Thirteen years of progress in a Herberton butterfly garden

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Abstract

Over 13 years, I have developed my home garden – a ¼ acre (c. 0.1 ha) town lot in Herberton in north-east Queensland – to attract butterflies by planting caterpillar food plants, flowers to attract adults, and by creating structural diversity. Over that time I have recorded 110 species of butterflies, of which 45 species have at least shown interest in their caterpillar food plants and many actually bred in the garden. I continue to add both new species and new breeding records so that a ceiling is unlikely to have been reached. Using qualitative observations but conservative criteria, sixteen species appear to have increased in abundance over that time period, and none appear to have declined, with eight of these breeding or attempting to breed in the garden and a further five possibly doing so. Though Herberton is surrounded by dry sclerophyll forest, half the butterfly assemblage comprises species whose breeding habitat is rainforest or vine-thicket, and some may have travelled many kilometres from their breeding place. Developing the garden and observing its butterflies has been an informative and rewarding experience.

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Introduction

Urbanisation almost always has a negative effect on invertebrate diversity regardless of the intensity of development (McKinney 2008). This applies to butterflies (New & Sands 2002; Fontaine *et al.* 2016; Ramírez-Restrepo & MacGregor-Fors 2017; Rivest & Kharouba 2024), with adverse consequences arising from loss of remnant habitat and associated caterpillar (larval) food plants (Blair 1999) and use of pesticides (de Montaigu & Goulson 2024). Smaller urban areas may be less adversely affected than larger ones if smaller size means they are closer to remnant natural habitat or other habitat supporting caterpillar food plants (Bergerot *et al.* 2011; Pendl *et al.* 2022).

Notwithstanding these impacts, urban gardens even in big cities can be remarkable repositories for flora and fauna including invertebrates (New 2018; Rogers *et al.* 2024). Designing gardens to attract butterflies can benefit their populations (Pendl *et al.* 2022; Nason & Eason 2023; Hordley & Fox 2024) and help mitigate the negative effects of urbanisation (Di Mauro *et al.* 2007; Fontaine *et al.* 2016). Targeted planting of caterpillar food plants may even be a useful tool for conservation of threatened populations (Cutting & Tallamy 2015). Butterfly gardens can also have a positive impact on the health and well-being of the gardener (Goddard *et al.* 2013). Butterfly garden design includes planting food plants for caterpillars, flowering plants that are attractive to adult butterflies, and designing spaces with sunshine and shelter from adverse weather (Valentine 1999).

I moved into my current home in Herberton, north Queensland, Australia, in February 2012. This article is a progress report on the development of the garden, and arrival, presence and breeding of butterflies since then.

The setting

The town of Herberton (17.3838° S, 145.3857° E; population *c.* 1,000) is situated at 900 m ASL in an elevated valley set among steep granitic hills. It is surrounded by bushland comprising regrowth dry sclerophyll woodland/open forest with a particular abundance of Lemon-scented Gum (*Blakella* [*Corymbia*] *citriodora*) and White Mahogany (*Eucalyptus acmenoides* complex; syn. *E. portuensis*), and this is the Regional Ecosystem (7.12.30A) that originally occurred on my home lot (Queensland Herbarium 2024). The forest understorey (where not too disturbed) comprises scattered shrubs and a more-or-less continuous layer of Kangaroo Grass (*Themeda triandra*) and other native grasses. With increasing elevation to the east of the town in the Herberton Range, forests merge into wet sclerophyll forest of Small-fruited Red Mahogany

Figure 1. Backyard of the Herberton butterfly garden: A. in February 2012 – the month that I moved into the house; and B. June 2024. All photographs in this article are taken in the garden by the author.

(*E. resinifera*) at *c.* 1,000 m ASL and upland rainforest at *c.* 1,050 m, the nearest rainforest being 5.9 km from Herberton.

Mean annual rainfall in Herberton is 1,150 mm though substantially less in recent decades, with *c.* 70% of rain falling in the four warmer months of December to March (Bureau of Meteorology 2017). Rain may fall in the dry season or there may be extended misty spells in the cooler months, but some dry seasons are harsh with little or no effective rain for up to six months. Because of its elevation, temperatures in the cooler months are often sufficiently low as to partially suppress butterfly activity, with mean daily minimum and maximum temperatures for June to August of 10 and 22°C respectively; frosts occur occasionally.

My home is on an urban lot in Herberton of ¼ acre (*c.* 0.1 ha), with a steep slope. It is surrounded by lots with houses on either side and at the rear, and with a school ground across the road. It is 100 m from the nearest remnant bushland and 150 m from the Wild River. When I moved into the home, the lot comprised extensive central areas of lawn with heavy marginal plantings of a mixture of native and exotic trees (Fig. 1A). Its birdlife was and is dominated by Noisy Miners (*Manorina melanocephala*), a species that aggressively excludes most birds smaller than it (Mac Nally *et al.* 2012; Maron *et al.* 2013). It therefore seemed pointless to plant to encourage birds, so I made the strategic decision to develop the garden primarily for butterflies.

Creating the garden

Initial development of the garden over several years involved drainage, rock work, conversion of about 60% of lawn to mulched beds, and removal of several trees to make room for alternative plantings. Planting mostly commenced in 2013, and have been progressive since (Fig. 1B). About half of all plantings have been specifically for butterflies, the latter including both caterpillar food plants and floral nectar sources for adults. I aimed to create structural diversity with vine-thickets, shrubberies and tussock grassland, combined with sunny edges, retention of open areas of lawn, and sunny areas of floral attraction (Fig. 2). Potential larval food plants were identified mostly from Braby (2000). Floral sources were identified by observation, consultation with locals, and from various websites, and an aim is to have something flowering at most times of the year. Plants were sourced from local nurseries, provided by friends, or propagated from seed, cuttings or root stock. Garden development is an on-going process.

Most trees, shrubs and perennials must be able to survive year-round without watering (often after watering through the first dry season to help them establish), but a few have been planted in areas that I water throughout the year. Some plantings of herbs including grasses have established feral populations in mulch beds (Table S3) (e.g. Fig. 3), some so vigorous as to require management.

Figure 2. Butterfly habitats in the Herberton butterfly garden, May & June 2025. A. developing vine-thicket; B. tussock grassland; C. 'butterfly corner' – an assemblage of non-native flowers attractive to butterflies.

Figure 3. Love-flower (*Pseuderanthemum variabile*), a valuable caterpillar food plant, planted and now growing feral in mulch beds in the butterfly garden. Though seemingly ignored for a number of years, it is now used frequently by Leafwing (*Doleschallia bisaltide*), Blue-banded Eggfly (*Hypolimnas alimena*) and Blue Argus (*Junonia orithya*). The flowers also attract nectaring butterflies.

Several shrubs persist through suckering. Several weed species have been deliberately retained because of their value as caterpillar food plants.

The only caterpillar food plants present in February 2012 were five non-native weeds: Cinderella Weed (*Synedrella nodiflora*), Guinea Grass (*Megathyrsus maximus*), Purple Bush-bean (*Macroptilium atropurpureum*), Common Purslane (*Portulaca oleracea*) and Sicklepod (*Senna obtusifolia*). I have since planted a further 39 species that have been used by butterflies (Table S3), along with several other known food plants that have yet to be used (or I have not seen evidence of use). The process of adding food plants is on-going. The 44 food plant species used by butterflies so far include trees, shrubs, vines, forbs, grasses and sedges. Thirty-two are Australian natives, and 12 are non-natives.

Figure 4. Limeberry (*Micromelum minutum*, Rutaceae) is a caterpillar food plant for three species of swallowtail, and its flowers attract many species. Above – Orchard Swallowtail (*Papilio aegeus*) caterpillar; below – Green-spotted Triangle (*Graphium agamemnon*).

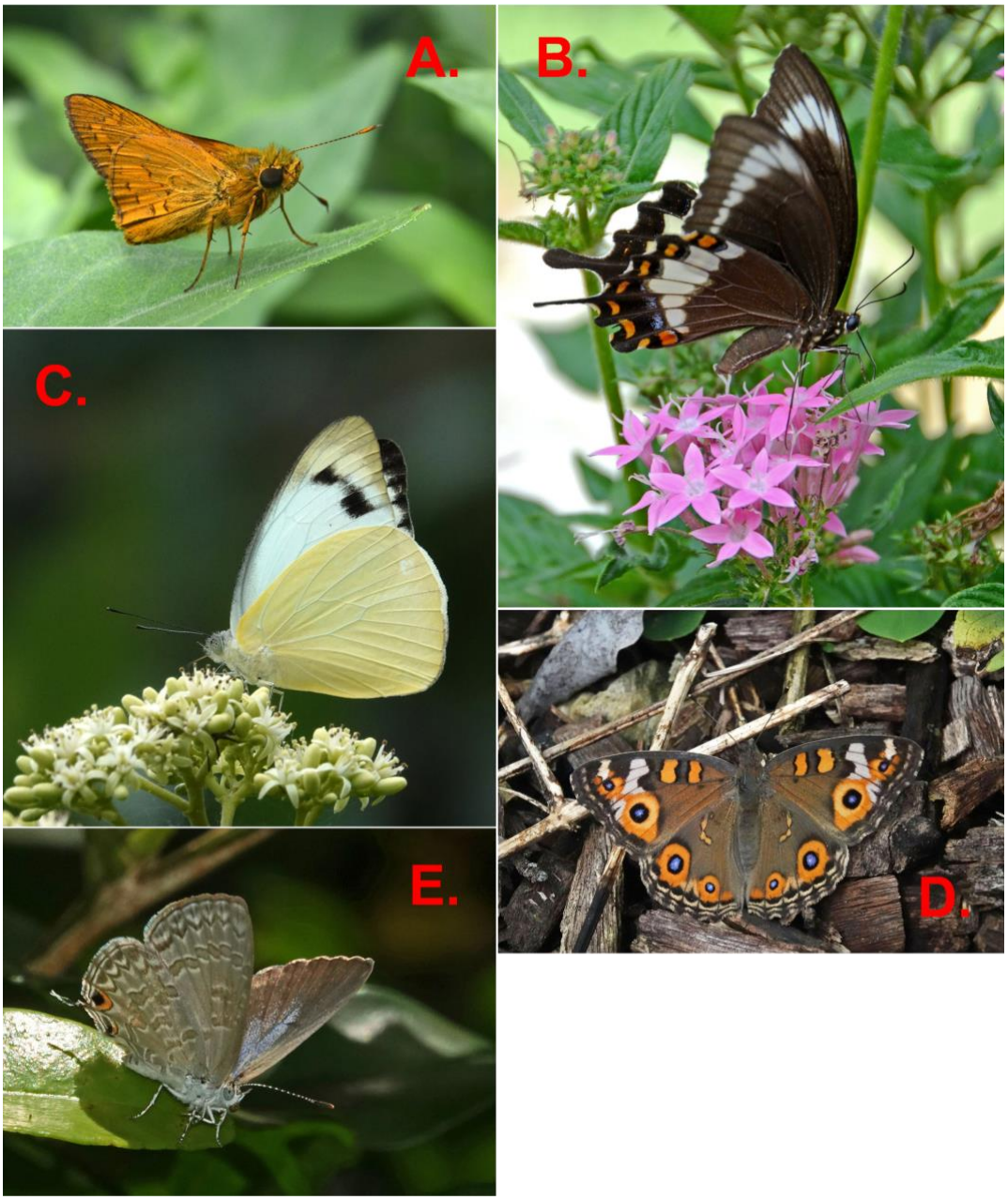

Figure 5. Representatives of the five butterfly families present in the Herberton butterfly garden. A. Hesperiidae (skippers) – Narrow-brand Darter (*Telicota mesoptis*); B. Papilionidae (swallowtails) – Fuscous Swallowtail (*Papilio fuscus*); C. Pieridae (whites & yellows) – male Yellow Albatross (*Appias paulina*); D. Nymphalidae (browns) – Meadow Argus (*Junonia villida*); E. Lycaenidae (blues) – Speckled Line-blue (*Catopyrops florinda*).

A wide variety of plants provide at least occasional floral attraction to nectaring butterflies. Those planted specifically as floral attractions include the Australian native Limeberry (*Micromelum minutum*), and the non-natives Buddleia (*Buddleia davidii*), Pink Pentas (*Pentas lanceolata*), False Heather (*Cuphea hyssopifolia* Compact) and Globe Amaranth (*Gomphrena globosa* Tall White) (Fig. 2C, 4). Most of these are shrubs, but Globe Amaranth is an annual grown from seed which is now self-seeding in a mulch bed. Special mention should be made of Limeberry; it is a hardy vine-thicket shrub that flowers intermittently during the wet season. As well as being used frequently by caterpillars of three species of swallowtail, it is an outstanding floral nectar source (Fig. 4). On one exceptional day, 2 March 2024, I observed 21 species of butterflies at its flowers.

I do not use herbicides; I use insecticides rarely and only in a highly localised manner.

Methods

A record was kept of all new and unusual butterfly sightings (in the first twelve months after moving in, new sightings were only attributed to that period). The identification of some skippers (Hesperiidae) was confirmed by sending photos to Ed Petrie. From 2016 and much more frequently from 2020, I conducted occasional formal surveys of butterflies present in the garden over times varying from 30 to 45 minutes or more, with records kept including an estimate of abundance of each species. From February 2024 I commenced formal day surveys of butterflies in the garden, these comprising four x 30-minute surveys spread through the warmer part of the day. These are ongoing and will be the subject of a separate report, but some observations have been extracted for presentation here. A spreadsheet of breeding records of species was maintained for the entire study period with activity noted in the following classes: adult showing interest in food plant, laying eggs (ovipositing), caterpillar (larva), chrysalis (pupa), emergence (eclosion, either a split pupal case or a freshly-emerged adult); the identity of food plants involved was also recorded.

Species were classified as "wet" or "dry" if their main caterpillar food plants occur in: wet – rainforest including deciduous vine-thicket or wet sclerophyll forest, or dry – dry sclerophyll forest, savanna or drier habitats respectively (Table S1). Some species were classified as "both" when their main caterpillar food plants occur in both habitat types. Using the records described above, along with memory, I classified the abundance of species in five classes for each of two time periods: 2012–2018 (7 years) and 2018–May 2025 (just under 6½ years). The classes were: 0. not observed; 1. vagrant (one or two sightings only); 2. infrequent (three to about ten sightings); 3. frequent (more than ten sightings, but not abundant); and 4. abundant (present most days at least seasonally) (Table S1). Conservatively, a species was considered to have changed in abundance between time periods if it changed by more than one class, e.g. 0. not observed to 2. infrequent, or 2. infrequent to 4. abundant.

Common and scientific butterfly names, and checklist order, follow Braby (2010) with names as updated by Butterflies Australia (2025) and Hsu (2000).

Butterflies

Since moving into the property in February 2012, I have recorded 110 butterfly species in the garden (Table S1). These comprise robust representation of all five butterfly families present in the region (Table 1) (Fig. 5). As a percentage of the regional fauna, swallowtails (Papilionidae) and browns (Nymphalidae) are particularly well represented, and skippers (Hesperiidae) and blues (Lycaenidae) least so (Table 1). The total of species has accumulated gradually over time and appears to be on-going (Fig. 6), with two species added during the 2024/5 wet season. Species were added to the list in all months of the year, with a peak from January to April and especially in March (Fig. 7).

The fauna is almost equally divided between species associated (by their food plants) with wetter environments and those associated with dry sclerophyll forest such as around Herberton or drier habitats (Table 1). Swallowtails (Papilionidae) were predominantly associated with wetter environments, and whites and yellows (Pieridae) with drier environments, with the other three butterfly families more or less equally represented.

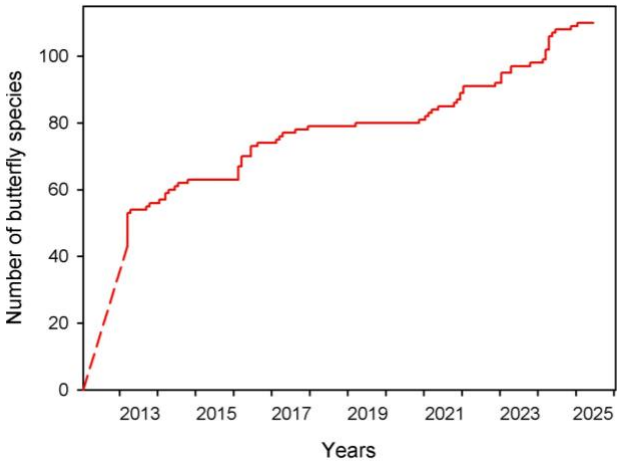

Figure 6. Accumulation of butterfly species over time in the Herberton butterfly garden. I moved into the property in February 2012. Records of first observations of each species were maintained from March 2013 (solid red line) with two oversights that have been included in the initial stage (dashed red line).

Table 1. Species richness of butterfly families recorded in the Herberton butterfly garden. "% of regional fauna" is the percent in the garden of those estimated to occur within 50 km, the latter based on range maps and records in Butterflies Australia (2025).

			Source habitat		
Family	**No. of species**	**% of regional fauna**	**Dry**	**Wet**	**Both**
Hesperiidae (skippers)	21	33.3	10	11	-
Papilionidae (swallowtails)	13	81.3	2	9	2
Pieridae (white & yellows)	16	64	10	5	1
Nymphalidae (browns)	29	70.7	11	10	8
Lycaenidae (blues)	31	37.8	15	12	4
Total	**110**	**23**	**48**	**47**	**15**

Table 2. Qualitative assessment of abundance of 110 butterfly species in the Herberton butterfly garden over two time periods.

Abundance class	**2012–2017**	**2018–2025**
0 – absent	31	9
1 – vagrant (1 or 2 sightings)	28	26
2 – infrequent (3–*c.*10 sightings)	27	33
3 – frequent (>10 sightings, but not abundant)	19	36
4 – abundant (present most days at least seasonally)	5	6

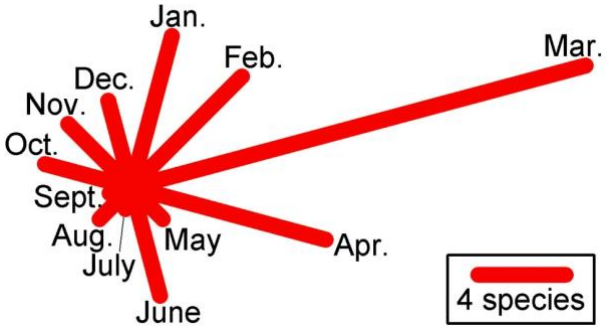

Figure 7. Month of first sighting of 67 species first seen after February 2013 in the Herberton butterfly garden.

There has been a substantial shift in estimated abundance of species from 2012–2018 to more recent times, with more species, and more species observed frequently, in recent times (Table 2). Sixteen species have changed by two abundance classes or more over time, with all increasing (Table 3; Fig. 8). Of the sixteen, eight have demonstrably been attracted to caterpillar food plants, and a further five may have been. Twelve are normally associated with wetter habitats, one with drier habitats and three with both. Thirty-two species were not recorded as more than vagrants in the garden in either period (Fig. 9), of which 15 are associated with wetter habitats, 15 with drier habitats and two with both (Table S1).

Forty-five species of butterfly have at least shown interest in their caterpillar food plants, with 37 species observed laying eggs (ovipositing) or at later stages of breeding (Table S2). Caterpillars of 21 species have been observed (Fig. 10) along with chrysalises of eight species (Fig. 11) (Table S2). Eclosion – completion of the breeding cycle by emergence from the chrysalis – has only been confirmed for nine species.

Discussion

With 110 species observed thus far, species richness in the Herberton butterfly garden has considerably exceeded my initial anticipation. The species total is unlikely to be complete, as indicated by recent addition of species (Fig. 6) and also because several candidate species have yet to be observed in the garden. I have seen one, the Northern Silver Ochre (*Trapezites maheta*), in a garden just 60 m away, and a further 12 species (5 skippers, 1 nymphalid, 6 blues) at forested sites, including a hilltop, within 1.2 km. All thirteen are associated with 'dry' country – eucalypt open forest or woodland. More vagrant records of rainforest species also seem likely to add to the list.

Table 3. Butterfly species that have changed markedly in abundance (by two or more abundance classes) between time periods. Abundance classes are given in the Methods and Table 2. ** = breeding demonstrated; * breeding possible as food plant is present. Source habitats: wet = rainforest or wet sclerophyll forest; dry = dry sclerophyll forest or drier habitats; both = wet and dry habitats.

	Abundance class			
Species	**2012–2018**	**2018–2025**	**Breeding**	**Source habitat**
Splendid Ochre, *Trepizites symmomus*	1	3	**	wet
Scrub Darter, *Arrhenes dschilus*	0	2	*	wet
Narrow-brand Darter, *Telicota mesoptis*	0	3	*	wet
Yellow-streaked Swift, *Sabera dobboe*	0	3	**	wet
Ambrax Swallowtail, *Papilio ambrax*	0	2	**	wet
Glistening Pearl-white, *Elodina queenslandica*	0	2	**	wet
Red-banded Jezebel, *Delias mysis*	0	2		wet
Tailed Rustic, *Vagrans egista*	0	2		wet
Chocolate Argus, *Junonia hedonia*	1	3		both
Blue-banded Eggfly, *Hypolimnas alimena*	1	3	**	both
Leafwing, *Doleschallia bisaltide*	1	3	**	wet
Dingy Bush-brown, *Mycalesis perseus*	0	3	*	dry
Orange Bush-brown, *Mydosama terminalis*	1	3	*	wet
Shining Pencil-blue, *Eirmocides helenita*	0	2	*	wet
Large Purple Line-blue, *Nacaduba berenice*	1	3	**	both
Hairy Line-blue, *Erysichton lineatus*	0	2	**	wet

Though gardening for butterflies is quite popular (Tekulsky 2015; Hurwitz 2018), I can find surprisingly few reports of surveys of garden butterfly faunas. Young (2008) recorded 13 species over three years in a garden of 0.04 ha, and Owen (1976) 16 species over five years, both in the United Kingdom, but the comparisons are dubious because there are fewer species of butterfly in the entire UK than in my garden. Rogers *et al.* (2024) reported 37 species of butterflies over 12 months on a 0.043 ha house lot in Brisbane. Valentine (1999) listed 144 butterfly species for Townsville, a very much larger urban area containing substantial remnant vegetation, and as a subset of that, 61 species over three months in an established butterfly garden of 2.5 ha on a riverbank (Valentine 1994).

Butterfly movements in the landscape are not well understood. Observations in this garden indicate it is likely some species move between suitable habitats, particularly rainforest or vine-thicket, potentially over quite long distances, contributing to its unexpectedly high diversity. The nearest upland rainforest is 6 km away (Herberton Range), and the nearest mid-elevation Mabi Forest 13.5 km away (Wongabel State Forest) with a mountain range in-between. Though the majority of rainforest visitors to the garden occur in the upland rainforest nearest to Herberton so may not have travelled so far, some including Cruiser (*Vindula arsinoe*), White-spotted Flash (*Deudorix democles*; Fig. 9F) and Sword-tailed Flash (*Bindahara phocides*; Fig. 9G) seem likely to have arrived from considerably further afield. Some vagrants arrived in a worn condition perhaps indicative of long travel, but others have been in good condition.

Figure 8. Some butterfly species that have increased over time in the Herberton butterfly garden. A. Yellow-streaked Swift (*Sabera dobboe*); B. Glistening Pearl-white (*Elodina queenslandica*); C. male Blue-banded Eggfly (*Hypolimnas alimena*); D. Chocolate Argus (*Junonia hedonia*); E. female Leafwing (*Doleschallia bisaltide*); F. Orange Bush-brown (*Mydosama terminalis*); G. Large Purple Line-blue (*Nacaduba berenice*); H. male Hairy Line-blue (*Erysichton lineatus*).

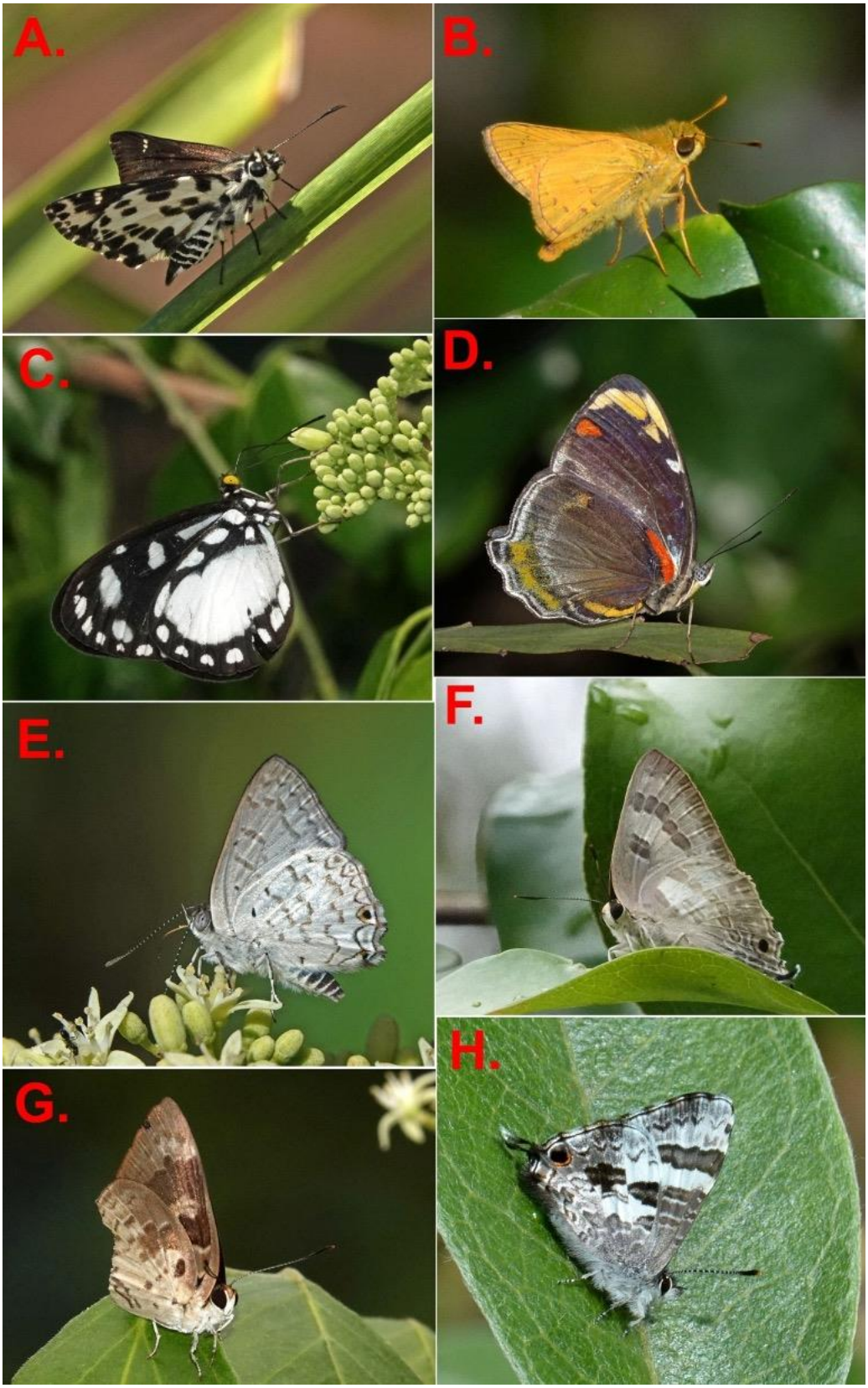

Figure 9. Some vagrant visitors to the Herberton butterfly garden. A. Spotted Sedge-skipper (*Hesperilla ornata*); B. Pale-orange Darter (*Telicota colon*); C. Hamadryad (*Tellervo zoilus*); D. female Jezebel Nymph (*Mynes geoffroyi*); E. male Dark Forest-blue (*Pseudodipsas eone*); F. White-spotted Flash (*Deudorix democles*); G. male Sword-tailed Flash (*Bindahara phocides*) that has lost its tail; H. Glistening Line-blue (*Sahulana scintillata*).

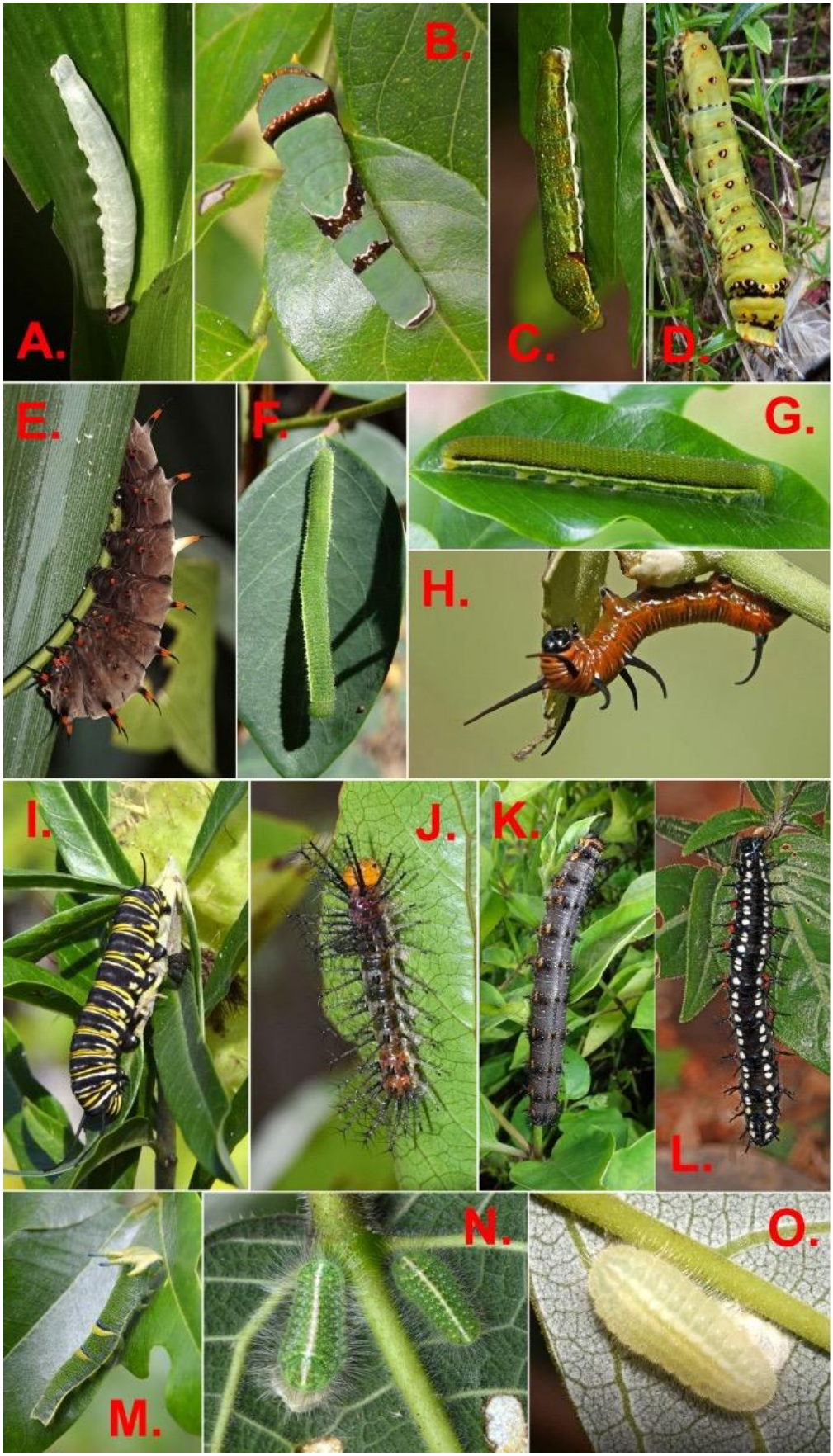

Figure 10. Some butterfly caterpillars in the Herberton butterfly garden. A. Yellow-streaked Swift (*Sabera dobboe*); B. Ambrax Swallowtail (*Papilio ambrax*); C. Fuscous Swallowtail (*P. fuscus*); D. Chequered Swallowtail (*P. demoleus*); E. Cairns Birdwing (*Ornithoptera euphorion*); F. Large Grass-yellow (*Eurema hecabe*); G. Lemon Migrant (*Catopsilia pomona*); H. Common Crow (*Euploea corinna*); I. Monarch (*Danaus plexippus*); J. Bordered Rustic (*Cupha prosope*); K. Blue Argus (*Junonia orithya*); L. Leafwing (*Doleschallia bisaltide*); M. Tailed Emperor (*Charaxes sempronius*); N. Purple Moonbeam (*Philiris innotata*); O. Small Green-banded Blue (*Psychonotis caelius*).

Figure 11. Some butterfly chrysalises in the Herberton butterfly garden. Top left – Monarch (*Danaus plexippus*) suspended from shade cloth; Top centre – Bordered Rustic (*Cupha prosope*) suspended from wall; Top right – Leafwing (*Doleschallia bisaltide*); Bottom – Fuscous Swallowtail (*Papilio fuscus*).

Many rainforest butterfly species are frequent visitors and/or have bred in my garden. For example, Blue Triangle (*Graphium choredon*) and Orchard Swallowtail (*Papilio aegeus*) are probably well-established residents in the Herberton urban area. Bordered Rustic (*Cupha prosope*), and more recently Leafwing (*Doleschallia bisaltide*; Fig. 8E) have established strong populations in my garden in clear response to the establishment of caterpillar food plants. Macleay's Swallowtail (*Graphium macleayanus*) and Glistening Pearl-white (*Elodina queenslandica*; Fig. 8B) are vagrant or infrequent visitors but both appear to have bred or attempted to breed in my garden in the last two years. Others have only occurred as non-breeding vagrants, for example the Hamadryad (*Tellervo zoilus*; Fig. 9C) and Jezebel Nymph (*Mynes geoffroyi*; Fig. 9D).

I have recorded evidence of breeding or possible breeding in 41% of the 110 species recorded, a percentage that has climbed steeply in recent years. This figure is likely to be a considerable underestimate for three reasons. First, I had negligible experience with butterfly reproduction prior to setting up the garden, so this has been and remains a steep learning experience for me. Secondly and related, caterpillars, chrysalises and especially eggs of smaller butterflies are so small I could easily overlook them. Thirdly, adults of some species are cryptic around their food plants, caterpillars may hide, and chrysalises may also be well hidden.

Some species have responded promptly to planting of caterpillar food plants, for example Yellow-streaked Swift (*Sabera dobboe*) caterpillars (Fig. 10A) appeared almost as soon as the food plants

were in the ground. However, other species have taken years to discover breeding opportunities. I planted Love-flower (*Pseuderanthemum variabile*) (Fig. 3) in 2013 and it has long been a common plant in mulched areas of the garden, but I first observed Leafwing to breed on it in 2023; since then, the butterfly has been a frequent wet-season visitor or possibly resident. Lag times for species to discover food patches may be considerable, especially so if the food plant is a different species to that on which the colonists fed as caterpillars (Graham Wood, personal communication). These lags, along with my improved skills in finding evidence of reproduction, suggest that the percentage of species recorded breeding will continue to increase.

I have not recorded any threatened butterfly species in my garden. However, one species is noteworthy. The Splendid Ochre (*Trapezites symmomus*) is a large skipper found widely along the east and south-east coast of Australia. Subspecies *sombra* (Fig. 12) is endemic to north Queensland where it is found mainly along creek lines at higher elevations (Braby 2000); it is uncommon and localised. Since 2017, the species has visited my garden most years and breeds there on several *Lomandra* species, particularly *L. longifolia* (Spiny-headed Mat-rush).

Development of the garden to favour butterflies has, without doubt promoted their abundance, diversity and breeding. No species has been intentionally introduced, and to my knowledge none accidentally introduced with food plants, so all must have been passing by, some I have argued from breeding grounds many kilometres away.

Figure 12. The uncommon north Queensland endemic subspecies *sombra* of the Splendid Ochre (*Trapezites symmomus*) now breeds annually in the Herberton butterfly garden.

However, in the absence of a formal survey regimen from the outset, this increase is difficult to demonstrate. The method I have employed to measure change is conservative (need to increment two abundance classes) but nevertheless comes with three cautions. The first is that the division into two time periods is arbitrary and not always applicable. For example, the Bordered Rustic was initially an infrequent or frequent visitor, but with the establishment of two food plant trees in 2013 and 2016 respectively, it has bred in the garden every year since 2016. In 22 day-long surveys conducted in the garden since February 2024, it was the only species present on every day. But this increase is not reflected in my analysis (Table 3) because it occurred during the first time period.

The second caution is that my survey effort, informal and especially formal, has increased over time, in good part because my interest has increased as butterfly activity has increased (a circularity!). My skills in finding and identifying early life history stages that demonstrate breeding have also increased. This is somewhat countered by interest in recording observations when species were considered to be uncommon visitors. Nevertheless, I have been somewhat reliant on memory to ascribe status to species in the first time period in particular, and my memory is far from perfect. Hence my conservative interpretation of change to abundance classes.

The third caution is about attributing any increase to development of the garden. Other factors may be in play, especially weather. The last three years of the study period coincided with a run of favourable wet seasons which may have contributed to a build-up in butterfly populations across the Wet Tropics and thus increased dispersal into drier areas such as my garden. It may also have favoured the establishment of breeding populations of rainforest species in my garden. The challenge of interpretation is particularly well illustrated by the Leafwing, which I suggested above may illustrate a lag effect in finding food plants. Prior to 2023, the species was a rare visitor to my garden, yet it has been quite common, and bred there, in the last three wet seasons. The Blue-banded Eggfly (*Hypolimnas alimena*; Fig. 8C) has exhibited almost an identical pattern of occurrence, though breeding has been less often confirmed perhaps due to more cryptic behaviour. It remains to be seen whether these and other rainforest species will persist there into the future, and

continuing the formal surveys of the garden will ensure these patterns can be detected.

Gardens established anywhere in north Queensland, and especially in and near the Wet Tropics, may with time yield a species-rich response with potential to be both informative and rewarding for those who create and observe. It is my hope that this article may prompt others to develop butterfly gardens and report on them in articles such as this.

Identifying the butterflies encountered in a garden (or anywhere) poses a worthy challenge that undoubtedly requires practice, skippers and the smaller blues being particularly problematic. For the difficult species, I recommend the field guide by Michael Braby (2016) and use of close-focus binoculars. Taking photographs allows examination and comparison with guide descriptions and other photographs at a more leisurely pace. Flowers not only attract butterflies but cause them to pause, providing excellent opportunities for photographic stakeouts. Photographs may be forwarded to experts for opinion, and there are two online options for seeking such advice, Butterflies Australia (*https://butterflies.org.au/external/home*, with its associated app available on Google Play), and iNaturalist (*https://www.inaturalist.org/*).

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Supplementary file

A supplementary Excel file accompanies this paper on its web-page. It contains:

- Table S1: Checklist of butterflies in the Herberton garden;
- Table S2: Breeding records of butterflies in the Herberton garden; and
- Table S3: Caterpillar food plants in the Herberton garden.

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