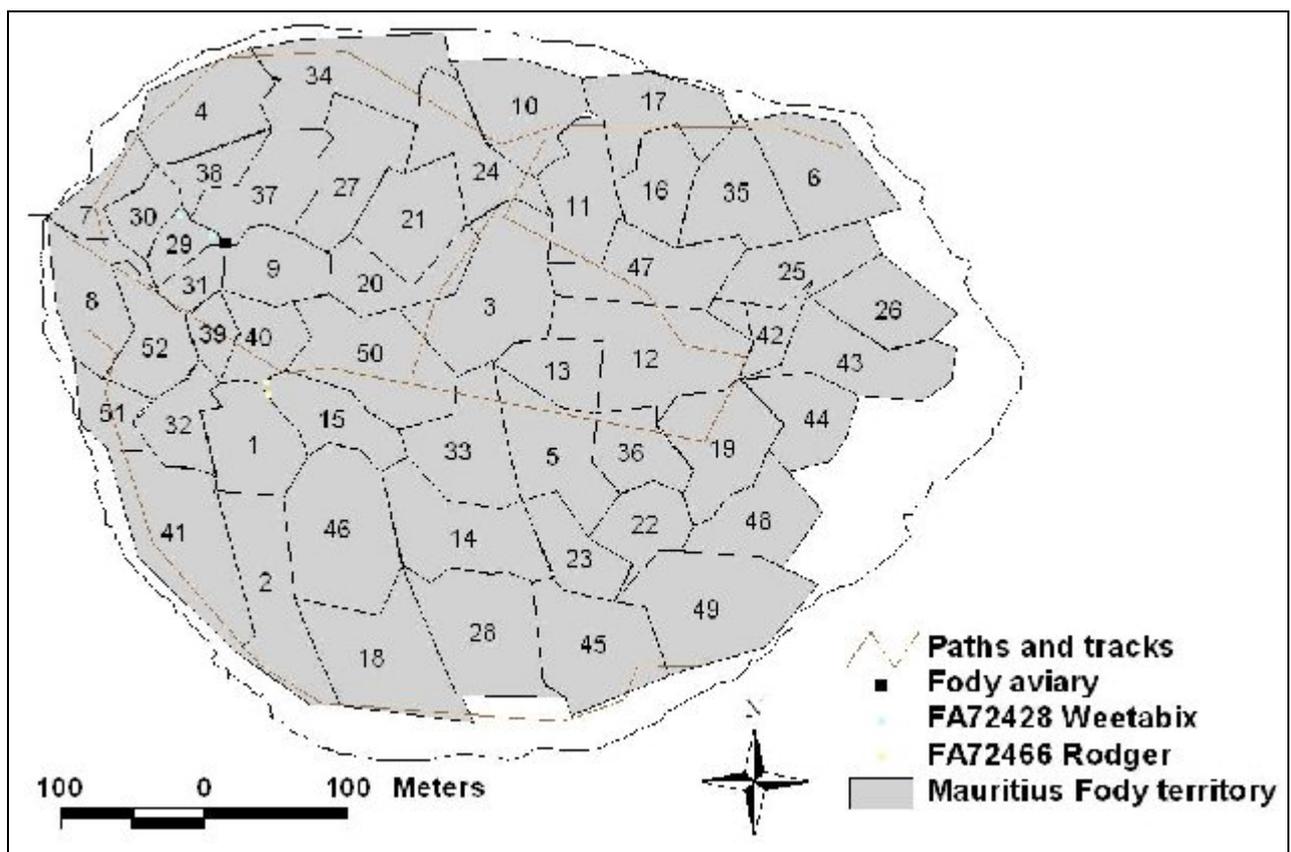


Fig. 2.4. Mauritius Fody territories on Ile aux Aigrettes at the end of the 2008-09 breeding season. Polygons were not created for pairs that were only seen together on a few occasions, and are marked with points. These pairs contained polygamous males, and only one nesting attempt was found for each pair. Each territory is numbered which corresponds to the pair occupying it (see Appendix 2 for full list of pairs).

Rates of divorce were particularly high this season, with a total of 31 pairs separating. This was mainly due to the death or disappearance of the male or female 25/31 (see disease section). One pair FA72439 'Licorice' × FA42261 'Devil' divorced after having been paired since the middle of last season and reformed pairs with other birds. This could have been due to them not having had any successful nesting attempts during their pairing and only getting to egg stage. On re-pairing with different partners the male produced chicks with his new female FA42268 'Roulette', unfortunately the chicks were predated by Mynah birds. As it was the adult males that were mostly affected by disease, there was male deficit, thus resulting in the large number of males with more than one female (12), two males having three females.

2.4 Survival

2.4.1 Supplementary Food

The provision of supplemental food remains an important part of the Fody recovery programme. It is administered every morning around 6.30 in 10 bowls, following the new food mix developed in 2007 (see Cole et al., 2007a). This season, supplementary food was also topped up at lunch time, as there was no food left in the bowls by this time. Due to the large number of birds using the supplementary food it was felt that extra food may improve chances of nest success and survivorship. Water was also provided for the birds in several drip water bottles, and plans for water baths are in place. The overall quantities of supplemental food have not greatly increased over the past couple of years, despite the population growing. This is encouraging for the future, as it can hopefully be stopped altogether. Especially as it is potentially a risk for the transfer of diseases with such high numbers of birds congregating in one place (see disease section).

2.4.2 Survivorship

The use of supplemental food provides an ideal opportunity to record daily sightings of birds in the Fody aviary and together with sightings in the field, survival can be calculated. Population size has increased from 146 individuals in April 2008 to 157 birds at the end of March 2009 (Table 2.5). A total of 55 fledglings were produced this season. All birds that have been present in the IAA population this season, and their status at the end of March 2009 are listed in Appendix 3.

Survival can be calculated using the Kaplan-Meier method, which is based on the failure rate or the number of birds that are missing from the population, and the number of birds that are at risk of failure. Fig. 2.5 shows the probability of fledglings produced this season surviving to 190 days on IAA.

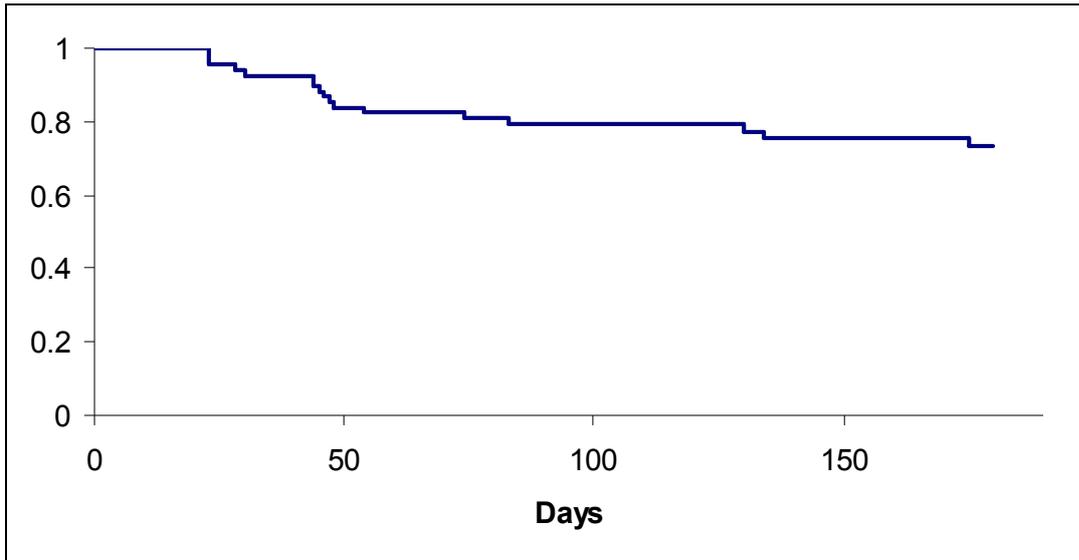


Fig. 2.5. Kaplan-meier daily probability curve of survival of fledglings on Ile aux Aigrettes to 180 days from April 2008 - March 2009.

The overall survival for 2008 - 09 was 73% for the new recruits to the population, which when compared last season has increased by 1% (Fig. 2.6). This seems to indicate that the population is reaching a plateau. Population size has increased over the last four years, and perhaps now we are seeing a levelling off, and population density is being reached. In comparison with the early years of population establishment on IAA, rates of increase are slowing, owing to the growing number of birds that are present on the island. Other findings that support the theory that density dependence is reached are the reduction in territory size, the decreased nesting success and the increase in disease occurrence. Increased numbers of birds on the island, more closely packed together will undoubtedly lead to birds coming in to contact with one another more frequently, and with competition for food and nesting sites high, it is likely that we will see more of these types of these regulatory patterns. However, the fact that 55 fledglings were produced this season with a survival probability of 73% is very encouraging for the long-term sustainability of the population.

Several birds have returned to the population throughout the season that were previously missing. One male, FA72486 ‘Apollo’ was missing for a total of 8 months on three separate occasions. The most interesting case was one of the new fledglings, FA85546 ‘Galapagos’, who was sighted on the mainland. The bird went missing in August and was sighted the following month at the Shandrani hotel, over 3.9 km away from Ile aux Aigrettes (Fig 2.7). After the sighting was confirmed by MWF staff an attempt to catch the bird and take it back to the island was made, however on returning the bird could not be found. Then, two months later the bird re-appeared on the island of its own will, and went missing again just over a month later. It is not the first time that an Ile aux Aigrettes bird has been sighted on the mainland, but it is interesting to note how far the bird travelled, with seemingly no ill effects. It is therefore possible that many of our missing birds are still alive on the mainland somewhere. More attempts should be made to find out where it is they go and whether breeding attempts are being made. This is important as we know that Mauritius Fodies can hybridise with the Madagascar Fody, and chances of inbreeding are likely to be much higher on the mainland given lower densities of Mauritius Fodies compared to Madagascar Fodies.

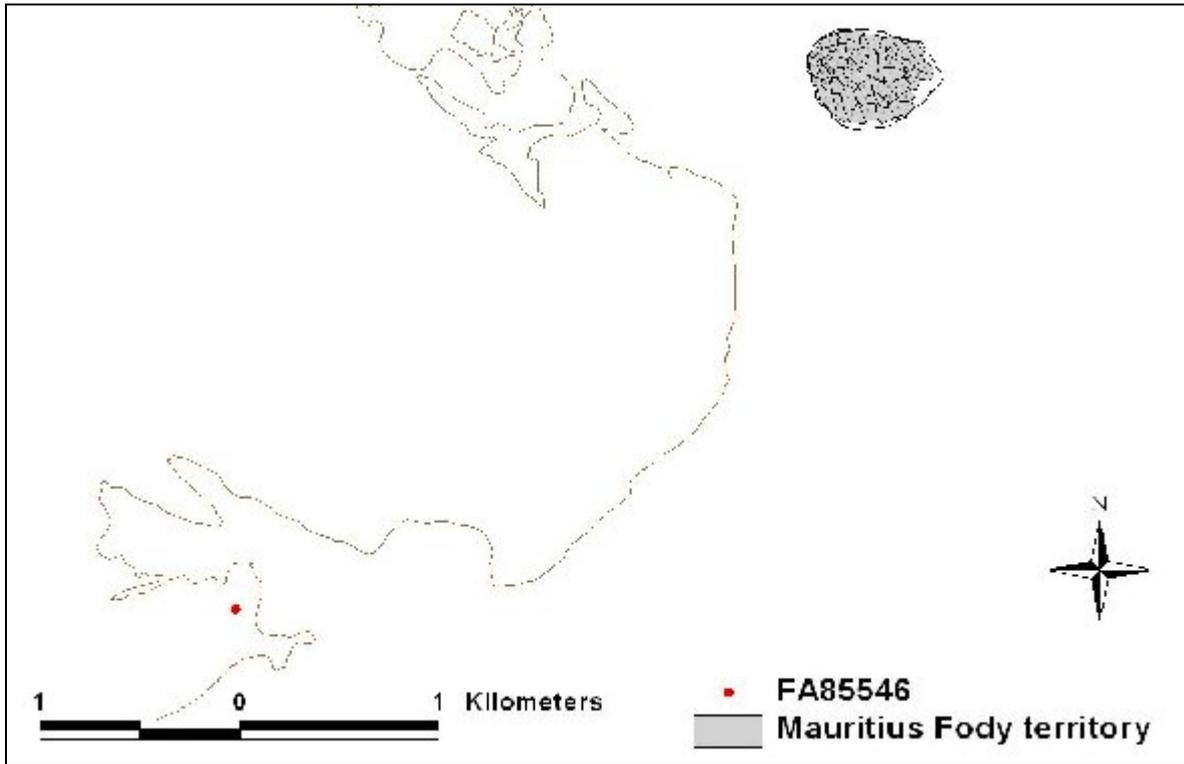


Fig 2.7. Map showing Ile aux Aigrettes and the missing Fody FA85546 ‘Galapagos’ at the Shandrani hotel on mainland Mauritius over 3.9 km away.

Table 2.5 Population change of Mauritius Fodies on Ile aux Aigrettes between April 2008 and March 2009.

	April	May	June	July	August	September	October	November	December	January	February	March
Population	143	144	132	124	137	153	152	143	153	160	158	157
No. ringed +	2	6	0	6	20	24	12	7	16	15	2	2
No. missing -	5	5	12	14	7	8	13	16	6	8	4	3
Male	50	48	46	38	47	47	43	40	39	40	40	40
Female	53	54	51	51	55	61	58	58	59	59	61	61
Unknown	2	4	2	35	25	17	16	14	9	7	7	7
Juvenile	38	38	33	0	10	28	35	31	46	54	50	49
Net change	-3	+1	-12	-8	+13	+16	-1	-9	+ 10	+7	-2	-1

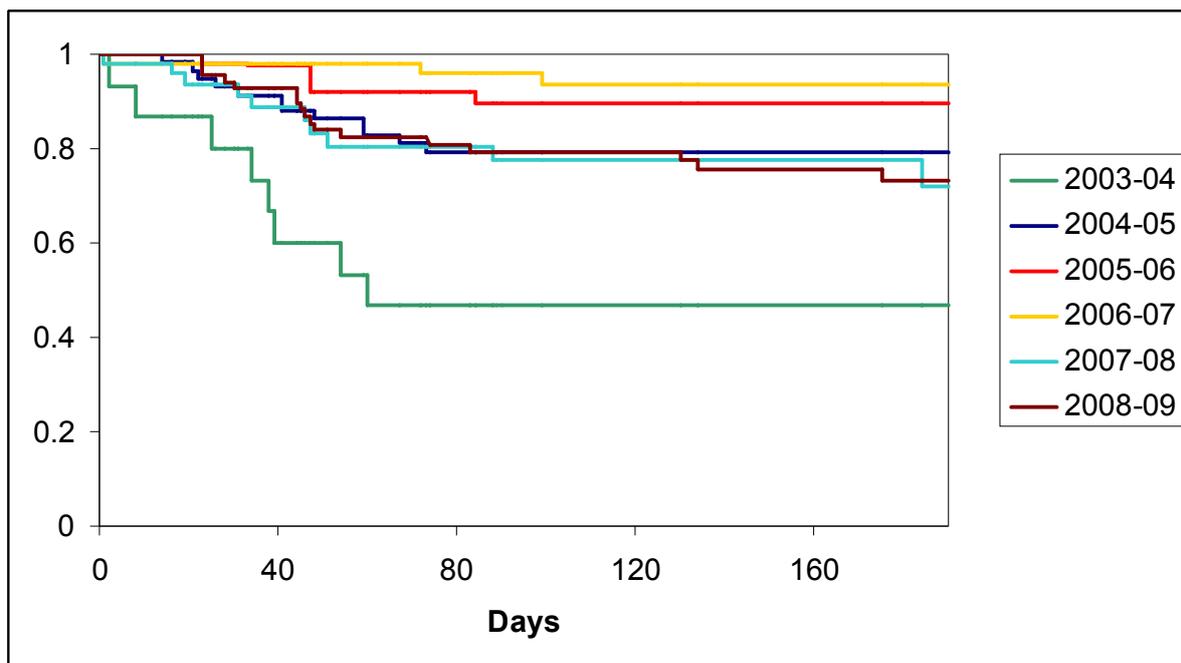


Fig. 2.6. Kaplan-Meier curves of the probability of survivorship to 190 days of fledglings on Ile aux Aigrettes each year since release.

2.5 Disease

This season has seen a marked increase in the number of birds showing signs of disease compared with previous years. A total of 19 birds have been found dead and several other birds have shown signs of illness and were then not seen since, indicating that they probably died but their bodies were not recovered. Other, non fatal, diseases have also been noted, such as avian pox.

A large proportion of the birds which were found dead or took ill and subsequently died in captivity were adult males (9/19). This is interesting as it could be related to levels of stress and population density. As the population grows and the number of territory holders increases, space becomes a limiting factor. Competition for this space will thus be fierce as each male defends his small patch from his neighbours. This, coupled with the increase in the number of birds feeding from a communal food source is likely to increase the rates of disease. It is well known that large groups of birds which feed from a relatively small area are more likely to contract a disease from fellow users, and are possible causes of fatality in the Mauritius Fody. On Ile aux Aigrettes introduced birds often frequent the feeding stations, and immunity to exotic diseases is much higher in introduced species. Disease is also much more prevalent in the lowlands (Bunbury, 2006). Any diseases that may be present among birds using the feeding station are unlikely to cause fatality themselves with many being carriers, but the risk of it escalating to serious illness is heightened when under conditions of stress, and breeding activity including nest and territory defence are potential stresses.

Details of all the known fatalities and diseases which have occurred this season along with their symptoms are given below (in order of occurrence). Post mortem and other screening results are also presented where applicable.

Birds found dead – body recovered

F34512 ‘Dumbkopf’ ID/DG, WT adult male was found dead 14/05/08. Parents: C1 Pair (Pigeon Wood), nest ref: FR03PW37, hatch date: 28/11/03 (hand reared at GDEWS). Taken to IAA: 23/12/03, released on IAA: 30/12/03. One of the first birds to be released on Ile aux Aigrettes, and form a territory. Age; 5 years 2 months.

Seen in Fody aviaries feeding from the ground and looking puffed up 11/05/08, holding a leg up, but no signs of pox. Seen looking puffed up again on the 13/05/08 and an attempt was made to catch him, but failed. The following day he was found dead on top of the safety hatch inside the Fody aviary 14/05/08.

A *post mortem* revealed that the bird was underweight but otherwise feathers in good shiny condition. The liver had a yellow film covering 20% of one lobe and also a dark patch over 40% of the organ. *Laboratory analysis* revealed small numbers of focal heterophilic nephritis (monocytes) in the kidney (kidney inflammation) and extramedullary haematopoiesis in the liver (increase in blood cell growth outside of the bone marrow, characteristic of anemia). Post mortem autolysis was high, even though a post mortem was performed on the same day of death.

FA72441 ‘Kladkorker’ DG, ID/YL adult male found dead 31/05/08. Parents: F34535 X FA42201, Nest reference: FR06IAA06, hatch date: 29/09/06, fledge date: 11/10/06. Age: 2 years 6 months.

Seen on 30/05/08 in the morning perched on the outside mesh of aviary, seemingly quiet and a little distressed but flew away and happened on two occasions. Then seen in the aviary perched on food dish puffed up with head tucked behind wing, attempts were made to catch the bird, but he flew into the back of the Fody aviary looking fine. Seen again in the back of aviary puffed up and sleeping, bird was caught in the hand. The bird’s condition seemed fine but panting and weak. The left nostril was blocked but eyes were bright and clear. Mouth checked for blockages but nothing seen. His vent was dirty and had faeces on his tail. The bird was placed in a fledging cage with fresh food and nectar and was going to be started a on a course of Baytril antibiotics the following day, but when checked at around noon he was found dead in the food dish at the bottom of the cage.

Bird did not appear underweight. A *post mortem* revealed yellow lesions covering 20% of liver surface, more of a discolouring than lesion or growth but sample taken, red bloody patch on left airsac. *Laboratory analysis* revealed multifocal nephritis in the kidney (inflammation), and mild increases in heterophil number (monocytes), occasionally focal present in the lung, but convincing pneumonia is absent. Inflammation of renal tubules. Infiltrates of extramedullary haematopoiesis in the liver (increased rates of red blood cell turn over could be symptomatic of anaemia). Post mortem autolysis was high (bacterial growth due to decay after death).

FA85526 ‘Norbert’ ID/DB, CS juvenile was found dead on 04/06/08. Parents: F34535 X FA42201, nest ref; FR08IAA14, hatch date: 29/01/08, fledge date: 15/02/08. Age: 4 months.

The bird was seen in the Fody aviaries at 7.30am on the morning of 04/06/08 in seemingly good health, but at 9.30 was found dead in the Fody aviary.

Bird had a slightly dirty vent and slightly underweight. A *post mortem* revealed no obvious diagnosis, but a slight cloudiness of the right eye and a yellow patch to the underside of right lobe of liver. *Histology* report revealed mild acute multifocal hepatitis in the liver

(inflammation), mild acute multifocal interstitial pneumonia in the lung (inflammation), extramedullary haematopoiesis in the liver and kidney (increase in red blood cell count, characteristic of anemia). This suggests bacterial infection may be implicated as the cause of death. Leukocytosis (increased white blood cell turnover) was also present in blood vessels, notably the lung.

FA85531 'McLovin' ID/WT, MV juvenile found dead 29/06/08. Parents: FA42243 X FA42284, nest ref: FR08IAA71, hatch date: 21/03/08, fledge date: 11/03/08. Age: 4 months.

The bird was caught up on 21/05/08, as its right eye was completely closed, with a slight swelling around the eye. The left eye had a green film over the surface which looked like a cataract. Small pox lesions were also noted in the left hand corner of beak. No pox on feet, vent was slightly swollen and protruding a little, clearly irritating the bird as every now and then bird would fidget and preen around the area. The birds' breathing was faster than normal when at rest but after being caught up for medication administration the bird gasped for breath.

McLovin was put on a course of Baytril antibiotics (22/05/08) and given nectar and fresh food. Baytril was given twice a day at 7 hour intervals, 0.1mls given at each dose and diluted 1:10 ratio with Ringer's solution. Weight 14.5 g. Bird was also puffed up and slept a lot.

23/05/08 bird looking better, more alert.

25/05/08 bird was still alert and eating well, eye was closed again but when caught up the bird reopened the left green eye, but was completely blind on that side as had no reflexes when touched lightly with the tip of a finger.

26/05/08 the last dose of Baytril was given.

The bird's condition improved and it was released from the Fody aviary on 03/06/08, and was seen visiting the aviaries and using the supplementary food on subsequent occasions. The eye was still clouded over and did not appear to have improved in itself, and remained open. The bird had occasional bouts of laboured breath, but seemed to be eating.

The bird was then found dead in the Fody aviary on 29/06/08 almost a month after release, it was seen on the morning of the same day, but later found dead.

A *post mortem* revealed a large creamy coloured lesion extending from the lungs around the liver as far as the rib cage on the right side of the body. Some internal decomposition had already taken place. *Histology* revealed marked inflammation over the outer surfaces of the lung and within the spleen. Intralesional bacterial colonies in many of the tissues. Post mortem autolysis was also quite high, as indicated by the post mortem findings. But the inflammatory reaction and dissemination to the spleen suggests a septicaemic bacterial infection (blood poisoning). Whether this is the primary bacterial infection, or a secondary development following a pre-existing lesion such as trichomoniasis or pox virus cannot be determined, but the presence of pox lesions during the first incidence of illness may be suggestive of the latter as the original cause.

FA42205 'Jim' LB/DG, ID adult male found dead 11/07/08. Parents: F32113 X F32119 (bred in captivity at GDEWS), nest reference: n/a, hatch date: 26/11/04, fledged: 11/12/04. Taken to IAA: 26/12/04, released: 02/01/05. Age: 3 years 6 months.

Appeared at the aviary looking very ill and fluffed up 04/07/08. Attempts were made to catch the bird, but were unsuccessful. On 05/07/08 the bird was seen at the warden's house, being attacked by FA72481 'Kumquat'. It was caught in one of the rooms but had later escaped. The body was discovered in the office on 11/07/08, without the head and full of maggots. No

post mortem was performed. Jim had a territory encompassing the wardens house, a much sort after area, and was loved by all who visited the island.

FA42285 ‘Eileen’ RD/DB, ID adult female, remains found 30/07/08. Parents: Predator Fence Pair (Pigeon Wood), nest ref: FR05PW13, hatch date: 11/02/05, fledge date 17/11/05. Taken to IAA: 27/11/05, released: 21/12/05. Age: 2 years 4 months.

Seen in the Fody aviary on the ground feeding and fluffed up 03/06/08. The bird stayed on the ground for around 10 minutes. It could not fly and was easily caught up in the hand. On examination the bird appeared in good condition and physically healthy with good feather condition, eye, nose and vent clear. It was put in a fledging cage at 10.00 am, and was feeding on grape and insect mix but still sat puffed up. It was treated with a 5 day course of Baytril.

04/06/08 Baytril given at 07.00 and 18.00, seems alert and perkier but still weak and puffed up.

05/06/08 active and responsive not as easy to catch up.

06/06/08 still active and less puffed up.

07/06/08 still active and started to attack when caught up. Calling a lot and not puffed up at all.

08/06/08 same as previous day only given Baytril in am to complete 5 day course.

09/06/08 Avipro was added to food to replace gut flora and at 12.00 midday the bird was transferred to the Olive White-eye aviary to increase space for flight. However, it did not fly and it was thought that it may have sprained its left wing, but it is not broken. The bird remained in the large aviary and did not fly at all but fed well and was alert and calling to other birds. It clung to the wire to come down to feed and then climbed back up the wire to perch. Both wings were set slightly away from the body. The bird was last seen in the Olive White-Eye aviary, where she was kept captive, on 04/07/08. Large clumps of feathers were found under the rocks at the back of the aviary on 30/07/08; no other remains were found. It is most likely that the remains had been carried under the rocks by shrews, which have been seen to carry off other dead birds. Reasons for her death however, remain unknown.

F34544 ‘Mike’ ID, LB/BK adult male, found dead 04/08/08. Parents: Eastenders Pair (Pigeon Wood), nest ref: FR04PW13, hatch date: 30/10/04, fledge date 14/11/04 (hand reared at GDEWS). Taken to IAA: 29/11/04, released: 05/12/04. Age: 3 years 10 months.

The bird was caught in the Ile aux Aigrettes field station kitchen on 03/08/08; the bird was looking fluffed up and was hopping around on the floor. He had been at the aviaries earlier the same day, looking poorly and feeding on the ground. The bird was placed in a fledgling cage and was given fresh food, nectar and Critical Care. Some improvement to health was noted. The next day (04/08/08) he was found dead in the cage, lying on his back near the food bowl, a large pile of faeces, green in colour and spongy in consistency were next to the body.

Post mortem revealed the bird was slightly emaciated and had one black testicle (unlikely to have caused death) but otherwise no conclusive diagnostic could be made. *Histology* revealed severe inflammation with bacterial colonies at the base of heart. Enlarged spleen, inflamed liver (multifocal heterophilic hepatitis), inflamed kidney (heterophilic nephritis), increased red blood cell production in the liver, kidney and spleen (extramedullary haematopoiesis). This would suggest a septicaemic bacterial infection (blood poisoning).

FA72427 ‘Bad Banana’ BK, ID/YL adult male found dead 02/09/08. Parents: FA42239 X FA42233, nest ref: FR06IAA53, hatch date: 10/09/06, fledge date: 23/09/06. Age: 2 years.

Body was recovered in the morning of 02/09/08 near the Ile aux Aigrettes jetty. No external signs of injury were apparent, and the last time the bird had been seen at the aviaries (28/08/08) it looked healthy.

A *post mortem* was performed the same day, but no abnormalities were discovered. *Histology* revealed no signs of any abnormalities, cause of death unknown.

FA85550 ‘Turkey’ DG, O/ID juvenile found dead 30/09/08. Parents: FA42230 X F34520, nest ref: FR08IAA122, hatch date: 15/08/08, fledge date: 29/08/08. Age: 1 month 15 days.

This season’s fledgling; body was found at the Fody aviaries on 30/09/08. The carcass was completely desiccated, the body was found on one side of the Fody aviary and the remains of the skull and bill were located at the back of the other aviary, presumably carried by shrews. The bird had been seen the previous day and looked healthy (29/09/08). No post mortem was possible. This fledgling was very dominant in the Fody aviaries and defended the supplemental feed from other birds, including adult males. The fledgling could possibly have been attacked during one of its defensive outbursts, resulting in death, but no conclusions can be made.

FA42255 ‘Mori’ ID, WT/MV adult male found dead 14/10/08. Parents: F34505 X F34519, nest ref: FR05IAA10, hatch date: 18/07/05, fledge date: 03/08/05. Age: 3 years 2 months.

Bird was found dead at the Fody aviaries on the morning of 14/10/08, and showed no previous signs of illness.

The bird was very emaciated with protruding keel. A *Post mortem* revealed very pale air sacs, Gizzard appeared very small in size and ochre in colour – not healthy. A dark sausage shaped unidentified body attached near to the pancreas was found. It had a thin membrane and appeared black in colour, but when substance inside was placed on a white background it appeared dark green. A post mortem blood smear was taken from the heart. Although good smear quality was difficult to achieve from this method, analysis revealed presence of blood parasites, probably Plasmodium infection. However this was most likely a relapse due to the low parasitaemia present, and does not suggest acute infection, so blood parasitism cannot be termed the primary cause of death. *Histology* revealed presumptive orchitis in the testis (bacterial infection, similar to that in FA42212 ‘Bruno and FA72432 ‘Poisson Sally’). A single nematode was located in the oesophagus (similar to that in FA72432 ‘Poisson Sally’). Extramedullary haematopoiesis in the liver and kidney (increased rates of red blood cell turn over could be symptomatic of anaemia). There was also candida in the gizzard (fungal growth).

FA42212 ‘Bruno’ ID, YL/O adult male found dead 16/10/08. Parents: Monkey Pair (Pigeon Wood), nest ref: FR04PW24, hatch date: 20/12/04 (hand reared at GDEWS), fledge date: 07/01/05. Taken to IAA: 21/01/05, released: 28/01/05. Age: 3 years 9 months.

This adult male was caught at the aviaries on 15/10/08, looking unwell and puffed up with reduced movement and closing its eyes. It was placed in a fledgling cage and a course of Baytril was started, but the bird’s condition deteriorated rapidly and it was found dead the following morning 16/10/08.

A *post mortem* was performed which revealed enlarged and hardened testes, a lump of the same consistency was also found next to the cloaca. Air sacs were pale in colour and the gizzard did not appear to be a healthy colour. The kidneys were grey and mushy in texture. Blood smears were taken both anti and post mortem. Analysis of these revealed a single red blood cell from a bacterium and possibly a trophozoite (parasitic spore). This infection is unlikely to be of significance, given the age of the bird. *Histology* revealed a bacterial infection in the testis and cloaca (severe to chronic heterophilic orchitis, with intralesional rod-shaped bacteria). Inflamed Kidney (heterophilic ascending tubulointerstitial nephritis, with intralesional rod-shaped bacteria). Extramedullary haematopoiesis in the liver (increased rates of red blood cell turn over could be symptomatic of anaemia). There is considerable similarity to FA72432 'Poisson Sally' and raises a suspicion of factors predisposing to cloacal impaction, such as dehydration or intestinal parasitism.

FA72432 'Poisson Sally' WT, ID/DG adult male found dead 16/10/08. Parents: FA42230 X F34520, nest ref: FR06IAA58, hatch date: 19/09/06, fledge date: 04/10/06. Age: 2 years 1 month.

This adult male was seen at the aviaries on 14/10/08, looking puffed up and unwell. The next day it was seen at the aviaries again, looking puffed up and closing its eyes. It was kept overnight in one compartment of the aviaries, and given fresh food and nectar. The bird appeared more active than the previous day, but was then found dead on the floor of the aviary in the evening of 16/10/08.

A *post mortem* revealed enlarged and hard testes, similar to findings from FA42212 (see previous). The vas deferens was also filled with a hard substance, and a lump of the same consistency was located next to the cloaca. The liver had a hard lump on the right lobal tip and air sacs were pale in colour. Post mortem blood smears revealed no signs of parasites. *Histology* revealed a bacterial infection in the testis and vas deferens (severe to chronic heterophilic orchitis, with intralesional rod-shaped bacteria). Extramedullary haematopoiesis in the liver and kidney (increased rates of red blood cell turn over could be symptomatic of anaemia). There were nematode parasites in the oesophagus (unidentified species). There is considerable similarity to FA42212 'Bruno' and raises a suspicion of factors predisposing to cloacal impaction, such as dehydration or intestinal parasitism.

FA72430 'Lunch' CS, ID/O adult male found dead 05/11/08. Parents: FA42247 X FA42215, nest ref: FR06IAA58, hatch date: 19/09/06, fledge date: 03/10/06. Age: 2 years 2 months.

This bird was found dead inside his previous nest which was not complete on 5/11/08. The body of the bird was decayed and a post mortem was not possible and cause of death unknown.

FA85570 'Croc' BK, DG/ID juvenile found dead 14/11/08. Parents: unknown, hatch date; 23/08/08, fledge date: 06/09/08. Age: 3 months.

This season's fledgling; was found outside the Fody aviaries on the morning of 9/10/08 with damaged wings and one eye blind. The injuries appeared to be the result of an attack. The bird was placed in a fledgling cage and given fresh food and nectar, as well as Critical Care. The bird was placed in the Olive-White Eye aviaries on 22/10/08 in order to increase flight ability, but was unable to fly. The bird was then found dead on the morning of 14/11/08 and had appeared healthy the previous day.

A *post mortem* revealed the joint between humerus and ulna to be inflamed on the left wing and the right eye clouded, both probably due to the surmised attack. Some discolouration of the liver and grossly enlarged kidneys. *Histology* revealed Extramedullary haematopoiesis in the liver (increased rates of red blood cell turn over could be symptomatic of anaemia). Inflamed Kidney (heterophilic ascending tubulointerstitial nephritis). Cause of death is likely to have been caused by a bacterial infection, the inflammation of the liver is likely to be a response to the infection.

FA85543 ‘Sierra’ LG, RD/ID juvenile found dead 26/11/08. Parents: unknown, hatch date: 15/07/08, fledge date: 01/08/08. Age: 4 months 12 days.

This seasons fledgling, found dead in the Fody aviary on the floor. The birds skull had been cracked open and eyes were missing. No previous signs of injury or illness.

Post mortem showed all organs appeared healthy and stomach was full. Death could have been caused by an attack from another bird. Samples have been sent for analysis.

‘Unknown’ An unringed fledgling from this season found dead 08/12/08. Possible parents: FA72492 X FA72469. Approx hatch date: 24/10/08, fledge: 08/11/08. Age: 1 month.

Bird found drowned in a barrel of water behind the warden’s house 8/12/08. The barrel was covered with mesh, which probably prevented the bird from getting out once it had gotten into the water. The bird showed no signs of illness or injury, and it was still white at the flanges indicating it had fledged recently.

A *post mortem* showed no lesions or abnormalities. Cause of death almost certainly drowning.

FA42303 ‘Cheddar’ ID, RD/RD juvenile found dead 05/02/09. Parents: FA42255 X FA42280, nest ref: FR08IAA177, hatch date: 19/10/08 (hand reared at GDEWS), fledge date: 03/11/08. Taken to IAA: 23/12/08, released: 04/01/09. Age: 3 months 17 days.

Bird was caught up on 27/01/09 looking very ill with a messy beak and vent. After being placed in a fledgling cage it ate continuously and had diarrhoea. It was given Critical care and a 10 day course of Baytril 1:10 dilution in 0.1ml doses twice daily. It was also treated with a single dose (0.036ml) of 2.5% Panacur wormer. The condition of the bird fluctuated, it had severe trouble with balance and spun around in circles attempting to preen its dirty vent and stomach. Some days it was unable to stand and found lying on its side. It has laboured breath and slept a lot. Then its condition appeared to improve, only to relapse again. On the morning of 05/02/09 the bird was not eating or moving, and was later found dead.

A *post mortem* revealed the bird to be underweight with a swollen vent and lesion below rib cage. Small grey patch on right side of liver. Gizzard contained black-brown fluid. Duodenum-ileum also filled with black-brown liquid. Large intestine and cloaca were massively swollen and full of faecal matter. *Histology* revealed the cause of death to be cloacal bursal and intestinal cryptosporidiosis (parasitic disease). There is also secondary bacterial inflammation in the cloaca, predominantly by coccoid Gram-positive organisms that may be streptococci. The finding of cryptosporidiosis correlates with the history of diarrhoea. Whilst cryptosporidiosis in birds can be a primary problem, in many cases it is

indicative of an underlying immunosuppressive condition. It is spread through the fecal-oral route, often through contaminated water.

FA42303 ‘Chale’ BK/BK, ID juvenile found dead 22/02/09. Parents: FA42223 X F32122, nest reference: FR08IAA184, hatch date: 30/10/08 (hand reared at GDEWS), fledge date: 12/11/08. Taken to IAA: 05/01/09, released: 13/01/09. Age: 3 months 24 days.

This hand-reared bird was caught at the aviaries on 19/02/09 with similar symptoms as FA42303 ‘Cheddar’. The bird had a dirty vent, looked puffed up and ill. It was placed in a fledgling cage with fresh food and nectar; a course of Baytril 1:10 at 0.1 ml doses twice daily was started the next day. The vent of the bird was cleaned daily, and paraffin oil was administered to help the bird pass faeces. It was also assisted in passing faeces, as it was not doing so unaided. The bird’s condition did not improve however, and it was found dead on the morning of 22/02/09.

A *post mortem* revealed a blockage of faecal matter in the cloaca, and liquid faecal matter was present in the lower intestine. Faeces and blood smears taken, samples have been sent for analysis.

FA42322 ‘Rudolph’

Found dead in the office on Ile aux Aigrettes. The bird had last been seen 21/01/09, its desiccated carcass was found in a folder on 30/03/09. It is possible that the body had been moved after the death occurred, as the folder had been in use between the dates the bird disappeared and when the carcass was found. Carcass was too decayed for any post mortem analysis or conclusions to be made.

Birds seen looking ill and subsequently not seen

FA42247 ‘Devoushka’ was caught 01/04/08 after being observed holding his left leg up. After examination there seems to have been some damage to the upper leg. There was a hardened lump of feathers and blood around the tibiotarsus and fibula, completely around the leg. The top muscle of the leg seemed swollen and enlarged. The bird did not have any movement in its foot, and had no tail feathers (the latter could be a result of moult). It was placed in a small cage at the back of one side of the aviary, which was closed to stop other birds entering. A course of Baytril antibiotics was given twice a day and Critical Care was added to food from 02/04/08 – 09/04/08. 09/04/08 ‘Devoushka’ was let out into one side of the main aviary, as he was perching more with the left foot, and Avipro was added to feed. 15/04/08 The use of the foot seemed to improve, and he was able to grip the perch, but was still holding his leg up when perching for any length of time. 16/04/08 Due to improvements in leg movement ‘Devoushka’ was released from the aviary. The release hatch was opened at 08:00, and he left at 09:45. Later that morning, ‘Devoushka’ was followed in his territory, and was seen having a territory battle with FA72430 ‘Lunch’, and was also fighting with FA72401 ‘Halle’. Since release, ‘Devoushka’ was seen most mornings feeding in the Fody aviary, and regularly in his territory. He still held his leg at an awkward angle when perched, but otherwise seemed strong and healthy. The bird was missing from 18/06/08 and not seen during the remainder of the season.

FA42207 ‘Munsch’ was seen in the field on 23/09/08 looking puffed up and was not moving very much. A new male (Marsh Mallow FA85505) subsequently took over his territory and was seen nest prospecting with ‘Colonel Pinky’ FA42231. Munsch was not seen for the remainder of the season.

F34533 ‘Heliotrope’ was seen in the field on 5/11/08 looking ill, not chasing other males encroaching into his territory. On 17/11/08 the bird was found and caught easily in the Fody aviaries. It appeared drowsy, but perked up after having been given nectar. The bird was released the same day but was not seen since.

FA72426 ‘Papaya’ was seen in the field looking ill on 29/12/08. The bird was perched on a branch and did not move at all, despite of having red ants crawling on its feet. The bird was not seen for the remainder of the season.

FA72473 ‘Skinko’ was seen with her right eye closed, an unidentified male Mauritius Fody was then seen to peck her in the damaged eye in the Fody aviary whilst feeding, causing her to cry out (30/09/08). The bird was then seen with a wet right eye on 15/10/08. The right eye was completely closed on 17/10/08. The bird was seen looking puffed up with reduced movement, eye closed, on 18/10/08. The bird was not seen at the aviaries or in the field for the remainder of the season.

Avian Pox

A total of 14 cases of pox occurred this season. Of these, 9 occurred during the wet season in January - March. Most of the affected birds had mild cases, mainly to the feet and digits, which did not seem to have any deleterious effects to the birds' overall health. One bird, FA85552 ‘Guyana’, had a particularly large pox swelling beneath one eye, but this cleared up within a month with no noticeable effects to the bird's health.

Summary/conclusions

The results from the histology reports together with the blood smear analysis seem to suggest that in most cases the cause of death was random bacterial infections. Blood parasitism would appear not to be the primary cause of death, and may be the result of secondary infections, which can have more serious consequences during times of stress. These infections may be contracted by large groups of birds feeding in close proximity, coupled with stress from the breeding period, these infections, which would normally be residual can result in fatality.

In an attempt to reduce all potential sources of stress, water was provided in the Fody aviaries in 6 water bottles. These are drip water bottles, which eliminates the potential for faeces to contaminate the water – an easy way for bacteria to spread. Other measures such as changing and disinfecting feeding bowls with Virkon, food catch trays, changing the foliage regularly, disinfecting the the whole aviary with Virkon at three monthly intervals have been implemented in order to combat disease transfer. Measures to reduce the amount of dropped food which accumulates on the floor of the aviary were also made. If left, this food decays and becomes mouldy especially during periods of wet weather. All dropped food is cleared from the floor at regular intervals and gravel is replaced. Catch trays were also implemented, and are placed beneath food bowls and changed, cleaned and disinfected with Virkon daily. This latter method significantly reduced the amount of food debris accumulating on the floor.

A Red-whiskered Bulbul excluder mesh was also trialled this season in an attempt to reduce the number of introduced birds feeding at the Fody aviaries. A smaller mesh was fitted to the entrance hatch, which worked well in excluding the slightly larger bulbuls; it did not prevent House Sparrows and Madagascar Fodies from entering. The amount of food which was left over at the end of the day increased, indicating that the bulbuls are taking a large amount of supplementary food.

A potential method for reducing disease transfer between individuals is to increase the number of feeding points on the island. Feeding from several locations will reduce the number of birds using the supplementary food at any one time. It would be possible to set up feeders in several locations on the island, this will mean that watches of these stations along with the Fody aviary would need to be carried out in order to maintain daily sightings of individual birds as well as monitoring for effectiveness and signs of disease or ill health. It would also cause potential problems when needing to catch birds in order to replace colour bands or ring un-rung fledglings, and is likely to significantly increase the workload of the Fody team on Ile uax Aigrettes. However, the benefits may outweigh the costs.

An alternative would be to remove supplementary feeding altogether, due to the likelihood that it is now causing more problems for the birds than it was originally intended to solve. Nesting success is very low on the island which could be related to the high densities that the Fodies are being ‘artificially’ supported at by the provision of supplementary food. If supplementary food was removed the population would undoubtedly see some reductions in size, but eventually a levelling off would occur and the population would stabilize to a level which the island could support in a more ‘natural’ capacity. Adaptive management using population models would allow the provision of supplementary food to be withdrawn without jeopardising the survival of the population (Armstrong et al., 2007).

2.6 Feeding behaviour

Although we now have a good overall knowledge of the dietary composition for the Mauritius Fody, there was previously little knowledge of exactly what it is that Fodies are eating, especially in terms of invertebrate prey choice. Therefore this season has seen the continuation of the recording of feeding attempts where the invertebrate or vertebrate prey item can be identified. Just over 60 observations were collected, significantly adding to our knowledge of Mauritius Fody feeding Biology.

Prey items were categorised into the following classes:

<i>Hymenoptera</i>	wasps, bees, ants
<i>Arachnida</i>	spiders, spider eggs and nests, mites, harvestmen, scorpion
<i>Orthoptera</i>	grasshoppers and crickets
<i>Lepidoptera</i>	butterflies and moths
<i>Neuroptera</i>	lacewings
<i>Collembola</i>	Springtail
<i>Dictyoptera</i>	cockroaches, termites, preying mantis
<i>Diplopoda</i>	millipede
<i>Hemiptera</i>	bugs, aphids, scale insects
Invertebrate Larvae and eggs	
<i>Oligochaeta</i>	earth worm
Caterpillar	
Agamid lizard	<i>Calotes versicolor</i>

The main observed prey items were caterpillars with 35% (22/63) of observations, followed by moths 14% (9/63), invertebrate larvae and eggs 11% (7/63) and ants 11% (7/63) (Fig. 2.8).

Due to the methodology of how these data were collected, conclusions made must be tentative, as although caterpillars accounted for the largest proportion of observations, it does not mean that they constitute the largest part of their diet. It may be that caterpillars were simply easier to confirm as prey items. Indeed, a great many feeding observations were observed on invertebrate prey but in a large proportion of them the prey item could not be identified due to the rapidity of their consumption. It would therefore, be interesting to collect faecal samples. This, however, is very time-consuming, and the most likely point of collection seems the Fody aviaries, however, due to their high metabolism rates the faeces may contain a large proportion of supplementary food and not wild-caught prey. Having said this, the advances in knowledge gained from collecting opportunistic feeding observations are extremely useful, and do not add significantly to the monitoring workload even in the hectic breeding period.

A total of five new classes have been added to the invertebrate prey items list from last season (Garrett et al., 2008). Possibly the most interesting of the feeding observations is the predation of an agamid lizard *Calotes versicolor*. This introduced lizard is a known predator on Ile aux Aigrettes, taking native geckos (*Phelsuma ornata*) and probably baby Telfair's skinks *Leiopisma telfairii* (N. Cole pers. comm.). They have also been seen stealing the eggs of the endemic Rodriguan bird species (*A. Begue pers comm.*), and it seems likely that they could predate Mauritius Fody and Mauritian Olive White-eye nests.

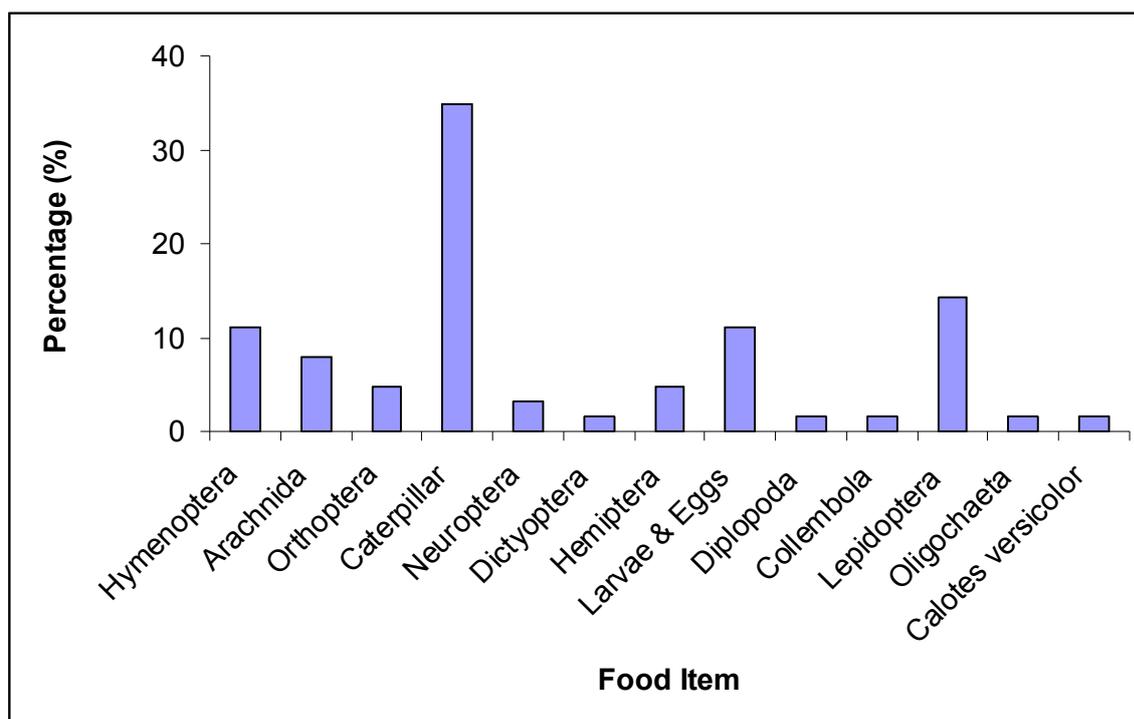


Fig. 2.8. Percentage of feeding observations on different prey items. N = 63.

Another important observation, not included in the above analysis, was a likely predation by a Mauritius Fody on an Olive White-eye egg. On the 22/10/08 an adult male Fody F34526 was seen looking into an Olive White-eye nest. The parent birds were aggressively defending the nest and some human intervention human prevented the Fody from stealing the eggs which were confirmed to be on the nest. However, the following day the nest was accessed and one egg was found in pieces on the nest.

Table 2.6. List of prey items fed upon by the Mauritius Fody on Ile aux Aigrettes during April 2008 – March 2009.

Prey item	Description/Scientific name (if known)
Ants	
Flying ants	Small brown flying ant Small black flying ants
Spider	Large bodied reddish brown spider
Spider eggs	
Spider nest – whole	Whole nest with eggs or young spiders
Millipede	Dark brown millipede
Cockroach	Pale coloured cockroach
Cricket	
Grasshopper	Green grasshopper
Springtail	
Moth	White moth Small brown moth
Caterpillar	Various, including a large hairy one- only the head and end of tail were consumed
Bug	various
Lacewing	Green lacewing
Scale insect	White scale insect
Earthworm	<i>Picked from leaf litter</i>
Larvae and eggs	Un-identified
Agamid lizard	<i>Calotes versicolor</i> juvenile

2.7 Interactions and competition

2.7.1 Telfair's Skink

Introduction of the Telfair's Skink in December 2006 does not appear to have affected the Mauritius Fody directly. Skinks are largely opportunistic feeders (Bullock et al., 2002), and spend much of their time on the ground. They can however, be good climbers and have been observed quite high up in trees on IAA (> 2m). It is likely that they would predate eggs and chicks if they came across them, but are more likely to take to the most abundant prey items available.

Last season field observations noted Fodies attacking and being aggressive to skinks on two occasions during the breeding season. This season two observations were made of skinks attacking Mauritius Fodies. On the first occasion (09/02/09) a skink was seen on the veranda of the field station with a ringed Fody in its mouth, which it only released on human intervention (Ashok Khadun pers. comm.). The Fody flew off seemingly unharmed. A second observation was made by Nik Cole, who saw a skink attempt to grab a Fody again on the veranda. The Fody flew off and the skink was left with some feathers in its mouth. Though the Fodies in question were not identified they may well have been young birds, which often forage for human food scraps around the kitchen and veranda area. The hand reared birds are especially tame, and perhaps naïve to the dangers of skinks. These sorts of incidences are likely to be rare, but confirm suspicions that if the opportunity arises, Telfair's will predate small passerines. However, these species did co-occur in the past (Cole, 2005), so are likely not to have a huge impact on one another.

Other possible impacts of their introduction on Fodies is potential overlap in diet. Skinks will feed on many different prey items, but also take invertebrates. They have, however successfully reduced other insectivorous species, such as the common house gecko *Hemidactylus frenatus*, Indian musk shrew *Suncus murinus* and agamid lizard *Calotes versicolor*. Also, predatory wolf snakes *Lycodon aulicus*, which are now present in very low numbers. The introduced African land *Achatina fulica* snail has fallen by over 85% (N. Cole, pers. comm.). This can only have positive effects for the Mauritius Fody.

2.7.2 Mauritius Olive White-eye

Since their introduction to IAA, any interactions between the Olive White-eye, and Mauritius Fodies have been noted. On the mainland their distributions no longer overlap, and this may be due competitive exclusion. It is most likely that these two species did co-occur in the past, but the severe reduction in habitat and habitat quality may have pushed them apart. Most instances of interactions between Fodies and Olives have been of a non-bothered nature, with both species seemingly ignoring the other. The supplementary feeding stations provided for the Olive White-eyes have also attracted the attention of Fodies. Fodies have been known to aggressively defend these stations from Olives, and measures have been taken to permanently exclude the slightly larger Mauritius Fodies from entering the stations. Smaller ½ inch mesh has been fitted to the feeding stations, which has successfully excluded the Fodies. Some Fodies do still defend them though.

The most concerning interaction is the Mauritius Fodies interference with Olive breeding activity. Fodies have been observed stealing nesting material and have been seen near to nests containing clutches prior to their disappearance; as known egg predators it is not unlikely that they were responsible. Although the Mauritius Fody is an opportunistic feeder taking what prey is most abundant, due to the small number of Olive White-eyes present on the island and the high densities of Mauritius Fodies, this competition may have a problematic effect on the growth of the population. However, the fact that five fledglings were produced on the island this season is encouraging.

2.7.3 Madagascar Fodies

Although Garrett et al. (2007) found little overlap in the diet of the Madagascar and Mauritius Fodies, there is still potential competition between these congeners. Similarities in song have been noted previously (Cristinacce, 2008), and a possible hybrid produced on IAA in the past (Cristinacce et al., 2005). However, most observation on interactions between these species suggests Mauritius Fodies to be the dominant party. The case of the hybrid occurred at the very start of the introduction programme and was not likely due to the much higher abundance of Madagascar compared to Mauritius Fodies.

A rather bizarre interaction between Mauritius and Madagascar Fodies occurred this season. One pair (FA72493 'Dr. No' X FA42296 'Me') were seen to feed a clutch of three Madagascar Fody chicks on several occasions. Suspicions that the nest was not a Mauritius Fody nest arose when the birds had only recently finished a previous nesting attempt, the time scale not being long enough for them to have built a new nest and laid and incubated eggs to chick stage. When the nest was accessed, the chicks turned out to be much older than expected and were force fledged from the nest, which was when the chicks were confirmed to be Madagascar fledglings. The nest was then noticed to be see through (a common trait of

Madagascar Fody nests, unlike the dense and lined nests of Mauritius Fodies). Once the chicks had fledged it was not possible to catch them, as they were too quick. At first the male attacked one of the fledglings and chased it off. Then the pair were seen calling to the fledglings and fed them on several occasions. A Madagascar Fody pair were seen in the area and presumably took over the rearing of the chicks when the Mauritius Fodies lost interest after a few days. It has been known for Mauritius Fodies to feed other Mauritius Fody chicks, but not of another species. The pair in question have not had a successful nesting attempt so far, and were possibly practicing rearing a clutch. This behaviour should be carefully monitored should it occur again in the future.

Nest predation of Madagascar Fody eggs by Mauritius Fodies was recorded last season (Garrett et al., 2008). As the population of Mauritius Fodies grows there is potential for them to out-compete Madagascar Fodies, and reduce their numbers. In 2007 their population size was estimated at around 500 birds (Packman, 2007).

2.7.4 Seabird Translocations

An ongoing project is the reintroduction of sea birds to Ile aux Aigrettes which commenced in March 2009. A trial translocation of Wedge-tailed Shearwaters and White-tailed Tropicbirds commenced in March 2009. Should it prove successful larger numbers of birds will be translocated in the future, in the hope of establishing breeding colonies. This project can only benefit the restoration of the island, as it is well known that islands inhabited by seabirds have higher invertebrate densities due to their biomass input (Polis and Hurd, 1996).

3.0 Mauritius × Madagascar Fody Hybrids; GDEWS



Mauritius × Madagascar Fody Hybrid, GDEWS. Photo: Lucy Garrett

Lucy Garrett

GDEWS Staff

3.1 Introduction

Following a report of a Mauritius Fody from the Ile aux Aigrettes population on the mainland, this subsequently resulted in a hybridization breeding attempt. The hybrids were successfully hand reared and kept together in an aviary at the Gerald Durrell Endemic Wildlife Sanctuary. The hybrids showed signs of maturity around July 2008, when they formed a pair, the suspicions of them being male and female from the differences in morphometrics taken last season were confirmed.

3.2 Breeding activity

The male developed a full red head and breast, and black bill and eye stripe by August 2008. He had red plumage above his tail and some red feathers on his back, the main red chest plumage stops half way down the breast, similar to that of the Mauritius Fody. Overall the backs of both birds are streaky in appearance, resembling those of the Madagascar Fody. The male calls like a Madagascar Fody having a wheezy, high pitched song.

The first signs of breeding activity began on 15/07/08, however was abandoned before it was completed, and another nest was commenced the following month. The second nest was then abandoned and they continued construction on the first nest again. In October the hybrids were given two aviaries, as space promoted captive breeding behaviour in the Mauritius Fodies during the captive breeding programme in 2004 (Cristinacce et al., 2004). This was not successful in promoting egg laying however, and the continual building, dismantling and building continued until 10/11/08, when the pair ceased to build any more nests, despite the male retaining breeding plumage (Table 3.1). Breeding activity then resumed in March 2009, after a break of over three months. The pair built a new nest but this was not completed and both birds were in heavy moult. The male continually chased the female in what appeared to be aggressive behaviour and not courtship, it is considered to separate the pair and present them with alternative partners, such as Madagascar Fodies.

Tabel 3.1 Nest summary for Mauritius Fody × Madagascar Fody hybrids; Gerald Durrell Endemic Wildlife Sanctuary.

Nest reference	Date discovered	Current status or outcome and date of result
FH08GDEWS01	15/07/08	Abandoned before completion 11/08/08
FH08GDEWS02	11/08/08	Abandoned before completion 29/08/08
FH08GDEWS01 (re-use)	29/08/08 (initially commenced; 15/07/08)	Abandoned before completion 10/10/08
FH08GDEWS03	13/10/08	Abandoned before completion 27/10/08
FH08GDEWS04	27/10/08	Abandoned before completion 10/11/08
FH09GDEWS01	10/03/09	Abandoned before completion 17/03/09

The nests built appeared to be the same construction as other Fody nests, but as none were completed it is not known whether they line their nests like those of the Mauritius Fody, or not as for the Madagascar Fody.

Feeding behaviour

The hybrids were being fed on insectivorous mix and also nectar. They were also presented with mixed seed. They ignored the insect mix and took only the seeds and some nectar. Thus, the provision of insect mix was reduced. They were however, seen to attempt catching invertebrates in their aviary. They fed readily on grasses which were presented to them in their aviaries.

4.0 Establishing a second sub-population of Mauritius Fodies; Round Island



Round Island Fody aviary. Photo: Richard Baxter.

Lucy Garrett

Support team Round Island; Richard Baxter, Ewa Bednarczuk¹, Sarah Lovibond, Heather Dixon Ile aux Aigrettes; Laura bambini, Heather Dixon, Matthew Gee

¹Wildlife Trust Canada

4.1 Introduction

Following the success of the translocation of the Critically Endangered Mauritius Fody to Ile aux Aigrettes, the next step in the recovery of this species has been considered. Over the past two years investigations, planning and approval have been carried out in order for the establishment of a second sub-population of the Mauritius Fody to be carried out. The initial process was finding a suitable release site, and after careful deliberation, Round Island was chosen, due to the protection it provides from introduced predators. Aside from this were many other considerations, such as logistical support, and mainly the benefits it would bring to the island itself, such as ecosystem rehabilitation.

Once a release site was found further and more intensive work was carried out in order to assess its suitability for release, in terms of the provision of adequate food sources and habitat. This work was carried out during the 2006-07 season (see Garrett et al., 2008).

Having successfully been granted Government backing, planning commenced and ongoing preparations for the translocation of birds to Round Island have been taking place this season. It was hoped that translocations would take place between October and December 2008, however, prior to this, a lot of work was needed in order to prepare the release site. This was more important than previous translocation programmes, as prior to this there have been no intensively managed bird projects on Round Island. Preparations such as the construction of an aviary, harvesting and hand rearing of eggs from Ile aux Aigrettes, eradicating House Sparrows from Round Island and preparing the staff on Round Island for the arrival of a small passerine. It is very important to have the support of all the staff working on Round Island, even if they are not directly involved in the project itself. The successful completion of many of these tasks was achieved this season and though the translocation of Mauritius Fodies to Round Island was not implemented, this has led to further our knowledge and highlight the intense amount of work that is required for a release project to be carried out. What follows is a summary of the progress and achievements made this season towards this goal.

4.2 Aviary construction

The release aviaries for Mauritius Fodies were constructed on Round Island between September and December 2008 at Site 1 (see Garrett et al., 2008). Wood was chosen for its' lightweight yet strong properties. It has proved a durable medium to work with on Round Island in the past, where erosion from salt spray, wind and extreme sun exposure tends to render most materials prone to decay in a matter of months.

The main support beams of the aviary were thick treated hardwood (meranti) poles which were concreted in to the ground with large bolts to secure the frame. The aviary has two bays, with a release hatch for each. It also has a safety door which opens onto the main outside door, this will prevent birds flying out when captive birds are present. As the aviary frame is made from wood it is essential to protect this from weathering, thus, the frame was oiled with linseed oil, with two coats, and will need re-applying once a year. Any holes and cracks in the wood were filled with mastic. A cyclone guard was attached to the inside of the aviary which covered the back exposed ends. This was made of plywood.

Due to high levels of salt spray together with strong winds even galvanised wire rusts in a matter of weeks, therefore, the outer wire mesh was painting in order to provide a protective layer. All wire mesh was painted with four coats of paint: 1) etch solution, 2) two pack primer, 3) Epoxy HT Primer, 4) Two pack acrylic enamel. In order to safe guard the

environment from harmful paint chemicals, thick plastic sheeting was laid on the ground before painting. Any run off was collected where possible and put into sealed containers and taken back to the mainland. Protective gloves were also worn. Mesh was cut to size first and each section then painted and attached.

In order to prevent skinks from entering the aviaries, thin aluminium sheeting was used all around the base of the aviary. This is 50cm high and a trench 10cm deep was dug around the outside of the aviary to house it.

Corrugated iron (galvanized) was used for the roof of the aviary with 2.5" bolts and water sealing washers on every other crest (corrugations) of the corrugated iron (5 bolts on each beam of the frame). All sheets were overlapped to stop water seepage and attached onto spacers underneath to keep the structure solid when the bolts were put in. The roof was also raised 2.5 inches sloping towards the back of the aviary to allow runoff, and a gutter to catch runoff was also attached.

In order to safeguard the aviaries from severe weather conditions, cyclone cables were attached to the outer structure and concreted into the ground.

It is planned to plant some native plants in and around the aviary area. This will hold the disturbed soil in place and act as natural perching and foraging sites inside and outside of the aviary.

4.3 Harvesting of eggs and parent-raised fledglings; Ile aux Aigrettes

A total of 19 eggs were harvested from the Ile aux Aigrettes population between October and November from 6 pairs (Table 4.1). As part of a potential project, designed to analyze the effects inbreeding on release cohorts, eggs were harvested from birds with known parentage of both inbred and non-inbred origin. One chick was also rescued from a different pair in order to trial a new diet for hand rearing (see hand rearing section).

Nests were accessed prior to harvesting to confirm that eggs were still present. This enabled the incubator to be warmed to temperature on the mainland by using an adapter to the cigarette lighter socket. The portable incubator was set to 36.5°C with a maximum temperature of 37.2°C. The temperature was set slightly lower than normal as this gives the best travelling conditions, as excessive temperature can damage the embryo. If the latter was reached an alarm would sound, the incubator lid could then be lifted to cool the internal temperature down. The incubator was then taken to the island and the nest site, where the eggs were carefully removed from the nest ensuring that they were held in the same position as found in the nest. The eggs were placed in sponge with egg shaped holes cut into it, contained in a small plastic tub. The tub was placed in the incubator and the tub size ensured a snug fit to avoid it sliding around within the wooden trays inside when carried. A separate plastic tub containing a sponge soaked in F10 disinfectant solution (1ml of F10: 125ml deionised H₂O), was placed in the lower tray inside the incubator. This maintains humidity and a sterile environment within the incubator.

The incubator was carried away from the body, this prevented any bangs or heavy steps being transferred directly to the incubator, and was instead suspended between the persons arms. Regular swapping of the person carrying the incubator when containing eggs reduced the risk of fatigue and thus the potential for accidental sudden jerking, which could damage the membrane of the eggs inside.

The date at harvesting varied between clutches, as it would have been very difficult to harvest all nests at the same time of incubation, and candling would also be needed to ensure that the estimated days of incubation were the same as the actual development stage of the embryo. The estimate of incubation stage, gathered from nest watches, has often proved to be inaccurate and is mainly used as a guide. Also, some nests are discovered during incubation stage, thus the start date of incubation is not known.

Up to two clutches of eggs were harvested on the same day, the distance between them not being greater than 50m. The incubator and eggs were then transferred to the mainland by boat, again adopting the same carrying technique as on land, this time accounting for waves. The incubator was then plugged into a jeep waiting on the mainland jetty, and the temperature did not drop below 36°C prior to being re-heated. The eggs were then transferred to the Gerald Durrell Endemic Wildlife Sanctuary in Black River and placed in an 'Octagon' incubator in the hand rearing room. A summary of the hand rearing techniques and outcomes can be found in section 5.0.

Table 4.1 Summary of the nest harvests from Ile aux Aigrettes during October – November 2008.

Date Harvest	Pair Nest Reference	No. of eggs	Comments
13/10/08	FA42232 X FA42242 FR08IAA181	3	Eggs estimated to be at least 12 days, which turned out to be quite accurate, as the eggs hatched the next day, so were actually 13 days.
14/10/08	FA42255 X FA42280 FR08IAA177	3	Eggs harvested as the male was found dead that morning. Incubation estimated at 6-9 days and were 9 days.
14/10/08	F34505 X F34519 FR08IAA185	3	Eggs harvested same day that nest was found.
18/10/08	FA42223 X F32122 FR08IAA184	3	Estimated at 1-3 days, and were actually two days old.
31/10/08	FA72409 X FA42294 FR08IAA206	2	Estimated at 1-3 days old, but only found two days before. Incubation at harvesting was 6 days.
07/11/08	FA42223 X F32122 FR08IAA208	2	This pair were harvested from for a second time as the first clutch only produced one fledgling. Eggs estimated around 5 days, but were 8 days into incubation.
22/11/08	FA42243 X FA42284 FR08IAA239	3	Nest found the previous day before harvesting, eggs hatched 3 days later.

Along with the hand reared fledglings, the first cohort for release will be comprised of six parent raised fledglings. Parent raised birds are usually fitter than captive raised ones and potentially more capable of surviving in the wild. Due to the decrease in successful nesting attempts as the season progresses (Garrett et al., 2008) it is advantageous to take the parent raised birds as early in the season as possible. It is also important to find as many nests as possible during this highly productive time, as this will ensure that adequate numbers of chicks fledge which have been ringed on the nest, and therefore have known parentage. When starting a new population known parentage is essential for future analysis of the success of the released birds and to maintain the studbook of the population. This also aids analysis of inbreeding rates.

Parent raised fledglings were caught at the Mauritius Fody aviaries when they had reached independence at around 14 days after fledgling. Once caught, they were placed in a fledgling cage and transferred to the Black River Aviaries (Gerald Durrell Endemic Wildlife Sanctuary, GDEWS) where they were cared for by the GDEWS staff (Table 4.2). Certain fledglings proved to be quite aggressive towards one another, and were given three adjoining aviaries and several different food bowls and nectar bottles to reduce conflict. The parent raised fledglings were kept separate from the hand reared fledglings for quarantine purposes. The parent raised fledglings were screened for blood parasites. Blood smears were kept frozen until they could be sent to the International Zoo Veterinary Group (UK) for analysis. The results of the parent raised birds were all negative, which is encouraging for future harvesting from the free-living Ile aux Aigrettes population. The hand reared fledglings also tested negative for blood parasites.

Table 4.2 Details of the parent-raised fledglings taken from Ile aux Aigrettes to GDEWS for quarantine.

ID	Parents ID Nest reference	Hatch date	Fledge date	Date transferred to GDEWS
FA85567	F34525 X F34523 FR08IAA123	11/09/08	29/09/08	21/10/08
FA85568	F34525 X F34523 FR08IAA123	11/09/08	29/09/08	21/10/08
FA85569	F34525 X F34523 FR08IAA123	11/09/08	29/09/08	21/10/08
FA85572	FA42277 X F34545 FR08IAA148	14/09/08	01/10/08	30/10/08
FA85574	FA42277 X F34545 FR08IAA148	14/09/08	01/10/08	30/10/08
FA85573	FA42277 X F34545 FR08IAA148	14/09/08	01/10/08	07/11/08

Juvenile birds were chosen for the releases on Round Island as they adapt well to new environments and change and it has previously been found that translocations using young birds are more successful. Due to the postponement of the translocations to Round Island, all of the hand reared and parent raised fledglings were released back onto Ile aux Aigrettes. Keeping them captive at GDEWS would have rendered them too old for release onto Round Island and would have led to social problems such as rivalry with not enough space to house them separately. Please see later section for details of all the releases.

4.5 Disease screening of exotic birds and sparrow eradication programme

Introduced birds of Round Island were tested for diseases and parasites. Barred Ground doves (*Geopelia striata*) were captured in mist nets, tissue and blood samples were taken and sent for analysis. Of the 8 blood smears taken all tested negative for blood parasites and no internal parasites were found in 6 of the 7 tissue samples. One of the birds had a single parasitic tape worm, which was deemed incidental as it was the only one found.

House Sparrows were captured using several trapping techniques (see full report for trapping methods) and 10 birds were screened for diseases. All of the blood smears tested negative for blood parasites. Histology reports are yet to be received. During the eradication programme several mites were found crawling on handlers hands. These were surmised to come from the House Sparrows, but do not create great cause for concern for the introduction of Mauritius Fodies.

Several methods and trapping techniques were employed across the island in order to eradicate sparrows (Table 4.3). Some methods were more successful than others and a total of 320 birds were captured. Although the eradication has proved extremely useful in terms of testing techniques and censusing the population, it was not successful in eradicating House Sparrows from Round Island.

Table 4.3 Summary of the number of birds captured by each trapping method used in the attempted eradication of House Sparrows on Round Island between August 2008 and February 2009.

Funnel Traps	Glue sticks	Shooting	Mist net	α chloralose poison bait	Nest destruction	Total
277	22	10	3	3	4	320

Further eradication attempts are planned and should they prove successful the island will need closely monitoring in order to ensure they do not re-establish. Though they occur in abundance on Flat Island (N. Cole, pers. comm.), their recolonization from there may be rather unlikely. Though Sparrows do eat invertebrates when feeding young, their main food source tends to be seeds and thus their dietary overlap with Mauritius Fodies is fairly minimal. Disease does not appear to be affecting the Round Island resident birds, and transfer to Mauritius Fodies should be minimal if any. Should further eradication attempts prove unsuccessful, it should not prevent the planned Mauritius Fody translocations from proceeding, although it will be desirable that the competition for food from House Sparrows is addressed through bird control. Interactions between the two species should be closely monitored. House Sparrows do exist on Ile aux Aigrettes alongside Mauritius Fodies, but in fairly small numbers. They do not appear to be forest dwelling birds, and this is the type of habitat which the Mauritius Fody prefers. Thus, once the regeneration of Round Island increases, it may exclude large numbers of House Sparrows. Prior to habitat regeneration taking place on this kind of scale, most Sparrows on Round Island were observed in open ground or sparsely vegetated areas, not in the dense palm thickets and it is the most densely forested areas that the Fodies are most likely to occupy.

For the full attempted House Sparrow eradication work, findings and methodology please see Bednarczyk et al. (2008).

4.6 Conclusions and future plans

Though the completion of the aviary has been achieved, along with the hand-rearing of birds from the Ile aux Aigrettes population, the translocation itself did not take place this season. The decision was made to post-pone the releases until earlier in the 2010-11 season, as several factors led to delays and the translocations would not have commenced until the end of January, a time when the risk of cyclones is high. However, this has been to the advantage of the project, as it has led to the completion several preparative tasks, and increased our knowledge and experience for the future releases.

The harvesting of eggs from Ile aux Aigrettes was a great success and subsequent hand-rearing of these eggs led to further our knowledge and allowed for experimentation with different diets (see hand rearing section). The transfer of six parent raised fledglings from Ile aux Aigrettes was also excellent experience, and subsequent disease screening encouraging.

The House Sparrow eradication project on Round Island has also made good progress. Trials of various trapping techniques have greatly added to our knowledge of both the species and which methods are most successful.

This project has been supported by many different MWF projects, not only the passerine team, but also Round Island, GDEWS and visiting specialists, it is through this that a great deal of experience has been gained, and this will lead to a smoother and well prepared translocation to take place early next season.

5.0 Hand rearing; Gerald Durrell Endemic Wildlife Sanctuary



Newly fledged Mauritius Fody chick 'Brie' GDEWS Hand rearing room. Photo: Lucy Garrett

**Amanda Ladkoo
Lucy Garrett**

Hand rearers: Sally Baross¹, Harriet Whitford², Julie Cole, Anne Morris¹

¹Chester Zoo, ²Durrell Wildlife and Conservation Trust, Jersey Zoo

5.1 Introduction and Summary

The main objective for the hand rearing team this season was to artificially incubate, hatch and rear to independence a total of 18 Mauritius Fodies for eventual release to Round Island. The Ile aux Aigrettes field team aimed to provide the hand rearing team with around six to ten clutches, targeting specific pairs. The techniques used for incubation from early stage and rearing from hatch that were trialled and developed during the 2005/06 season were applied in this season in order to facilitate the early rescue of nests, due to the high failure rate on Ile aux Aigrettes (Garrett et al., 2008). A team of between two and four hand-rearing staff were based at the Gerald Durrell Wildlife Sanctuary (GDEWS) in Black River, between October 2008 and January 2009. Due to the post-pone of the Round Island translocations, harvests of eggs ceased at the end of November, and all hand reared fledglings were then taken to Ile aux Aigrettes for release.

Once fledged and feeding independently, the birds were kept in captivity in outdoor aviaries until transfer to Ile aux Aigrettes. These were managed by both the hand-rearing team and GDEWS staff under the supervision of the aviaries managers.

During the months of October and November 2008, eight nests were harvested and transferred to GDEWS for artificial incubation and hand rearing. Seven nests were harvested as clutches, the eighth was rescued at chick stage in order to trial a new diet.

The hand-rearing of Mauritius Fody clutches proved successful this season. Of the 19 eggs harvested, one was infertile and two fertile eggs died during early artificial incubation (separate clutches). The remaining 16 eggs hatched. An abandoned single chick was successfully reared and socialized with other broods. There were three chick fatalities this season, two pre fledge and one post fledge. A fourth fledgling was euthanized due to health problems. A total of 13 Mauritius Fodies were successfully fledged and raised to independence.

This report first describes the methods used for artificial incubation and hand rearing followed by the work conducted by the hand rearing team at GDEWS and the results of the 2008/09 season.

5.2 Artificial Incubation and Hand Rearing Methods applied in 2008/09

5.2.1 Artificial egg incubation

It is preferable to rescue/harvest eggs at late incubation stage as moving eggs during early incubation may reduce hatching success. This is because the young developing embryos are more susceptible to bumps and jolts that may occur during transfer from the field to the hand rearing room and are also more sensitive to variations in humidity and temperature. However some nests have to be rescued as early as possible due to a high risk of nest failure and are therefore taken as early as possible. Past success in artificially incubating and hatching from early incubation of Olive White-eye eggs (see Cole *et al.*, 2007) suggest that our methods are effective and this strategy leads to greater success and allows for a wider choice of nests to harvest from, which is important when targeting certain pairs.

Prior to receiving eggs, the Brinsea Octagon® incubator is set at 37.2°C, humidity 65% and the eggs were manually turned three times a day. A 1:125 solution of the disinfectant F10 to de-ionised water is used in the humidity dish of the incubator in order to provide a sterile incubation environment and help prevent exposure to harmful bacteria and fungi that could harm the developing embryo.

Following the nest rescue/harvest and transfer of the clutch to GDEWS, eggs were brought to the hand rearing room and removed from the portable incubator (see earlier section for details of transfer from Ile aux Aigrettes). A small coloured dot is made on the side of the eggshell in order to distinguish between eggs. Each egg is then placed into the pre-set warmed incubator and left to settle after the journey. All eggs are candled and weighed and weight losses and embryo development are recorded daily at 19:00 throughout the incubation period. When the eggs reach internal pip, turning of eggs ceased.

In cases of clutches of more than a single egg, eggs were spaced as far away from each other as possible in order to avoid any contact and possible disease transfer. Meticulous cleanliness is maintained when handling eggs. Hands were thoroughly washed and dried and any equipment that was used to weigh and measure eggs was disinfected after each use.

5.2.2 Hatching and Post-Hatch Care

Hatching times for a clutch of more than one egg are generally spaced a few hours apart. It is important to minimize fluctuations in the environment around hatching eggs. However a newly hatched chick requires feeding every 60 minutes, which requires opening the incubator which causes unavoidable drops in humidity and temperature. This is not harmful for the chick but may have a detrimental effect on hatching eggs, which could incur a dry hatch, or at worst, hatchling death. Therefore newly hatched chicks are first allowed to rest and dry until the down on the top of the head appears fluffy, this usually takes 3-4 hours and are then transferred to a Hatcher set at 37°C and 65% humidity. If the chick's yolk sac appears particularly prominent then the first feed may be delayed for an hour, provided the chick does appear dehydrated. This allows the second/third egg to hatch within a more stable environment (Cole *et al.*, 2008).

After hatching the chicks were placed in a sterile tub with a piece of textured mat in the bottom and tissue around the edge. Following signs of leg and feet abnormalities the substrate was changed in order to discount any potential influences which may have been caused by this. Newly hatched chicks were put back into the base of the original nest that was rescued and they remain in this for the duration of the hand-rearing period. The nest is kept in a freezer for 24 hours prior to use in order to kill any nest mites and subsequently brought up to temperature within the hatcher. Only the bottom bowl shaped part of the nest is used, in order to allow the chicks to be fed easily. Tissue paper was placed around the edge of the nest, in order to prevent dropped food becoming encrusted into the nesting material. This is replaced when soiled to ensure the nest is kept as clean as possible.

5.2.3 A note on the evolution of the Hand Rearing Protocol

The hand rearing protocol was first devised in the breeding season of 2001-02 by Andrew Owen (Switzer *et al.*, 2003). With his expertise in passerine hand rearing he established the first Mauritius Fody hand rearing diet. The diet consisted of bee larvae, cricket guts and egg and papayas and was supplemented with Vitamin B, Nutrobal and Nekton 1 and this proved to be very successful. During the breeding season of 2004/05, the first Mauritius Fody eggs were rescued and hatched at GDEWS. Modifications to the diets and feeding frequencies were made in accordance with the young age and begging responses of the chicks (Cristinacce *et al.*, 2005).

Throughout the seasons of Mauritius Fody hand rearing, the principle food substances used have always been cooked egg and papaya soaked in Ringers lactate, bee larvae also soaked in ringers lactate, cricket guts, pinkie mice and wax worms.

In 2005/06 the diet remained largely unchanged from that used in the previous season except for two alterations. Firstly, a shortage in the GDEWS breeding stock of pinkie mice occurred mid-season. The diet was adjusted in response to this shortage, with egg and papaya used as a substitute. Secondly, the wax moth culture at GDEWS died out and this component of the diet was substituted with egg and papaya and bee larvae.

The diet designed in the 2005 season worked very well, and ideally we would have stuck to this, however, due to circumstances changing, we had to adapt the diet. The adapted diet was based on that designed by Andrew Owen, which did not include pinky mice. However, pinkies were later added to the hand rearing diet due to their nutritional value.

5.3 Hand Rearing Diet, Feeding Routines and Combinations

Feeding combinations

The principle foods used this season for hand-rearing nestlings were bee larvae, egg and papaya, pinkie mice (although due to shortage of pinkies, none was given in the month of October) and crickets. The diet for fledglings contained all the above with the addition of nectar, insectivorous soft-bill mix and fresh soft fruits. Vitamin B, Neckton and Nutrobal were given routinely as dietary supplements and additional supplements such as Cuttle fish scrapings, Critical care and Poly Aid were given to chicks showing signs of sickness. The principle foods are described in turn below and full feeding combinations can be found in Appendix

This season two new feeding regimes were experimented on an abandoned Fody chick, consisting of alternately feeding Kaytee hand rearing formula and then a mixture of sifted insect mix (to remove hard seeds and big food pieces) which was dissolved in bee larvae juice to form a fluidy paste egg and papaya was also fed as these food substances are easily available and nutritious.

Bee larvae

Bee larva is the first food substance given to newly hatched chicks. They are a good source of fluid and are easily digested. This enables feeds to be spaced out at frequent intervals, which helps to prevent dehydration. The first and second bee larva feeds are supplemented with Vitamin B and Nutrobal respectively. A diet of only Bee larvae is given to one-day-old chicks in order to allow the yolk sac to be completely absorbed whilst ensuring the chick is kept well hydrated. It is important that the yolk sac is absorbed as this prevents yolk sac infection and encourages regular begging responses. Bee larvae are also fed alongside more complex food such as egg and papaya and mice to ensure that each meal adequately hydrates as well as nourishes the chicks. Bee larvae were obtained this season mainly from colonising events of Echo Parakeet boxes, however, boxes will be treated with a bee deterrent next season which prompted the trial of an alternative food source.

Egg and Papaya

Cooked egg (scrambled) contains many nutrients essential for growth making it an important component of the diet. Papaya is a good source of fructose and contains important digestive enzymes. The hydrophobic properties of egg are overcome by soaking in Ringer's lactate solution and this is then combined with ripe papaya. The supplement Necton is also added to this feed in solution, but care must be taken to make the correct concentration as too strong a solution can lead to dehydration. Bee larvae are also fed alongside the egg and papaya mixture until Day 5 in order to add plenty of moisture and increase the digestibility of this feed for younger chicks.

Pinkie mice

Day-old mice or 'pinkies' provide a good source of calcium and protein for growing chicks and are introduced to the diet at day 3. For the first two days of feeding, only the internal organs of the mouse are given to chicks. The harder to digest cartilage, skin and head are only added to the feeding routine from Day 5. No supplement is given with this feed as most of the essential vitamins and nutrients needed are already found in the pinkie feed alone. Unfortunately, due to the limited stock of pinky mice they were omitted from the diet during the month of November. This feed was replaced with insect mix mixed with bee larvae and cuttle fish was also introduced to increase calcium intake during this period (See Appendix 5 and 6 for details of diets).

Crickets

Cricket guts are fed as from Day 1, however only male cricket guts are used to feed chicks. It was noted in the 2005/06 season, that small hard balls and cricket eggs could lead to problems such as strained defecation (Cristinacce *et al.*, 2006). As a result, female crickets (distinguished by a long ovipositor) are excluded from the diet. The head of the cricket is pulled out as it is attached to the rest of the entrails at the end of which is rock hard "ball" like organ, which can also lead to digestive difficulties.

Nectar, Insectivorous soft-bill mix and fresh soft fruits

These are given from fledging to encourage weaning and comprise the main components of the captive diet. Nectar is artificial, prepared from the powdered formula Avesnectar® which is designed for small nectivorous passerines. Soft, juicy fruits such as mango, kiwi, grapes, watermelon and papaya are cut to cubes and spiked on branches in the fledgling cage. Insectivorous soft-bill mix (Witte Molen® Universal Food) is provided in a dish – this is mixed with grated carrot and grated hard-boiled egg to provide additional nourishment.

A chick's feeding response and digestion is optimal early in the morning and by late afternoon it will start to become more lethargic. In order to synchronize with this, as well as imitate the conditions that would occur in the wild, the first feed was given at 05.00- 05.30 am and the last feed varied between 20.30 and 21.00 pm.

It is essential to keep chicks well hydrated. In order to achieve this, every chick hatched was initially started on a 60 minute feeding interval. On day 6 the interval between feeds is changed to every hour and a half and then increased to every three hours at approximately day 27.

In some cases, particularly with sick chicks, a very flexible time table had to be kept. Table 5.1 gives the set number of feeds and the approximate feeding times according to the age of the chick. Bee larvae (with supplements) were given for the first two feeds of the day and as the chicks easily digest bee larvae, their crops were usually empty within an hour. It should be noted that from Day 6 to Day 14 the first and second feeds are just one hour apart and all feeds given thereafter are spaced out at the given intervals.

Table 5.1 Feeding times for hand rearing Fody chicks. Times and intervals are approximate and were adapted to suit individual chick's behaviours.

Age (days)	1-5	6-14	15-27	27- independence
Time of first feed	05:00	05:00	06:00	06:00
	21:30	21:30	20:00	18:00
Time of last feed				
Interval between feeds	1hr	1.5hr	2hrs	3hrs
Feeds per day	16	11	11	8

5.4 A summary of 2007-08

In total 19 eggs from 7 nests were deposited at the hand rearing room (Gerald Durrell Endemic Wildlife Sanctuary). One 5 day old chick was rescued from an abandoned, and ant ridden nest. Below is a summary in table form of this season's hand reared Fodys

Table 5.2 Below is a summary of all the eggs and one chick harvested from IAA and their outcomes.

Date Harvest	Pair Nest Reference	No. Eggs	Hatch Date	No. Eggs Hatched	Fledge Date	No. Chicks Fledged
13/10/08	FA42232 X FA42242 FR08IAA181	3	14/10/08	3	28/10/08	FA42301, FA42302 (one had deformed legs – later ringed on IAA; FA85595)
14/10/08	FA42255 X FA42280 FR08IAA177	3	19/10/08	2 (one infertile egg)	03/11/08	FA42303 One fledgling euthanized 06/11/08
14/10/08	F34505 X F34519 FR08IAA185	3	22/10/08	3	11/11/08	FA42304, FA42305, FA42306
18/10/08	FA42223 X F32122 FR08IAA184	3	30/10/08	2 (one egg died during incubation)	12/11/08	FA43207 One chick died 02/11/08
31/10/08	FA72409 X FA42294 FR08IAA206	2	08/11/08	1 (one egg died during incubation)	25/11/08	FA42308
07/11/08	FA42223 X F32122	2	15/11/08	2	29/11/08	FA42309 One fledgling

22/11/08	FR08IAA208 FA42245 X FA42284 FR08IAA239	3	25/11/08	3	09/12/08	died 04/12/08 FA42310 FA42311 One chick died 04/12/08 FA42312
27/11/08	F34540 X FA42272 FR08IAA227		21/11/08 (taken to GDEWS as a 5day old chick)	1	09/12/08	

5.5 Growth deficiencies and fatalities of chicks and fledglings

This season several fatalities occurred, it is thought to be either due to a lack of calcium in the diet, bad genetics or a possible combination of both. The G.D.E.W.S mice culture lost half of it's breeding adults, resulting in poor pinky production, therefore the latter was excluded from the Fody diet throughout the month of October. This would account for the lack of calcium in the diet which subsequently led to growth abnormalities.

During the month of October two chicks from different nests experienced developmental problems. Both chicks displayed more or less the same symptoms, lack of begging, development appeared stunted and most notably, splaying of limbs. The abnormal growth of limbs became apparent as the chicks were nearing fledging stage.

The first case of abnormal development was a chick from nest FR08IAA181. Of a clutch of three chicks FA85595 started to show signs of impaired health. As from 15/10/08 when chick was 2 days old, begging responses were not as enthusiastic as the other two chicks; FA42301 and FA42302. Throughout rearing FA85595 would sometimes be found in the nest with its head under the body of the other two chicks. On day 13 it became apparent that chick found it hard to stand up right, and while the other two chicks were able to manoeuvre themselves to defecate outside nest, FA85595 was unable to, and continued to defecate inside of the nest. This was due to the fact that chick had developed slightly splayed legs and reduced strength in its feet, and was unable to grip onto nesting material as well as the other two chicks.

Once fledged the bird improved in its perching ability and gained strength in its grip. The fledgling however still wasn't as agile as the other two, and it would jump from perch to perch, and would often loose grip and fall to the floor. However it did persevere and try to follow the other two fledglings as they learned to feed by themselves. A single fledgling from nest FR08IAA177 was socialised with the cohort. No aggression was observed, after a slight period of initial curiosity, socialisation was successful.

FA85595 was still not completely agile and movements were slow and while the other three were sufficiently agile and independent enough to take out into the aviary, the former remained in the fledgling room and was used in the socialising of FA43207 from nest reference FR08IAA184. Once again the fledglings displayed no signs of aggression and FA85595 was quite useful in the weaning of the younger fledgling. Eventually the extent of the splaying reduced to slightly interned feet. The fledgling was then successfully transferred to Ile aux Aigrettes where it was ringed and subsequently released. The fledgling survived the remainder of the season, and whilst it appears reliant on the supplemental food provided, it has been seen flying and foraging in the forest.

The second chick to exhibit abnormal growth was from nest FR08IAA177. In this clutch of 3 eggs, 1 was infertile. The 2 remaining eggs hatched, both chicks appeared to be in good health until on the 22/11/08, when one of the 4 day old chicks' begging responses subsided and remained so for the entire rearing period. The chick would have the tendency to hold food in its beak for 2-3 seconds before eventually swallowing. Much time and patience was needed to feed this chick, development was very slow. On Day 10 it was observed that the chick used its wings to reshuffle its left leg. As the chick grew older its condition became worse. The legs were very severely deformed and sticking out backwards behind the body, which became more severe once the chicks had fledged. On several occasions the fledgling was found on the floor of the fledgling cage upside down. It was deemed too severe to attempt strapping the legs in an attempt to realign the bones, and the decision was made to euthanize the chick (06/11/08) in order to prevent suffering due to no improvements in its condition being made. The sibling chick, FA42303 developed normally and at fledging was successfully socialised with FA42301 and FA42302; and was subsequently released on Ile aux Aigrettes. However, a month after release it became ill and subsequently died (see disease section).

The clutch from nest FR08IAA184, contained 3 eggs, one of which died at hatch; note several electricity cuts had been experienced during incubation of eggs, this may have contributed to the death of the egg. The other two hatched with no problem, although on the 31/10/08 when chicks were 2 days old, one presented signs of lethargy. Begging responses diminished and it would at most swallow one tweezerful of food and refuse all other attempts to feed more. Day 3 symptoms got worse, critical care dissolved in bee larvae was given but to no avail and the chick died at day 4. The chicks abdomen seemed to be particularly distended, a post mortem showed no conclusive results on cause of death but pieces of undigested papaya were found in the gizzard

The sibling chick; FA42307 was reared with no problems, development appeared normal, and it fledged and was socialised with FA42304, FA42305 and FA42306. No aggression was seen during the introduction. However, once independence had been reached and it was released into the aviary, FA42307 at first refused to leave the fledgling cage and when it eventually did, it flew onto the side of the mesh wire of the aviary and hung on for most of the day. The chick had to be coaxed down and a nectar bottle presented in order for chick to feed. It was noticed that it refused to fly. It was then brought back to the fledging room and socialised with FA85595, nest ref FR08IAA181 (see above notes). It is suspected that while in the aviary FA42307 may have knocked against something and damaged his wing, as two weeks later the bird was taken out of cage and allowed to fly around the room, which it was able to do with no problem, it was then eventually released on to Ile aux Aigrettes. The fledgling did well on the island, but unfortunately took ill and died around one month after release (see disease section).

A 9 day old chick from nest FR08IAA239 died on 04/12/08. It hatched from a clutch of three and had exhibited no prior signs of sickness or abnormal behaviour while being hand reared. At 0700 in the morning it was found dead in the nest. It had appeared healthy at the 0600 feed, it fed well and it's weight was normal. However one hour later it was found dead in the nest. A post mortem revealed no internal signs of abnormality. There was undigested papaya fragments in the gizzard, and some bleeding in the lung cavities, which may have been caused by the post-mortem itself. The other two chicks FA42310 and FA42311 were successfully fledged and released onto the island.

A fledgling from nest FR08IAA208 of a clutch of two, died on 04/12/08. During hand rearing both chicks experienced irregular faecal sac production. The worst case, however, occurred in FA42309, drops of Lactulose were administered once a day for two days this fortunately rectified its condition. On the 29/11/08 both chicks successfully fledged, both appeared healthy. Sadly on the morning of 04/12/08 the body the sibling to FA42309 was found on the floor of the cage. Again nothing out of the ordinary was noted previous to death. A post mortem revealed nothing conclusive, apart from the liver was very dark, almost black in colour. All other internal organs appeared healthy. FA42309 was successfully released onto IAA and is doing well.

5.6 Changes in diet following potential calcium deficiency

As from 13th of November pinky mice were added to all the diets of the remaining birds whilst at chick stage. The cricket culture's diet consisted of pellets, oranges and apples this ensured that the crickets were gut loaded and extra nutritional for the feeding of the chicks. To enhance the calcium content of this feed grated cuttle fish was sprinkled onto the guts.

Weight comparisons between chicks fed on a diet with and without pinky mice showed those that had not been fed pinky mice had lower weights on average than those fed with pinky mice during the early chick stages. Pinky mice are introduced into the diet at day three when internal organs are fed until day five when the entire mouse (excluding the milk sac) is used. In figure 5.1 it is at day three when the differences in weights between the chicks fed pinky mice and those fed no mice become more notable. A fairly sizeable difference in weight gain continues between the two different diets up until around day 10, when the weights are roughly the same. Fig 5.2 shows that after day 10 the average weight of the 10 chicks fed no pinky mice increased beyond those fed with pinkies. The chicks fed with pinky mice had very similar weight gain to those fed on the same diet in 2005/06 season, where high hand rearing success rates were noted (Cristinacce et al., 2006). This difference in weight gain may be due to the absorbability of the food sources being fed. The pinky mice diet, which was specifically designed to help digestion, resulted in increased weight gain at the early chick stages. This pattern flipped after Day 10, when the diet excluding pinky mice resulted in higher average weights compared to those being fed pinky mice. Thus, this would seem to indicate that more solid food sources such as the insectivorous mix are more digestible in the later stages of chick development. Should the supply of pinky mice be low, it would therefore be preferable to include it in the diet during the early stages of chick growth, such as up to day 13, and after this the diet including insectivorous mix may become more beneficial to chick development.

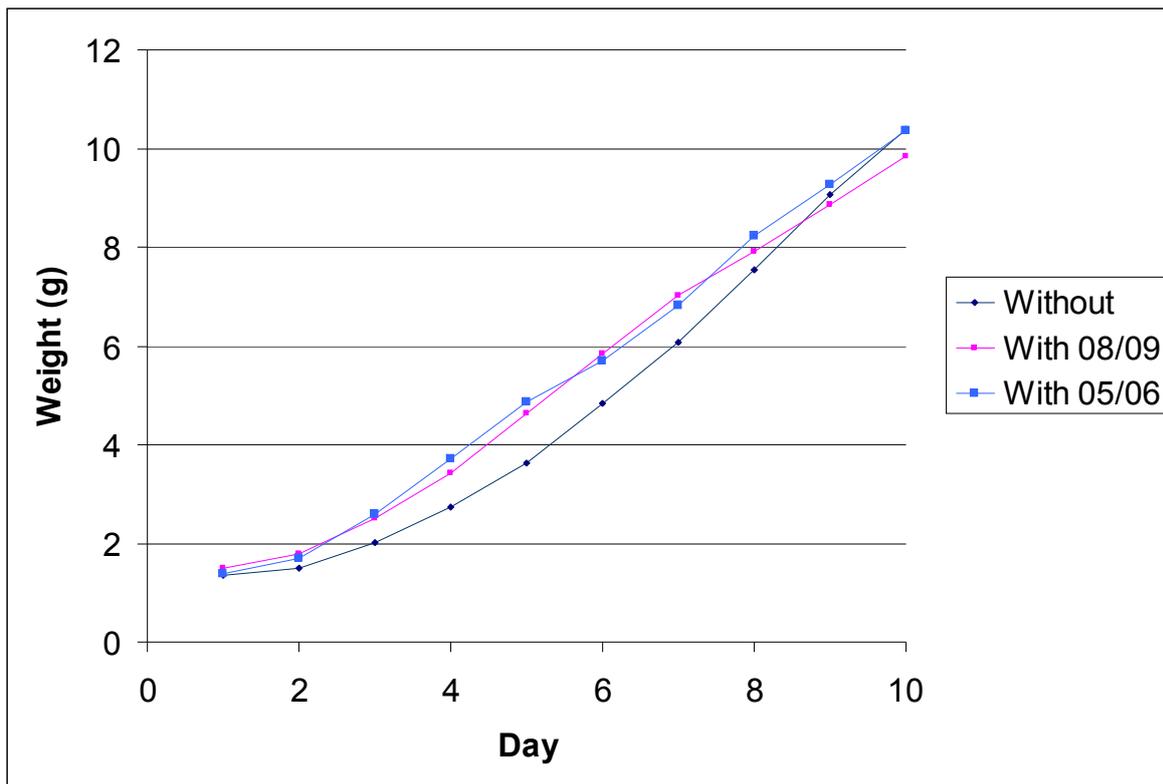


Fig. 5.1 Daily average weights of chicks fed on a diet without pinky mice from this season (N = 10), and those fed on a diet with pinky mice from this season (N = 6) and the 2005/06 season (N = 14).

The abandoned chick which was rescued from Ile aux Aigrettes due to being attacked by ants was used to trial a new diet which is much less time consuming to prepare and administer. Hand rearing formula was trialled in combination with bee larvae and insectivorous mix, interchanged.

The chick was estimated at day 5, although it could have been possibly younger. When it arrived at the hand rearing room, it was dehydrated and very pale in colour. It had received many ant bites and was therefore quite anaemic. The first few feeds given were liquid bee larvae sprinkled with Critical Care; this was to re-hydrate the chick.

The hand rearing formula comes in powder form, therefore sterile water was used to create a solution of approximately 60% water: 40% hand rearing formula. The first feed was introduced along with bee larvae. A very small amount of mixture was given at first in order to be sure that the chick would be able to digest it. Chick was fed ½ a crop full. It was noted that the crop emptied in less than an hour, therefore a thicker mixture was prepared; around 75% hand rearing formula, this passed well in the crop. This concentration was used throughout rearing. Egg and papaya, insect mix dissolved bee larvae and hand rearing formula was the stable diet of this chick. It appeared to be a successful combination, although the chick was a lower weight than average (Fig. 5.2), considering the circumstances that it had endured, it fledged successfully and appeared healthy. The only in difference in its behaviour from other chicks was that it appeared a little ‘shyer’ than the others, but this could be due to the fact that it was parent raised up until day 5 which may have impacted its social development. On the 02/12/08 the chick was socialised with FA42310 and FA42311 in order to prevent any social problems, and was successfully released onto Ile aux Aigrettes where it is doing well.

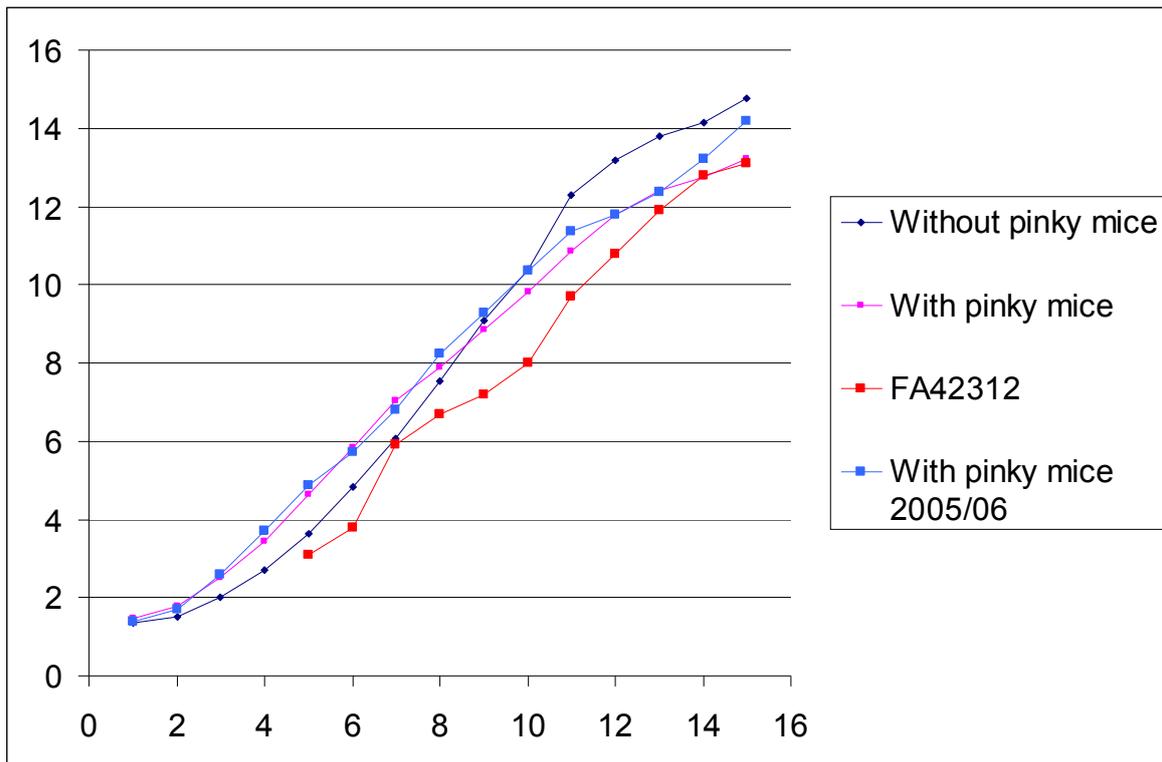


Fig. 5.2 Mean daily weights of chicks fed with (N = 10) and without (N = 6) pinky mice in 2008/09 season compared with those fed with pinky mice in the 2005/06 season (N = 14), together with the trial diet of hand rearing formula trialled on a single chick (FA42312) in 2008/09.

5.7 Releases onto IAA

Birds were transported to Ile aux Aigrettes from GDEWS aviaries in a transport box or fledgling cage. The first cohort to be released were the parent raised fledglings, due to them being older than the hand reared birds. As the birds were already familiar with the island and the feeding aviary they were released from the Olive White-eye release aviary, after a relatively short amount of time, to reduce demand on a single bay of the Mauritius Fody aviary.

The hand-reared birds were kept in one side of the Mauritius Fody aviary for between 8 and 15 days prior to release in order to habituate them to the island. Prior to release food bowls were placed near to the entrance hatch and extra perching provided in and around it. The fledglings were released in cohorts corresponding roughly to groups they had been socialised in after fledgling at GDEWS. One bird which had developed slightly splayed legs, was released on its own prior to the Round Island translocations being postponed, as it was not considered fit enough to form the basis of a new sub population. The first cohort to be released (cohort 3, Table 5.3) left the aviary straight away and were seen foraging in the surrounding area. They were later seen to use the supplementary food. For all subsequent releases it was not thought necessary to place the feed and extra perching near to the release hatch, as the birds frequently stayed near to the release hatch and had no difficulty or delayed time response to exiting the aviary when the hatch was opened.

Whilst captive at GDEWS some aggressive interactions were noted between the fledglings housed together. This was not a problem whilst they were captive in the same aviary on Ile aux Aigrettes even though the aviary is smaller in size. This is possibly due to the presence of adult birds around the aviaries on Ile aux Aigrettes who are dominant and hold territories in the surrounding area. This may have subdued the fledglings in comparison to GDEWS where no Mauritius Fodies are present in the area and therefore they may have been trying to prove their dominance for establishing potential territories.

Table 5.3 Dates of all fledglings both parent raised and hand reared released on Ile aux Aigrettes.

ID	Parents	Hatch Date	Fledge Date	Date taken to IAA	Release Date Cohort
FA85567	F34525 X F34523	11/09/08	29/09/08	16/12/08	19/12/08 1
FA85568	F34525 X F34523	11/09/08	29/09/08	16/12/08	19/12/08 1
FA85569	F34525 X F34523	11/09/08	29/09/08	16/12/08	19/12/08 1
FA85572	FA42277 X F34545	14/09/08	01/10/08	16/12/08	19/12/08 1
FA85574	FA42277 X F34545	14/09/08	01/10/08	16/12/08	19/12/08 1
FA85573	FA42277 X F34545	14/09/08	01/10/08	16/12/08	19/12/08 1
FA85595	FA42232 X FA42242	14/10/08	28/10/08	09/12/08	24/12/08 2
FA42301	FA42232 X FA42242	14/10/08	28/10/08	23/12/08	04/01/09 3
FA42303	FA42255 X FA42280	19/10/08	03/11/08	23/12/08	04/01/09 3
FA42304	F34505 X F34519	19/10/08	11/11/08	23/12/08	04/01/09 3
FA42302	FA42232 X FA42242	14/10/08	28/10/08	05/01/09	13/01/09 4
FA42305	F34505 X F34519	19/10/08	11/11/08	05/01/09	13/01/09 4
FA42306	F34505 X F34519	19/10/08	11/11/08	05/01/09	13/01/09 4
FA42307	FA42223 X F32122	30/10/08	12/11/08	05/01/09	13/01/09 4
FA42308	FA72409 X FA42294	08/11/08	25/11/08	13/01/09	22/01/09 5
FA42309	FA42223 X F32122	15/11/08	29/11/08	13/01/09	22/01/09 5
FA42310	FA42243 X FA42284	25/11/08	09/12/08	13/01/09	22/01/09 5
FA42311	FA42243 X FA42284	25/11/08	09/12/08	13/01/09	22/01/09 5

Survivorship on Ile aux Aigrettes

Of the 13 birds which were hand reared and released onto Ile aux Aigrettes by the end of March 2009 two had died (FA42303 ‘Cheddar’, FA42307 ‘Chale’) and two were missing (FA42305 ‘Walnut’, FA42311 ‘Liffon’). Using the Kaplan-meier probability of survivorship method, gives a survivorship of 73% (Fig. 5.3), which is the same as for Ile aux Aigrettes wild-fledged birds. This is quite a good probability, but it is too early for any major conclusions to be derived from this. Out of interest FA42303, FA42305 and FA42307 were all raised on a diet without pinky mice. A larger sample size would be needed in order to test the effects of dietary components on survivorship.

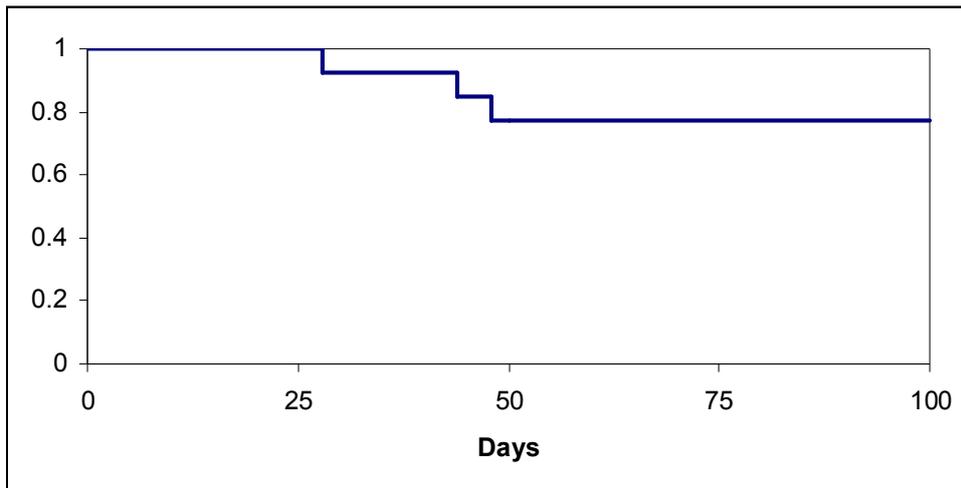
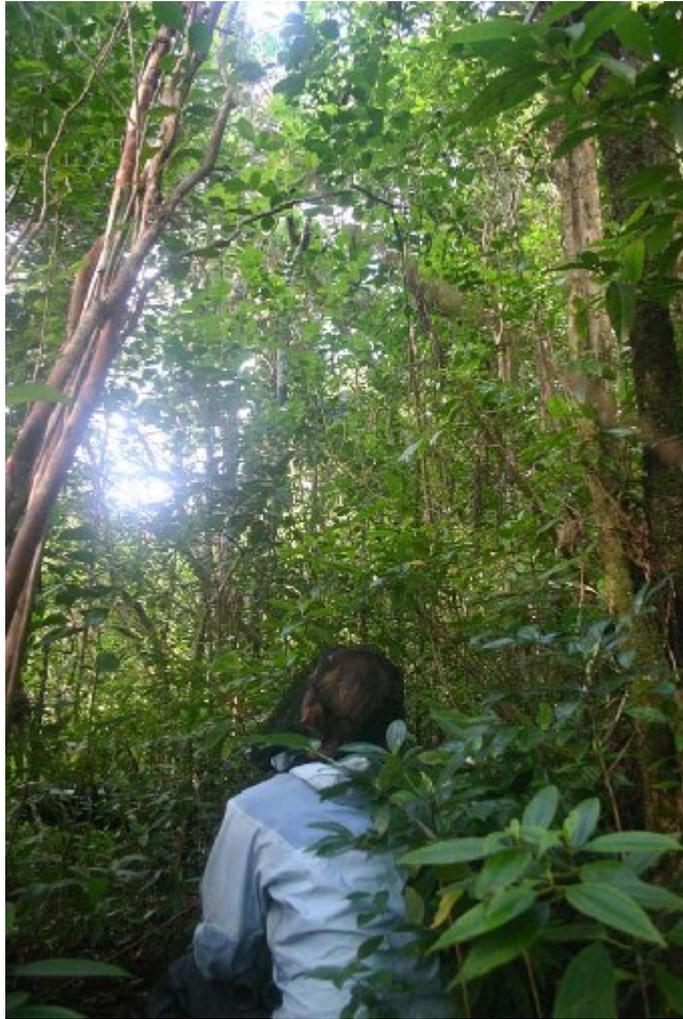


Fig. 5.3. Kaplan-Meier curve of the probability of survivorship to 100 days for Hand reared birds released on Ile aux Aigrettes in the 2008-09 season.

6.0 Pigeon Wood



Nest watch at Pigeon Wood, Sarah Lovibond. Photo: Lucy Garrett

Lucy Garrett

**Support team; Iwan Fletcher, Sarah Lovibond, Matthew
Gee, Heather Dixon**

6.1 Introduction

This season is the first time since 2005 that Mauritius Fody monitoring has been carried out in the upland forests of mainland Mauritius. The aims of this monitoring were to estimate breeding success in order to establish the health and recruitment levels of the founder population. It is hoped that the Pigeon Wood Fody population may be used to increase genetic diversity both to the Ile aux Aigrettes population and once established, the Round Island population. It is important to assess breeding success in the various areas of the upland forest, so that any removal of eggs causes as little damage to the population as possible. The second aim was to get a rough idea of territory location and distribution of birds within the Pigeon Wood area, this will provide a basis for future work in locating pairs for harvesting eggs.

A thorough population census has not been carried out since 2002/03, when the total population estimate was 93-116 pairs. Although there was not enough staff or time available to carry out a full population census this season the assessment of territories and pairs provides a good guide as to the status of this population. Results are compared with previous year's data for the more detailed study areas of Pigeon Wood and Les Mares Chasse.

6.2 Breeding behaviour

Breeding activity was monitored in the area surrounding Pigeon Wood between October 2008 and March 2009. Breeding activity commenced before monitoring took place and finished around February/March, when the birds started to moult. Territories were located by searching areas where Mauritius Fodies have been found and monitored in previous years. The main areas monitored were the small area of *Cryptomeria japonica* dominated woodland containing some native trees and exotics, referred to hereafter as the Wood (c 6ha), and a larger area of mixed exotics mainly dominated by a Pine *Pinus elliotti* plantation, Les Mares Chasse (c 100ha). Other areas were also searched for birds however nesting attempts were only monitored in Pigeon Wood and Les Mares Chasse.

6.2.1 Nest Monitoring

A total of 38 nesting attempts were monitored from an estimated 27 pairs based on location, the outcomes of which can be seen in Table 6.1 (Outcomes of each nest can be seen in Appendix 4). Of these, 21 did not proceed to incubation. Several nests were destroyed prior to incubation being observed 9/38, however it is likely that some of these nests contained eggs, as the female only starts incubating when the full clutch has been laid. This occurrence was especially high in Les Mares Chasse, where monkey sightings were frequent. From the distribution of nesting material and the 'opening out' of the nests which were found destroyed, it seems likely that monkeys were the main cause of destruction. Red-whiskered Bulbuls were also seen around some of the nests and from the sightings on Ile aux Aigrettes of nest interference, they are also a potential predator, and exist in fairly high numbers in the Pigeon Wood area. Predation or interference from introduced predators was thought to have resulted in the failure of 15 of the nests monitored, 11 of these being in Pine trees. Periods of bad weather were also suspected to have caused the failure of at least two nests, and most likely the curtailment of the breeding season around early March.

Table 6.1 Outcomes of the nests monitored in the area surrounding Pigeon Wood between October 2008 – March 2009 in relation to tree species. Other exotic = *Ravenala madagascariensis*. Native includes an Ebony species (unidentified) and *Homalium integrifolium*.

	Nest tree species				Total
	<i>Cryptomeria japonica</i>	<i>Pinus elliotti</i>	Other exotic	Native	
Abandoned before completion	2	3	1		6
Abandoned after completion	4			2	6
Destroyed before incubation	2	7			9
Failed during incubation	2	5			7
Predated at incubation – nest torn apart	2	4			6
Failed at chick stage	1				1
Successful	3				3
Unknown					
Total	16	19	1	2	38

6.2.2 Nesting Success

Nesting success was calculated using the Mayfield method (Mayfield, 1961; 1975), which uses exposure time rather than simply numbers that fledge. Nesting success was calculated for the 17 nests that contained a clutch i.e. where a nest reached incubation or chick stage. The nests which were destroyed before incubation was confirmed, but which may have contained eggs were excluded from this analysis.

Nesting success was calculated by: the probability an egg will survive the incubation period × the probability an egg will hatch × the probability a chick will survive the nestling period. The incubation period was taken as 14 days (Cristinacce, 2008), and the chick period (from hatch to fledge) was taken as the average time it took a chick to fledge.

The probability that an egg survived the incubation period was 47% and the probability that a chick would survive the nestling period was 77%. Thirty-three percent of eggs present at hatching time did not hatch, giving an overall nesting success of 24%. Nesting success was also calculated for tree species (Table 6.2). Nests which proceeded to incubation were found in *Cryptomeria japonica* (mainly in Pigeon Wood itself, but also patches in Les Mares Chasse and Alexandra Falls area) and Pine *Pinus elliotti* which dominates in Les Mares Chasse and surrounding areas. Sample size was fairly small, with 8 nests monitored in *Cryptomeria* and 9 nests in Pine. Overall nesting success in *Cryptomeria* was 47% and nesting success in Pine was 0%.

Table 6.2 Mayfield Analysis of nesting success in relation to nest tree species for nests located in the Pigeon Wood area during 2008-09.

	Number of nests proceeding to incubation	Number of failed nests	Mayfield estimate of nesting success (%)
All	17	14	24
<i>Cryptomeria japonica</i>	8	5	47
<i>Pinus elliotti</i>	9	9	0

Compared with previous years nesting data, overall nesting success has decreased (Table 6.3). This could be due to the fact that during previous years monkeys, thought to be the main predator of Fody nests, were controlled. During 2006-06 monkeys were trapped in Les Mares Chasse, which could explain the increased success, especially in Pine trees in that season. Nesting success in *Cryptomeria*, during the months when breeding activity was monitored this season, was higher than that in Pine. However, several fledglings were seen from nests not found. In total, 18 fledglings were seen from 12 different pairs. Of these, 13 were found in locations outside of the Wood (the main *Cryptomeria* grove). Some of the fledglings however were located in or near to patches of *Cryptomeria* plantations outside of the Wood, namely on the track to Alexandra Falls and also in a patch of *Cryptomeria* in Les Mares Chasse. It is likely however, that some of the fledglings seen did fledge from nests in Pine trees, and a larger sample size of nests would perhaps confirm this.

Table 6.3. Comparison of Mayfield analysis of nesting success at Pigeon wood between seasons for different tree species followed by N in parentheses.

Season	<i>Cryptomeria japonica</i>	<i>Pinus elliotti</i>	Other	Overall
1989-1993	46 (39)	6 (22)		- (61)
2002-2003	32-35 (14)	39 (3)	-	30 (17)
2003-2004	41.2 (13)	16.2 (8)	100	33.6 (22)
2004-2005	22.3 (7)	54 (4)	0 (1)	26.4 (12)
2005-2006	58 (5)	100 (5)	100 (1)	74 (11)
2008-2009	47 (8)	0 (9)	-	24 (17)

6.3 Fody Sightings

Due to the mainland population not being ringed it is extremely difficult to accurately map the territories. GPS coordinates were taken of many of the Mauritius Fody sightings, and it is hoped that more accurate maps may be developed by exploring the data more thoroughly together with the GPS data and field observations. As a brief overview of the general distribution of the Fodies monitored this season Fig 6.1 shows the Fody sightings in the area surrounding Pigeon Wood, the denser clump of points at the bottom is the Wood *Cryptomeria* grove.

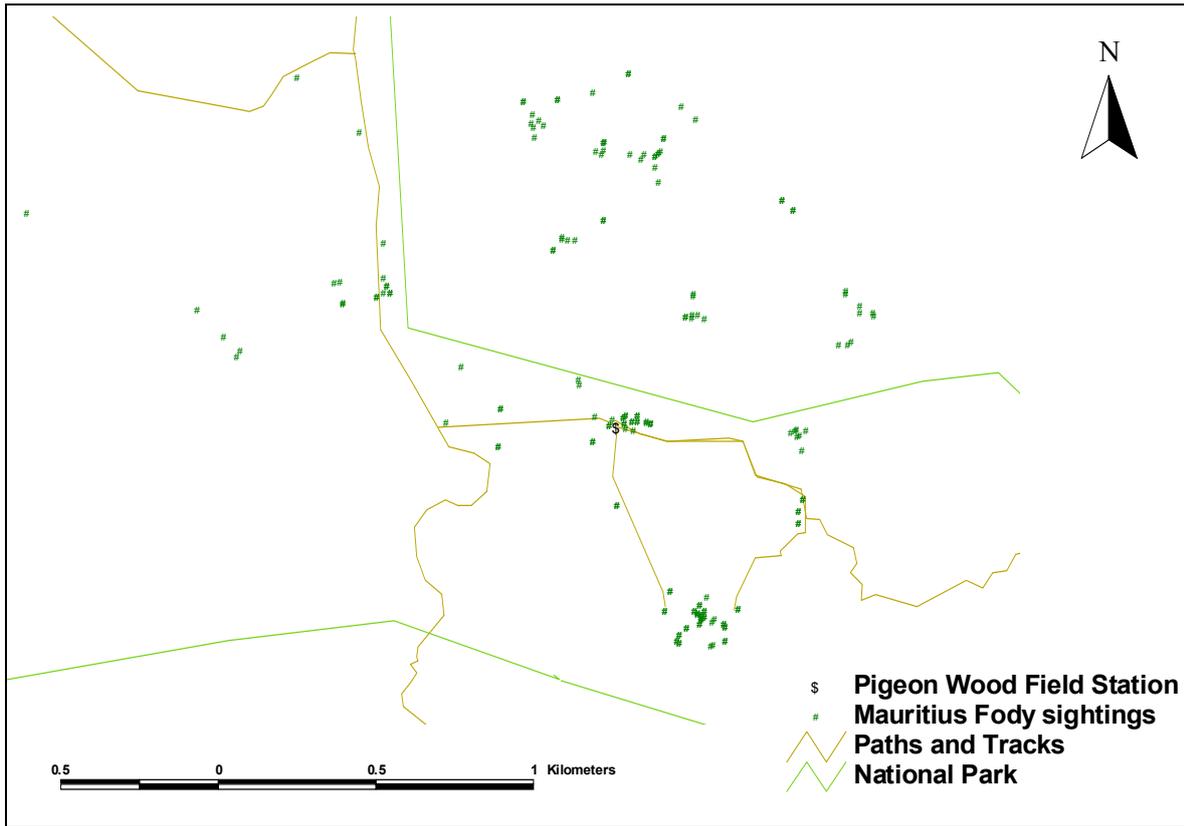


Fig. 6.1 Locations of Fody sightings in the Pigeon Wood area, showing the National Park boundary during 2008-09.

Sightings were also recorded at Bel Ombre, with 6 territories located. Another Fody male was sighted at the Petrin junction, though this area was not thoroughly explored (Fig 6.2). This also gives some indication of the rough distribution of Mauritius Fodies within and outside of the National Park, though more thorough explorations of the wider area are needed.

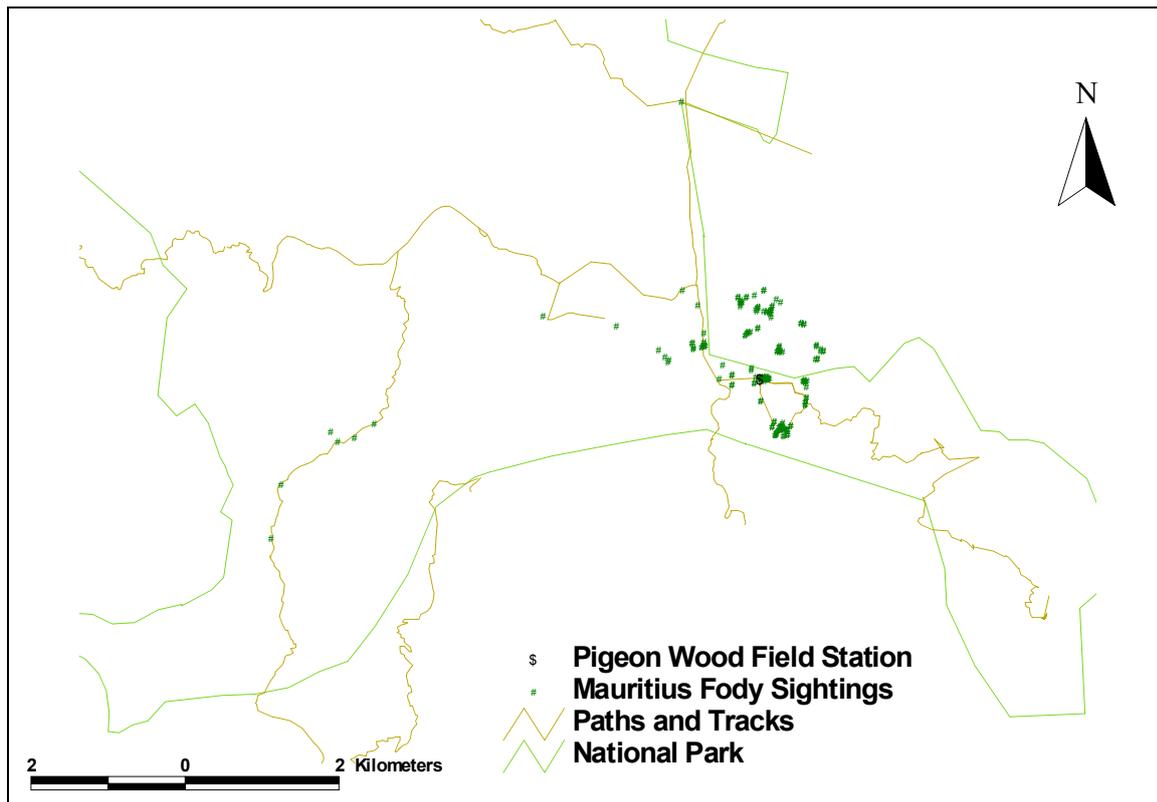


Fig. 6.2 Mauritius Fody sightings in the Pigeon Wood area (densest points), Bel Ombre Uppers (left hand side) and a single sighting at Petrin crossroads (top), between October 2008 and March 2009.

In comparison with old territory maps, several new territories have also been found in the Wood itself. It seems areas that once held up to 3-4 territories now have upwards of 5-6, which is encouraging. The *Cryptomeria* grove held higher densities of Fodies in the past, presumably due to the protection it offers against nest predators.

One male Fody sighted on the path to the Les Mares Chasse entrance had a metal ID ring on its left leg. From the ringing records of nestlings and adults that have been ringed at Pigeon Wood it is possible that this male is between 5 - 7 years old. No other ringed Fodies were observed.

6.4 Feeding behaviour

Information on feeding behaviour of the upland population of Mauritius Fodies is incomplete. Most observations state invertebrates as a large part of their diet as well as nectar (Cheke, 1987; Safford, 1991). This season's monitoring presented the opportunity to record as many feeding observations as possible which resulted in over 100 feeding accounts being recorded. Opportunistic feeding observations were taken whenever Fodies were observed feeding. The prey items were separated into three categories; Invertebrates, Nectar, and Fruit and seeds.

Invertebrates constituted the main part of the Fodies diet (Fig. 6.3) with 61% of the observations (66/108). Nectar was also an important component and the Fodies took full advantage of the flowering exotic Bottle Brush *Callistemon citrinus* mainly on road and track edges, with 32% of the observations (35/108). This has been previously noted to attract birds into communal feeding in order to take advantage of this abundant food source, and draws

birds out onto the tracks where Bottle Brush can be found in abundance (Switzer et al., 2003). Sightings to support this theory came from two females feeding together with a male in the same tree (06/10/08, 09/10/08), seemingly tolerating each other which is not normal behaviour. The females both appeared to be adults, with obvious signs juvenile behaviour or remnants of flanges. A female Mauritius Fody chased a Madagascar Fody from Bottle Brush flowers (30/10/08), indicating this is a well defended food source. The main flowering period appeared to be from October – November, with flowers remaining in low densities through to February.

Several observations were also noted on the seeds of an exotic, *Homalanthus populifolius* fruit (7/108).

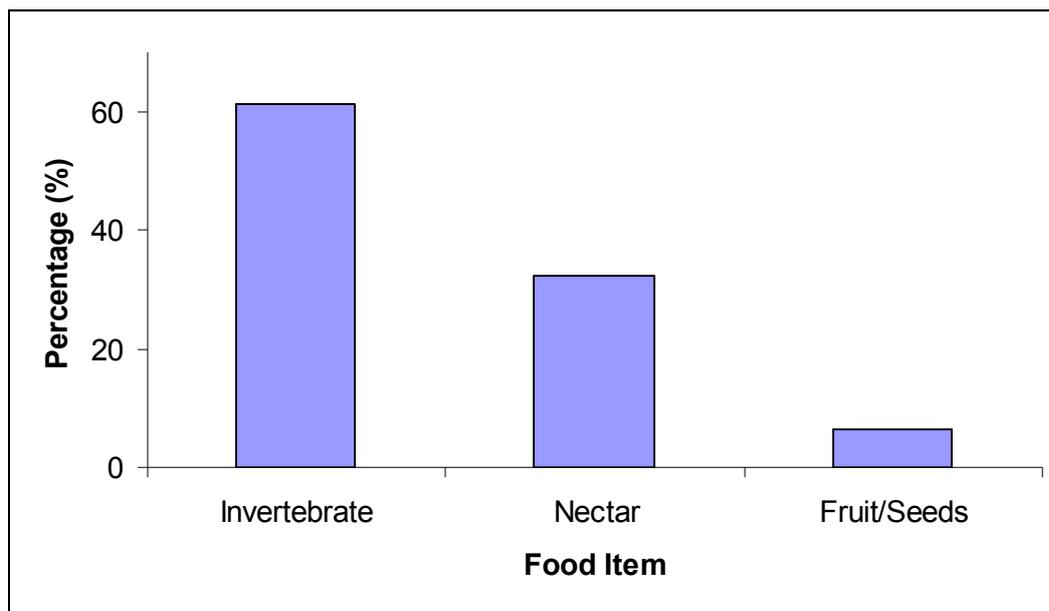


Fig. 6.3 Percentage of feeding observations on different food items at Pigeon Wood. N = 108.

Fodies mainly probed for invertebrates in bark and moss (Fig. 6.4) with 41% of the foraging observations exhibiting this behaviour (44/108). Licking was also a preferred foraging method - for nectar feeding (32%).

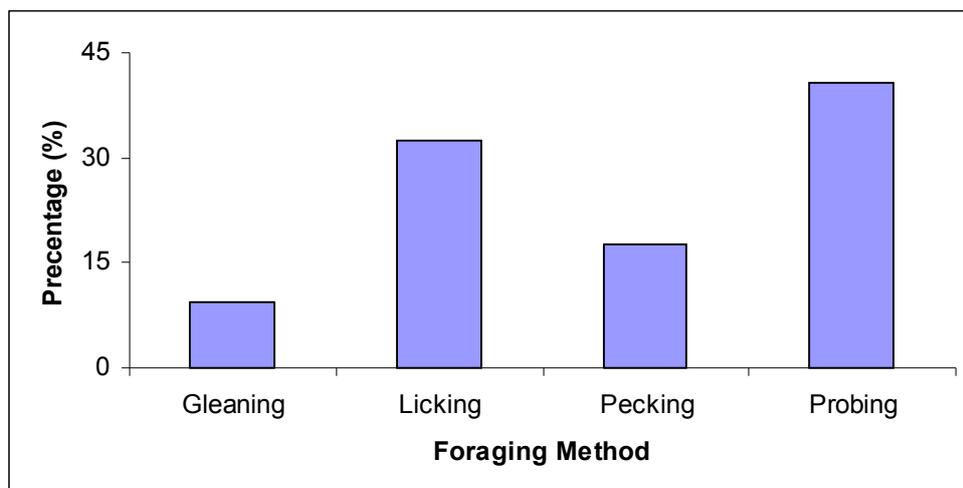


Fig. 6.4 Percentage of feeding observations for each foraging method at Pigeon Wood. N = 108.

6.5 Conclusions

Monitoring this season has been the first to document breeding success in the upland population for 3 years. This season has also added greatly to our knowledge of feeding behaviour. It is concerning that these findings have documented a decline in breeding success, and a potential increase in nest predators in the area surrounding Pigeon Wood.

It is encouraging that several fledglings were seen however, further monitoring of the mainland population is needed, in order to confirm population size and recruitment into the population.

Due to the small size of the field team this season unfortunately it was only possible to monitor a small area surrounding Pigeon. Despite the nature of the terrain and the difficulty in locating birds and nests, the information that has been gained this season is very important, and gives an insight into the current situation of the founder population of Mauritius Fodies. It is important that this population be safeguarded, as it extremely valuable in terms of its genetics and also several behaviours that are present in this population are not exhibited in the Ile aux Aigrettes population. As the Ile aux Aigrettes population grows inbreeding is likely to become more of a problem, and re-stocking with birds from Pigeon Wood will be necessary. Predation is still very much a problem in the upland remnant forests, and the importance of *Cryptomeria* groves as a form of protection against introduced predators is made evident from these findings. Measure to increase and safe guard the *Cryptomeria* patches should be a priority, in paralell with native habitat restoration. Measure to control monkeys in Les Mares Chasse should also be investigated.

7.0 Aims for 2008-09 season



Mauritius fodies using the supplemental food in the Fody aviary. Photo: Nicholas Bolton.

Lucy Garrett
Vikash Tatayah, Carl Jones, Amanda Ladkoo

The Mauritius Fody recovery programme will continue work into the 2009 - 10 season with the main focus being on maintaining similar standards of monitoring on the Ile aux Aigrettes population.

Monitoring breeding activity, population size, territory behaviour and disease: Ile aux Aigrettes

Next season will be extremely important in terms of monitoring for this population; not only in terms of continuing long-term data sets but also given the findings of this season's disease problem.

Supplementary food provision will be maintained throughout the year, especially during the breeding period in order to aid breeding success and survival

It is especially important to monitor breeding activity to a high level, this will ensure that the studbook is maintained and parentage of birds is confirmed so that rates of inbreeding can be monitored.

Investigation into and prevention of cases of disease on Ile aux Aigrettes is incredibly important. Increasing and maintaining hygiene and cleanliness in and around the Fody aviary is essential. Methods to decrease the transfer of disease or bacteria between birds should be considered. This may involve creating more than one feeding point or removing supplementary food altogether.

Trapping of Indian Mynahs should be carried out in order to reduce the incidence of nest predation. Nest boxes have been made for this purpose, and better monitoring and management of them is needed. Control of exotic bird species visiting the Fody aviaries should also be maintained, and Red-whiskered Bulbuls excluded.

Mauritius × Madagascar Fody Hybrids: GDEWS

It is extremely important to ascertain whether or not the Fody hybrids are sterile, as this will have major implications for wild Fodies should there be any further incidences of hybridisation.

Although nesting attempts were made by the hybrids this season, they do not seem to be a good match, with the male constantly chasing the female in an aggressive manor. It is therefore suggested that the pair be separated and a Madagascar Fody be added to form two pairs.

Using wild caught Madagascar Fodies would not be suitable for keeping in an aviary, and would likely not make any successful nesting attempts. It would not create too much extra work to rear a clutch of Madagascar Fodies at GDEWS, which would also provide a good training species for the new hand rearers working on Olive White-eyes.

Mauritius Fody Team 2009 - 10 Staff:

Project Coordinator; Ile aux Aigrettes: Laura Bambini

- An experienced member of staff who maintains monitoring and management of the Ile aux Aigrettes population.
- Recruit and train new staff, daily management of the field team, data collection and application of management techniques. Produce monthly and annual progress reports, funding appeals and other reports as required, maintain studbook and ringing records. Conduct any presentations or talks to funders etc. Organise purchases and maintenance of field equipment, prepare an annual budget.
- Fully supported with return flight and 12 month salary provided by MWF
- Present in Mauritius between August to May

Volunteer Field Staff (2)

- Self-funded staff to support field teams at Ile aux Aigrettes for at least six months from June/July.

Out of Season Staff (2)

- Two staff to maintain supplementary food provision and basic population monitoring of the Ile aux Aigrettes birds between April and July.

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Appendix

Appendix 1. Mauritius Fody nests monitored on Ile aux Aigrettes during May 2008 to March 2009 and their outcomes.

Nest Reference	Male	Female	Date found	Result
FR08IAA101	F32121 Cornucopia	FA72420 Raspberry Ripple	18/06/2008	Abandoned after completion
FR08IAA102	FA72439 Licorice	FA42261 Devil	24/06/2008	Failed during incubation
FR08IAA103	F34535 Jesse	FA42201 Petanque	24/06/2008	Abandoned before completion
FR08IAA104	FA42212 Bruno	F34530 Gris Gris FA72446 Monkey	24/06/2008	Fledged
FR08IAA105	FA72401 Halle	Brains FA42260 The Godfather	10/07/2008	Failed during incubation
FR08IAA106	FA42214 Reuben	Godfather	16/07/2008	FA85540, FA85541 Fledged
FR08IAA107	F34533 Heliotrope	FA72433 Roti	29/07/2008	Fledged 3 fledglings
FR08IAA108	FA72410 Chou Chou	FA72475 Julian FA72420	29/07/2008	Fledged at least two
FR08IAA109	F32121 Cornucopia	Raspberry Ripple	29/07/2008	Failed by predation 29.8.2008
FR08IAA110	FA72493 Dr No FA42298 The Guffnor	FA72426 Papaya	29/07/2008	Abandoned before completion
FR08IAA111	Guffnor	FA42246 Shrek	29/07/2008	Failed at incubation stage
FR08IAA112	FA72429 Dinner	FA72470 Bell	30/07/2008	Abandoned before completion
FR08IAA113	F34526 Jabba	F34522 Peaches	30/07/2008	Abandoned after completion.
FR08IAA114	FA72405 Ginger	FA42267 Rummy	30/07/2008	Failed at incubation 3 fledglings FA85554, FA85555, FA85556
FR08IAA115	FA72443 Apple Pie	FA42238 Animal	01/08/2008	
FR08IAA116	F34505 Holly	F34519 Willow FA42287 Bald Eggs	06/08/2008	FA85548, FA85549 Failed at chick stage.
FR08IAA117	F32118 Papillion	Eggs	12/08/2008	Failed at incubation
FR08IAA118	FA72405 Ginger	FA42267 Rummy	13/08/2008	Fledged, 1 seen
FR08IAA119	FA42232 Grace	FA42242 Corsair	13/08/2008	2 fledglings FA85552, FA85553
FR08IAA120	FA72439 Licorice	FA42261 Devil	13/08/2008	Failed at incubation
FR08IAA121	FA72409 Sushi FA42230 General Switzer	FA42294 Momo	15/08/2008	Abandoned before completion
FR08IAA122	Switzer	F34520 Beeko	19/08/2008	1 fledgling FA85550, 2 failed eggs.
FR08IAA123	F34525 Capoeira	F34523 Freda	19/08/2008	Fledged FA85567, FA85568, FA85569
FR08IAA124	FA42277 Aramis	F34545 Milo FA42244 The Ultimate Warrior	19/08/2008	Abandoned before completion
FR08IAA125	FA42240 Hardy	FA72445 Victoria Sponge	19/08/2008	Failed by predation
FR08IAA126	FA72423 MSG	Sponge	20/08/2008	Abandoned after completion
FR08IAA127	FA72453 Grater	FA42219 Antimi	20/08/2008	Abandoned before completion
FR08IAA128	FA72493 Dr No	FA72426 Papaya	20/08/2008	Abandoned after completion
FR08IAA129	FA72410 Chou Chou FA72427 Bad Banana	FA42237 Kermit	21/08/2008	Fledged, 2 seen
FR08IAA130	Banana	FA42296 Me	22/08/2008	Abandoned after completion
FR08IAA131	FA72481 Kumquat	FA42222 Neo	22/08/2008	Failed at incubation.
FR08IAA132	FA72429 Dinner FA72432 Poisson	FA72470 Bell	26/08/2008	Abandoned before completion
FR08IAA133	Sally	FA72494 Frisk	26/08/2008	Failed at incubation.
FR08IAA134	FA42227 Mutley	FA42256 Scorch FA42280 Brookfield	27/08/2008	Failed at chick stage.
FR08IAA135	FA42255 Mori	Brookfield	28/08/2008	Failed at incubation.
FR08IAA136	FA72487 Goldfinger	F34524 Arthur	28/08/2008	Failed at chick stage.
FR08IAA137	FA72401 Halle	FA72446 Monkey	28/08/2008	Failed at incubation.

Brains				
FR08IAA138	FA42243 Sharkeater	FA42284 Catch	28/08/2008	Failed at incubation.
FR08IAA139	FA42239 Darth Vada	FA42233 Lotte	03/09/2008	Failed at chick stage
FR08IAA140	FA72439 Licorice	FA42261 Devil	05/09/2008	Failed at incubation.
		FA42236		
FR08IAA141	FA72416 Scramble	Hurricane	10/09/2008	Failed at incubation
FR08IAA142	FA42277 Aramis	FA42268 Roulette	10/09/2008	Failed at chick stage
		FA42244 The		
FR08IAA143	FA42240 Hardy	Ultimate Warrior	10/09/2008	Failed at incubation
FR08IAA144	F32133 Pepe le Pheu	F34584 Zeca	10/09/2008	Failed at incubation.
FR08IAA145	FA42255 Mori	FA42288 Shogi	11/09/2008	Abandoned before completion
FR08IAA146	FA72493 Dr No	FA72426 Papaya	12/09/2008	Abandoned after completion.
FR08IAA147	FA72434 Goulash	FA42297 Mio	13/09/2008	Abandoned after completion.
FR08IAA148	FA42277 Aramis	F34545 Milo	16/09/2008	Fledged FA85572, FA85573, FA85574
FR08IAA149	FA72467 Warty Bro	FA42278 Porthos	16/09/2008	Abandoned after completion
FR08IAA150	FA72471 Butsky	FA72406 Saffron	23/09/2008	Failed at incubation.
		FA42280		
FR08IAA151	FA42255 Mori	Brookfield	23/09/2008	Abandoned before completion
FR08IAA152	FA72409 Sushi	FA42294 Momo	23/09/2008	Failed at incubation.
FR08IAA153	F34533 Heliotrope	F34550 Rasta	23/09/2008	Failed at incubation.
		FA42244 The		
FR08IAA154	FA42240 Hardy	Ultimate Warrior	23/09/2008	Failed at incubation.
FR08IAA155	F34526 Jabba	F34522 Peaches	24/09/2008	Failed at incubation.
		FA72417 Hard		
FR08IAA156	FA72481 Kumquat	Boiled	24/09/2008	Failed at incubation.
FR08IAA157	FA72416 Scramble	FA42272 Babylon	24/09/2008	Failed at chick stage.
FR08IAA158	FA42212 Bruno	FA72475 Julian	24/09/2008	Failed at incubation.
		FA42287 Bald		
FR08IAA159	FA42223 Papillion	Eggs	24/09/2008	Failed at incubation.
	FA72492 Shadow			
FR08IAA160	Davis	FA72469 Tingaling	25/09/2008	Abandoned before completion.
	FA42230 General			
FR08IAA161	Switzer	F34520 Beeko	25/09/2008	Failed at incubation.
FR08IAA162	FA72493 Dr No	FA42296 Me	25/09/2008	Abandoned before completion
FR08IAA163	FA72439 Licorice	FA42261 Devil	25/09/2008	Failed at incubation.
FR08IAA164	FA72429 Dinner	FA72470 Bell	24/09/2008	Failed at incubation.
		FA42258		
FR08IAA165	FA42259 Haiku	Pipistrelle	26/09/2008	Abandoned before completion
FR08IAA166	FA72419 Satsuma	FA42275 Crumble	26/09/2008	Failed at incubation.
FR08IAA167	FA42239 Darth Vada	FA42233 Lotte	26/09/2008	Failed at incubation.
FR08IAA168	FA42255 Mori	FA42288 Shogi	26/09/2008	Abandoned after completion.
FR08IAA169	F34505 Holly	F34519 Willow	30/09/2008	Failed at incubation.
FR08IAA170	F34526 Jabba	F34522 Peaches	30/09/2008	Failed at incubation.
		FA72481 Man of		
FR08IAA171	FA85507 Houdini Jr	War	30/09/2008	Failed at incubation.
FR08IAA172	FA72481 Kumquat	FA42222 Neo	30/09/2008	Abandoned before completion.
FR08IAA173	FA42227 Mutley	FA42256 Scorch	01/10/2008	Failed at incubation.
FR08IAA174	FA72439 Licorice	FA42261 Devil	01/10/2008	Failed at incubation.
FR08IAA175	FA72493 Dr No	FA72426 Papaya	01/10/2008	Abandoned after completion.
FR08IAA176	FA72493 Dr No	FA42296 Me	01/10/2008	Abandoned after completion.
		FA42280		
FR08IAA177	FA42255 Mori	Brookfield	01/10/2008	Eggs harvested.
		FA42283		
FR08IAA178	FA72430 Lunch	Diplodocus	02/10/2008	Abandoned before completion.
	FA85505 Marsh	FA42231 Colonel		
FR08IAA179	Mallow	Pinky	03/10/2008	Abandoned after completion.
FR08IAA180	FA72405 Ginger	FA42267 Rummy	03/10/2008	Abandoned before completion.

FR08IAA181	FA42232 Grace	FA42242 Corsair	06/10/2008	Eggs harvested.
FR08IAA182	FA72434 Goulash	FA42238 Animal	08/10/2008	Failed at incubation.
FR08IAA183	FA72481 Kumquat	FA42222 Neo	08/10/2008	Abandoned before completion.
FR08IAA184	FA42223 Papillion	F32122 Babs	09/10/2008	Eggs harvested.
FR08IAA185	F34505 Holly	F34519 Willow	14/10/2008	Eggs harvested.
FR08IAA186	FA72405 Ginger	FA42267 Rummy	15/10/2008	Failed at chick stage.
FR08IAA187	FA72467 Warty Bro	FA42261 Devil	17/10/2008	Abandoned before completion.
FR08IAA188	FA72434 Goulash	FA42297 Mio FA72420	17/10/2008	Failed at incubation.
FR08IAA189	FA72405 Ginger	Raspberry Ripple	17/10/2008	Fledged FA85589, FA85590
FR08IAA190	F34540 Jack	F34531 Greenflash	17/10/2008	Failed at incubation.
FR08IAA191	FA72487 Goldfinger	FA72475 Julian	17/10/2008	Failed at chick incubation
FR08IAA192	F34505 Holly	F34519 Willow FA42287 Bald	17/10/2008	Failed at incubation.
FR08IAA193	FA42223 Papillion	Eggs	17/10/2008	Abandoned after completion.
FR08IAA194	FA72493 Dr No	FA72426 Papaya	17/10/2008	Abandoned after completion.
FR08IAA195	FA72481 Kumquat	FA42222 Neo	17/10/2008	Abandoned before completion.
FR08IAA196	FA72434 Goulash	FA42238 Animal	18/10/2008	Abandoned after completion.
FR08IAA197	F34525 Capoeira	F34523 Freda	21/10/2008	Failed at incubation.
FR08IAA198	FA72439 Licorice	FA42268 Roulette FA72417 Hard	23/10/2008	Failed at incubation.
FR08IAA199	FA72481 Kumquat	Boiled	24/10/2008	Abandoned after completion.
FR08IAA200	FA42239 Darth Vada	FA42233 Lotte FA42258	24/10/2008	Failed at chick stage.
FR08IAA201	FA42259 Haiku	Pipistrelle	24/10/2008	Failed at incubation.
FR08IAA202	FA72434 Goulash FA85503 Celine	FA42297 Mio	24/10/2008	Fledged FA85591, FA85592, FA85593
FR08IAA203	Dion	FA42288 Shogi sus F32119	28/10/2008	Abandoned after completion.
FR08IAA204	FA42216 Lara	Moonshine	28/10/2008	Abandoned before completion.
FR08IAA205	F32133 Pepe le Phew	F34584 Zeca	29/10/2008	Failed at chick stage.
FR08IAA206	FA72409 Sushi	FA42294 Momo	29/10/2008	Eggs harvested.
FR08IAA207	FA42243 Sharkeater	FA42284 Catch	30/10/2008	Failed at incubation.
FR08IAA208	FA42223 Papillion	F32122 Babs	30/10/2008	Eggs harvested for hand-rearing.
FR08IAA209	FA72481 Kumquat	FA42222 Neo	03/11/2008	Failed at incubation.
FR08IAA210	F34505 Holly	F34519 Willow FA72446 Monkey	04/11/2008	Failed at chick stage.
FR08IAA211	FA72401 Halle	Brains	04/11/2008	Failed at incubation.
FR08IAA212	FA72419 Satsuma	FA42275 Crumble FA42236	04/11/2008	Failed at incubation
FR08IAA213	F34540 Jack	Hurricane poss FA72407	05/11/2008	Failed at chick stage.
FR08IAA214	FA42227 Mutley	Cake FA42260 The	05/11/2008	Failed at incubation.
FR08IAA215	FA42214 Reuben	Godfather	06/11/2008	Failed at incubation.
FR08IAA216	FA42277 Aramis FA42230 General	F34545 Milo	06/11/2008	Failed at incubation.
FR08IAA217	Switzer	F34520 Beeko	06/11/2008	Failed at incubation.
FR08IAA218	F34529 Tufty	FA42226 Nobby	06/11/2008	Abandoned after completion.
FR08IAA219	FA72410 Chou Chou	FA42237 Kermit	07/11/2008	Fledged 2
FR08IAA220	FA42227 Mutley	FA42256 Scorch	07/11/2008	Failed at incubation.
FR08IAA221	FA72487 Goldfinger	F34524 Arthur	11/11/2008	Failed at incubation.
FR08IAA222	FA72487 Goldfinger	FA72475 Julian	11/11/2008	Failed at incubation.
FR08IAA223	FA72467 Warty Bro	FA42261 Devil	11/11/2008	Abandoned before completion.
FR08IAA224	FA72409 Sushi	FA42294 Momo	12/11/2008	Abandoned before completion.
FR08IAA225	FA72419 Satsuma	FA72470 Bell	12/11/2008	Abandoned before completion.

FR08IAA226	FA85505 Marsh Mallow	FA42231 Colonel Pinky	13/11/2008	Failed at chick stage.
FR08IAA227	F34540 Jack	FA42272 Babylon	13/11/2008	Chick rescued from nest on the ground.
FR08IAA228	FA72471 Butsky	FA72406 Saffron	14/11/2008	Failed at incubation.
FR08IAA229	F34525 Capoeira	F34523 Freda	14/11/2008	Failed at incubation.
FR08IAA230	F32133 Pepe le Phew	FA72474 Dodo	14/11/2008	Failed at incubation.
FR08IAA231	FA72481 Kumquat	FA42222 Neo FA72417 Hard	15/11/2008	Failed by predation at chick stage.
FR08IAA232	FA72481 Kumquat	Boiled FA42236	17/11/2008	Failed at chick stage.
FR08IAA233	F34540 Jack	Hurricane	20/11/2008	Failed at chick stage.
FR08IAA234	FA72493 Dr No	FA42296 Me	20/11/2008	Abandoned after completion.
FR08IAA235	FA72467 Warty Bro	ID, LG FA42201	20/11/2008	Abandoned after completion.
FR08IAA236	F34535 Jesse FA42230 General	Pentanque	20/11/2008	Failed at incubation.
FR08IAA237	Switzer	F34520 Beeko FA72445 Victoria	20/11/2008	Failed at chick stage.
FR08IAA238	FA72423 MSG	Sponge	21/11/2008	Failed at incubation.
FR08IAA239	FA42243 Sharkeater	FA42284 Catch	21/11/2008	Eggs harvested for hand-rearing.
FR08IAA240	FA42277 Aramis Poss FA72434	F34545 Milo	22/11/2008	Abandoned before completion.
FR08IAA241	Goulash or Aramis	FA72466 Rodger	22/11/2008	Failed at incubation.
FR08IAA242	F34526 Jabba	F34522 Peaches	22/11/2008	Failed at incubation.
FR08IAA243	FA42223 Papillion	F32122 Babs FA42260 The	24/11/2008	Abandoned before completion.
FR08IAA244	FA42214 Reuben	Godfather	26/11/2008	Failed at incubation.
FR08IAA245	FA72409 Sushi FA85503 Celine	FA42294 Momo	26/11/2008	Fledged FA42322, FA42323
FR08IAA246	Dion	FA42288 Shogi	27/11/2008	Abandoned after completion.
FR08IAA247	FA42223 Papillion	F32122 Babs	29/11/2008	Failed at incubation.
FR08IAA248	FA42239 DARTH VADA	FA42233 Lotte	02/12/2008	Failed at incubation.
FR08IAA249	FA72467 Warty Bro	FA42278 Porthos	02/12/2008	Failed at chick stage
FR08IAA250	FA72439 Licorice	FA42268 Roulette FA72420	02/12/2008	Abandoned after completion.
FR08IAA251	FA72405 Ginger	Raspberry Ripple	03/12/2008	Failed at incubation.
FR08IAA252	F32133 Pepe le Phew	FA72474 Dodo	04/12/2008	Failed at incubation.
FR08IAA253	FA72493 Dr No	FA85502 Cabbage FA42244 The	04/12/2008	Failed at incubation.
FR08IAA254	FA42240 Hardy	Ultimate Warrior	05/12/2008	Failed at incubation.
FR08IAA255	FA72487 Goldfinger	FA42272 Babylon poss F32119	05/12/2008	Failed at incubation.
FR08IAA256	FA42216 Lara	Moonshine	05/12/2008	Failed at chick stage.
FR08IAA257	FA42232 Grace	FA42219 Antimi	09/12/2008	FA85594 Failed at chick stage.
FR08IAA258	FA42243 Sharkeater FA85505 Marsh	FA42284 Catch FA42231 Colonel	09/12/2008	Failed at incubation.
FR08IAA259	Mallow	Pinky	10/12/2008	Failed at incubation.
FR08IAA260	FA72405 Ginger	FA42267 Rummy	10/12/2008	Failed at incubation.
FR08IAA261	FA72467 Warty Bro	FA42261 Devil	10/12/2008	Failed at incubation.
FR08IAA262	FA42277 Aramis	F34545 Milo	11/12/2008	Failed at incubation.
FR08IAA263	FA72493 Dr No	FA42296 Me	11/12/2008	Failed at incubation.
FR08IAA264	FA72487 Goldfinger	FA42272 Babylon	11/12/2008	Abandoned before completion.
FR08IAA265	FA72410 Chou Chou FA85503 Celine	FA42237 Kermit	11/12/2008	Failed at chick stage.
FR08IAA266	Dion	FA42288 Shogi FA72446 Monkey	12/12/2008	Failed at incubation.
FR08IAA267	FA72401 Halle	Brains	12/12/2008	Failed at chick stage.

FR08IAA268	FA72419 Satsuma	FA42275 Crumble	12/12/2008	Failed at incubation.
FR08IAA269	FA72493 Dr No	FA42296 Me	15/12/2008	Failed at incubation.
FR08IAA270	FA72487 Goldfinger	F34524 Arthur	18/12/2008	Failed at incubation.
FR08IAA271	FA72481 Kumquat	FA42222 Neo FA72420	20/12/2008	Failed at incubation.
FR08IAA272	FA72405 Ginger	Raspberry Ripple	23/12/2008	Failed at incubation.
FR08IAA273	F34526 Jabba	F34522 Peaches	23/12/2008	Fledged 1 FA42325
FR08IAA274	FA72439 Licorice	FA42268 Roulette	23/12/2008	Abandoned after completion.
FR08IAA275	FA42223 Papillion	F32122 Babs	25/12/2008	Failed at incubation.
FR08IAA276	F34505 Holly FA42230 General	F34519 Willow	27/12/2008	Failed at incubation.
FR08IAA277	Switzer FA85505 Marsh	F34520 Beeko FA42231 Colonel	29/12/2008	Failed at chick stage
FR08IAA278	Mallow	Pinky	29/12/2008	Abandoned after completion
FR08IAA279	FA72434 Goulash	FA42238 Animal	29/12/2008	Failed at incubation.
FR08IAA280	FA72405 Ginger	FA42267 Rummy	29/12/2008	Failed at incubation.
FR08IAA281	FA42227 Mutley	FA42256 Scorch FA42260 The	30/12/2008	Failed at incubation.
FR09IAA01	FA42214 Reuben	Godfather	05/01/2009	Failed at incubation.
FR09IAA02	FA72439 Licorice	FA42268 Roulette	05/01/2009	Predated at chick stage.
FR09IAA03	FA42277 Aramis	F34545 Milo	05/01/2009	Failed at incubation.
FR09IAA04	FA42223 Papillion	FA72428 Weetabix	05/01/2009	Abandoned after completion.
FR09IAA05	F34525 Capoeira	F34523 Freda	06/01/2009	Failed at incubation.
FR09IAA06	FA72434 Goulash	FA42238 Animal	07/01/2009	Abandoned before completion.
FR09IAA07	FA72481 Kumquat	FA42222 Neo	08/01/2009	Failed at chick stage.
FR09IAA08	FA72467 Warty Bro	FA42278 Porthos FA42287 Bald	08/01/2009	Failed at incubation.
FR09IAA09	FA42223 Papillion	Eggs	08/01/2009	Failed at incubation.
FR09IAA10	FA42243 Sharkeater	FA42284 Catch	09/01/2009	Failed at incubation.
FR09IAA11	FA72405 Ginger	FA42267 Rummy FA72446 Monkey	09/01/2009	Failed at chick stage.
FR09IAA12	FA72401 Halle	Brains	09/01/2009	Failed at incubation.
FR09IAA13	F34540 Jack	F34531 Greenflash	09/01/2009	Failed at incubation.
FR09IAA14	FA72410 Chou Chou	FA42237 Kermit	10/01/2009	Failed at chick stage.
FR09IAA15	FA72434 Goulash	FA42238 Animal	13/01/2009	Fledged at least 2
FR09IAA16	FA42227 Mutley	FA42256 Scorch	14/01/2009	Failed at incubation.
FR09IAA17	FA42232 Grace FA42230 General	FA42242 Corsair	14/01/2009	Failed at incubation.
FR09IAA18	Switzer	F34520 Beeko	14/01/2009	Failed at chick stage
FR09IAA19	F34505 Holly	F34519 Willow	16/01/2009	Failed at incubation.
FR09IAA20	F32133 Pepe le Pheuw	F34584 Zeca FA42236	16/01/2009	Failed at incubation.
FR09IAA21	F34540 Jack	Hurricane	20/01/2009	Failed at incubation.
FR09IAA22	F34529 Tufty	FA42226 Nobby	20/01/2009	Abandoned after completion.
FR09IAA23	FA42240 Hardy	FA72494 Frisk FA72417 Hard	20/01/2009	Abandoned before completion.
FR09IAA24	FA72481 Kumquat	Boiled	24/01/2009	Failed at incubation.
FR09IAA25	FA42239 Darth Vada	FA42233 Lotte	29/01/2009	Failed at chick stage

Appendix 2. List of confirmed Mauritius Fody pairs on Ile aux Aigrettes at the end of March 2009. Numbers correspond to Fig. 2.4.

1. FA42277 Aramis X F34545 Milo (F34544, F34545 X F32118, F32122)
2. FA72471 Butsky X FA72406 Saffron (sus FA42239, FA42233 X FA42207, FA42225)
3. F34525 Capoeira X F34523 Freda (F32117, F32123 X F32113, F32119)
4. FA72410 Chou Chou x FA42237 Kermit (FA42232, FA42242 X F34505, F34519)
5. FA85503 Celine Dion X FA42288 Shogi (FA42216, FA42278 X F32118, F32122)
6. FA42239 Darth Vada X FA42233 Lotte (F34505, F34519 X FA42230, F34520)
7. FA72493 Dr. No X FA85502 Cabbage (Unknown X FA42216, FA42278)
8. FA72493 Dr. No X FA42296 Me (Unknown X Alexandra Falls)
9. FA42230 General Switzer X F34520 Beeko (Switzer Pair X F32117, F32123)
10. FA72405 Ginger X FA72420 Raspberry Ripple (FA42207, FA42225 X F34512, F34518)
11. FA72405 Ginger X FA42267 Rummy (FA42207, FA42225 X F34529, FA42226)
12. FA72434 Goulash X FA42238 Animal (FA42230, F34520 X F34505, F34519)
13. FA72434 Goulash X FA42297 Mio (FA42230, F34520 X Alexander Falls Pair)
14. FA72487 Goldfinger X F34524 Arthur (sus FA42255, FA42280 X F32113, F32119)
15. FA72487 Goldfinger X Julian (sus FA42255, FA42280 X FA42216, FA42278)
16. FA42232 Grace X FA42242 Corsair (FA42230, F34520 X FA42230, F34520)
17. FA72453 Grace X FA42219 Antimi (FA42230, F34520 X F32118, F32122)
18. FA42259 Haiku X FA42258 Pipistrelle (FA42230, F34520 X FA42230, F34520)
19. FA72401 Halle X FA72446 Monkey Brains (F34505, F34519 X F34505, F34519)
20. FA42240 Hardy X FA72492 Frisk (F34521, F34542 X FA2207, FA42231)
21. F34505 Holly X F34519 Willow (Stream X Annabel)
22. FA85507 Houdini Jnr. X FA72407 Cake (F32113, F34548 X F34533, F34550)
23. FA85507 Houdini Jnr. X FA72481 Man of War (F32113, F34548 X FA42232, FA42242)
24. F34526 Jabba X F34522 Peaches (F32117, F32123 X F32113, F23119)
25. F34540 Jack X F34531 Greenflash (Sting X F32113, F23119)
26. F34540 Jack X FA42236 Hurricane (Sting X F34512 , F34518)
27. F34535 Jesse X FA42201 Petanque (F32117, F32123 X F32113, F32119)
28. F34521 J-Star X FA72458 Hob Nob (F32117, F32123 X Unknown)
29. FA72481 Kumquat X FA42222 Neo (FA42214, FA42268 X F32118, F32122)
30. FA72481 Kumquat X FA72417 Hard Boiled (FA42214, FA42268 X FA42229, FA42236)
31. FA42216 Lara X F32119 Moonshine (Andy's Creek X Safford)
32. FA72439 Licorice X FA42268 Roulette (F32113, F34548 X F34529, FA42226)
33. FA85505 Marsh Mallow X FA42231 Colonel Pinky (FA42230, F34520 X F34505, F34519)
34. FA85516 McQueen X FA42280 Brookfield (Unknown X Hasslehoff)
35. FA72423 MSG X FA72445 Victoria Sponge (F34513, F34524 X F34505, F34519)
36. FA42227 Mutley X FA42256 Scorch (F34505, F34519 X F34544, F34548)
37. FA42223 Papillon X F32122 Babs (F32118, F32122 X C1 pair)
38. FA42223 Papillon X FA42287 Bald Eggs (F32118, F32122 X F32118, F32122)
FA42223 Papillon X FA72428 Weetabix (F32118, F32122 X X FA42225, FA42280)
39. F32133 Pepe le Phew X F34584 Zeca (C1 pair X F32118, F32122)
40. F32133 Pepe le Phew X FA72474 Dodo (C1 pair X FA42243, FA42284)
41. FA42214 Reuban X FA42260 The Godfather (Andy's Creek pair X FA42230, F34520)
X FA72466 Roger (FA42216, FA42278) *possibly with Aramis or Goulash*
42. FA72419 Satsuma X FA72470 Bell (FA42214, FA42268 X FA42230, F34520)
43. FA72419 Satsuma X FA42275 Crumble (FA42214, FA42268 X F34535, FA42201)
44. FA72419 Satsuma X F34550 Rasta (FA42214, FA42268 X F32121, F32123) *Unconfirmed*
45. FA72492 Shadow Davis X FA72469 Tingaling (Unknown X FA42230, F34520)
46. FA42243 Sharkeater X FA42284 Catch (FA42230, F34520 X Bristol pair)
47. FA72409 Sushi X FA42294 Momo (F34521, F34542 X Alexandra Falls)

48. FA42298 The Guffnor X FA42283 Diplodocus (F34505, F34519 X F34526, F34522)
Unconfirmed
49. FA42298 The Guffnor X FA42246 Shrek (F34505, F34519 X F34505, F34519)
50. F34529 Tufty X FA42226 Nobby (Eastenders X F32113, F32119)
51. FA72468 Warty Bro X FA42261 Devil (FA42230, F34520 X F32121, F32119)
52. FA72468 Warty Bro X FA42278 Porthos (FA42230, F34520 X F34544, F34545)

Appendix 3. Mauritius Fodies present on Ile aux Aigrettes between April 2008 and March 2009, and their current status at the end of March 2008. Empty column on date last seen means still present on IAA.

Name	ID Number	Parents	Date Fledged	Date last seen
General Switzer	FA42230	Switzer pair	28/11/2003	
Holly	F34505	Stream pair	01/12/2003	
Dumbkopf	F34512	C1 pair	30/12/2003	14/05/2008
The Daddy	F34513	C1 pair	30/12/2003	12.07.09
Willow	F34519	Annabel pair	08/09/2004	
Beeko	F34520	F32117 X F32123	15/10/2004	
J-Star	F34521	F32117 X F32123	15/10/2004	
Peaches	F34522	F32113 X F32119	15/10/2004	
Freda	F34523	F32113 X F32119	15/10/2004	
Arthur	F34524	F32113 X F32119	15/10/2004	
Capoeira	F34525	F32117 X F32123	31/10/2004	
Jabba	F34526	F32117 X F32123	31/10/2004	
Tufty	F34529	Eastenders pair	31/10/2004	
Gris Gris	F34530	F32113 X F32119	20/11/2004	04/10/2008
Greenflash	F34531	F32113 X F32119	20/11/2004	
Heliotrope	F34533	D3 pair	20/11/2004	17/11/2008
Jesse	F34535	F32117 X F32123	05/12/2004	
Jack	F34540	Sting pair	05/12/2004	11.02.09
Mike	F34544	Eastenders pair	05/12/2004	04/08/2008
Milo	F34545	F32118 X F32122	18/12/2004	
Zeca	F34548	F32118 X F32122	18/12/2004	
Rasta	F34550	F32121 X F32123	02/01/2005	
Petanque	FA42201	F32113 X F32119	02/01/2005	
Jim	FA42205	F32113 X F32119	02/01/2005	05/07/2008
Munsch	FA42207	Safford pair	16/01/2005	23.09.08
Bruno	FA42212	Monkey pair	28/01/2005	16.10.08
Reuban	FA42214	Andy's Creek pair	28/01/2005	
Sharen	FA42215	Andy's Creek pair	28/01/2005	19/07/2008
Lara	FA42216	Andy's Creek pair	28/01/2005	
Antimi	FA42217	F32118 X F32122	25/02/2005	
Neo	FA42222	F32118 X F32122	03/04/2005	
Papillon	FA42223	F32118 X F32122	03/04/2005	
Nobby	FA42226	F32113 X F32119	03/04/2005	
Cornucopia	F32121	C1 pair	09/06/2005	30.09.08
Pepe Le Phew	F32113	C1 pair	21/07/2005	
Moonshine	F32119	Safford pair	25/09/2005	
Brookfield	FA42280	Hasslehoff pair	20/11/2005	
Diplodocus	FA42283	F34526 X F34522	20/11/2005	
Catch	FA42284	Bristol pair	20/11/2005	
Eileen	FA42285	Predator fence pair	21/12/2005	05/07/2008
Bald Eggs	FA42287	F32118 X F32122	21/12/2005	
Shogi	FA42288	F32118 X F32122	21/12/2005	
Babs	F32122	C1 pair	08/02/2006	

Momo	FA42294	Alexandra Falls pair	08/02/2006	
Me	FA42296	Alexandra Falls pair	08/02/2006	
Mio	FA42297	Alexandra Falls pair	08/02/2006	
Hallé	FA72401	F34505 X F34519	08/03/2006	
Luke	FA42229	F34505 X F34519	10/12/2004	18.12.08
Mutley	FA42227	F34505 X F34519	10/12/2004	
Colonel Pinky	FA42231	F34505 X F34519	03/08/2005	
Mori	FA42255	F34505 X F34519	03/08/2005	
Grace	FA42232	FA42230 X F34520	17/08/2005	
Lotte	FA42233	FA42230 X F34520	17/08/2005	
Hurricane	FA42236	F34512 X F34518	29/08/2005	
Kermit	FA42237	F34505 X F34519	16/09/2005	
Animal	FA42238	F34505 X F34519	16/09/2005	
Darth Vada	FA42239	F34505 X F34519	16/09/2005	
Hardy	FA42240	F34521 X F34542	27/09/2005	
Corsair	FA42242	FA42230 X F34520	28/09/2005	
Sharkeater	FA42243	FA42230 X F34520	28/09/2005	
The Ultimate				
Warrior	FA42244	F34513 X F34524	24/10/2005	05.12.08
Porthos	FA42278	F34544 X F34545	27/10/2005	
Aramis	FA42277	F34544 X F34545	27/10/2005	
Shrek	FA42246	F34505 X F34519	29/10/2005	
Devoushka	FA42247	FA42228 X FA42215	29/10/2005	18/06/2008
St. Blair	FA42249	FA42228 X FA42215	29/10/2005	03.09.08
De La Roche	FA42250	FA42228 X FA42215	29/10/2005	04.06.08
Scorch	FA42256	F34544 X F34548	11/02/2005	
Pipistrelle	FA42258	FA42230 X F34520	11/05/2005	
Haiku	FA42259	FA42230 X F34520	11/05/2005	
The Godfather	FA42260	FA42230 X F34520	11/05/2005	
Devil	FA42261	F32121 X F32119	11/12/2005	
Angel	FA42262	F32121 X F32119	11/12/2005	
Rummy	FA42267	F34529 X FA42226	23/11/2005	
Roulette	FA42268	F34529 X FA42226	23/11/2005	
Psychodidae	FA42254	F34521 X F34542	02/12/2005	18.05.08
Babylon	FA42272	F34535 X FA42201	09/01/2006	11.12.08
Crumble	FA42275	F34535 X FA42201	09/01/2006	
The Guffnor	FA42298	F34505 X F34519	12/01/2006	
Ginger	FA72405	FA42207 X FA42225	08/09/2006	
Saffron	FA72406	FA42207 X FA42225	08/09/2006	
Cake	FA72407	F34533 X F34550	06/09/2006	
Sushi	FA72409	F34521 X F34542	07/09/2006	
Chou Chou	FA72410	FA42232 X FA42242	12/09/2006	
Scramble	FA72416	FA42229 X FA42236	18/09/2006	15/10/2008
Hard Boiled	FA72417	FA42229 X FA42236	18/09/2006	
Raspberry Ripple	FA72420	F34512 X F34518	23/09/2006	
Kumquat	FA72418	FA42214 X FA42268	21/09/2006	
Satsuma	FA72419	FA42214 X FA42268	21/09/2006	
MSG	FA72423	F34513 X F34524	22/09/2006	
Papaya	FA72426	FA42239 X FA42233	23/09/2006	29.12.08
Bad Banana	FA72427	FA42239 X FA42233	23/09/2006	02.09.08
Weetabix	FA72428	FA42225 X FA42280	28/09/2006	
Goulash	FA72434	FA42230 X F34520	04/10/2006	
Poisson Sally	FA72432	FA42230 X F34520	04/10/2006	16.10.08
Roti	FA72433	FA42230 X F34520	04/10/2006	02/09/2008
Dinner	FA72429	FA42247 X FA42215	03/10/2006	25.10.08
Lunch	FA72430	FA42247 X FA42215	03/10/2006	05.11.08
Breakfast	FA72431	FA42247 X FA42215	03/10/2006	

Kladkorker	FA72441	F34535 X FA42201	11/10/2006	31/05/2008
Peg Leg	FA72438	FA42239 X FA42233	19/10/2006	
Licorice	FA72439	F32113 X F34548	11/10/2006	
Lentil	FA72444	F34505 X F34519	16/10/2006	25.11.08
Victoria Sponge	FA72445	F34505 X F34519	16/10/2006	
Monkey Brains	FA72446	F34505 X F34519	16/10/2006	
Apple Pie	FA72443	F34525 X F34523	18/10/2006	01/10/2008
Cracker	FA72449	Unknown	11/10/2006	
Cheese	FA72450	Unknown	11/10/2006	24/04/2008
Grater	FA72453	FA42232 X FA42242	21/11/2006	27.08.08
Hob Nob	FA72458	Unknown	15/12/2006	
		Unknown, suspected		
Butsky	FA72471	FA42239 X FA42233	01/04/2007	
Rodger	FA72466	FA42216 X FA42278	27/06/2007	
		Unknown, suspected		
Natalia	FA72472	FA42239 X FA42233	01/04/2007	29.08.08
Warty Bro	FA72468	FA42230 X F34520	30/06/2007	
Tingaling	FA72469	FA42230 X F34520	30/06/2006	
Bell	FA72470	FA42230 X F34520	30/06/2007	
Skinko	FA72473	FA42243 X FA42284	08/09/2007	18.10.08
Dodo	FA72474	FA42243 X FA42284	08/09/2007	
Julian	FA72475	FA42216 X FA42278	11/09/2007	
Keneth	FA72476	FA42216 X FA42278	12/09/2007	
Man of War	FA72481	FA42232 X FA42242	14/09/2007	
Monster	FA72483	FA42247 X FA42215	17/09/2007	17/01/2008
Apollo	FA72486	FA42205 X FA42222	18/09/2007	
		Unknown, suspected		
Goldfinger	FA72487	FA42255 X FA42280	08/09/2007	
Odd Job	FA72488	Unknown	01/09/2007	
Shadow Davis	FA72492	Unknown	27/09/2007	
Dr. No	FA72493	Unknown	07/10/2007	
Frisk	FA72494	FA42207 X FA42231	26/10/2007	
Sweet Pea	FA72495	FA42207 X FA42231	26/10/2007	
Misty Prospect	FA72496	FA42207 X FA42231	26/10/2007	
Cabbage	FA85502	FA42216 X FA42278	08/11/2007	
Celine Dion	FA85503	FA42216 X FA42278	07/11/2007	
Chicken	FA85504	FA42216 X FA42278	08/11/2007	27.11.08
Marsh Mallow	FA85505	FA42230 X F34520	25/10/2007	
Houdini jnr	FA85507	F32113 X F34548	06/12/2007	
Debbie McGee	FA85506	F32113 X F34548	06/12/2007	
McQueen	FA85516	Unknown	14/12/2007	
Pilkie	FA85509	FA42230 X F34520	11/12/2007	25/06/2008
Mole	FA85521	FA42229 X FA42236	20/12/2007	04.10.08
Cliff	FA85522	F34540 X F34531	07/12/2007	01/02/2008
Bernard	FA85523	Unknown	06/11/2007	
Thomas	FA85524	F34535 X FA42201	15/02/2008	15.07.08
Bundle	FA85525	F34535 X FA42201	15/02/2008	
Norbert	FA85526	F34535 X FA42201	15/02/2008	04/06/2008
Star Wars	FA85527	FA72418 X FA42285	27/02/2008	
Melvin Piterway	FA85528	FA72418 X FA42285	27/02/2008	
None	none	F32121 X FA72420	27/02/2008	26/03/2008
None	none	F32121 X FA72420	27/02/2008	21/03/2008
Jesus	FA85529	FA42298 X FA42246	29/02/2008	
Maverick	FA85530	FA42298 X FA42246	29/02/2008	
McLovin	FA85531	FA42243 X FA42284	11/03/2008	29/06/2008
Mello	FA85537	FA42229 X FA42236	27/03/2008	13/06/2008
Beaux	FA85538	F34533 X F34550	24/03/2008	

Bluey	FA85539	F34533 X F34550	24/03/2008	05/05/2008
Brazil	FA85540	FA42214 X FA42260	08/08/2008	04.10.08
Argentina	FA85541	FA42214 X FA42260	08/08/2008	
India	FA85542	Unknown	01/08/2008	
Sierra	FA85543	Unknown	01/08/2008	26.11.08
Volta	FA85544	Unknown	01/08/2008	
Taiwan	FA85545	Unknown	04/08/2008	
Galapagos	FA85546	Unknown	01/08/2008	06.01.09
Tierra del Fuego	FA85547	Unknown	04/08/2008	
Japan	FA85551	Unknown	12/08/2008	27.08.08
Turkey	FA85550	FA42230 X F34520	29/08/2008	30.09.08
Guyana	FA85552	FA42232 X FA42242	03/09/2008	
Panama	FA85553	FA42232 X FA42242	03/09/2008	
Cosmos	FA85557	Unknown	15/08/2008	
Colombia	FA85558	Unknown	15/08/2008	06.12.08
Mongolia	FA85559	Unknown	16/08/2008	
Georgia	FA85560	Unknown	20/08/2008	
Burma	FA85561	Unknown	20/08/2008	
Bulgaria	FA85554	FA72443 X FA42238	10/09/2008	16.10.08
Tasmania	FA85555	FA72443 X FA42238	10/09/2008	
Korea	FA85556	FA72443 X FA42238	10/09/2008	09.10.08
Algeria	FA85562	Unknown	01/09/2008	
Alaska	FA85563	Unknown	01/09/2008	
Croc	FA85570	Unknown.	06/09/2008	14.11.08
Venice	FA85571	Unknown	15/08/2008	
Compliment	FA85575	Unknown	15/08/2008	
Ecosse	FA85567	F34525 X F34523	29/09/2008	
Constantinopal	FA85568	F34525 X F34523	29/09/2008	
Scrabble	FA85569	F34525 X F34523	29/09/2008	
Kuala Lumpur	FA85576	Unknown, suspected FA42207 X FA42231	10/09/2008	
Timbuktu	FA85577	Unknown, suspected FA42207 X FA42231	10/09/2008	
Frankfurt	FA85578	Unknown, suspected FA42207 X FA42231	10/09/2008	
Corsica	FA85572	FA42277 X F34545	01/10/2008	
Chaussette	FA85573	FA42277 X F34545	01/10/2008	
Gondwana	FA85574	FA42277 X F34545	01/10/2008	
Zanzibar	FA85579	Unknown	30/09/2008	
Snowdonia	FA85580	Unknown	01/10/2008	
Bermuda	FA85581	Unknown	26/09/2008	
Mapuche	FA85582	Unknown	01/10/2008	
Yanamamu	FA85583	Unknown	01/10/2008	
Inuit	FA85584	Unknown	01/10/2008	
Widget	FA85585	Unknown	15/10/2008	
Niton	FA85586	Unknown	15/10/2008	
Nile	FA85587	Unknown	15/10/2008	
Congo	FA85588	Unknown	10/10/2008	
Froth	FA85589	FA72405 X FA72420	22/11/2008	
Frith	FA85590	FA72405 X FA72420	22/11/2008	
Schnitzle	FA42301	FA42232 X FA42242	28/10/2008	
Rasmus	FA42304	F34505 X F34519	11/11/2008	
Cheddar	FA42303	FA42255 X FA42280	03/11/2008	05/02/2009
Flipflop	FA85591	FA72434 X FA42297	08/12/2008	08.12.08
Peabody	FA85592	FA72434 X FA42297	08/12/2008	08.12.08
Brandybutter	FA85593	FA72434 X FA42297	08/12/2008	08.12.08
Spartacus	FA85595	FA42232 X FA42242	28/10/2008	
Rudolph	FA42322	FA72409 X FA42294	28/12/2008	21.01.09

Jingle	FA42323	FA72409 X FA42294	28/12/2008	
Chale	FA42307	FA42223 X F32122	12/11/2008	22/02/2009
Walnut	FA42305	F34505 X F34519	11/11/2008	19.02.09
Brie	FA42302	FA42232 X FA42242	28/10/2008	
Smidgeon	FA42306	F34505 X F34519	11/11/2008	
Fianostra	FA85596	Suspected FA72410 X FA42237	28/11/2008	
Quentin	FA42324	Suspected FA72410 X FA42237	28/11/2008	
Pistachio	FA42309	FA42223 X F32122	29/11/2008	
Skye	FA42310	FA42243 X FA42284	09/12/2008	
Llifon	FA42311	FA42243 X FA42284	09/12/2008	10.02.09
Berenty	FA42308	FA72409 X FA42294	25/11/2008	
Armadillo	FA42312	F34540 X FA42272	09/12/2008	
Gael	FA42325	F34526 X F34522	26/01/09	
St. George	FA42326	FA72434 x FA42238	13/02/09	

Appendix 4. Mauritius Fody nests monitored on mainland Mauritius in the Pigeon Wood area during October 2008 to March 2009 and their outcomes.

Nest Reference	Location	Pair	Date found	Result
FR08PW02	Les Mares	Paddy	07/10/08	Possible monkey predation
FR08PW03	Pigeon Wood	Hardwood	08/10/08	Fledged
FR08PW04	Pigeon Wood	Easywood	15/10/08	Predation-possibly monkey or red whiskered bulbul
FR08PW05	Pigeon Wood	Eastend	17/10/08	Fledged
FR08PW06	Les Mares Chasse	House	24/10/08	Possible monkey predation
FR08PW07	Les Mares Chasse	House	30/10/08	Possible monkey predation
FR08PW08	Les Mares Chasse	House	03/11/08	Possible monkey predation
FR08PW09	Les Mares Chasse	Meadow	04/11/08	Monkey predation
FR08PW10	Chasse	Paddy	12/11/08	Predated at egg stage
FR08PW11	Pigeon Wood Les Mares	Anabel	14/11/08	Fledged three fledglings
FR08PW12	Chasse Les Mares	Meadow	25/11/08	Failed at incubation
FR08PW13	Chasse Les Mares	Troop Trap	25/11/08	Monkey predation
FR08PW14	Chasse	Crypt 2	26/11/08	Abandoned before completion
FR08PW15	Pigeon Wood	Easywood	27/11/08	Abandoned before completion
FR08PW16	Pigeon Wood CMA	Garden, possibly House pair	01/12/08	Abandoned after completion, possibly predated but incubation not seen
FR08PW17	Les Mares Chasse	Meadow	02/12/08	Abandoned before completion
FR08PW18	Les Mares Chasse	Crypt 2	03/12/08	Possible monkey destruction
FR08PW19	Chasse	Junction	03/12/08	Possible monkey destruction
FR08PW20	Pigeon Wood Les Mares	Riverside	04/12/08	Failed at incubation
FR08PW21	Chasse	House	13/12/08	Failed at incubation
FR08PW22	Pigeon Wood	Sarah	17/12/08	Failed at chick stage, possibly due to very heavy rain

FR08PW23	Pigeon Wood	Pic-Nic	17/12/08	Abandoned after completion
FR08PW24	Pigeon Wood	Platform	27/12/08	Abandoned after completion
FR08PW25	Les Mares Chasse	Hitchhiker	28/12/08	Failed at incubation - predated
FR08PW26	Les Mares Chasse	Bounty	29/12/08	Abandoned before completion
FR08PW27	Les Mares Chasse	House	30/12/08	Failed at egg stage
FR09PW01	Les Mares Chasse	Happy New Year	04/01/09	Predated at egg stage
FR09PW02	Chasse	Shamrock	05/01/09	Abandoned before completion
FR09PW03	Pigeon Wood	Easywood	06/01/09	Nest destruction possibly monkeys
FR09PW04	Pigeon Wood	Head Net	08/01/09	Nest not re-located
FR09PW05	Pigeon Wood	Ravenala	14/01/09	Abandoned before completion
FR09PW06	Pigeon Wood Les Mares	WTF	14/01/09	Failed at incubation
FR09PW07	Chasse Pigeon Wood	Kelly Garden, possibly	15/01/09	Nest ripped apart, incubation not seen
FR09PW08	CMA	House pair	16/01/09	Abandoned after completion Possibly failed due to cyclone Gael and associated poor weather
FR09PW09	Pigeon Wood Les Mares	Heather	28/01/09	Parts of nest found on ground, incubation not seen, and unsure if nest complete
FR09PW10	Chasse Les Mares	Cyclone	09/02/09	
FR09PW11	Chasse	Central	18/02/09	Failed at incubation
FR09PW12	Pigeon Wood	Deer Pen	18/02/09	Failed at incubation

Appendix 5. Hand rearing diet including pinky mice fed to chicks at GDEWS 2008-09.

Day	1	2	3	4	5	6	7	8	9
Temp (°C)	37-36	36-35	35-34	34	33	32	31	30	29
Interval (Hrs)	1	1	1	1	1	1 1/2	1 1/2	1 1/2	1 1/2
Times	5.00-21.00	5.00-21.00	5.00-21.00	5.00-21.00	5.00-21.00	5.00-21.00	5.00-21.00	5.30 +6.30-21.00	5.30 +6.30-21.00
Feed									
1	B	B	B	B (vb)	B (vb)				
2	B (p)	B (n)	B (n)						
3	Bcg	BEP (nk)	BEP (nk)	BEP (nk)	EP (nk)	EP (nk)	EP (nk)	EP (nk)	EP (nk)
4	B	B	B	B	B	Bcg	Bcg	Bcg	Bcg
5	B	Bcg	M*	M*	MP	MP	MP	MP	MP
6	Bcg	BEP	BEP	BEP	EP	EP	EP	EP	EP
7	B	B	BCG	B	B	Bcg	Bcg	Bcg	Bcg
8	B	Bcg	M*	M*	MP	MP	MP	MP	MP
9	Bcg	BEP	BEP	BEP	EP	EP	EP	EP	EP
10	B	B	B	B	B	B	B	Bcg	Bcg
11	B	Bcg	Bcg	Bcg	Bcg	Bcg	Bcg	B	B
12	Bcg	BEP	BEP	BEP	EP	EP	EP		
13	B	B	B	B	B	B	B		
14	B	Bcg	Bcg	Bcg	Bcg	Bcg	Bcg		
15	Bcg	BEP	BEP	BEP	EP	EP	EP		

16	B	B	B	B	B	B	B		
17	B	Bcg	Bcg						
18	Bcg	BEP	BEP						
19	B	B	B						
20	B	Bcg	Bcg						
21	Bcg	BEP	BEP						
22	B	B	B						
23	B	Bcg	Bcg						
24	B	B	B						
Day	10	11	12-14	15-27	27..				
Temp (°C)	28	27							
Interval (mins)	1 1/2	1 1/2	1 1/2	2	3				
Times	5.30 +6.30- 21.00	5.30 +6.30- 21.00	5.30 +6.30- 21.00	5.30 +6.30- 21.00	6.00 +7.00- 20.00				
Feed									
1	B (vb)								
2	B (n)								
3	EP (nk)								
4	Bcg	Bcg	Bcg	Bcg	MP				
5	MP	MP	MP	MP	Bcab				
6	EP	EP	EP	EP	EP				
7	Bcg	Bcg	Bcg	Bcg	MP				
8	MP	MP	MP	MP	Bcg				
9	EP	EP	EP	BEP	B				
10	Bcg	Bcg	Bcg	Bcg					
11	B	B	B	B					
12									

KEY: B: Bee

EP: Egg and Papaya

Cg: Cricket gut only

Cab: Cricket abdomens

M: Mouse

M*: Mouse internal organs

n: Nutrobal

vb: Vitamin B

nk: Nekton

p: Avipro

Appendix 6. Hand rearing feeding diet not including pinkie mice fed to chicks at GDEWS 2008-09.

Day	1	2	3	4	5	6	7	8	9
Temp (°C)	37-36	36-35	35-34	34	33	32	31	30	29
Interval (Hrs)	1	1	1	1	1	1 1/12	1 1/2	1 1/2	1 1/2
Times	5.00- 21.00	5.30 +6.30- 21.00	5.30 +6.30- 21.00						
Feed									
1	B	B	B	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)
2	B (p)	B (n)	B (n)						
3	Bcg	BEP (nk)	BEP (nk)						
4	B	B	B.I.M	B.I.M	B.I.M	Bcg	Bcg	Bcg	Bcg
5	B	Bcg	Bcg	Bcg	Bcg	B.I.M	B.I.M	B.I.M	B.I.M
6	Bcg	BEP	BEP						
7	B	B	B.I.M	B.I.M	B.I.M	Bcg	Bcg	Bcg	Bcg
8	B	Bcg	Bcg	Bcg	Bcg	B.I.M	B.I.M	B.I.M	B.I.M
9	Bcg	BEP	BEP						
10	B	B	B.I.M	B.I.M	B.I.M	B.I.M	B.I.M	Bcg	Bcg
11	B	Bcg	Bcg	Bcg	Bcg	Bcg	Bcg	B	B
12	Bcg	BEP	BEP	BEP	BEP	BEP	BEP		
13	B	B	B.I.M	B.I.M	B.I.M	B.I.M	B.I.M		
14	B	Bcg	Bcg	Bcg	Bcg	Bcg	Bcg		
15	Bcg	BEP	BEP	BEP	BEP	BEP	BEP		
16	B	B	B.I.M	B c.f	B c.f	B c.f	B c.f		
17	B	Bcg	Bcg						
18	Bcg	BEP	BEP						
19	B	B	B.I.M						
20	B	Bcg	Bcg						
21	Bcg	BEP	BEP						
22	B	B	B.I.M						
23	B	Bcg	Bcg						
24	B c.f	B c.f	B c.f						

Day	10	11	12-14	15-27	27..
Temp (°C)	28	27	Not regulated		
Interval (mins)	1 1/2	1 1/2	1 1/2	2	3
Times	5.30 +6.30- 21.00	5.30 +6.30- 21.00	5.30 +6.30- 21.00	5.30 +6.30- 21.00	6.00 +7.00- 1800
Feed					
1	B (vb)	B (vb)	B (vb)	B (vb)	B (vb)
2	B (n)	B (n)	B (n)	B (n)	B (n)
3	BEP (nk)	BEP (nk)	BEP (nk)	BEP (nk)	EP (nk)
4	Bcg	Bcg	Bcg	Bcg	MB
5	B.I.M	B.I.M	B.I.M	B.I.M	Bcab
6	BEP	BEP	BEP	BEP	EP
7	Bcg	Bcg	Bcg	Bcg	MB
8	BM	B.I.M	B.I.M	B.I.M	Bcg
9	BEP	BEP	BEP	BEP	B
10	Bcg	Bcg	Bcg	Bcg	
11	B c.f	B c.f	B c.f	B c.f	
12					

KEY:

B: Bee

EP: Egg and Papaya

Cg: Cricket gut only

Cab: Cricket abdomens

M: Mouse

B.I.M: Bees and Insect mix

n: Nutrobal

vb: Vitamin B

nk: Nekton

p: Avipro

c.f: cuttle fish

Appendix 7. Hand rearing feeding regime for FA42312 hand reared at GDEWS 2008/09.

Day	1	2	3	4	5	6	7	8	9
Temp (°C)	37-36	36-35	35-34	34	33	32	31	30	29
Interval (min)	60	60	60	60	1	1 1/2	1 1/2	1 1/2	1 1/2
Times	5.00-21.00	5.00-21.00	5.00-21.00	5.00-21.00	5.00-21.00	5.00-21.00	5.00-21.00	5.30-21.00	5.30-21.00
Feed									
1					Bvb	Bvb	Bvb	Bvb	Bvb
2					B n	B n	B n	B n	B n
3					EP	EP	EP	EP	EP
4					HR	HR	HR	HR	HR
5					B.IM	B.IM	B.IM	B.IM	B.IM
6					EP	EP	EP	EP	EP
7					HR	HR	HR	HR	HR
8					B.IM	B.IM	B.IM	B.IM	B.IM
9					EP	EP	EP	EP	EP
10					HR	HR	HR	HR	HR
11					B.IM	B.IM	B.IM	B.IM	B.IM
12					EP	EP	EP		
13					HR	HR	HR		
14					B.IM	B.IM	B.IM		
15					EP	EP	EP		
16					HR	HR	HR		
17									
18									
19									
20									
21									
22									
23									
24									

Day	10	11-14	15-27	27..
Temp (°C)	28	27	Not regulated	
Interval (mins)	1 1/2	1 1/2	2	3
Times	5.30 +6.30- 21.00	5.30 +6.30- 21.00	5.30 +6.30- 21.00	5.30 +6.30- 21.00
Feed				
1	Bvb	Bvb	Bvb	Bvb
2	B n	B n	B n	B n
3	EP	EP	EP	EP
4	HR	HR	HR	HR
5	B.IM	B.IM	B.IM	B.IM
6	EP	EP	EP	HR
7	HR	HR	HR	
8	B.IM	B.IM	B.IM	
9	EP	EP	EP	
10	HR	HR	HR	
11	B.IM	B.IM	B.IM	
'16'	HR	HR		

KEY:

B: Bee

EP: Egg and Papaya

Cg: Cricket gut only

Cab: Cricket abdomens

M: Mouse

M*: Mouse internal organs

n: Nutrobal

vb: Vitamin B

nk: Nekton

p: Avipro

Appendix 8. Daily weights of eggs artificially incubated at GDEWS during the 2008/09 season

CLUTCH	DATE	EGG 1 Weight (g)	Weight loss (g)	EGG 2 Weight (g)	Weight loss (g)	EGG3 Weight (g)	Weight loss (g)
FR08IAA181	13/10/2009	1.758	n/a	1.750	n/a	1.726	n/a
FR08IAA177	14/10/2009	1.844		1.892			
	15/10/2009	1.830	0.014	1.878	0.014		
	16/10/2009	1.816	0.014	1.868	0.010		
	17/10/2009	1.796	0.020	1.850	0.018		
	18/10/2009	1.776	0.020	1.830	0.020		
	19/10/2009						
FR08IAA185	14/10/2009	1.752		1.776		1.806	
	15/10/2009	1.750	0.002	1.764	0.012	1.788	0.018
	16/10/2009	1.702	0.048	1.716	0.048	1.748	0.040
	17/10/2009	1.690	0.012	1.706	0.010	1.740	0.008
	18/10/2009	1.678	0.012	1.694	0.012	1.730	0.010
	19/10/2009	1.666	0.012	1.684	0.010	1.718	0.012
	20/10/2009	1.654	0.012	1.670	0.014	1.706	0.012
	21/10/2009	1.638	0.016	1.656	0.008	1.694	0.012
	22/10/2009	1.624	0.014	1.648	0.008	1.682	0.012
FR08IAA184	18/10/2009	1.884		1.912		1.876	
	19/10/2009	1.868	0.016	1.898	0.014	1.860	0.016
	20/10/2009	1.856	0.012	1.882	0.016	1.848	0.012
	21/10/2009	1.840	0.016	1.870	0.012	1.838	0.010
	22/10/2009	1.830	0.010	1.860	0.010	1.828	0.010
	23/10/2009	1.820	0.010	1.848	0.012	1.816	0.012
	24/10/2009	1.806	0.014	1.834	0.014	1.806	0.010
	25/10/2009	1.794	0.012	1.820	0.014	1.780	0.26
	26/10/2009	1.776	0.018	1.804	0.016	1.770	0.010
	27/10/2009	1.768	0.008	1.792	0.012	1.756	0.014
	28/10/2009	1.748	0.020				
FR08IAA206	31/10/2009	2.188		2.208			
	01/11/2009	2.174	0.014	2.194	0.014		
	02/11/2009	2.160	0.014	2.180	0.014		
	03/11/2009	2.164	0.014	2.154	0.026		
	04/11/2009	2.130	0.034	2.140	0.014		
FR08IAA208	07/11/2009	1.866		1.976			
	08/11/2009	1.850	0.016	1.960	0.016		
	09/11/2009	1.834	0.016	1.942	0.018		
	10/11/2009	1.820	0.014	1.928	0.014		

	11/11/2009	1.806	0.014	1.912	0.016		
	12/11/2009	1.784	0.022	1.896	0.016		
	13/11/2009	1.766	0.018	1.874	0.022		
FR08IAA239	22/11/2009	1.970		1.652		1.842	
	23/11/2009	1.954	0.016	1.632	0.020	1.824	0.016

Appendix 9. Daily weights recorded for Fody chicks hand reared at GDEWS in 2008/09.

ID Number	Weight of chick recorded each day (grams)														
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15
FA42301	1.4	1.4	1.8	2.6	3.8	5.0	6.2	7.1	9.1	9.5	13.3	13.3	15.8	14.2	14.5
FA42302	1.4	1.5	1.8	2.9	3.6	4.4	5.9	6.4	8.4	10.0	12.7	13.0	14.5	14.5	14.8
FA42303	1.2	1.6	1.9	2.6	3.3	5.3	6.6	9.0	9.9	11.3	13.5	14.9	15.6	16.1	16.6
FA42304	1.2	1.4	2.0	2.4	3.5	4.6	5.4	7.5	9.1	10.2	11.3	11.9	12.3	13.5	-
FA42305	1.3	1.4	1.9	2.4	3.3	4.3	5.4	7.1	8.1	9.6	11.1	11.9	12.8	13.6	-
FA42306	1.4	1.8	2.4	3.4	4.4	5.4	5.9	7.8	8.2	9.2	11.0	11.5	12.3	12.6	
FA42307	1.4	1.6	2.1	3.1	3.8	4.7	5.9	6.7	8.4	10.7	12.0	13.2	13.9	15.1	-
FA42308	1.7	1.7	2.2	3.2	4.3	5.9	6.3	7.9	8.8	9.8	10.1	11.2	12.7	12.5	-
FA42309	1.7	2.3	3.2	4.1	5.0	6.7	8.2	8.7	9.4	11.1	11.9	12.1	12.4	12.5	-
FA42310	1.5	1.7	2.3	3.2	4.8	6.2	6.9	7.7	9.1	10.7	10.6	11.8	12.2	12.9	-
FA42311	1.5	2.0	3.0	4.7	5.9	6.4	7.7	8.8	9.6	10.6	10.8	12.4	12.7	13.0	-
FA42312	-	-	-	-	3.1	3.8	5.9	6.7	7.2	8.0	9.7	10.8	11.9	12.8	13.1
FA85595	1.5	1.4	1.8	2.6	3.8	4.8	6.3	6.9	8.2	10.2	12.3	13.0	16.4	15.3	-
Fledging from nest FR08IAA177	1.4	1.6	1.9	2.5	3.3	5.4	6.5	8.7	10.2	11.4	12.7	12.5	12.0	13.4	-
Fledging from nest FR08IAA239	1.2	1.6	2.7	3.2	4.2	4.9	6.4	7.1	8.2	8.5	10.9	11.5	12.0	12.8	13.2
Chick from nest FR08IAA239	1.3	1.4	1.7	2.2	3.6	4.9	6.7	7.2	8.1	8.3	-	-	-	-	-
Chick from nest FR0IAA184	1.4	1.5	2.2	2.9	-	-	-	-	-	-	-	-	-	-	-