

James Franklin Illingworth in Far North Queensland, 1917-1921: 'useful birds' and an overlooked record of insectivory in the Australasian Figbird, *Sphecotheres vieilloti*

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Abstract

In 1917, James Franklin Illingworth (1870-1949) moved from Hawaii to work as Chief Entomologist for the Queensland Bureau of Sugar Experiment Stations. Stationed until 1921 near Cairns in Far North Queensland, he led research into pests of sugar cane and investigated potential natural controls, including birds. His commitment to protection of 'useful birds' helped position Queensland Government entomology research as part of a first wave of Australian bird conservation. His records included an overlooked, significant early observation of insectivory by the Australasian Figbird (*Sphecotheres vieilloti*), preying on adult Greyback Cane Beetles (*Dermolepida albohirtum*) swarming on native trees near cane fields. This, and other incidental records covering nearly 150 years, suggest that insects may be an important breeding season resource for the largely frugivorous Figbird. Illingworth also recorded flocks of up to 500 Straw-necked Ibis (*Threskiornis spinicollis*) preying on beetle larvae in ploughed cane fields, but ten years later few ibis remained, possibly due to hunting and the clearing of roost trees. He contributed a significant number of Australian insect specimens to collections, primarily to the Bishop Museum, Hawaii.

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Introduction

Economic ornithology was a major theme in agricultural research and practice, and in early efforts for bird conservation, in the United States and Australia in the late 19th and early 20th centuries (Barrow 1998; Hutton & Connors 1999). Entomologists in agricultural companies and government agencies studied crop pests; investigated bird insectivory to identify 'useful birds' which should be protected; and promoted bird conservation (Hall 1907; Le Souëf 1920; Whelan *et al.* 2015). Queensland enacted a *Native Birds Protection Act* in 1877, which by 1894 covered "all insectivorous birds", and local governments and landowners could declare

'sanctuaries' where hunting was prohibited (Munro & Cowie 1894; Chisholm 1918). In 1905 the government introduced 'nature study' into Queensland primary schools (Logan & Clarke 1984) and promoted the Gould League of Bird Lovers, including in the Cairns region (Chisholm 1918). At the annual Brisbane Exhibition ('The Ekka'), State Entomologist Henry Tryon displayed mounted birds with trays of dried insects from stomachs, to show thousands of rural visitors the beauty and benefits of 'useful birds' needing protection (Anon 1905,1918a; Tryon 1906). Background water-colours illustrated habitats, and the birds and their

insect prey were listed in the *Queensland Agricultural Journal* (Jervis 1929).

By 1900, sugar cane was already an important crop for the economy of Queensland and the Cairns region (Bottoms 2016) and the state government established the Bureau of Sugar Experiment Stations (BSES) to develop new varieties and cultivation techniques (Queensland Government 1950).

Cane growers increasingly suffered serious crop and economic losses caused by 'cane grubs' (Griggs 2005). These are the larvae of a number of species of native beetle (Coleoptera: Scarabaeidae), which in undisturbed habitats chew the roots of plants such as Blady Grass (*Imperata cylindrica*) (Goebel *et al.* 2010). Adults of the most significant cane pest, the Greyback Cane Beetle (*Dermolepida albohirtum*: Fig. 1), emerge after rainfall in October-February. Over several months they feed in large numbers on the leaves of trees ('feeding-trees') near the cane fields, mate, and fly to the ground to lay eggs in the soil adjoining cane stools (Illingworth 1921a; Goebel *et al.* 2010). Tryon was urged by the sugar industry to address the grub problem (Griggs 2005); he presented a report on 'natural controls', including birds (Tryon 1911). BSES set up an Entomology Branch and began a series of Bulletins reporting field trials and pest control results (Griggs 2005).



Figure 1. Greyback Cane Beetle (*Dermolepida albohirtum*), Mission Beach.

Source: Hobern (2011: licence in References).

In 1917, BSES recruited American entomologist James Franklin Illingworth (1870-1949: Fig. 2), Professor of Entomology in Hawaii, as Chief Entomologist (United States Government 1917; Anon 1917). Aged 47, with experience in crop pest research and management in the mainland United States and Hawaii, Illingworth had collected many insects and some bird specimens for museums and was a keen birdwatcher (Illingworth 1897,1901; ECS unpublished data). In this paper I review Illingworth's background and his contributions to natural history in Queensland, including a significant, previously overlooked record of insectivory in the Australasian Figbird (*Sphecotheres vieilloti*: 'Figbird'). I also consider how the work of BSES entomologists contributed to a 'first wave' of Australian bird conservation (Hutton & Connors 1999).



Figure 2. James Franklin Illingworth (1870-1949), ~1924 (?). Chief Entomologist, Bureau of Sugar Experiment Stations, 1917-1921.

Source: US Department of Agriculture (Mitchell 1966).

Methods

The study area (Fig. 3) is on the coastal plains near Cairns (16°55'S, 145°45'E) in the Wet Tropics bioregion of Far North Queensland ('FNOQ': defined as Queensland north of Cardwell, ~100 km south of Innisfail). Pre-clearing habitat data (Regional Ecosystems, REs) for the BSES Meringa Sugar Experiment Station ('Meringa SES') are from the Queensland Government (2019). Locations of Illingworth's reports of bird insectivory and insect specimens were mapped in QGIS 3.16.6.

Details of Illingworth's career including studies, publications and work were sourced from agriculture and entomology publications, archives including newspapers, and club and association reports. Specimen records were sought from the Atlas of Living Australia (ALA), Smithsonian

National Museum of Natural History (NMNH) and Global Biodiversity Information Facility (GBIF). Family and travel details were obtained using Ancestry (2010). For all searches the spelling 'Illingsworth' was included, due to errors in some sources. As noted by others (e.g. Griggs 2005; Elliott 2011), BSES staff – in their efforts to reach as many interested people as possible – regularly republished work reports, or extracts, in many avenues: BSES Bulletins, sugar industry magazines, entomology journals and newspapers. I checked all available publications for accounts of bird insectivory.

The role of insectivory in the diet of the largely frugivorous Figbird is unknown (Higgins *et al.* 2006). Literature and social media were searched for reports of its insectivory; to avoid duplication,

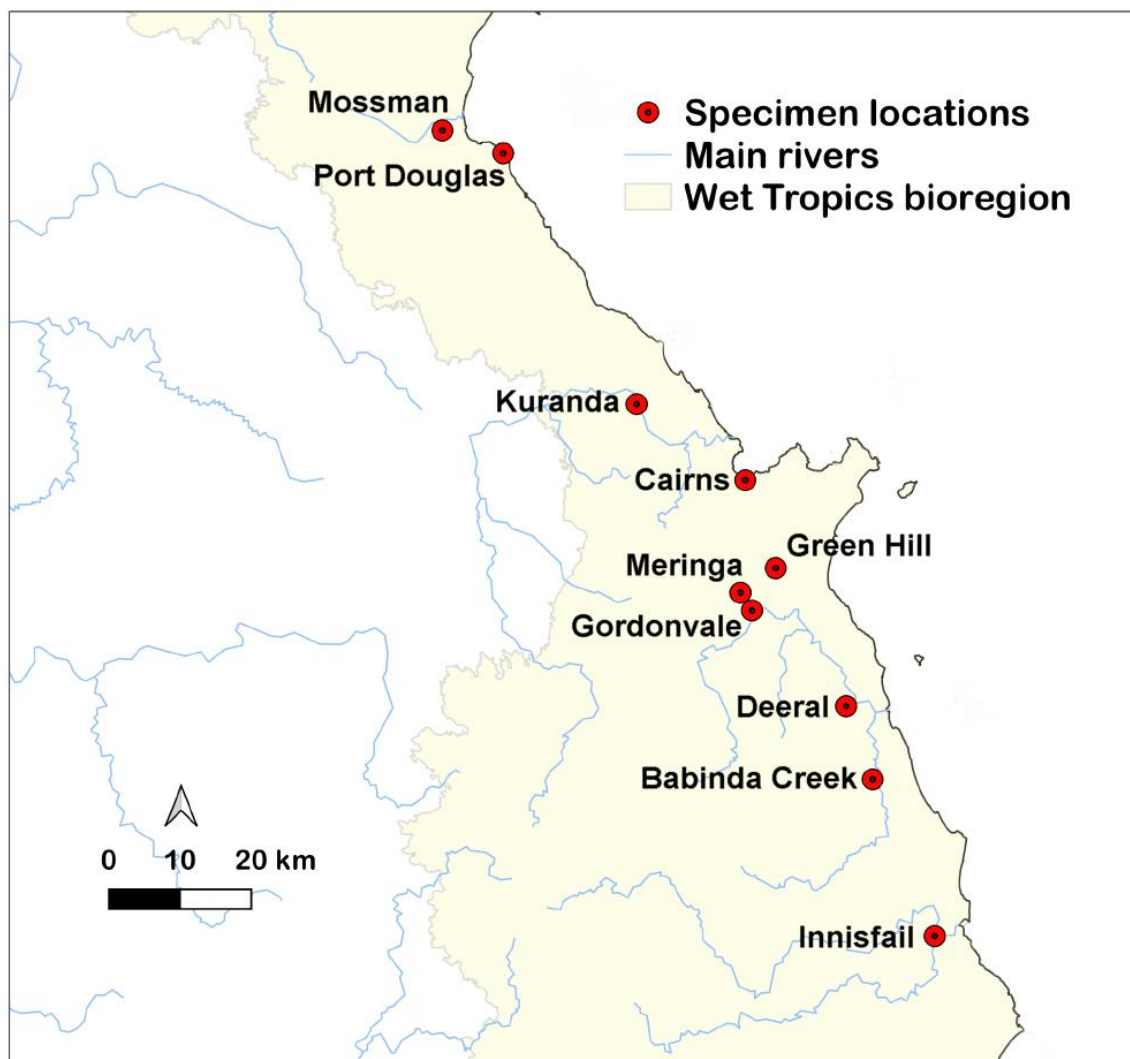


Figure 3. Locations where James F. Illingworth collected insect specimens near Cairns (16°55'S, 145°45'E), Far North Queensland, 1917-1921.

Bird insectivory was recorded at Green Hill and the Mulgrave Sugar Mill, Gordonvale.

field guides and similar general texts were excluded. For other bird species Illingworth had recorded as preying on cane beetles, I reviewed accounts in *The Food of Australian Birds* (Barker & Vestjens 1979,1989) and *Handbook of Australian, New Zealand and Antarctic Birds* (HANZAB: Marchant & Higgins 1990,1993; Higgins 1999; Higgins *et al.* 2001,2006). Bird scientific and common names are from BirdLife Australia (2019) and for an American species, from Martin (2020). There are two Figbird sub-species in eastern Australia. The northern sub-species (Yellow Figbird, *S. v. flaviventris*) is present in the Cairns region and was previously known as Yellow-bellied Figbird (Checklist Committee 1913), from the brilliant yellow belly of the male. I use the term 'Figbird' throughout, but apply the sub-species name for Illingworth's record, as it is relevant to the way he reported his observations (see below). Bird species' distributions were obtained from eBird (2020). Quotations are verbatim, except where ellipses indicate omitted text; square brackets indicate my additions.

Results

James F. Illingworth, background

Illingworth was born in Illinois in 1870. Moving with his parents to California, he worked on the family fruit farm before studying biology at Pomona College in his late 20s. Entomology was a common academic career path for American farmers' children (Palladino 1996; Ancestry 2010) and Illingworth's studies and early career coincided with a rapid flourishing of economic ornithology in the USA, which followed broadscale agricultural expansion in the 19th century (Barrow 1998; Whelan *et al.* 2015). He joined the Cooper Ornithological Club in 1896 (Anon 1914) and spoke to community meetings on "our bird friends" (Anon 1897). In 1899 he advised Californian farmers that a granivore/ insectivore, Brewer's Blackbird (*Euphagus cyanocephalus*) (Martin 2020), was a "beneficial species that should be protected"; his view was supported by some pioneers of economic ornithology, but not others (Knight 1902, p. 117). In 1901 he graduated with an MA in zoology from Stanford University, where he was a classmate of biologist Joseph Grinnell (Stanford University 1910).

Illingworth taught high school biology in Seattle for several years before commencing a PhD study at

Cornell University on the biology and control of an apple maggot (Illingworth 1912). He was a founding member and later President of Washington State Audubon Society, and was "much interested in the conservation of wildlife" (Anon 1907; Bryan 1950); he also joined the American Ornithologists Union (Sage 1917). He collected almost two bushels (~70 L) of pellets below a long-term Barn Owl (*Tyto alba*) nest, largely comprising entire rat skulls: "I took the exhibit to a farmers' club, where it stirred up great enthusiasm for the protection of the owls" (Illingworth 1918-1919). On completing his PhD in 1912 he was appointed Professor of Entomology at the College (later University) of Hawaii and in 1913, was commissioned to study cane pest control in Fiji, and bred and introduced Tachinid flies parasitic on a cane borer (Anon 1913; Bryan 1950). Illingworth was a committed naturalist, recording birds while teaching summer school zoology in 1904-1907 at the Puget Sound Biological Station (Miller *et al.* 1935), and in Hawaii he explored the mountains for insects on weekends (Alexander 1919).

Work area and environment in Far North Queensland

Illingworth was invited to apply as Chief Entomologist for BSES by A. J. Gibson, supported by the Queensland Under Secretary for Agriculture E. G. Scriven (United States Government 1917; Appendix 1). Gibson was a chemist with post-doctoral research experience, who had moved from his role as General Superintendent of BSES to manage the Queensland Government sugar mills (Walker 2018). The government was presumably keen to raise the scientific level of the Bureau's entomological work, but in close cooperation with growers in the field, which was the strength of Illingworth's experience in the USA and Fiji. Assistant Entomologist Edmund Jarvis had conducted experiments and published advisory bulletins but was untrained (McCarthy 2004); Illingworth's predecessor, controversial expert A. A. Girault, was dedicated to the taxonomy of insects rather than control of their impact as cane pests (Griggs 2005,2011 p. 523). In 1917 the main control method was still the arduous collection of thousands of beetles and grubs by hand (Griggs 2011 p. 522).

One of Illingworth's first tasks on arriving in Australia, with the help of his assistant E. Jarvis,

was to set up the Meringa SES in new, purpose-built quarters near Gordonvale (Anon 1917; Heritage Alliance 2011; Fig. 4). The facility included a laboratory and an insectary for breeding pest insects and potential control species. Original habitats (Regional Ecosystems, REs) on the 63 ha Meringa SES site comprised *Eucalypt/Melaleuca* woodland with *Acacia* and vine forest understorey (RE 7.3.12b); dense *Eucalypt/Melaleuca* forest with dense secondary tree layer (RE 7.3.45f, now practically extinct); and mesophyll vine forest, RE 7.3.10a (Queensland Government 2019). These remnants were progressively cleared. There were experimental fields (Griggs 2005) and in the Station grounds BSES staff raised fowls which they fed on beetles shaken down from feeding-trees or collected at lights (Illingworth 1917-1918). In October 1918, BSES Superintendent H. T. Easterby (1918) reported:

At Cairns the Entomological Laboratory and quarters were visited...great improvements had been made in the station grounds,

which now presented a neat and attractive appearance in place of the struggling forest hitherto visible.

The BSES advised cane farmers to remove beetle feeding-trees. Some growers near Gordonvale had “cut down all the native fig trees, on account of the harbour they afforded the beetles” (Tryon 1911). Illingworth pioneered mapping of grub damage in relation to swarms of beetles on feeding-trees and estimated the distance beetles might fly to lay eggs (Goebel *et al.* 2010). He concluded: “It would appear to be a profitable procedure to have [feeding-trees] cut out within a circumference of a mile of such fields” (Illingworth 1917-1918, p. 13). However so many species were identified as feeding-trees (Dodd 1921) that this implied large-scale clearing (Griggs 2007). Illingworth may have partly reconsidered this advice, as he later recommended less clearing (to half a mile) and quoted countervailing reports by growers who retained trees, but suffered limited or no grub issues (Illingworth 1918-1919,1919a).



Figure 4. Meringa Sugar Experiment Station ~1935: “a neat and attractive appearance”. Completed in 1917. Entomologist’s residence on left, first occupied by Illingworth and his family. Source: Agriculture and Stock Department. Queensland State Archives, Digital Image ID 1331.

Communities south of Cairns were well-connected by telegraph, the postal service and *The Cairns Post* newspaper (Monday-Saturday) delivered by train (Toohey 1991; Heritage Alliance 2011; Bottoms 2016). However there was no rail link from the state capital, Brisbane; supplies were shipped north to Cairns, and a shipping strike in mid-1919 seriously delayed equipment for field trials (Illingworth 1919-1920). To visit farms BSES staff used a horse and trap (a light carriage, usually two-wheeled) on dirt roads (Illingworth 1917; Bottoms 2016, p. 301), which was especially difficult in the wet season, November-March, when beetles were emerging. There was no road north from Cairns. To visit Mossman, BSES staff took a train to Cairns, the weekly steamer to Port Douglas, and a train to Mossman (Anon 1918b; Douglas Shire Historical Society Inc. 2021). In March 1918, Innisfail, Babinda, and surrounding cane crops suffered destruction from a severe tropical cyclone (O'Donoghue 2006). At Meringa SES, pots and breeding cages in the insectary were upset and at nearby Gordonvale, "magnificent [fig] trees, the admiration of the district" in the sugar mill grounds, were uprooted (Anon 1918c,d). Some trees remained, where Illingworth recorded bird insectivory of cane beetles.

The BSES and 'useful birds'

The Cairns regional press featured 'good news' stories about birds preying on cane beetles (e.g. Anon 1908) and reported a resolution by the Australian Sugar Producers' Association calling for local governments to regulate to protect insectivorous birds, as had (reportedly) already been done in the Mourilyan district near Innisfail (Anon 1909). Since insectivorous birds were already protected by legislation, the resolution presumably referred to declaration of sanctuaries. One sugar farmer told Tryon (1911) that "the wild birds are nearly all gone", and C. E. Jodrell – a major grower from Innisfail – urged others to encourage the introduced Common Myna (*Acridotheres tristis*), "the best bird for grub destruction", which "had multiplied from six pairs to thousands" since its introduction in the 1880s (Tryon 1911; Chisholm 1919). From 1917, Illingworth built on earlier suggestions by Tryon (1911) and brought a new focus to BSES investigations of natural predators of pest beetles, including birds, and their potential economic importance. He did not mount a full-scale

economic ornithology study, which would involve collecting bird specimens, identifying stomach contents and interpreting the results for pest control objectives – a time-consuming and complex task (Kalmbach 1934). Instead he compiled reports from past literature, visited farms and sought comments from farmers on their experiences, and actively observed birds. He also organised assistants to quantify grub predation by birds in cane fields (e.g. Illingworth 1921b, p. 11). Almost 200 articles appeared in *The Cairns Post* and other media from 1917-1921, reporting Entomology Branch ideas and results to farmers and the public: over 60 reports mentioned natural controls such as other insects or birds.

Observations of bird insectivory

Bird species recorded by Illingworth as preying on cane beetle larvae and adults are shown in Table 1, records of insectivory by Figbirds 1870-2019 are in Appendix 2, and an image of a Figbird foraging on insect prey is shown in Fig. 5. The Table excludes bird species Illingworth surmised might take cane beetle prey, and second-hand reports from others. Illingworth checked (unspecified) 'Australian literature' to identify the bird species present in his work zone (Illingworth 1918-1919); he used scientific names published by the Royal Australasian Ornithologists Union (RAOU: Checklist Committee 1913), although he was apparently not a member (Anon 1918e). He used a range of common names, some from the RAOU (Checklist Committee 1913) and others from local vernacular: e.g. 'yellow-bellied figbird' (RAOU, but in lower case) versus 'yellow belly' (local) for Figbird.

The identity of two bird species is uncertain. Both the Laughing (*Dacelo novaeguineae*) and Blue-winged (*D. leachii*) Kookaburras occur near Gordonvale (eBird 2020). Ironically, while Illingworth was studying bird predators of cane pests, a kookaburra – perceived to be threatening chicks of domestic fowls in the grounds of Meringa SES – was (illegally) shot: on dissection, the stomach was "packed full of greyback beetles and nothing else" (Illingworth 1921b, p. 13). Illingworth reported it as 'Laughing Jackass, *Dacelo leachii*', combining the (then) common name for Laughing Kookaburra with the scientific name for Blue-winged (Checklist Committee 1913). Pied Butcherbird (*Cracticus nigrogularis*) is common near Gordonvale and Black Butcherbird (*Melloria*

Table 1. Bird species and cane beetle prey observed by J. F. Illingworth in Far North Queensland, 1917-1921. Bird names and order from BirdLife (2019). GB=Greyback Cane Beetle (*Dermolepida albohirtum*); FR=French's Cane Beetle (*Lepidiotia frenchi*); RO=Rothe's Cane Beetle (*L. rothei*).

Common name	Scientific name	Foraging substrate and insect stage
Straw-necked Ibis	<i>Threskiornis spinicollis</i>	GB ^{1,2} : Up to 500 ibis taking larvae behind plough; adult parts dropped on ground below trees FR ² : adults, from ground & ground vegetation
Australian White Ibis	<i>Threskiornis moluccus</i>	GB ² : as for Straw-necked Ibis, but few birds
Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>	Adult GB ³ in trees
Helmeted Friarbird	<i>Philemon buceroides</i>	" ²
Yellow Figbird	<i>Sphecotheres vieilloti flaviventris</i>	" ²
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	" ²
Spangled Drongo	<i>Dicrurus bracteatus</i>	" ²
Magpie-lark	<i>Grallina cyanoleuca</i>	GB ^{2,3} : adults in trees; adult parts dropped on ground; larvae behind plough
Common Myna	<i>Acridotheres tristis</i>	GB as for Magpie-lark; RO ⁴ adults on ground
<i>Bird species uncertain</i>		
[Laughing?] Kookaburra	<i>Dacelo</i> sp.	GB ² : adults, found in stomach; also follow plough to take grubs [beetle species not stated]
[Pied?] Butcherbird	<i>Cracticus</i> sp.	Adult GB ³ in trees

¹Illingworth 1920-1921; ²Illingworth 1921b; ³Illingworth 1918-1919; ⁴Illingworth 1921c

quoyi) occurs there in rainforest patches (eBird 2020), but it is unclear which species Illingworth (1918-1919) designated as 'Butcher Bird'. The same report included a 'Blackbird', which appears anomalous, but he later replaced it (e.g. Illingworth 1921b, p. 13) with Spangled Drongo (*Dicrurus bracteatus*).

During Illingworth's surveys of feeding-trees he repeatedly observed large numbers of birds, including Figbirds, preying on adult Greyback Cane Beetles in the early morning. He reported using binoculars to identify birds at the Mulgrave Sugar Mill, Gordonvale:

Both the pewees [Magpie-lark] and the mynas are...mortal enemies of the adult cane-beetles...I have always found these, usually associated with the yellow-bellied fig-bird (*Sphecotheres flaviventris*), the leatherhead (*Tropidorhynchus buceroides*) [Helmeted Friarbird], the blue jay (*Graucalus melanops*) [Black-faced Cuckoo-shrike] and the drongo (*Chibia bracteata*), early in the morning in the beetle feeding-trees. Most of these birds are so shy that it is difficult to

observe them closely. By approaching cautiously, however, I was able to watch them with my 6X binoculars. The pewees and fig-birds were usually greatly in the majority. The beetles clinging to the leaves were seized by the birds, which took them systematically and beat them to pieces on the larger limbs. During this feeding, of course many beetles, or parts of beetles, fell to the ground, and it was not unusual to see the pewees dash down after the lost specimens (Illingworth 1921b).

As noted above, even the fruit-eating birds take kindly to the beetles during this, their nesting season [January], a fact which agrees with my experience in America (Illingworth 1918-1919).

Whittell (1954) listed Illingworth's insectivory articles but they have since been overlooked (Barker & Vestjens 1979,1989) or cited anonymously. Higgins *et al.* (2006) overlooked Illingworth's record of Figbird insectivory. They listed Greyback Cane Beetle as prey of the Satin Bowerbird (*Ptilonorhynchus violaceus*) but cited an



Figure 5. Australasian Figbird (*Sphecotheres vieilloti*) with alate queen Green Tree Ant (*Oecophylla smaragdina*), Mossman FNQ, February 2019. Courtesy John D. A. Grant. (Male Figbird, a hybrid phenotype between the northern and southern sub-species: Higgins *et al.* 2006).

anonymous *Emu* reprint (Anon 1919), taken from Illingworth (1918-1919, p. 27; or 1919b). Oddly, Higgins (1999, p. 1126) cited the same *Emu* reprint for Laughing Kookaburra in relation to movements, not diet; however Illingworth made no statement about movements. Higgins *et al.* (2006) noted ‘cane beetles’ as prey of the Magpie-lark (*Grallina cyanoleuca*) citing Cameron (1933), but Cameron’s note is a third-hand report including some of Illingworth’s original findings.

Insect specimens

Illingworth correctly referred to “the vast amount of material collected by me...in Australia during four years’ residence in Queensland” (Gregory 1923a, p 9). On his return to Honolulu he deposited ~20,000 Australian insect specimens in the Bishop Museum, 6,000 collected by him personally and the rest compiled with assistance from Australian entomologists (Gregory 1923b, pp. 180, 198). The Bishop Museum and the

Hawaiian Entomological Society held special meetings and exhibitions to view this “large and extremely interesting collection of Australian insects” (Anon 1921). He also sent north Queensland insects to Australian museums and in 1920, donated ~900 to the NMNH (Smithsonian: Ravenel 1920, pp. 75,165,188). However <250 of all these specimens were returned by online searches (ALA 2020; GBIF 2021; NMNH 2021). Illingworth’s insect collections were soon recognised as valuable for Australian entomology: “The rich north-eastern Queensland region is far better represented than ever before in the collections studied, this largely due to the collections [of cockroaches] there made by Illingworth and Mjöberg” (Hebard 1943, p. 38). Illingworth was particularly interested in crane flies (Diptera: Tipulidae) and his friend, specialist taxonomist C. P. Alexander (1921), described some of the species and quoted Illingworth’s experiences catching insects along Babinda Creek, a hazardous stream with large boulders (Carmody 2010):

Sweeping [with a net] along streams is almost out of the question here in the tropics, where every bush is provided with recurved hooks to hold one up. I have torn a number of nets full of holes trying to do it and seldom make a catch. Most of the specimens I found either singly on the vegetation, in the scrub [rainforest], or in caverns under the large rocks along the streams.

Discussion

Insectivory records and Figbird diet

Illingworth was the first to systematically identify bird species preying on pests of sugar cane in Australia. In relation to Figbirds, his observations were significant: he published the first report of flocks preying on insects, of foraging method, of specific insect prey, of large numbers of insects taken, and of other bird insectivores present. However it is not clear if this was the first field record of Figbird insectivory *per se*. Lord (1956) recorded birds near his southern Queensland farm from 1902-1952, but did not give dates for the statement that nesting Figbirds feed insects to young. Lord’s wording suggests that this was a regular event; he collected a few eggs (Mason & Pfitzner 2020) and was a keen and observant birdwatcher (L. Nielsen personal communication),

so was alert to nesting behaviour. It is not surprising that HANZAB overlooked Illingworth's novel record of Figbird insectivory; the *Emu* reprint (Anon 1919) contained local common names, and 'yellow belly' is meaningless without the scientific name. His other contributions were presumably overlooked due to the promiscuous republication of BSES technical notes in other media. With increasing digitisation of historical archives, reviews including the forthcoming revision of HANZAB will be able to track back from reprints in early *Emus* to original sources.

Figbird insectivory has been recorded for almost 150 years, mostly in the breeding season, in individuals, pairs and flocks, on a range of prey, and with a number of foraging techniques (Higgins *et al.* 2006; Appendix 2). To understand how a species engages in, and benefits from, switching diet between fruits and insects goes beyond prey availability: it requires an understanding of its digestive biology and nutritional ecology (Levey & Martínez Del Río 2001), which have not been studied in Figbirds. However, although Figbirds may prey opportunistically on abundant insects, it is notable that their insect prey includes multiple species which emerge in large numbers in response to rainfall in the Figbird breeding season. The consistency of these records and the details presented by Gosper (1996) and Noske (1997) suggest insects are an important resource for breeding Figbirds. Crome (1978) observed them gleaning for insects for only 7% of observations across all seasons, but his study was in rainforest; Figbirds frequent edges, regrowth, fragments and gardens (Higgins *et al.* 2006) where swarming insects may be more readily encountered, and insectivory observed. Taking a longer-term view of its insectivory may contribute to an understanding of the enigmatic naming of the Figbird as *Sphecotheses*, 'wasp hunter' (Vieillot 1816; Johnson 1993; Higgins *et al.* 2006).

Bird conservation and the sugar industry

Le Souëf (1920) expected the RAOU to lead protection of birds in agriculture: "The duty of the members of the Union is to lead in the matter of economic ornithology, as among them are to be found the most experienced and observant ornithologists". However at this time there were only three RAOU members in FNQ: BSES Assistant Entomologist A. P. Dodd, who was overseas on war

service, his father, naturalist F. P. Dodd, at Kuranda, and E. J. Banfield on Dunk Island (Anon 1916,1918e,1926). Illingworth's professional goal was utilitarian, to reduce the cost and labour of pest control, but he expressed personal interest in birds and felt all species were beneficial until proved otherwise: "...it is difficult to say what birds are not our friends, until accounts are footed up" (Illingworth 1921b, p. 10). However despite official protection, persecution was reducing the numbers of even the most useful birds. Edmund Jarvis succeeded Illingworth as Chief Entomologist at Meringa SES and described the "indiscriminate hunting" of many species as a "crime against humanity" (Jarvis 1930). Illingworth had counted "fully 500" Straw-necked Ibis feeding on grubs (Illingworth 1920-21), but Jarvis reported that only one or two remained:

Incredible as it may seem, one occasionally hears reports of the shooting of ibises and other grub-eating birds for food by some of our canegrowers. Such foolish slaughter, if continued, must eventually lead to these feathered friends avoiding...cane fields (Jarvis 1930).

Drought and recession in the late 1920s and 1930s (Costar 1981; Bottoms 2016) could have affected ibis numbers, including through increased hunting for food. However the North Queensland Naturalists Club considered that indiscriminate hunting was widespread near Cairns: they reported that despite protection measures, bird numbers increased only after 1940, when severe WW2 restrictions limited civilian firearms, ammunition and travel (Flecker 1943; Bottoms 2016). Further, clearing of beetle feeding-trees such as *Corymbia tessellaris* (Dodd 1921) could have removed essential habitat for ibis, which roost as groups in large, adjacent trees – especially eucalypts (McKilligan 1979) – which (as above) were key species in pre-clearing ecosystems at Meringa. Politicians continued to extol the virtues of 'useful' birds (Anon 1935), but as economic ornithology research progressed it became clear that however bird diets were measured, the impact of birds on insect populations was hard to assess and even harder to manage (Kalmbach 1934; Whelan *et al.* 2015). In Queensland, assistance from birds had probably always been a side issue for cane grub control; most BSES grub research focused on other insects and pathogens (Jarvis 1933), together with

cultivation methods and chemical controls (Griggs 2005).

Afterword

After returning to Hawaii, Illingworth worked in museum entomology research and in the field with sugar and pineapple growers. He was an active member of entomological and growers' associations, cultivated insects in the laboratory to document their life history, and wrote many notes on agricultural entomology. He retired to California during WW2. He was a member of the Cooper Ornithological Club for 50 years, but except for some notes on avian parasites in Hawaii, the Queensland BSES reports seem to be his last writings on birds. Entomologists continue to include Illingworth's Australian specimens in taxonomic reviews (e.g. Elliott 2011), however the locality data (for the relatively few specimens databased) is very general. It seems he confined more precise location details and vivid descriptions of habitat and the collecting process to correspondence with taxonomists such as C. P. Alexander (e.g. 1919,1921). A study of documents held in the Bishop Museum, the Smithsonian Archives (2022) and other collections could reveal interesting information about insect specimens, habitats and ecology in the coastal Wet Tropics from 1917 to 1921.

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References

- Alexander CP. 1919. Notes on the crane-flies of the Hawaiian Islands (Tipulidae, Diptera). *Annals of the Entomological society of America* 12: 25-30.
- Alexander CP. 1921. New species of crane-flies from north Queensland (Tipulidae, Diptera). *Canadian Entomologist* 53: 205-211.
- Ancestry. 2010. <https://www.ancestry.com.au>, viewed 16 June 2010 and following.
- Anon. 1897. The ranch and its products: notes. *Los Angeles Herald*, Thursday 24 June 1897: 8. <https://chroniclingamerica.loc.gov/>, viewed 12 January 2022.
- Anon. 1905. Insectivorous birds. *The Queenslander*, Saturday 19 August 1905: 23. <http://nla.gov.au/nla.news-article20796875>, downloaded 10 May 2010.
- Anon. 1907. Editorial comment. *The Mountaineer* June 1907 1(2): 53.
- Anon. 1908. The cane grub pest. A suggested remedy. *Cairns Morning Post*, Tuesday 25 August 1908: 2. <http://nla.gov.au/nla.news-article39411557>, downloaded 19 June 2020.
- Anon. 1909. Sugar Producers' Association. Important resolutions. *Cairns Morning Post*, Friday 25 June 1909: 6. <http://nla.gov.au/nla.news-article32132867>, downloaded 5 January 2022.
- Anon. 1913. Current Notes. *Journal of Economic Entomology* 5: 491-492.
- Anon. 1914. Directory of members of the Cooper Ornithological Club. *Condor* 16: 154-160.
- Anon. 1916. Members of R.A.O.U., 1916. *Emu* 15: 269-276.
- Anon. 1917. Crusade against cane-beetle. *Brisbane Courier*, Thursday 7 June 1917: 6. <http://nla.gov.au/nla.news-article20170588>, downloaded 5 July 2010.
- Anon. 1918a. On the land. Insectivorous birds. *Sydney Morning Herald*, Thursday 12 September 1918: 5. <http://nla.gov.au/nla.news-article15802266>, downloaded 14 April 2010.
- Anon. 1918b. Shipping. Arrivals. *Cairns Post*, Friday 2 February 1918: 4. <http://nla.gov.au/nla.news-article40295375>, downloaded 2 May 2011.
- Anon. 1918c. The sugar crop. *The Advertiser (Adelaide)*, Tuesday 26 March 1918: 7. <http://nla.gov.au/nla.news-article5539141>, downloaded 24 July 2010.
- Anon. 1918d. Around Gordonvale. Mulgrave Mill suffers. *Cairns Post*, Tuesday 12 March 1918: 5. <http://nla.gov.au/nla.news-article40280940>, downloaded 24 July 2010.
- Anon. 1918e. Members of R.A.O.U., 1918. *Emu* 18: 148-156.
- Anon. 1919. Queensland Notes. Birds and cane beetles. *Emu* 18: 313-314.
- Anon. 1921. Notes and exhibitions. November 16th, 1921. *Proceedings of the Hawaiian Entomological Society* 5: 35.
- Anon. 1926. List of members of the Royal Australasian Ornithologists Union, 1925. *Emu* 25: 159-171.
- Anon. 1935. Minister's Tableland visit: Preservation of birds. *Northern Herald* 28 September 1935: 33. <https://trove.nla.gov.au/newspaper/article/150482916>, downloaded 14 February 2020.

- Atlas of Living Australia (ALA). 2020. Record search. <https://www.ala.org.au/>, downloaded 14 May 2020.
- Barker RD, Vestjens WJM. 1979. *The Food of Australian Birds. Vol. 1: Non-passerines*. CSIRO: Melbourne.
- Barker RD, Vestjens WJM. 1989. *The Food of Australian Birds. Vol. 2: Passerines*. CSIRO: Melbourne.
- Barrow MV. 1998. *A Passion for Birds: American Ornithology After Audubon*. Princeton University Press: Princeton.
- BirdLife Australia. 2019. Working List of Australian Birds Version 3. <https://birdlife.org.au/conservation/science/taxonomy>, downloaded 6 March 2020.
- Bottoms TDR. 2016. *Cairns, City of the South Pacific. A History 1770-1995*. Bunu Bunu Press: Edge Hill, Cairns.
- Bryan EH. 1950. James Franklin Illingworth, 1870-1949. *Proceedings of the Hawaiian Entomological Society* 14: 21.
- Cameron AC. 1933. Bird protection. *Emu* 33: 138-139.
- Carmody J. 2010. *Wet Tropics of Queensland World Heritage Area Tour Guide Handbook*. Reef & Rainforest Research Centre Ltd: Cairns.
- Chafer CJ. 1992. Notes on the distribution of and insectivory in the Figbird *Sphecotheres viridis* in the Illawarra and Shoalhaven regions of New South Wales. *Australian Bird Watcher* 14: 282-285.
- Checklist Committee (RAOU). 1913. Official Check-List of the Birds of Australia. *Emu* 12 Supplement 1: 2-116.
- Chisholm AH. 1918. Bird protection in Queensland. *Emu* 17: 239-243.
- Chisholm AH. 1919. Introduced birds in Queensland. *Emu* 19: 60-62.
- Costar BJ. 1981. *Labor, Politics and Unemployment: Queensland During the Great Depression*. PhD thesis, University of Queensland: Brisbane.
- Crome FHJ. 1978. Foraging ecology of an assemblage of birds in lowland rainforest in northern Queensland. *Australian Journal of Ecology* 3: 195-212.
- Crouther MM, Crouther MJ. 1984. Observations on the breeding of Figbirds and Common Koels. *Corella* 8: 89-92.
- Dodd AP. 1921. A study of the common trees in their relation to the aerial life of the beetles. In: *Australian Sugar-cane Beetles and their Allies: Division of Entomology Bulletin No. 16*, eds JF Illingworth, AP Dodd, pp. 29-43. Bureau of Sugar Experiment Stations: Brisbane.
- Douglas Shire Historical Society (NQ) Inc. 2021. Brief history of Mossman, Far North Queensland. <https://www.douglashistory.org.au/timelines/mossman.html>, viewed 21 December 2021.
- Easterby HT. 1918. Sugar industry. Conditions in the north. *Brisbane Courier*, Tuesday 8 October 1918: 6. <http://nla.gov.au/nla.news-article20259913>, downloaded 26 June 2011.
- eBird. 2020. Species maps. <https://ebird.org/australia/explore>, viewed 19 September 2020.
- Elliott MG. 2011. Annotated catalogue of the Australian Scoliidae (Hymenoptera). *Technical Reports of the Australian Museum* 22: 1-17.
- Flecker H. 1943. Current Nature Topics. Protection of bird life. *Cairns Post*, Friday 21 May 1943: 3. <http://nla.gov.au/nla.news-article42387666>, downloaded 4 July 2020.
- Forbes WA. 1878. Reports on the collections of birds made during the voyage of H.M.S. 'Challenger'. No. VII. On the birds of Cape York and the neighbouring islands (Raine, Wednesday and Booby Islands). *Proceedings of the Zoological Society of London 1878*: 120-128.
- Frith CB. 1993. Correspondence: Figbirds eating insects. *Sunbird* 23: 114.
- Global Biodiversity Information Facility (GBIF). 2021. <https://www.gbif.org/>, viewed 13 July 2021.
- Goebel FR, Sallam N, Samson PR, Chandler K. 2010. Quantifying spatial movement of the Greyback Cane Beetle in the sugarcane landscape: data available and research needs. *Proceedings of the Australian Society of Sugar Cane Technologists* 32: 71-83.
- Gosper CR. 1999. Plant food resources of birds in coastal dune communities in New South Wales. *Corella* 23: 53-62.
- Gosper DG. 1996. Insectivory in the Figbird in northern New South Wales. *Sunbird* 26: 35-38.
- Gregory HE. 1923a. Report of the Director for 1922. *Bernice P. Bishop Museum Bulletin* 4: 5-38.
- Gregory HE. 1923b. Report of the Director for 1921. *Occasional Papers of the Bernice P. Bishop Museum* 8: 175-214.
- Griggs PD. 2005. Entomology in the service of the State: Queensland scientists and the campaign against cane beetles, 1895-1950. *Historical records of Australian Science* 16: 1-29.
- Griggs PD. 2007. Deforestation and sugar cane growing in eastern Australia, 1860-1995. *Environment and History* 13: 255-283.
- Griggs PD. 2011. *Global Industry, Local innovation: The History of Cane Sugar Production in Australia, 1820-1995*. Peter Lang, Bern: New York.
- Hall R. 1907. *The Useful Birds of Southern Australia*. TC Lothian: Melbourne & Sydney.

- Hebard M. 1943. *Australian Blattidae of the Subfamilies Chorisonaurinae and Ectobiinae (Orthoptera)*. Academy of Natural Sciences of Philadelphia: Philadelphia.
- Heritage Alliance. 2011. *A Thematic History of the City of Cairns and its Regional Towns*. Queensland Government and Cairns Regional Council: Cairns.
- Higgins PJ, ed. 1999. *Handbook of Australian, New Zealand and Antarctic Birds, Volume 4: Parrots to Dollarbird*. Oxford University Press: Melbourne.
- Higgins PJ, Peter JM, Steele WK, eds. 2001. *Handbook of Australian, New Zealand and Antarctic Birds, Volume 5: Tyrant-flycatchers to Chats*. Oxford University Press: Melbourne.
- Higgins PJ, Peter JM, Cowling SJ, eds. 2006. *Handbook of Australian, New Zealand and Antarctic Birds, Volume 7: Boatbill to Starlings*. Oxford University Press: Melbourne.
- Hoborn D. 2011. Greyback Cane Beetle *Dermolepida albohirtum* (image, licence CC BY 2.0). <https://www.flickr.com/photos/dhoborn/6546513935/>, downloaded 27 December 2021.
- Hutton D, Connors L. 1999. *A History of the Australian Environment Movement*. Cambridge University Press: Melbourne, Vic.
- Illingworth FJ [sic:=JF]. 1897. Birds of the San Bernardino Mountains. *Osprey* 2: 36-37.
- Illingworth JF. 1901. The Bullock's and Arizona Hooded Orioles. *Condor* 3: 98-100.
- Illingworth JF. 1912. *A Study of the Biology of the Apple Maggot (Rhagoletis pomonella) Together With an Investigation of Methods of Control*. PhD thesis, Cornell University: Ithaca, New York.
- Illingworth JF. 1917. Wanted, a large buggy horse. Must be gentle and a good traveller. *Cairns Post*, Saturday 3 November 1917: 1. <http://nla.gov.au/nla.news-article40266459>, downloaded 20 June 2020.
- Illingworth JF. 1917-1918. *Monthly Notes on Grubs and Other Cane Pests. Division of Entomology Bulletin No 7*. Bureau of Sugar Experiment Stations: Brisbane.
- Illingworth JF. 1918-1919. *Monthly Notes on Grubs and Other Cane Pests. Second Series. Division of Entomology Bulletin No 8*. Bureau of Sugar Experiment Stations: Brisbane.
- Illingworth JF. 1919a. Investigation of control measures for white grubs affecting sugar cane in Queensland. *Journal of Economic Entomology* 12: 451-455.
- Illingworth JF. 1919b. Birds as beetle-eaters. *The Queenslander* (Brisbane), Saturday 8 February 1919: 8. <http://nla.gov.au/nla.news-article22369327>, downloaded 28 July 2010.
- Illingworth JF. 1919-1920. *Monthly Notes on Grubs and Other Cane Pests (Third Series). Division of Entomology Bulletin No 10*. Bureau of Sugar Experiment Stations: Brisbane.
- Illingworth JF. 1920-1921. *Monthly Notes on Grubs and Other Cane Pests (Fourth Series). Division of Entomology Bulletin No 15*. Bureau of Sugar Experiment Stations: Brisbane.
- Illingworth JF. 1921a. The Greyback Cane Beetle, *Lepidoderma albohirtum* Waterhouse. In: *Australian Sugar-cane Beetles and their Allies. BSES Division of Entomology Bulletin No. 16*, eds JF Illingworth, AP Dodd, pp. 5-28. Bureau of Sugar Experiment Stations: Brisbane.
- Illingworth JF. 1921b. *Natural enemies of Sugar Cane Beetles in Queensland. Division of Entomology Bulletin No. 13*. Bureau of Sugar Experiment Stations: Brisbane.
- Illingworth JF. 1921c. A Study of the Factors of Control. In: *Australian Sugar-cane Beetles and their Allies. BSES Division of Entomology Bulletin No. 16*, eds JF Illingworth, AP Dodd, pp.75-92. Bureau of Sugar Experiment Stations: Brisbane.
- Jarvis E. 1930. Relation of sugar entomology to bird life. *Cairns Post*, Wednesday 23 April 1930: 16. <http://nla.gov.au/nla.news-article41053666>, downloaded 10 January 2022.
- Jarvis E. 1933. BSES. April notes - Greyback cane beetles. *Townsville Daily Bulletin*, Thursday 23 March 1933: 7. <http://nla.gov.au/nla.news-article61371462>, downloaded 30 December 2021.
- Jervis H. 1929. Feeding habits of some Queensland birds. *Queensland Agricultural Journal* 32: 8-12.
- Johnson RW. 1993. Insectivory in the Figbird, *Sphecotheres viridis*. *Sunbird* 23: 90-92.
- Kalmbach ER. 1934. Field observation in economic ornithology. *Wilson Bulletin* 46: 1-89.
- Knight WC. 1902. *The Birds of Wyoming: Bulletin No. 55*. Wyoming Experiment Station: Laramie, Wyoming.
- La Mothe L. 1979. Diet of some birds in *Araucaria* and *Pinus* forests in Papua New Guinea. *Emu* 79: 36-37.
- Le Souëf AS. 1920. Objects of the Economic Section. *Emu* 19: 317-320.
- Levey DJ, Martínez Del Rio CM. 2001. It takes guts (and more) to eat fruit: Lessons from avian nutritional ecology. *Auk* 118: 819-831.
- Logan G, Clarke E. 1984. *State Education in Queensland: A Brief History*. Monographs on the History of Education in Queensland No. 2: Department of Education, Queensland.
- Lord EAR. 1956. The birds of Murphy's Creek district, southern Queensland. *Emu* 56: 100-128.

- Marchant S, Higgins PJ, eds. 1990. *Handbook of Australian, New Zealand and Antarctic Birds. Volume 1: Ratites to Ducks*. Oxford University Press: Melbourne.
- Marchant S, Higgins PJ, eds. 1993. *Handbook of Australian, New Zealand and Antarctic Birds, Volume 2: Raptors to Lapwings*. Oxford University Press: Melbourne.
- Martin S. G. 2020. Brewer's Blackbird (*Euphagus cyanocephalus*), version 1.0. In: *Birds of the World*, eds. AF Poole, FB Gill. Cornell Lab of Ornithology: Ithaca, NY.
- Mason IJ, Pfitzner GH. 2020. *Passions in Ornithology: A Century of Australian Egg Collectors*. Ian J Mason and Gilbert H Pfitzner: Canberra.
- McCarthy GJ. 2004. Jarvis, Edmund (1869-1935). Encyclopedia of Australian Science. <https://www.eoas.info/biogs/P001903b.htm>, viewed 7 January 2022.
- McKilligan NG. 1979. The ecology of the Straw-necked Ibis in winter at Toowoomba, south-east Queensland. *Sunbird* 10: 49-57.
- Mdk572. 2006. Australasian Figbird hawking a beetle (image). https://en.wikipedia.org/wiki/File:Green_Figbird.jpg, downloaded 23 October 2014.
- Miller RC, Ellsworth DL, Hall FS. 1935. Birds of the San Juan Islands, Washington. *Murrelet* 16: 51-65.
- Mitchell, WC. 1966. History of the Department of Entomology, University of Hawaii, College of Tropical Agriculture. *Proceedings of the Hawaiian Entomological Society* 19: 251-279.
- Morris T. 2010. Flying ant diet. Birding-aus archives. <http://bioacoustics.cse.unsw.edu.au/birding-aus/2010-10/msg00091.html>, viewed 6 October 2010.
- Munro W, Cowie A. 1894. *Port Curtis Almanac and Miners' and Settlers' Companion*. Munro & Cowie: Rockhampton.
- National Museum of Natural History (NMNH). 2021. Entomology collection search. <https://collections.nmnh.si.edu/search/ento/>, downloaded 15 November 2021.
- Noske R. 1997. Short breeding season of Figbirds *Sphecotheres viridis* in Darwin, Northern Territory. *Corella* 21: 44-47.
- O'Donoghue J. 2006. Innisfail - the 1918 cyclone. *Cairns Historical Society Bulletin* 539, October 2006.
- Palladino P. 1996. *Entomology, Ecology and Agriculture: The Making of Science Careers in North America, 1885-1985*. Harwood Academic Publishers: Netherlands.
- Queensland Government. 1950. *Fifty Years of Scientific Progress: A Historical Review of the Half Century Since the Foundation of the Bureau of Sugar Experiment Stations*. Bureau of Sugar Experiment Stations: Brisbane.
- Queensland Government. 2019. Regional ecosystems. <https://www.qld.gov.au/environment/plants-animals/plants/ecosystems>, downloaded 20 February 2020.
- Ravenel W de C. 1920. *Report on the Progress and Condition of the United States National Museum for the Year Ending June 30, 1920: Accessions Deserving Special Notice and Why*. Government Printing Office: Washington.
- Richardson J. 1978. Fig birds. *Wildlife in Australia* 15 (Autumn): inside back cover.
- Rose AB. 1999. Notes on the diet of some passerines in New South Wales. 1: Fairy-wrens to Woodswallows. *Australian Bird Watcher* 18: 106-120.
- Sage JH. 1917. Thirty-fourth stated meeting of the American Ornithologists' Union. *Auk* 34: 76-85.
- Smithsonian Archives. 2022. Charles P. Alexander Papers, 1905-1979, Accession 98-069. https://siarchives.si.edu/collections/siris_arc_229244, viewed 8 January 2022.
- Stanford University. 1910. *Alumni Directory and Ten-Year Book II, 1891-1910*. Stanford University: Palo Alto, California.
- Thomson DF. 1935. *Birds of Cape York Peninsula: Ecological Notes, Field Observations, and Catalogue of Specimens Collected on Three Expeditions to North Queensland*. HJ Green, Government Printer: Melbourne.
- Toohy E. 1991. *Tumbling Waters: Tumoulin on the Evelyn Tableland in Days Gone By*. E Toohy: Cairns.
- Tryon H. 1906. Are birds the farmers' enemies? *Queensland Agricultural Journal* 16: 349-350.
- Tryon H. 1911. Grub pest of sugar-cane, *Lepidiotia albohirta*: a neglected aspect. *Australian Sugar Journal* 2: 532-537.
- United States Government. 1917. James Franklin Illingworth passport application, 3 April 1917. <https://www.ancestry.com.au/>, downloaded 21 May 2020.
- Vieillot, LJP. 1816. *Analyse d'une nouvelle ornithologie élémentaire*. 1883 edition, ed. H Saunders. Taylor & Francis: London.
- Walker R. 2018. Gibson, Arthur J. (1877-1944). Encyclopedia of Australian Science. <https://www.eoas.info/biogs/P002902b.htm>, viewed 20 September 2020.
- Whelan CJ, Şekercioğlu ÇH, Wenny DG. 2015. Why birds matter: From economic ornithology to ecosystem services. *Journal of Ornithology* 156: 227-238.
- Whittell HM. 1954. *The Literature of Australian Birds: A History and a Bibliography of Australian Ornithology*. Paterson Brokensha: Perth.

Appendix 1. Recruitment of J. F. Illingworth to the Queensland Bureau of Sugar Experiment Stations, 1916.

Source: United States Government (1917).

(a) Letter from J. F. Illingworth to E. G. Scriven, Queensland Under Secretary for Agriculture.

Sept. 6, 1916.

The Under Secretary,
Department of Agriculture and Stock,
Brisbane, Australia.

Dear Sir:-

I have recently learned thro [sic] Mr. Gibson, that you still have a position open for an experienced economic entomologist.

If the appointment has not yet been made, kindly advise me as to the location, requirements, etc. You have, probably, seen my report, which was published by the Colonial Sugar Refining Company, upon the work I did for them in the Fiji Islands.

Thanking you for a reply, I am,

Yours respectfully,

(Sgd) James Illingworth

Professor of Entomology.

(b) Cable from Under Secretary for Agriculture E. G. Scriven to J. F. Illingworth.

CABLEGRAM
DEC 20 1916
BRISBANE 9
ILLINGWORTH
HONOLULU
URGE YOU COME EARLIER THAN JUNE
SCRIVEN

Appendix 2. Published records of insectivory by Australasian Figbird, *Sphecothebes vieilloti*, 1874-2019, in order of record date.

CYP=Cape York Peninsula; FNQ=Far north Queensland. *Observation included other bird species exploiting the same prey source. Higgins *et al.* (2006) cite at least one instance of insects fed to nestlings from the Nest Record Scheme, but the details are unknown. Note, as a minor point, Higgins *et al.* (2006) cite Gosper (1999) for some instances of Figbird insectivory, this should read Gosper (1996) for all instances.

Date	Location	Type	Details of Figbirds and prey
1-8 Sep. 1874	Somerset CYP ¹	stomach	1/3 stomachs contained 'seeds and insects'; probably immature male
(1902- 1952)	Darling Downs SEQ ²	field	Food includes insects 'when young are being fed'. No dates for Figbird observations; other dates in paper, 1902-1952
Jan. 1919	Gordonvale FNQ ³	field*	Large numbers of birds feeding on Greyback Cane Beetles <i>Dermolepida albohirtum</i> in trees, Magpie-larks and Figbirds 'greatly in the majority' (see text, also for other beetle species)
Nov. 1928	Stewart River CYP ⁴	stomach	Contents reported for 5/6 skins: 1 with 'beetles', 1 'packed with cockchafer' [beetles, Scarabidae]
1971- 1972	Lacey Creek FNQ ⁵	field	7% of time foraging in leaves, arthropod prey inferred
1973- 1994	N Rivers NSW ⁶	field*	Single Figbirds capturing cicadas; flocks preying on nuptial flights of ants; beetles fed to nestlings
1977	PNG ⁷	stomach	1 stomach, seeds and 'indeterminate insect material'
1978	Sydney NSW ⁸	field	Pair feeding on 'Christmas beetles' in garden
1980- 1983	Mackay Central Qld ⁹	field	One observation of 'green caterpillars' fed to young, from observations of pairs feeding young at ~33 nests over three breeding seasons
May 1984 / Jan. 1986	Townsville N Qld ¹⁰	field	Photographs: 1 male holding captured beetle / 1 male pursuing and catching cicada
Jan. 1989	Townsville N Qld ¹¹	field*	2 Figbirds catching Green Tree Ant (<i>Oecophylla smaragdina</i>) alates on the wing
Nov. 1990	S coast NSW ¹²	field	An individual, a pair and a group (2 adults, 4 immature) feeding on beetles and ?psyllids (lerps)
Apr. 1991	N coast NSW ¹¹	field	Flock feeding on caterpillars in trees, over 3 days
Oct. 1992	Darwin NT ¹³	field	Adults feeding on cicadas 'many times'
Oct. 1998	Mid-N coast NSW ¹⁴	field	1 male continuously flying up from perch, to catch emerging termite alates
Dec. 2006	Mid-N coast NSW ¹⁵	field	Photograph: 1 female or immature hawking a beetle in flight
Oct. 2010	N coast NSW ¹⁶	field*	Figbirds feeding on emerging 'flying ants'
Feb. 2019	Mossman FNQ ¹⁷	field	Photograph: 1 male feeding on queen Green Tree Ant (Fig. 5); 5-6 Figbirds were hawking the ants in flight

¹Forbes 1878; ²Lord 1956; ³Illingworth 1918-1919, 1921b,c; ⁴Thomson 1935 p. 58; ⁵Crome 1978; ⁶Gosper 1996; ⁷La Mothe 1979; ⁸Richardson 1978; ⁹Crouther & Crouther 1984; ¹⁰Frith 1993; ¹¹Johnson 1993; ¹²Chafer 1992; ¹³Noske 1997; ¹⁴Rose 1999; ¹⁵Mdk572 2006 (image); ¹⁶Morris 2010; ¹⁷John D. A. Grant (personal communication).