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MONOGRAPH

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(Lepidoptera) of the Mt Etna area  
(Sicily, Italy)



The eastern slope of Mt Etna (Sicily, Italy) - *Anthocharis damone* (Boisduval, 1836)

# Faunistic analyses of the butterflies (Lepidoptera) of the Mt Etna area (Sicily, Italy)

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## ABSTRACT

The butterflies known from the Mt Etna area, Sicily are analysed. Eighty-four species are here recorded from within the boundaries of the mountain. A checklist is provided. Species data from 176 locations across the mountain are tabled and mapped for the 84 species. Of the 84 species recorded, 72 are considered resident, with 12 considered to be likely vagrants to the mountain. The analyses showed that of the 176 mapped locations, only 28 were from the western half of the mountain. This may explain why 18 of the more common Sicilian butterfly species were not recorded from the western side of the mountain. The data did indicate that *Melanargia russiae* (Esper, [1781]), *Chazara briseis* (Linnaeus, 1764) and *Melitaea cinxia* (Linnaeus, 1758) have very localized distributions on the mountain. Four of the resident species were found to be inherently rare, viz. *Pieris mannii* (Mayer, 1851), *Leptidea sinapis* (Linnaeus, 1758), *Leptotes pirithous* (Linnaeus, 1767) and *Pseudophilotes baton* (Bergsträsser, 1770). The elevational zone from 500-1500 m was found to have the highest butterfly richness at 71 resident species excluding *Boloria euphrosyne* (Linnaeus, 1758) which is restricted to higher elevations. *Polyommatus thersites* (Cantener, 1834) is recorded from Sicily and illustrated for the first time. Despite strong anthropogenic influences on some areas of the mountain, the overall butterfly fauna was still relatively rich and abundant. A concern is the reclaiming of abandoned vineyard terraces on the northern slope where *M. russiae*, which has a very restricted distribution on this slope, has residence on some of these abandoned terraces. Thus, it would be prudent to retain some abandoned terraces to ensure survival of these resident butterfly populations. Undertaking more butterfly sampling on the mountain would provide a more complete picture of the status of the mountain's butterfly fauna. This will serve as a useful baseline and yardstick to assess future climate change impacts.

## KEY WORDS

Vagrancy; resident species; anthropogenic; abandoned terraces; observational and collection data; butterfly bait trap.

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## INTRODUCTION

The island of Sicily, which lies roughly in the middle of the Mediterranean Sea, sits at the very bottom of mainland Italy, just 3 kms from the Italian mainland at its closest point. Sicily occupies an area of 25,711 km<sup>2</sup> and is one of the 20 administrative regions of Italy. The northern side of the island is flanked by several mountain systems, the Madonie,

Nebrodi and the Peloritani Mountains, while in the south there are several lower mountain ranges, but undoubtedly, the most dominant feature of north-eastern Sicily is Mount Etna, the largest active volcano in Italy at an elevation of just over 3,350 m (Fig. 1). Thus, within Sicily, much of the area of the eastern Province of Catania consists of this iconic mountain and its environs. Mount Etna is the highest mountain on any Mediterranean island (Anony-

mous, 2013) with its central coordinates being 37.747°, 14.991°. It is one of the most active volcanoes in the world and is classified as a stratovolcano. Together, with its environs, the mountain covers an extensive area of 1,178 km<sup>2</sup> (Branca et al., 2011) and is geologically much younger than the rest of the island, which is composed of geologically older calcareous rocks and soils. Mount Etna is a composite basaltic volcano which has extensive areas of fertile volcanic soil flanked with numerous lava flows (Branca et al., 2011). It is estimated that the volcano has had an eruptive history dating back 500,000 years with the eruptions documented for at least 2,700 years (Anonymous, 2013).

In 1987, much of the mountain was declared national park (Parco dell'Etna), and in 2013 the upper reaches including the major eruptive lava flows (*sciare*) were inscribed on the World Heritage list by the International Union for Conservation of Nature (ICUN) (Anonymous, 2013). As a part of the delineation of the national park, four zones of the park were designated (Anonymous, 2025a). The upper zone (*Zona A*) at 19,237 ha, largely corresponds to the area designated as the World Heritage site and varies in elevation from 870 m on the western side of the mountain up to the height of the craters at 3,350 m. This zone is largely open 'desert' of volcanic ash and the vegetation growing at the lower elevations of this zone comprise thorny and prostrate steppic species (Fig. 2) (Marchese, 2003). Below this is *Zona B* (26,000 ha) which ranges in elevation from 640 m up to 1880 m, with the predominant tree species in this zone being beech (*Fagus sylvatica* L.) (Fagaceae) and birch (*Betula aetnensis* Rafin.) (Betulaceae), including woods of pine (*Pinus nigra* Arnold) (Pinaceae) (Fig. 3) and oak (*Quercus* L. species) (Fagaceae) (Fig. 4). *Zona C* is the smallest zone at 4300 ha and is dominated by chestnut woods (*Castanea sativa* Miller) (Fagaceae) and the lowest zone (*Zona D*) at around 600 m elevation is the most anthropogenically disturbed area of the park (9700 ha) in which grow extensive areas of vineyards and orchards (Marchese, 2003). Below this lowest zone are the lower fringes of the mountain which are highly anthropogenically altered and contain many towns and villages. A useful reference for the plants of Mount Etna Park is Marchese (2003), who provided thorough treatment of its vascular and nonvascular plant species.

The butterflies of Sicily have been relatively well documented (Tolman & Lewington 2008; Tshikolovets, 2011; Balletto et al., 2014, 2023) since the early days of Verity (1940-53) with 101 species currently recorded from the island (Balletto et al., 2014). On the contrary, the butterfly fauna of the Mount Etna region remains relatively poorly known. Sichel (1955) first published specifically on the butterflies of the Etna region, and this was followed by several authors over the following 40 years. Sichel (1955) listed 44 species of butterfly from 18 locations across Mount Etna ranging in elevations from 600 to 2500 m and roughly categorized three ecological zones bounded by these two elevations. Thus, from the lowest to the highest elevation, they were, 1) a cultivated zone, 2) a wooded zone, and 3) an open zone which was further subdivided into steppic and desert zones.

Due to the temporally disjunct publications dealing with butterflies of the Mount Etna region since that of Sichel (1955), and since much of the knowledge relating to these butterflies is fragmentary or unpublished, the author has attempted in this current paper to pull together much of these data that are available. A review of recorded data on the butterflies of Mount Etna has surprisingly shown that, despite the mountain being such a well-known European stratovolcano and a World Heritage Site, publications on the butterflies occurring on the mountain are relatively scant. Consequently, in this work, for the first time, a checklist is provided of the butterfly species that have been recorded within the boundaries of the Mount Etna region since and including the work of Sichel (1955), and distribution maps within the region for each butterfly species are provided. Based on these data, a brief analysis of each species' distribution and habitat on the mountain is provided including some unpublished information, some noteworthy butterfly records from the mountain are highlighted, and butterfly residency and vagrancy on the mountain are discussed. Lastly, the conservation of several butterfly species in anthropogenically disturbed locations within the cultivated zone (as per Sichel, 1955) is discussed. Overall, this publication forms an important baseline for future monitoring of butterfly species on the mountain, such that the potential future impacts of climate or anthropogenic changes on butterfly populations can be correctly evaluated.



Figure 1. The eastern slope of Mt Etna: viewed from Montargano (700 m elevation) in May.



Figure 2. Steppic environment above Rifugio Citelli (1850 m elevation) in July.



Figure 3. Pine woods at Pineta Ragabo (1386 m elevation) in June.



Figure 4. Oak woodland above Linguaglossa (1000 m elevation) in May.

## MATERIAL AND METHODS

Observation and collection data were assembled for 84 species of butterfly recorded from within the broader area of Mt Etna. For the purposes of this study, the Etna area was delineated by the Ionian coastline in the east, the Alcántara River in the north, the Simeto River in the west and the southern environments of Catania in the south.

Personal butterfly observational and collection data from the mountain were gathered by the author over multiple visits since 1980. The years of visits when data were collected were 1980, 1991, 1993, 2002, 2003, 2005, 2010, 2018, 2023 and 2024. In total, these visits spanned the months of March through to September. These data were predominantly observational but where identifications were not possible in the field, specimens were collected and identified subsequently. Thus, collections of butterflies undertaken on the upper reaches of the mountain were made under Parco dell'Etna research permit number 3539/02. At Montargano and near Millicuccio in 2024, observations and collections were supplemented using a butterfly bait trap (cone type) 100 cm high x 38 cm diameter, with a bait of fermenting bananas and stale wine. All material collected over the 10 visits is deposited into the Queen Victoria Museum and Art Gallery, Launceston, Tasmania, Australia.

Literature relevant to butterflies recorded from Mt Etna was reviewed, as per that of Sichel (1955, 1959, 1963), Bretherton (1965), Hesselbarth & Valletta (1969), Leigheb (1978), Henriksen (1981), Valletta (1970, 1971, 1976, 1978, 1979), Cernigliaro et al. (1988, 1989, 1992, 1994, 2003), and Arnone and Romano (1991). On-line butterfly observational data for Mt Etna were downloaded from European Butterfly Monitoring (2024). Additionally, butterfly collection data were extracted from the collection of the late B. Giandolfo († 2017) housed at Pedara, Provincia Catania.

All location metadata were converted to latitude and longitude coordinates for mapping. Where exact coordinates could not be accurately determined, a best fit was applied. Inaccurate location metadata that could not be converted to coordinates were omitted. An assessment of residency/vagrancy on the mountain for each species was made where vagrants are considered to be ephemeral species that either do not breed permanently on the moun-

tain or perhaps do so for only a limited period prior to their extinction. Mapping of coordinates was made using BatchGeo (<https://www.batchgeo.com>).

Note: For this study, location coordinates for males of *Hipparchia fagi* (Scopoli, 1763) and *H. hermione* (Linnaeus, 1764) were plotted separately only for specimens whose genitalia could be examined (as per Villa et al., 2009). Location coordinates for females were not plotted and all published records were presumed to be those of *H. fagi* except when indicated by Cernigliaro et al. (2003).

Moreover, it should be further noted that just a small number of butterfly species that occur on the mountain present difficulties with their identification, and therefore these few species were collected to confirm their identification. Furthermore, the accurate recording of butterfly observational data can be problematic as commonly observed butterfly species are often not collected (and most often do not need to be collected) or recorded. Hence, similarly in this study, commonly observed or ubiquitous species may not have been recorded by previous authors, which may invariably skew species' distributional data. For this reason, a degree of prudence has been used in this study, as a rule, not to over scrutinise the lack of published distributional data for commonly observed species.

Because butterfly nomenclature varies between authors (Tolman & Lewington, 2008; Villa et al., 2009; Tshikolovets, 2011; Balletto et al., 2014, 2023; Wiemers et al., 2018), it was decided for this study to base nomenclature on Balletto et al. (2014, 2023).

## RESULTS

Some unique specimens of particular interest from the mountain are illustrated in Figs. 5–12. Combined phenology (recorded flight periods) of the 84 butterfly species recorded from the Mt Etna region, plotted against month of year is presented in Fig. 13. All mapped coordinate location data for the 84 species recorded from the mountain are illustrated as maps in Figs. 14–97. A checklist of these species is listed in Table 1. In total, 176 locations where butterflies were either observed or collected from the mountain are indicated in Fig. 98 and listed in Table 2 with cross reference to species.

## Family HESPERIIDAE

*Pyrgus armoricanus* (Oberthür, 1910) (Fig. 14)

Confined to areas on the mountain above 650 m elevation where it occurs in flowery meadows and open grassy areas adjacent to woodland.

Recorded flight period: April–October.

*Pyrgus malvoides* (Elwes et Edwards, 1897) (Fig. 15)

This species occurs at similar elevations to *P. armoricanus* on the mountain but can occur at lower elevations. The lowest elevation recorded in this study was just below 500 m near Piedimonte Etneo. The species occurs in similar habitats to *P. armoricanus* but appears to be tolerant of more disturbed environments.

Recorded flight period: April–July.

*Spialia orbifera* (Hübner, [1823]) (Fig. 16)

The current data shows no records from the western side of the mountain. It appears to be restricted to mid elevations on the mountain (200–1100 m) where it occurs in open grassy areas, dry meadows, woodland clearings and cultivated areas.

Recorded flight period: April–August.

*Carcharodus alceae* (Esper, [1780]) (Fig. 17)

Ubiquitous across the mountain, occurring at all elevations from sea level to 1700 m in a range of habitats from dry riverbeds and wasteland to upland meadows.

Recorded flight period: March–October.

*Riverdinus floccifer* (Zeller, 1847) (Fig. 18)

Just two specimens of this species are recorded from the southern slope of the mountain as reported by Sichel (1959). Balletto et al. (2023) includes Sicily within its distribution, and on mainland Italy the species is restricted to flowery meadows on calcareous soils at elevations up to 1500 m (Balletto et al., 2023). Based on the infrequency of its occurrence on the mountain and its dependency on calcareous soils, the two records reported by Sichel (1959) are likely vagrant.

Recorded flight period: June and July.

*Riverdinus baeticus* (Rambur, [1839]) (Figs. 5, 19)

Balletto et al. (2023) reported that *R. baeticus* was last recorded from Sicily in 1967. The three specimens recorded here from Adrano in 1975 (Valletta, 1976), near Piedimonte Etneo in 2002 and above Randazzo at 1000 m in 2003 (Fig. 5) constitute the only known specimens recorded from Mt Etna and the only known recent records from Sicily. Moreover, a specimen recorded from above Belpasso at 800 m and identified as *R. lavatherae* by Valletta (1979) is likely a misidentification, as Balletto et al. (2023) reported that the two species are easily confused, and the latter species likely does not occur in Sicily (Balletto et al., 2023). For these reasons the Valletta (1976) record is recorded here as *R. baeticus*.

Recorded flight period: May, July and August.

*Muschampia alta* (Schwingenschuss, 1942) (Fig. 20)

A species typical of rocky slopes and screes (Balletto et al., 2023). In Sicily outside of the Etna region it occurs in rocky habitats on calcareous soils (*pers. obs.*). A male collected from a stoney creek gully in Vallone Zambataro near Piedimonte Etneo is the only record known from the mountain. This single specimen was likely a vagrant.

Recorded flight period: July.

*Thymelicus acteon* (Rottemburg, 1775) (Fig. 21)

Relatively common across the mountain occurring at moderate elevations (470–1500 m) in a range of grassy habitats, including on old lava flows.

Recorded flight period: May–August.

*Thymelicus lineola* (Oscsenheimer, [1808]) (Fig. 22)

The limited data available for *T. lineola* indicates that the species has not been recorded from the mountain since May 1977 (Valletta, 1979) despite a robust effort by the author to locate the species on the mountain since 1980. Balletto et al. (2023) indicates that on mainland Italy, the species frequents montane grasslands and woodland clearings from sea-level to 2000 m.

Recorded flight period: April–July.

*Thymelicus sylvestris* (Poda, 1761) (Fig. 23)

Ubiquitous across the mountain, recorded from elevations from 300 to 1800 m in grassy areas in flowery woodland and scrub clearings.

Recorded flight period: April–August.

***Ochlodes sylvanus*** (Esper, [1777]) (Fig. 24)

Data from the current study indicate that the species is widespread on the eastern slopes of the mountain, with just a single record from the western slope. It is known from sea level to 1800 m occurring mostly along grassy woodland margins and in clearings, these habitats often with an abundance of *Rubus fruticosus* L. (bramble) (Rosaceae) and bracken fern.

Recorded flight period: June–August.

***Gegenes pumilio*** (Hoffmansegg, 1804) (Fig. 25)

The current data indicate that *G. pumilio* is restricted to the lower reaches of the eastern slopes not far from its primary habitat of coastal flood plains and rivers, where it often occurs in sparsely vegetated, dry gullies. Near Piedimonte Etneo (500 m elevation) adults were collected feeding on the flowers of *Lantana camara* L. (Verbenaceae).

Recorded flight period: June, July and October.

***Gegenes nostradamus*** (Fabricius, 1793) (Figs. 6, 26)

Balletto et al. (2023) reported that this species

occurs in similar habitats to *G. pumilio*. Apart from Sichel (1959) recording the species from the beach zone south of Catania, the only other records known in this current study are a male specimen collected along a country lane near Millicuccio at 500 m elevation (Sciarelle) in June 2002 (Fig. 6), and several from a dry creek gully, Vallone Zambataro, just northeast of Piedimonte Etneo.

Recorded flight period: June and July.

Family PAPILIONIDAE

***Papilio machaon*** Linnaeus, 1758 (Fig. 27)

Widespread across a diverse range of habitats on the mountain from 200 to 1800 m. Generally, in cultivated and disturbed areas, and often along roadsides with an abundance of nectar-rich flowering plants.

Recorded flight period: March–September.

***Papilio alexanor*** Esper, [1800] (Fig. 28)

A rare vagrant in Sicily (Balletto et al., 2023). Within the Mt Etna region there is just one record of this species, a female, recorded in May 1980 at Linguaglossa by Henriksen (1981). This specimen was illustrated by Balletto et al. (2023) and is likely a vagrant from the Balkans (Balletto et al., 2023).



Figure 5. *Riverdinus baeticus*, female, Contrada Pirao, 1000 m, above Randazzo, Etna Nord, 17.VIII.2003, T.A. Lambkin (forewing length 13 mm). Figure 6. *Gegenes nostradamus*, male, Sciarelle, 500 m, 5 km W of Piedimonte Etneo, 25.VI.2002, T.A. Lambkin (17 mm).



***Iphiclides podalirius*** (Linnaeus, 1758) (Fig. 29)

Widespread through a diverse range of habitats including cultivated and urban areas, from low elevation (140 m) up to 1500 m, particularly in orchards of its primary hostplants, i.e. *Prunus* L. (Rosaceae) cultivars. Adult males often hilltop on low ridges and elevated areas.

Recorded flight period: April–August.

***Zerynthia cassandra*** (Geyer, [1828]) (Fig. 30)

A species occurring at moderate elevations on the mountain (500–1250 m) predominantly on rocky flowering slopes and in gullies, often near oak (*Quercus* spp) and chestnut (*C. sativa*) woodlands during spring.

Recorded flight period: February–May.

## Family PIERIDAE

***Aporia crataegi*** (Linnaeus, 1758) (Fig. 31)

Occurs in a diverse range of habitats, predominantly in warm sunny flowery meadows and in woodland clearings often near *Prunus* cultivars at moderate to high elevations (600–1700 m). The populations on the eastern side of the mountain (around 1100 m on the Via Mare Neve above Linguaglossa) appear to be relatively stable, as adults at this particular site have been observed regularly over many years.

Recorded flight period: April–August.

***Pieris brassicae*** (Linnaeus, 1758) (Fig. 32)

Ubiquitous and abundant across the mountain in a diverse range of habitats containing its larval hostplants (many Brassicaceae spp) from sea level to the tree line at 1800 m. In spring and early summer adult butterflies are often observed visiting flowers, particularly *Centranthus ruber* (L.) (Valerianaceae).

Recorded flight period: March–September.

***Pieris mannii*** (Mayer, 1851) (Fig. 33)

Infrequently encountered on the mountain, perhaps due to the species' close similarity to the ubiquitous *P. rapae* which it resembles very closely. The

adults frequent rough, rocky and disturbed areas, often found on disused agricultural terraces at mid elevation. Has also been observed in woodland clearings at higher elevations up to 1800 m.

Recorded flight period: April–July.

***Pieris rapae*** (Linnaeus, 1758) (Fig. 34)

Ubiquitous and abundant across the mountain, at most elevations, in a diverse range of habitats, as for *P. brassicae*.

Recorded flight period: March–September.

***Pieris napi*** (Linnaeus, 1758) (Fig. 35)

The species occurs in rocky terrain, often found on abandoned terraces and on old lava flows from sea level to mid elevations (300–800 m), but at higher elevations (up to 1500 m) it occurs in flowery meadows in woodland clearings.

Recorded flight period: March–October.

***Euchloe ausonia*** (Hübner, [1804]) (Fig. 36)

Predominantly occurs on rough stony ground, especially on old lava flows where its hostplants grow prolifically. It occurs from sea level up to the tree line but is most often encountered at mid elevations (between 300 and 1000 m) during spring.

Recorded flight period: March–June.

***Anthocharis cardamines*** (Linnaeus, 1758) (Fig. 37)

Occurring in a range of habitats like those of *E. ausonia*. Mostly at elevations below 1000 m (also at sea level) but some individuals have been recorded up to an elevation of 1500 m.

Recorded flight period: March–June.

***Anthocharis damone*** (Boisduval, 1836) (Figs. 7, 8, 38)

This species is somewhat iconic on the mountain being designated as a symbol of the biodiversity of Mt Etna (Anonymous, 2025b). Its primary distribution in Sicily is the Etna region, although elsewhere in Sicily it is also known from the eastern part of the Nebrodi Mountains and the Peloritani Mountain range (Cernigliaro et al., 1988). Addition-

ally, it is known from the Aspromonte area of Calabria on peninsular Italy and from the Balkans and Turkey (Tolman & Lewington, 2008). On the mountain, it occurs in similar habitats to *E. ausonia* and is known from many locations on the eastern and southern slopes of the mountain. It appears to be primarily restricted to elevations between 500 and 1000 m where its hostplant *Isatis tinctoria* L. (Brassicaceae) grows, but stray individuals have been observed up to 1500 m, for example near pine woods on Via Mare Neve above Linguaglossa. Despite the hostplant being a common plant growing at sea level on the eastern side of the mountain, and in southern Sicily in Provincia Ragusa, the butterfly is absent from these locations. In the spring of 2023, the butterfly and its hostplant were extremely abundant on the eastern slope of the mountain especially in the area from Montargano to Randazzo at around 750 m elevation. The species appears to be increasing in numbers over the last several decades perhaps due to the prevalence of its hostplant growing on old lava flows.

Recorded flight period: March–May.

***Pontia edusa*** (Fabricius, 1777) (Fig. 39)

Abundant and ubiquitous across the mountain in a diverse range of habitats with records from sea level to above 1800 m.

Recorded flight period: March–October.

***Colias crocea*** (Geoffroy, 1785) (Fig. 40)

Abundant and ubiquitous across the mountain in a diverse range of habitats, recorded from 300 m up to approximately 1800 m elevation. *C. crocea* is one of the most frequently observed butterflies on the mountain.

Recorded flight period: March–October.

***Gonepteryx cleopatra*** (Linnaeus, 1767) (Fig. 41)

A commonly observed butterfly on the eastern and southern slopes of the mountain in a diverse range of habitats with records from sea level to above 1700 m elevation. Oddly, the author has just a single record of the species from the combined western and northern slopes of the mountain (Adrano at 650 m).

Recorded flight period: March–September.

***Leptidea sinapis*** (Linnaeus, 1758) (Fig. 42)

Rarely observed on the mountain. Predominantly recorded on the eastern slope where it is generally associated with pine and oak woodlands and clearings, although a few specimens have been collected along country lanes near Piedimonte Etneo (300–500 m elevation). The current data indicate that it mainly occurs above 500 m elevation and the author has no records of the butterfly on the mountain after 2003.

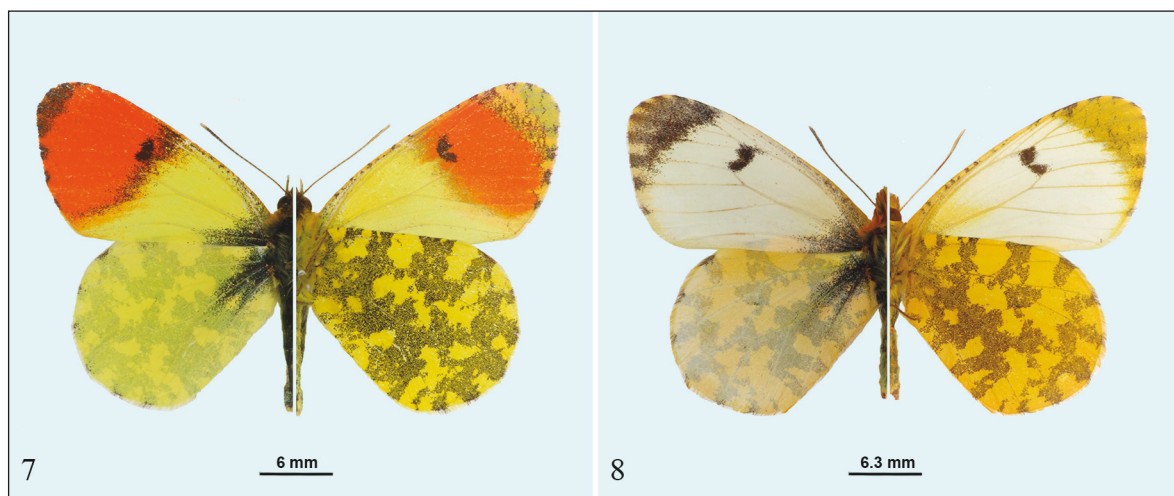


Figure 7. *Anthocharis damone*, male, Pioppe e Betulle Case, 714 m, Montargano, Mt Etna, Prov. Catania, 37.775° 15.140°, 29.IV.2023, T.A. Lambkin (21 mm). Figure 8, female, St Gerardo (Millicuccio), 516 m, 3 km NW of Piedimonte Etneo, Prov. Catania, 9.V.1993, T.A. Lambkin (22 mm).

Recorded flight period: March–May and July–September.

Family LYCAENIDAE

***Lycaena alciphron*** (Rottemburg, 1775) (Fig. 43)

A butterfly associated with steppic vegetation across the mountain, occurring in all steppic habitats above 700 m. including oak and pinewood clearings. It is one of the most common butterflies observed in these habitats.

Recorded flight period: May–September.

***Lycaena phlaeas*** (Linnaeus, 1761) (Fig. 44)

Abundant and ubiquitous on the mountain in a diverse range of habitats with records from 200–1800 m elevation. One of the most frequently observed butterflies on the mountain.

Recorded flight period: March–November.

***Favonius quercus*** (Linnaeus, 1758) (Fig. 45)

The available data indicate only a single record of this species from the western and northern slopes of the mountain. Thus, in the east it is restricted to oak woodlands from 500–1700 m elevation.

Recorded flight period: June–September.

***Satyrium ilicis*** (Esper, [1778]) (Fig. 46)

Occurs across the mountain in areas of oak woodland from 500–1800 m elevation. Adults perch on oak foliage and visit bramble blossom.

Recorded flight period: May–August.

***Satyrium w-album*** (Knoch, 1782) (Fig. 47)

Just one male specimen is known from the mountain collected at Piano Tavola, Belpasso at 300 m elevation on the southern slope of the mountain as reported by Cernigliaro et al. (1988). The authors provided no details on the specimen, just citing that it was the first for the mountain. Elsewhere in Sicily, more recently, Falci (2001) recorded *S. w-album* in June and July at Mimiani near Caltanissetta. Adults were only observed visiting bramble blossom (Falci, 2001). The Mt Etna

specimen may well be a vagrant from the Mimiani area.

Recorded flight period: May.

***Callophrys rubi*** (Linnaeus, 1758) (Fig. 48)

Occurs in a diverse range of habitats including damp, oak woodland clearings, waste areas and terraces, generally where there is a prevalence of bramble growing from which the adult butterflies actively visit its blossom. Often seen perched on oak foliage. It occurs across the mountain from 500–1700 m elevation.

Recorded flight period: April–July.

***Leptotes pirithous*** (Linnaeus, 1767) (Fig. 49)

Overall, a rarity on the mountain. Sometimes associated with one of its hostplants, *Plumbago Tourn. ex L.* (Plumbaginaceae), but most often occurs as lone individuals in a range of habitats from near sea level to 1700 m elevation.

Recorded flight period: May–September.

***Cacyreus marshalli*** Butler, [1898] (Fig. 50)

A common pest of ornamental *Geranium L.* (Geraniaceae) on the mountain. Current data for this introduced species indicate records only from the eastern slope from sea level to 875 m elevation, but these data are likely incomplete as the butterfly is probably ubiquitous on the mountain wherever *Geranium* is grown.

Recorded flight period: May–December.

***Lampides boeticus*** (Linnaeus, 1767) (Fig. 51)

A commonly observed species on the mountain occurring in a range of habitats from sea level to 1800 m elevation.

Recorded flight period: April–September.

***Celastrina argiolus*** (Linnaeus, 1758) (Fig. 52)

A common and widespread species across the mountain in a diversity of habitats, often in woodland clearings and margins. Available data indicate that the species occurs at elevations above 300 m up to the tree line at 1950 m.

Recorded flight period: April–September.

***Pseudophilotes baton*** (Bergsträsser, 1770) (Fig. 53)

Rarely observed on the mountain with just eight location records available to the author from all four slopes of the mountain from elevations of 700 m up to 1880 m. Adults occur in open flowery, rocky meadows, often on old lava flows, where they fly close to the ground and feed on flowering, low herbaceous plants.

Recorded flight period: April–August.

***Glaucopsyche alexis*** (Poda, 1761) (Fig. 54)

A common spring butterfly found in a diverse range of habitats including flowery meadows and woodland clearings from sea level to 1800 m elevation. At the higher elevations, adults persist into June.

Recorded flight period: April–June.

***Aricia agestis*** ([Denis et Schiffermüller], 1775) (Fig. 55)

Widespread across the mountain in a diverse range of habitats from low elevations (200 m) up to the tree line (1800 m). Adults fly low to the ground where they feed on flowering herbaceous plants.

Recorded flight period: April–September, November.

***Cyaniris semiargus*** (Rottemburg, 1775) (Fig. 56)

Available data indicate that the *C. semiargus* is not often observed on the mountain and may occur in highly localised colonies. It occurs in flowery, damp meadows, often in woodland clearings and in sheltered gullies on roadsides. The species bears a superficial resemblance to *G. alexis*. Occurs at moderate to high elevations (500–1800 m).

Recorded flight period: April–July.

***Polyommatus icarius*** (Esper, [1789]) (Fig. 57)

The only data on this butterfly from the mountain are the records reported by Sichel (1959) of seven males and two females collected on one day in July 1949 at Rifugio Citelli (1740 m elevation) and that of Bretherton (1965) who collected another male specimen in June 1965 at around 1500 m elevation above Nicolosi. No further specimens have

been recorded from the mountain, and it is possible that these specimens were perhaps from localised colonies which have since become extinct.

Recorded flight period: June, July.

***Polyommatus celinus*** (Austaut, 1879) (Fig. 58)

Together with *P. rapae* and *P. brassicae*, *P. celinus* is one of the most observed butterflies on the mountain from near sea level to the tree line at 1800 m on all four slopes. It occurs in a diverse range of habitats, being found in almost all habitat types, where it typically flies close to the ground and perches on and feeds from flowering herbaceous plants.

Recorded flight period: April–September.

***Polyommatus thersites*** (Cantener, 1834) (Figs. 9, 10, 59)

This species was recorded by Ragusa (1919) (p. 168) and by Mariani (1938) as occurring in Sicily, but both authors gave no specific details regarding location data for the species. Much later, Tolman and Lewington (2008) also indicated the species as occurring on the island. In contrast, Balletto et al., (2014) in their checklist of Italian butterflies, did not list the species occurring in Sicily. The collection of two males by the author from Mt Etna confirms its presence on the mountain. One specimen was collected near Piedimonte Etneo in a dry creek gully, Vallone Zambataro, at 200 m elevation in May 2005 (Fig. 9), with another collected near Montargano at 700 m elevation in May 2024 (Fig. 10). Because of its similarity to the very common *P. celinus*, *P. thersites* has been likely overlooked and may well be more common than these few records indicate. Additionally, *P. thersites* appears to share an identical habitat to *P. celinus* with the two species exhibiting similar behaviours.

Recorded flight period: May.

## Family NYMPHALIDAE

***Nymphalis polychloros*** (Linnaeus, 1758) (Fig. 60)

The current data indicate no records from the western slope of the mountain for this species. On the eastern and southern side of the mountain, it has been recorded from 200–1800 m in a diverse range

of habitats, but a preference is for clearings in deciduous and evergreen oak woodlands. For such a large conspicuous butterfly, it is surprising that such few records exist for the species on the mountain, although the butterfly does have a very swift flight and settles infrequently. Records of the butterfly from March and April are hibernating individuals that emerge from hibernation and commence the summer generation. At Montargano and near Millicucco (2024) this species was collected in a fermenting-fruit bait trap (see Material and Methods).

Recorded flight period: March, April, June, July and November.

*Inachis io* (Linnaeus, 1758) (Fig. 61)

As for *N. polychloros*, there are no records available to the author from the western slope of the mountain and again not many records for a relatively large showy species. The species occurs in damp meadows and clearings, often in disturbed moist areas where its hostplant *Urtica* L. (Urticaceae) is abundant. The butterfly flies at mid elevations of 500–1000 m. At Montargano and near Millicucco (2024) this species was collected in a fermenting-fruit bait trap (see Material and Methods).

Recorded flight period: May–July.

*Vanessa atalanta* (Linnaeus, 1758) (Fig. 62)

A very fast flying species found in damp meadows and disturbed areas where its hostplant *Urtica* grows. Occurs from sea level to 1600 m across the four slopes of the mountain. Adult butterflies may hibernate over the winter months, especially at lower elevations, which may explain specimens recorded on warm days in November and December (Sichel, 1963). At Montargano and near Millicucco (2024) this species was collected in a fermenting-fruit bait trap (see Material and Methods).

Recorded flight period: March–September, November, December.

*Vanessa cardui* (Linnaeus, 1758) (Fig. 63)

A migratory species that arrives on the mountain from Africa in early spring (Tolman & Lewington, 2008) and then breeds over the summer period. It is found in a diverse range of habitats, especially in disturbed areas and on old lava flows. The author

has records from 300 m elevation up to the tree line at 1800 m.

Recorded flight period: March–September.

*Aglais urticae* (Linnaeus, 1758) (Fig. 64)

A predominantly montane butterfly where it occurs in flowery meadows, woodland clearings and steppic environments. The lowest elevation recorded for *A. urticae* in this study is 650 m at Adrano and 600 m at Pedara, but all other records are at or above 900 m elevation right up to past the tree line at around 2500 m. There are records from all slopes of the mountain.

Recorded flight period: April–August.

*Polygonia c-album* (Linnaeus, 1758) (Fig. 65)

A butterfly mostly found in damp oak woodland clearings and on damp abandoned terraces. The current study has records from all slopes of the mountain from sea level to 1700 m. At Montargano and near Millicucco (2024) this species was collected in a fermenting-fruit bait trap (see Material and Methods).

Recorded flight period: April–September.

*Polygonia egea* (Cramer, [1775]) (Fig. 66)

A species of hot, dry rocky terrain with records from all four slopes of the mountain from 300–2200 m elevation but much more common at mid elevations from 300 to 900 m. A common species in villages where the butterfly perches on hot walls in the late afternoon.

Recorded flight period: April–September.

*Argynnis adippe* ([Denis et Schiffermüller], 1775) (Figs. 11, 67)

Just two specimens are known from the mountain. A female collected in August 1985 on the southern slope at 1350 m elevation as reported by Cernigliaro et al. (1988) and another female collected at 1000 m on the Via Mare Neve, above Linguaglossa in July 1980 (Fig. 11). The latter specimen was collected in a flowery meadow near the roadside. Cernigliaro et al. (1988) indicated that *A. adippe* did occur on the Nebrodi mountain range, so perhaps this specimen collected on the Via Mare Neve did originate from the Nebrodi

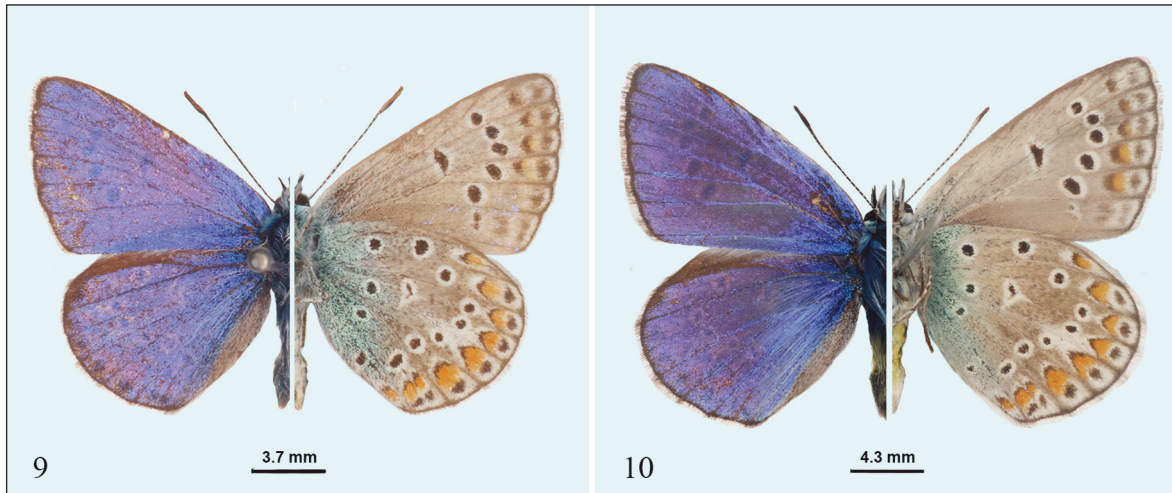


Figure 9. *Polyommatus thersites*, male, Vallone Zambataro, 200 m, below Monte San Michele, NE of Piedimonte Etneo, 2.v.2005, T.A. Lambkin (14 mm). Figure 10. *Polyommatus thersites*, male, aqueduct between Montargano and Vena, 708 m, 37.783°, 15.142°, 26.v.2024, T.A. Lambkin (16 mm).

mountain range which is approximately 20 km distant. Based on the extremely low number of records of this species from the mountain, the two specimens recorded here are more than likely vagrants.

Recorded flight period: July, August.

***Argynnis niobe*** (Linnaeus, 1758) (Figs. 12, 68)

Just a single specimen of this species is known by the author; a male collected in July 1980 at 1000 m on the Via Mare Neve, above Linguaglossa (Fig. 12), on the same day and at the exact same location that the female *A. adippe* was collected. The only reference of this species recorded from near Mt Etna is that of Fountaine (1897) who found it relatively common at Monte Ciccìa, at the far end of the Peloritani Mountain Range, which is roughly 60 km to the northeast of Via Mare Neve. Notwithstanding, perhaps the specimen originated from somewhere on the Peloritani Range. In his treatment of the butterflies of Sicily, Ragusa (1916–19) only mentions the publication of Fountaine (1897) in reference to *A. niobe* in Sicily. Since this is the only known specimen from Mt Etna, it is almost certainly a vagrant to the mountain.

Recorded flight period: July.

***Argynnis pandora*** ([Denis et Schiffermüller], 1775) (Fig. 69)

A fast and robust flyer, occurring in a diverse range of habitats; especially clearings in deciduous and evergreen oak woodlands. The butterfly is a common morning visitor to nectar-rich flowers such as thistle, *Onopordum illyricum* L. (Compositae) where it is most easily observed. It occurs from mid elevations (500 m) to above the tree line (2500 m). Despite being such a large and spectacular butterfly, the author has overall few records from the mountain (from only 14 locations). These records indicate that it is largely absent from the northern and western slopes of the mountain.

Recorded flight period: July–September.

***Argynnis paphia*** (Linnaeus, 1758) (Fig. 70)

This species occurs in the same habitats as *A. pandora* and exhibits similar behaviour. Like *A. pandora*, there are remarkably few records available for *A. paphia* on the mountain (only 10 locations), occurring from 600 m to 1500 m elevation. Equally the author has no records of the species from western half of the mountain.

Recorded flight period: June–September.

***Issoria lathonia*** (Linnaeus, 1758) (Fig. 71)

A montane species that occurs in open flowery meadows and steppe environments with almost all records in this current study, bar one (at 700 m ele-

vation), from above 1100 m elevation. Again, strangely, there are relatively few records for this highly distinguishable low flying species (just 15 locations) and only one record from the western half of the mountain.

Recorded flight period: April, June–September.

***Brenthis daphne*** ([Denis et Schiffermüller], 1775)  
(Fig. 72)

This species is essentially montane on Mt Etna with no available records below 875 m but extending to over 1700 m elevation. As for the previous three species, there are relatively few records for *B. daphne* on the mountain (just 10 locations), with no records on the western half of the mountain, with most records from the north-eastern and eastern parts of the mountain. The butterfly is most often observed visiting bramble blossom (*Rubus* L.) in bushy places and woodland clearings. Its primary larval hostplant is the foliage of *Rubus*. Marchese (2003) indicates that *R. idaeus* is restricted to the northeastern part of the mountain.

Recorded flight period: June–August.

***Boloria euphrosyne*** (Linnaeus, 1758) (Fig. 73)

A species limited to the upper heights of the mountain. The current data available to the author indicates that the species is restricted to elevations between 1500 m and 1950 m on the four slopes of the mountain. It flies in flowery meadows in coniferous woodland clearings and in steppic environments. Few records were available to the author with only 11 locations noted.

Recorded flight period: May–July.

***Melitaea cinxia*** (Linnaeus, 1758) (Fig. 74)

This species is rarely observed on the mountain. Cernigliaro et al. (1988) first recorded seven males in May 1987 at 1100 m elevation on the north-western slope of the mountain. At that time, Cernigliaro et al. (1988) thought that the butterfly was restricted to that area of the mountain. Subsequently, a further two males are recorded here in May 1993 from the Via Mare Neve above Linguaglossa at 1250 m and 1500 m elevation, indicating that the species may be more widespread than previously thought. The

two specimens recorded from the Via Mare Neve were flying low to the ground in flowery meadows near coniferous woodland with other *Melitaea* species.

Recorded flight period: May.

***Melitaea nevadensis*** Oberthür, 1904 (Fig. 75)

Widespread across the northern, eastern and southern slopes of the mountain with no available records from the western slope. The species flies at mid elevations from 500 m to 1700 m in a diverse range of habitats including flowery meadows in woodland clearings and on abandoned terraces. Several specimens were collected by the author at 500 m elevation at Millicucco near Piedimonte Etneo in July 1980. After repeated visits to the site since then, this population is no longer there and is now likely extinct.

Recorded flight period: May–July.

***Melitaea didyma*** (Esper, [1778]) (Fig. 76)

This species has been recorded mostly above 600 m, up 1800 m, with several collected in July 1980 near Piedimonte Etneo (Vallone Zambataro) at 200m. This specific site has been visited many times by the author since 1980 with no further observations of the species at this location. Thus, this population is likely extinct. Further up the mountain, it is a common summer butterfly where it flies in flowery meadows in oak and coniferous woodland clearings and on roadsides and on abandoned terraces, where it often flies with other *Melitaea* species. Available records indicate that it is largely absent from the western side of the mountain.

Recorded flight period: May–August, October.

***Melitaea ornata*** Christoph, 1893 (Fig. 77)

Strictly a spring butterfly on the mountain. It mostly flies at mid elevations from 500–1200 m with a few records from the Pineta di Linguaglossa at 1500 m elevation. It occurs on all four slopes of the mountain, in a diverse range of habitats but most often in dry, open grassy places amongst scattered oak woodland. The butterfly frequently occurs on old lava flows.

Recorded flight period: April–June.

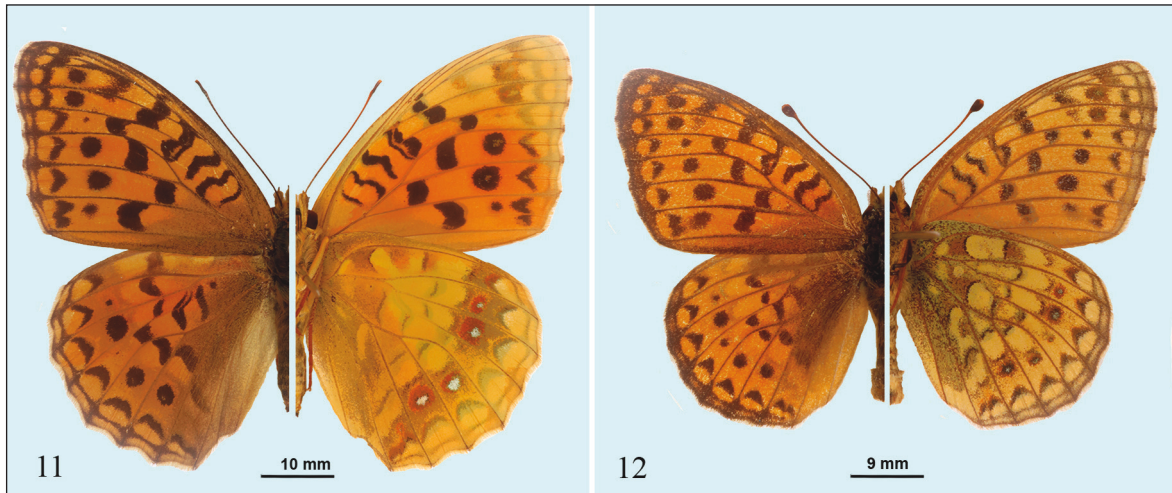


Figure 11. *Argynnis adippe*, female, Petto Petrarò (1000 m), Via Mare Neve, Linguaglossa, 17.VII.1980, T.A. Lambkin (32 mm). Figure 12. *Argynnis niobe*, male, Petto Petrarò (1000 m), Via Mare Neve, Linguaglossa, 17.VII.1980, T.A. Lambkin (25 mm).

***Limnitis reducta*** Staudinger, 1901 (Fig. 78)

A species of well shaded, damp, oak woodland clearings but it is also found in coniferous woodland clearings. Ubiquitous on the mountain, occurring from 500 m elevation to 1800 m, although mostly not above 1200 m elevation. The distribution of the butterfly closely matches that of its primary larval hostplant *Lonicera etrusca* G. Santi (Caprifoliaceae) on the mountain which grows no higher than 1400 m (Marchese, 2003).

Recorded flight period: May–September.

***Libythea celtis*** (Laicharting, [1782]) (Fig. 79)

A common summer butterfly on the mountain. Occurs primarily in mid-level woodland (600–1000 m elevation) containing its major larval hostplant *Celtis australis* L. (Cannabaceae) trees. Butterflies peak in numbers in June and then disperse over the mountain with vagrant specimens occurring as high as 1950 m elevation. Specimens observed in March to early May have previously hibernated over winter and become active again in spring and commence the summer generation. Adults have been observed in June feeding on the blossom of *Castanea sativa* Miller (Fagaceae).

Recorded flight period: March–July, September.

***Kanetisa circe*** ([Denis et Schiffermüller], 1775) (Fig. 80).

A frequently observed species in the summer and autumn months. Current data indicate that it occurs in mid elevations from 300–1500 m in dry grassy areas, often in sparse oak woodland and in coniferous woodland clearings. It also flies in flowery meadows and on abandoned terraces. At Montargano and near Millicuccio (2024) this species was collected in a fermenting-fruit bait trap (see Material and Methods).

Recorded flight period: May–September.

***Hipparchia blachieri*** (Fruhstorfer, 1909) (Fig. 81)

Occurs in rocky grassy environments in sparse oak woodland and in coniferous woodland clearings, from 475–1800 m elevation on all slopes of the mountain. Leigheb (1978) quoted similar elevation parameters for this species, i.e. from 500–1500 m. Adults typically land on rock surfaces and trunks of oaks. At Montargano and near Millicuccio (2024) this species was collected in a fermenting-fruit bait trap (see Material and Methods). *Hipparchia blachieri* is endemic to Sicily and the coastal section of southwestern Italy from Napoli to Reggio di Calabria (Tshikolovets, 2011).

Recorded flight period: May–September.

***Hipparchia semele*** (Linnaeus, 1758) (Fig. 82)

This species occurs sympatrically with *H. blachieri* in similar habitats and elevations (545–



2200 m) across the mountain on all four slopes. In his work on *Hipparchia* in Sicily, Leigheb (1978) also indicated similar elevations for this species of between 400 and 1600 m, with a preference of 1000–1400 m. As for *H. blachieri*, adults of *H. semele* occur in coniferous and oak woodland clearings where they characteristically perch on tree trunks.

Recorded flight period: May–September.

***Hipparchia statilinus*** (Hufnagel, 1766) (Fig. 83)

Occurs on hot, dry, grassy and rocky slopes with sparse woodland. Adults fly predominantly in late summer and perch on rocks or the hot ground. Available data shows only a single record from the whole western half of the mountain, with records from 200–1800 m elevation on the other three slopes, with most records being below 1000 m elevation.

Recorded flight period: July–September.

***Hipparchia fagi*** (Scopoli, 1763) (Fig. 84)

On Mt Etna, this species is restricted to coniferous woodland and clearings in late summer, at elevations above 1200 m (up to 1900 m) where adults typically perch on the trunks of conifers. Current data available indicate that it is largely absent from the western and northern slopes of the mountain.

Recorded flight period: July–September.

***Hipparchia hermione*** (Linnaeus, 1764) (Fig. 85)

This current work has limited data on the distribution of this species on the mountain. Just a single record from the western slope and only three records from Via Mare Neve and Piano Provenzana, above Linguaglossa. These are based on the work of Cernigliaro et al. (2003) and the author's limited sampling data (using records of only males: see Methods and Materials). The species appears to be montane, occurring at elevations of 1160–1800 m. Behaviour of the adults is assumed to be much like that of *H. fagi*.

Recorded flight period: July–September.

***Chazara briseis*** (Linnaeus, 1764) (Fig. 86)

Based on current data, this species appears to be

restricted to the southern slope of the mountain at elevations of 875–1880 m, despite its published larval hostplants, *Bromus* L. and *Festuca* L. (Graminaceae) (Tolman and Lewington 2008) being common on the mountain at all elevations (Marchese 2003). It flies in hot, dry stony places with scattered grass where it frequently settles on the ground. It is primarily a late summer flyer.

Recorded flight period: July, August.

***Melanargia galathea*** (Linnaeus, 1758) (Fig. 87)

Data available to the author indicate that this is a common species on the eastern half of the mountain from 500–1700 m elevation, but strangely no records are available from the western slope. It occurs in a diverse range of habitats including grassy areas with flowers in coniferous and oak woodland clearings.

Recorded flight period: May–August.

***Melanargia russiae*** (Esper, [1781]) (Fig. 88)

All available data indicate that this species is restricted to the northern slope of the mountain at elevations of 700–1100 m. The species flies in open flowery meadows and on abandoned terraces. The population that Cernigliaro et al. (1988) referred to as '*Linguaglossa dintorni 800 m*', was on abandoned terraces at Solicchiata (A. Cernigliaro, *pers. comm.*) and the butterfly was still present in 2010. A recent survey of the specific area indicated that the population is perhaps no longer extant as many of the terraces are now vineyards.

Recorded flight period: May–July.

***Maniola jurtina*** (Linnaeus, 1758) (Fig. 89)

A common summer butterfly on the four slopes of the mountain. It occurs in open grassy meadows at elevations of 200–1500 m. Male butterflies generally emerge earlier than the females.

Recorded flight period: April–September.

***Hyponephele lupina*** (Costa, [1836]) (Fig. 90)

The only records of this species from the mountain are two males referred to by Cernigliaro et al. (1989) collected near Adrano at 900 m elevation in

July 1981, and again near Adrano at 850 m elevation in June 1982. Cernigliaro et al. (1989) indicated that the species can be very localized in its distribution, so it is unclear whether this species is a vagrant on the mountain or perhaps may be a highly localized resident that has not been further detected. Cernigliaro et al. (1989) provided no further details regarding the habitat of the species, but Tolman & Lewington (2008) indicate that the species can be found in hot, dry, grassy and bushy places.

Recorded flight period: June, July.

***Hyponephele lycaon*** (Küns, 1774) (Fig. 91)

The author has just four records (two males and two females) of this species from the mountain. One male is from near Rovittello at 750 m collected on a dry abandoned terrace in August 1991 and the other three specimens are from Vallone Zambataro at 200 m (near Piedimonte Etneo) which is a dry rocky gully, collected in July 2003 (female) and August 1991 (male and female). Despite further robust butterfly sampling in these two areas, there are no further records of this species from the mountain. Thus, based on this evidence, the species is likely a vagrant to the mountain.

Recorded flight period: July, August.

***Pyronia cecilia*** (Vallantin, 1894) (Fig. 92)

This species is a common summer butterfly on the mountain, but the available data indicate an absence of the species from the western half of the mountain. It occurs at a broad range of elevations from 200–1700 m, and it frequently flies in sunny, dry grasslands. Males appear earlier than females with very few males still flying in August. At Montargano and near Millicucco (2024) this species was collected in a fermenting-fruit bait trap (see Material and Methods).

Recorded flight period: June–September.

***Coenonympha pamphilus*** (Linnaeus, 1758) (Fig. 93)

A very common butterfly across the mountain in a diverse range of habitats from 200–1700 m elevation. It frequents grassy areas including cultivated zones. At Montargano and near Millicucco

(2024) this species was collected in a fermenting-fruit bait trap (see Material and Methods).

Recorded flight period: March–September.

***Pararge aegeria*** (Linnaeus, 1758) (Fig. 94)

One of the most observed butterflies on the mountain. Mostly occurs in mixed woodland where it prefers shaded areas in clearings where males territorially bask in sunlit glades, often on the foliage of *Rubus*. Occurs on all slopes of the mountain at elevations from sea level to the tree line at 1700 m. At Montargano and near Millicucco (2024) this species was collected in a fermenting-fruit bait trap (see Material and Methods).

Recorded flight period: March–September.

***Lasiommata maera*** (Linnaeus, 1758) (Fig. 95)

A species of moderate to high elevations (500–1700 m) occurring on grassy slopes in scattered woodland, and in coniferous and oak woodland clearings where it frequents similar habitats to those of *P. aegeria*. The current data has very few records from the western slope of the mountain.

Recorded flight period: May–September.

***Lasiommata megera*** (Linnaeus, 1767) (Fig. 96)

A common butterfly on all four slopes of the mountain from 200 m to the tree line (1900 m) where it frequents a diverse range of habitats. It frequently occurs on grassy, rocky slopes but can be found in woodland clearings and in cultivated areas and often sits on stone walls.

Recorded flight period: April–September.

***Danaus chrysippus*** (Linnaeus, 1758) (Fig. 97)

Just three specimens of this species are recorded from the Etna region; a male specimen collected in Catania in June 1988 (Cernigliaro et al., 2003), a female collected in June 1990 at Santa Maria La Stella di Acireale (Cernigliaro et al., 1994), and another specimen (sex unknown) recorded from Aci San Antonio in the summer of 1990 by Arnone & Romano (1991). In Sicily, this vagrant species is known from hot, coastal plains, river gullies and sand dune areas (Tshikolovets, 2011).

Recorded flight period: June.

## DISCUSSION

Of the 176 locations where butterflies were either observed or collected from the mountain, just 28 are from the mountain's western half (Fig. 98). Thus, a greater frequency of observations and collections has occurred on the eastern half of the mountain. The lack of observations and collections made on the western half of the mountain, especially during summer and autumn, has likely skewed the overall results, such that 18 of the more common butterfly species of the mountain which are probably widespread, appear to be largely absent from the western half. Therefore, their absence is more than likely an artefact of lower frequency of sampling. Moreover, it is puzzling why there are relatively few location records for several of the quite large or easily recognizable species, for example *N. polychloros*, *I. io*, *A. pandora* and *A. paphia*. Moreover, several of these species also appear to be absent from the western slope. So, it seems that these species have perhaps been overlooked and in general their incidence has not been recorded by previous authors. More sampling and observations of butterflies on the western slope of the mountain should clarify this anomaly.

Analyses of the data indicate that 12 species have infrequently been collected or observed on the mountain or are known from very few specimens and thus are presumed to be likely vagrants; these species are: *R. floccifer*, *R. baeticus*, *M. alta*, *P. alexanor*, *S. w-album*, *P. icarius*, *P. thersites*, *A. adippe*, *A. niobe*, *H. lupina*, *H. lycaon* and *D. chrysippus*. It is unclear whether *P. icarius*, *P. thersites* and *H. lupina* are vagrant or perhaps have been overlooked because of their similarity to other species, as in *P. thersites*, or exist in very localized colonies that have eluded subsequent detection (as for *P. icarius* and *H. lupina*). The skipper *G. nostradamus* (Figs. 6, 26) in all likelihood is linked to habitats associated with calcareous soils and thus is not strictly linked to the volcanic soils of the mountain. For this reason, this species is presumably restricted to the fringes of the mountain and may be classed as resident. Thus, of the 84 species of butterfly recorded from the mountain, 72 are more than likely to be resident.

The combined phenology plot for the 84 species recorded from the Mt Etna region (Fig. 13) indi-

cated that the months of May to August inclusive have the highest recorded numbers of species of adult butterflies on the wing, with the peak in July. The lowest numbers of butterfly species on the wing are over the winter months from October through to February inclusive.

It is not clear if *T. lineola* (Fig. 22) is still extant on the mountain as Cernigliaro et al. (1992) specifically referred to the species from elsewhere in Sicily, but did not report it from Mt Etna. This, combined with the absence of records from the time of the last verified record made by Valetta (1979) in 1977, and the robust search for this species undertaken by the author since 1980, points to the species likely no longer occurring on the mountain.

The available data indicate that the distribution of *M. russiae* appears to be highly localized on the northern slope (Fig. 88), *C. briseis* seems confined to the southern slope (Fig. 86) and *M. cinxia* is restricted to the northeastern and northwestern slopes of the mountain (Fig. 74). Of the 72 species which are considered resident on the mountain, just four, *P. manni*, *L. sinapis*, *L. pirithous* and *P. baton* appear to be inherently rare and may be highly localized in their distribution.

Further analyses of the data do indicate that the coastal side of the mountain from sea level to roughly 500 m elevation has the lowest butterfly species richness. This is understandable as this lower eastern zone of the mountain is the most anthropogenically disturbed and urbanized area of the whole mountain where fewer butterfly species would be expected. Certainly, the zone from 500-1500 m elevation has the highest butterfly richness, at 71 resident species, excluding *B. euphrosyne* which is restricted to higher elevations.

In summary, this study has indicated that overall, due to the protected status of the mountain, the butterfly populations on the mountain appear to be relatively stable with most species being highly predictable in their preferred habitats and flight periods. Moreover, the results of the study concord well with the findings of Cernigliaro et al. (1988) who concluded that, despite the strong anthropogenic influences on some areas of the mountain, the Mt Etna butterfly fauna was still relatively rich and abundant. A concern is with the clearing of abandoned terraces on the northern slope to replant vineyards. Several butterfly species are resident on

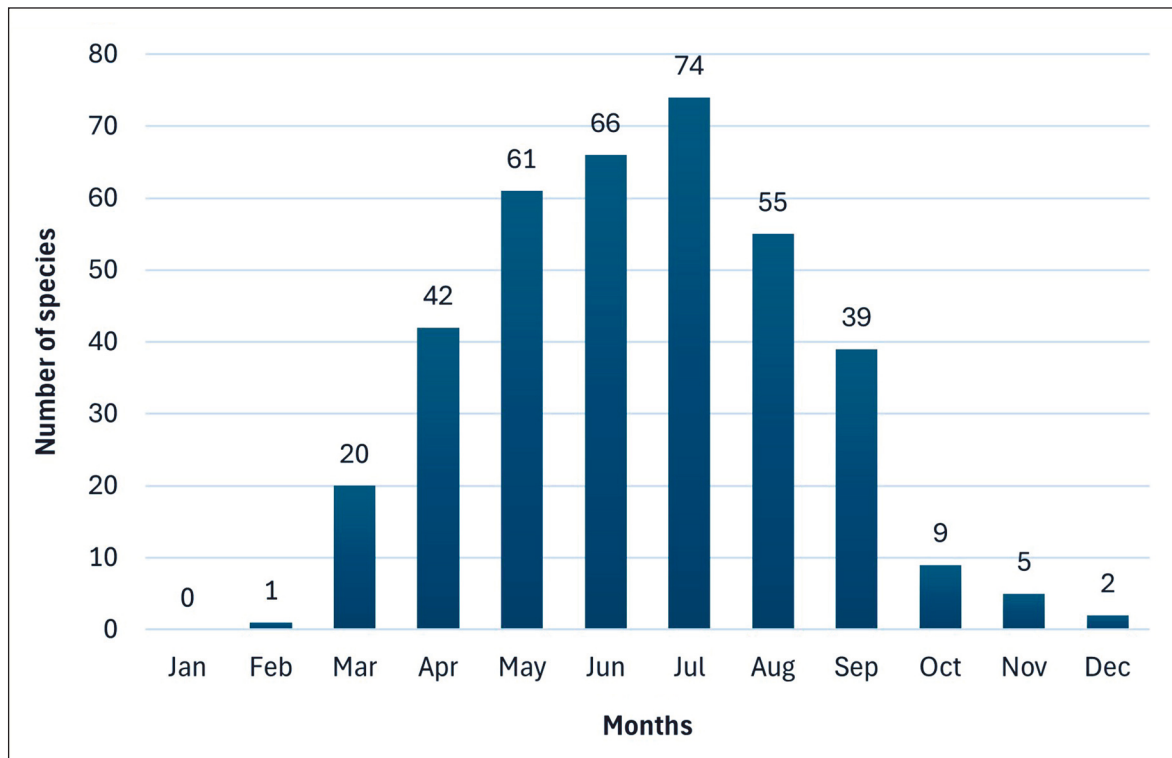


Figure 13. Combined phenology (recorded flight periods) of the 84 butterfly species recorded from the Mt Etna region plotted against month of year.

these terraces, with one species (*M. russiae*) having a very restricted distribution on this slope. It is suggested here that when reclaiming abandoned terraces for vineyard plantings, it would be prudent to retain some abandoned terraces to ensure the survival of resident butterfly populations in these habitats.

Finally, it must be considered that the current study is intrinsically provisional so undertaking more sampling of butterflies on the mountain to augment the current data would provide a much more complete picture of the status of the butterfly fauna of Mt Etna. The resultant data would serve as a solid baseline and a useful yardstick to assess any potential future climate change or anthropogenic impacts on the butterfly fauna of the mountain.

#### ACKNOWLEDGEMENTS

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**TABLE 1.**  
**BUTTERFLY CHECKLIST OF THE MT**  
**ETNA REGION (SICILY, ITALY)**

(Numbers in superscript refer to species indicated in Table 2)

**Family HESPERIIDAE**

Subfamily Pyrginae

- <sup>1</sup>*Pyrgus armoricanus* (Oberthür, 1910)  
<sup>2</sup>*Pyrgus malvoides* (Elwes & Edwards, 1897)  
<sup>3</sup>*Spialia orbifera* (Hübner, [1823])  
<sup>4</sup>*Carcharodus alceae* (Esper, [1780])  
<sup>5</sup>*Reverdinus floccifer* (Zeller, 1847)  
<sup>6</sup>*Reverdinus baeticus* (Rambur, [1839])  
<sup>7</sup>*Muschampia alta* (Schwingenschuss, 1942)

Subfamily Hesperinae

- <sup>8</sup>*Thymelicus acteon* (Rottemburg, 1775)  
<sup>9</sup>*Thymelicus lineola* (Ochsenheimer, [1808])  
<sup>10</sup>*Thymelicus sylvestris* (Poda, 1761)  
<sup>11</sup>*Ochlodes sylvanus* (Esper, [1777])  
<sup>12</sup>*Gegenes pumilio* (Hoffmanssegg, 1804)  
<sup>13</sup>*Gegenes nostradamus* (Fabricius, 1793)

**Family PAPILIONIDAE**

Subfamily Papilioninae

- <sup>14</sup>*Papilio machaon* Linnaeus, 1758  
<sup>15</sup>*Papilio alexanor* Esper, [1800]  
<sup>16</sup>*Iphiclides podalirius* (Linnaeus, 1758)

Subfamily Parnassiinae

- <sup>17</sup>*Zerynthia cassandra* (Geyer, [1828])

**Family PIERIDAE**

Subfamily Pierinae

- <sup>18</sup>*Aporia crataegi* (Linnaeus, 1758)  
<sup>19</sup>*Pieris brassicae* (Linnaeus, 1758)  
<sup>20</sup>*Pieris mannii* (Mayer, 1851)  
<sup>21</sup>*Pieris rapae* (Linnaeus, 1758)  
<sup>22</sup>*Pieris napi* (Linnaeus, 1758)  
<sup>23</sup>*Euchloe ausonia* (Hübner, [1804])  
<sup>24</sup>*Anthocharis cardamines* (Linnaeus, 1758)  
<sup>25</sup>*Anthocharis damone* (Boisduval, 1836)  
<sup>26</sup>*Pontia edusa* (Fabricius, 1777)

Subfamily Coliadinae

- <sup>27</sup>*Colias crocea* (Geoffroy, 1785)  
<sup>28</sup>*Gonepteryx cleopatra* (Linnaeus, 1767)

Subfamily Dismorphiinae

- <sup>29</sup>*Leptidea sinapis* (Linnaeus, 1758)

**Family LYCAENIDAE**

Subfamily Lycaeninae

- <sup>30</sup>*Lycaena alciphron* (Rottemburg, 1775)  
<sup>31</sup>*Lycaena phlaeas* (Linnaeus, 1761)

Subfamily Theclinae

- <sup>32</sup>*Favonius quercus* (Linnaeus, 1758)  
<sup>33</sup>*Satyrium ilicis* (Esper, [1778])  
<sup>34</sup>*Satyrium w-album* (Knoch, 1782)  
<sup>35</sup>*Callophrys rubi* (Linnaeus, 1758)

Subfamily Polyommatainae

- <sup>36</sup>*Leptotes pirithous* (Linnaeus, 1767)  
<sup>37</sup>*Cacyreus marshalli* Butler, [1898]  
<sup>38</sup>*Lampides boeticus* (Linnaeus, 1767)  
<sup>39</sup>*Celastrina argiolus* (Linnaeus, 1758)

<sup>40</sup>*Pseudophilotes baton* (Bergsträsser, 1770)

<sup>41</sup>*Glaucoopsyche alexis* (Poda, 1761)

<sup>42</sup>*Aricia agestis* ([Denis et Schiffermüller], 1775)

<sup>43</sup>*Cyaniris semiargus* (Rottemburg, 1775)

<sup>44</sup>*Polyommatus icarius* (Esper, [1789])

<sup>45</sup>*Polyommatus celinus* (Austaut, 1879)

<sup>46</sup>*Polyommatus thersites* (Cantener, 1834)

## Family NYMPHALIDAE

### Subfamily Nymphalinae

<sup>47</sup>*Nymphalis polychloros* (Linnaeus, 1758)

<sup>48</sup>*Inachis io* (Linnaeus, 1758)

<sup>49</sup>*Vanessa atalanta* (Linnaeus, 1758)

<sup>50</sup>*Vanessa cardui* (Linnaeus, 1758)

<sup>51</sup>*Aglais urticae* (Linnaeus, 1758)

<sup>52</sup>*Polygonia c-album* (Linnaeus, 1758)

<sup>53</sup>*Polygonia egea* (Cramer, [1775])

### Subfamily Heliconiinae

<sup>54</sup>*Argynnis adippe* ([Denis et Schiffermüller], 1775)

<sup>55</sup>*Argynnis niobe* (Linnaeus, 1758)

<sup>56</sup>*Argynnis pandora* ([Denis et Schiffermüller], 1775)

<sup>57</sup>*Argynnis paphia* (Linnaeus, 1758)

<sup>58</sup>*Issoria lathonia* (Linnaeus, 1758)

<sup>59</sup>*Brenthis daphne* ([Denis et Schiffermüller], 1775)

<sup>60</sup>*Boloria euphrosyne* (Linnaeus, 1758)

<sup>61</sup>*Melitaea cinxia* (Linnaeus, 1758)

<sup>62</sup>*Melitaea nevadensis* Oberthür, 1904

<sup>63</sup>*Melitaea didyma* (Esper, [1778])

<sup>64</sup>*Melitaea ornata* Christoph, 1893

### Subfamily Limenitidinae

<sup>65</sup>*Limenitis reducta* Staudinger, 1901

### Subfamily Libytheinae

<sup>66</sup>*Libythea celtis* (Laicharting, [1782])

### Subfamily Satyrinae

<sup>67</sup>*Kanetisa circe* ([Denis & Schiffermüller], 1775)

<sup>68</sup>*Hipparchia blachieri* (Fruhstorfer, 1909)

<sup>69</sup>*Hipparchia semele* (Linnaeus, 1758)

<sup>70</sup>*Hipparchia statilinus* (Hufnagel, 1766)

<sup>71</sup>*Hipparchia fagi* (Scopoli, 1763)

<sup>72</sup>*Hipparchia hermione* (Linnaeus, 1764)

<sup>73</sup>*Chazara briseis* (Linnaeus, 1764)

<sup>74</sup>*Melanargia galathea* (Linnaeus, 1758)

<sup>75</sup>*Melanargia russiae* (Esper, [1781])

<sup>76</sup>*Maniola jurtina* (Linnaeus, 1758)

<sup>77</sup>*Hyponephele lupina* (Costa, [1836])

<sup>78</sup>*Hyponephele lycaon* (Küns, 1774)

<sup>79</sup>*Pyronia cecilia* (Vallantin, 1894)

<sup>80</sup>*Coenonympha pamphilus* (Linnaeus, 1758)

<sup>81</sup>*Pararge aegeria* (Linnaeus, 1758)

<sup>82</sup>*Lasiommata maera* (Linnaeus, 1758)

<sup>83</sup>*Lasiommata megera* (Linnaeus, 1767)

### Subfamily Danainae

<sup>84</sup>*Danaus chrysippus* (Linnaeus, 1758)

**TABLE 2.** 176 locations (locations, altitude, coordinates and species-number) where butterflies were observed or collected from the mountain. Species-number refers to species numbered in superscript in checklist; numbers bolded refer to published data; numbers not bolded refer to data from the author, collection of B. Giandolfo, and locations derived from European Butterfly Monitoring: <https://butterfly-monitoring.net/> (2024); locations without names are derived from European Butterfly Monitoring.

Location	Elevation m	Coordinates	Species recorded at each location (refer to Table 1)
Above Belpasso	800	37.623°, 14.984°	<b>4, 9, 16, 23, 65</b>
Above Bronte	894	37.771°, 14.845°	<b>14, 19, 21, 22, 23, 24, 25, 26, 27, 31, 40, 41, 42, 45, 50, 53, 64, 80, 81, 83</b>
Above Bronte	1000	37.756°, 14.858°	<b>14, 19, 26, 27, 50, 65, 67</b>
Above Case Calderera, Contrada Pirao	1046	37.850°, 14.992°	22, 39, 63, 67, 74, 76, 81
Above Fornazzo, Mare Neve	1000	37.745°, 15.098°	16, 21, 22, 24, 25, 30, 31, 41
Above Fornazzo, Mare Neve	900	37.738°, 15.100°	30, 42
Above Fornazzo, Mare Neve	1180	37.751°, 15.086°	30, 45
Above Fornazzo, Mare Neve	1486	37.771°, 15.079°	19, 21, 27, 28, 30, 41, 65, 66, 80
Above Nicolosi	1600	37.685°, 14.985°	<b>44</b>
Above Nicolosi	1800	37.693°, 14.992°	<b>9, 10, 47, 60, 63, 65</b>
Above Nicolosi	1200	37.665°, 14.985°	<b>41, 43</b>
Above Nicolosi	870	37.628°, 14.015°	<b>16, 17, 19, 20, 21, 23, 24, 25, 27, 28, 31, 39, 41, 43, 50, 66, 80, 81, 83</b>
Above Nicolosi	800	37.627°, 15.024°	<b>2, 17, 21, 23, 24, 25, 31, 41, 43, 45, 49, 50, 64, 80, 81, 83</b>
Above Pedara	1200	37.666°, 15.024°	<b>26, 47, 57, 62, 65, 66, 67</b>
Above Ragalna	990	37.652°, 14.962°	3, 10, 17, 19, 21, 26, 27, 30, 31, 33, 39, 62, 63, 65
Above Rifugio Citelli	1850	37.761°, 15.055°	30, 45
Above Zafferana	765	37.871°, 14.950°	<b>80</b>
Above Zafferana	900	37.689°, 14.084°	<b>2, 16, 17, 19, 21, 22, 23, 24, 25, 27, 28, 32, 39, 41, 51, 70, 74, 76, 79, 80, 81</b>
Above Zafferana	1000	37.690°, 15.024°	<b>2, 3, 8, 16, 17, 20, 22, 23, 24, 25, 27, 29, 31, 41, 42, 45, 67</b>
Above Zafferana	1700	37.697°, 15.038°	<b>1, 9, 18, 27, 30, 32, 36, 38, 39, 51, 58, 71, 79, 81</b>
Above Zafferana	1500	37.696°, 14.950°	<b>2, 9, 11, 14, 16, 21, 22, 27, 28, 29, 30, 31, 32, 35, 39, 42, 45, 49, 50, 56, 59, 60, 62, 63, 65, 67, 68, 74, 76, 79, 80, 83</b>
Above Zafferana	1100	37.695°, 15.075°	<b>16, 17, 20, 23, 24, 25, 27, 31, 35, 39, 42, 45</b>
Above Zafferana	1400	37.699°, 15.049°	<b>69</b>
Aci Bonaccorsi	370	37.594°, 15.106°	<b>3, 4, 12</b>
Aci San Antonio	307	37.605°, 15.126°	<b>14, 28, 84</b>
Adrano	650	37.669°, 14.843°	<b>1, 2, 4, 6, 14, 16, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 31, 40, 41, 42, 43, 45, 49, 50, 51, 80, 81, 83</b>
Adrano contrada Timpone	1000	37.690°, 14.886°	<b>2</b>

Adrano-M.S. Leo	1270	37.696°, 14.909°	<b>1</b>
Adrano-M.S. Leo 7 km	1100	37.685°, 14.908°	<b>2, 4, 8, 11, 69</b>
Aqueduct between Montargano and Vena	708		14, 19, 21, 23, 25, 26, 27, 28, 30, 31, 33, 35, 36, 38, 39, 42, 45, 46, 48, 49, 50, 64, 66, 68, 80, 81, 82, 83
Belpasso loc. S. Leo	1000	37.648°, 14.987°	<b>1, 2, 3, 10</b>
Bosco della Milia (Ragalna)	1400	37.686°, 14.945°	<b>68</b>
Bronte	894	37.771°, 14.845°	51
Cannizzaro	18	37.540°, 15.133°	37
Cantoniera dell' Etna	1881	37.699°, 14.995°	<b>1, 19, 27, 30, 38, 45, 51, 57, 60, 68, 71</b>
Casa Bevacqua, above Vena	1014	37.793°, 15.119°	19, 21, 24, 27, 31, 41, 64, 76, 80
Casa Calderera, Contrada Pirao, Etna Nord	995	37.849°, 14.983°	3, 4, 10, 14, 16, 18, 19, 21, 22, 23, 24, 25, 26, 27, 30, 31, 35, 38, 39, 41, 42, 43, 45, 80, 48, 49, 50, 51, 62, 63, 64, 66, 68, 70, 74, 75, 76, 80, 81, 82, 83
Casa Del Vescovo	1677	37.697°, 15.024°	<b>28, 56, 58</b>
Castagneti di Fornazzo	1900	37.742°, 15.099°	<b>71</b>
Castagneti di Pedara	900-1100	37.648°, 15.031°	<b>4, 10, 11, 17, 18, 19, 30, 31, 33, 35, 41, 42, 43, 45, 47, 63, 68</b>
Catania	34	37.508°, 15.083°	<b>38, 84</b>
Catania Canalicchio	160	37.541°, 15.095°	<b>37</b>
Cerro, 2 km NW of Linguaglossa	683	37.857°, 15.125°	4, 19, 21, 27, 31, 36, 38, 39, 42, 45, 48, 49, 50, 52, 53, 57, 62, 65, 67, 70, 76, 79, 80, 81, 83
Chiesa Santi Martiri, road to Monte Ilice	824	37.657°, 15.065°	11, 62, 74
Contrada Barbabecchi, above Solicchiata	900	37.848°, 15.067°	29, 36, 45, 70, 76, 83
Contrada Casa del Vescovo	1372	37.699°, 15.054°	50, 51, 58
Contrada Feliciosa	1170	37.662°, 14.986°	<b>1, 2, 3, 4, 10, 68, 69</b>
Contrada Ilice, W of Zafferana Etnea	1075	37.685°, 15.079°	22
Contrada Marina (Adrano)	900	37.686°, 14.879°	<b>4, 10, 67, 68, 77</b>
Contrada Milia	1260	37.686°, 14.945°	50, 51, 73
Contrada Pirao	1000	37.849°, 14.982°	6, 14, 45, 65
Contrada Pomice (Adrano)	800	37.683°, 14.873°	<b>77</b>
Fleri	550	37.652°, 14.094°	<b>3, 8, 28</b>
Fontana Vecchia, below Mt Timpa, 1.5 km NNE of Linguaglossa	500	37.848°, 15.146°	3, 4, 11, 12, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 31, 39, 41, 42, 45, 47, 48, 53, 64, 80, 81
Fornazzo	827	37.735°, 15.112°	17, 25, <b>56</b> , 65, 68, <b>76</b>
Giarre	85	37.726°, 15.184°	37
Gravina di Catania	350	37.560°, 15.067°	<b>37</b>
Grotta di Monte Palomba	1570	37.827°, 15.027°	<b>58</b>



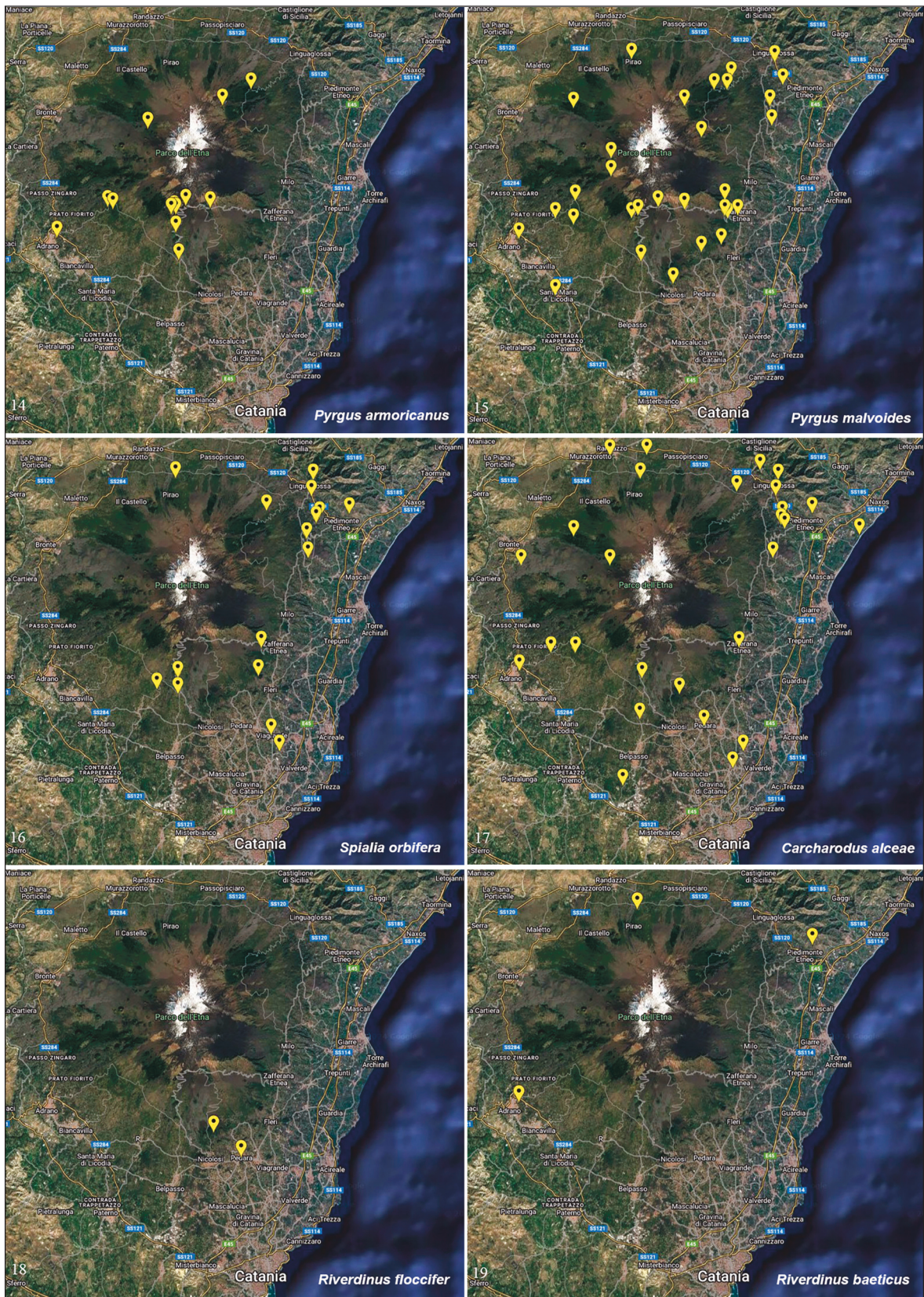
Junction of Via S Giovanni Bosco and Via Scorciavacca Montarsi, Montargano	662	37.775°, 15.145°	19, 21, 23, 24, 25, 41, 42, 45, 47, 50, 66, 80, 83
Linguaglossa	545	37.844°, 15.144°	<b>14, 14, 15, 16, 16, 25, 26, 27, 30, 41, 42, 45, 45, 50, 53, 65, 68, 69, 70, 76, 80, 83, 83</b>
Maletto (Contrada Nave)	1000	37.825°, 14.884°	<b>69</b>
Maletto below Bosco Chiuso	1100	37.805°, 14.892°	<b>61</b>
Maletto Bosco Chiuso	1225	37.795°, 14.906°	<b>2, 4</b>
Mascalucia	600	37.648°, 15.031°	<b>20, 21, 23, 24, 25, 26, 28, 31</b>
Milo	740	37.722°, 15.114°	19, 21, 26, 83
Milo	760	37.717°, 15.110°	<b>10, 19, 21, 26, 28, 38, 83</b>
Monte Intraleo	1400	37.721°, 14.910°	<b>10, 68, 72</b>
Monte Baracca	1679	37.780°, 15.052°	19, 21, 27, 30, 31, 42, 45, 51, 58, 68
Monte Calvario	540	37.643°, 14.878°	36
Monte Faggi	1600	37.685°, 14.989°	<b>31, 38, 45, 63, 69, 71</b>
Monte Gervasi	950	37.641°, 15.028°	<b>5, 30, 31, 33, 59, 61, 65, 66, 68, 76</b>
Monte Ilice	900	37.664°, 15.081°	2, 3, 8, 10, 11, 14, 16, 19, 21, 24, 26, 28, 30, 31, 32, 33, 35, 38, 39, 42, 43, 45, 47, 48, 51, 52, 56, 57, 64, 65, 67, 68, 69, 74, 76, 79, 80, 81, 82, 83
Monte Manfrè	1400	37.671°, 14.980°	<b>9, 10, 18, 19, 27, 30, 31, 35, 42, 43, 45, 59, 60, 63</b>
Monte Montagnola	2200	37.717°, 15.006°	<b>30, 31, 56, 38, 42, 53, 69</b>
Monte Nero degli Zappini	1950	37.703°, 14.977°	<b>39</b>
Monte Palestra (Rifugio)	1916	37.745°, 14.952°	30, 69
Monte Parmentelli	1400	37.674°, 14.983°	<b>1, 8, 10, 69</b>
Monte Pomiciaro	1400	37.709°, 15.066°	<b>11</b>
Monti Rossi	838	37.620°, 15.005°	<b>14, 16, 19, 21, 21, 22, 23, 24, 25, 25, 26, 27, 31, 35, 39, 42, 47, 48, 49, 50, 64, 66, 67, 80</b>
Monte San Leo	1190	37.655°, 14.984°	25, <b>35, 38, 39, 70</b>
Monte San Leo (SW of Rifugio Sapienza)	1080	37.652°, 14.987°	<b>14</b>
Monte Scavo, Rifugio	1700	37.770°, 14.950°	<b>1, 4, 10, 30, 31, 32, 82</b>
Monte Serra Pizzuta	1028	37.640°, 15.018°	73
Monti Silvestri	1750	37.733°, 14.983°	<b>69</b>
Monte Sona	1350	37.669°, 14.984°	<b>56, 45, 63, 69</b>
Monte Vetore, SW of Rifugio Sapienza	1815	37.691°, 14.983°	<b>1, 2, 14, 19, 20, 23, 27, 30, 38, 43, 45, 58, 60, 68, 70, 73, 76, 80</b>
Montelaguardia	750	37.874°, 14.994°	<b>4, 14, 19, 21, 22, 26, 31, 42, 45, 63</b>
Motta Sant'Anastasia	250	37.517°, 14.962°	<b>9, 45, 76, 80</b>
Bosco Bonanno, Zafferana	720	37.696°, 15.094°	<b>27, 50, 68, 74</b>
Nicolosi	730	37.618°, 15.024°	<b>16, 17, 19, 21, 23, 24, 25, 27, 30, 31, 37, 41, 42, 45, 49, 80</b>

Pedara	600	37.618°, 15.060°	<b>4, 4, 5, 8, 10, 12, 14, 14, 16, 16, 17, 19, 19, 20, 21, 21, 22, 23, 24, 25, 26, 28, 28, 30, 31, 31, 32, 33, 33, 35, 35, 36, 37, 38, 38, 39, 39, 41, 42, 42, 43, 45, 45, 47, 47, 48, 49, 49, 51, 52, 53, 53, 57, 63, 65, 65, 66, 68, 68, 69, 70, 70, 76, 79, 80, 80, 81, 83</b>
Petto Petrarò, Via Mare Neve (Linguaglossa)	1158	37.820°, 15.091°	<b>2, 2, 3, 8, 14, 16, 18, 19, 21, 22, 23, 24, 25, 27, 28, 31, 32, 33, 35, 39, 42, 47, 49, 52, 53, 57, 59, 65, 66, 68, 69, 71, 76, 81, 82, 83</b>
Petto Petrarò, Via Mare Neve (Linguaglossa) II	1158	37.813°, 15.092°	<b>2, 11, 16, 17, 19, 20, 21, 27, 30, 31, 39, 41, 43, 45, 50, 54, 55, 56, 58, 63, 64, 67, 68, 69, 71, 72, 74, 80, 83</b>
Piano del Lago	1915	37.749°, 14.050°	<b>51, 83</b>
Piano della Lepre	1640	37.699°, 15.036°	<b>27, 56, 58, 60, 69, 71, 73, 74</b>
Piano di Donna Vita, Via Mareneve (Linguaglossa)	1250	37.808°, 15.087°	<b>2, 2, 17, 18, 19, 21, 21, 22, 22, 24, 25, 25, 27, 29, 31, 31, 32, 33, 35, 36, 39, 41, 42, 43, 43, 45, 51, 57, 59, 61, 63, 64, 65, 65, 67, 68, 69, 71, 74, 74, 76, 81, 81, 83</b>
Piano Felce, 2 km SSW of Rovittello	756	37.839°, 15.097°	<b>4, 8, 14, 16, 19, 21, 22, 26, 27, 28, 29, 31, 32, 36, 38, 39, 42, 45, 49, 52, 53, 65, 67, 68, 70, 76, 78, 79, 80, 81, 83</b>
Piano Provenzana	1806	37.793°, 15.038°	<b>1, 2, 11, 21, 26, 27, 30, 31, 33, 38, 42, 45, 51, 56, 58, 59, 71, 72, 83</b>
Piano Sangillo	1550	37.752°, 15.118°	<b>69, 70</b>
Piano Tavola	300	37.561°, 14.964°	<b>4, 11, 12, 34</b>
Piccolo Rifugio	2496	37.717°, 14.999°	<b>51</b>
Piedimonte Etneo	306	37.807°, 15.182°	<b>10, 14, 14, 16, 19, 21, 22, 22, 23, 24, 25, 26, 27, 27, 28, 31, 31, 39, 41, 42, 45, 50, 53, 66, 67, 70, 76, 79, 80, 81, 81, 83</b>
Pineta del versante occidentale	1700	37.771°, 14.950°	<b>4, 27, 30, 33, 35, 38, 40, 41, 42, 43, 45, 56, 57, 60, 63, 68, 69, 70, 71</b>
Pineta di Biancavilla (NW of Rifugio Sapienza)	1680	37.720°, 14.941°	<b>30, 45</b>
Pineta di Biancavilla, W of Rifugio Sapienza	1760	37.693°, 14.982°	<b>73, 80</b>
Pineta di Linguaglossa, Via Mare Neve	1500	37.808°, 15.072°	<b>1, 2, 8, 10, 11, 19, 21, 22, 24, 25, 26, 29, 30, 31, 32, 32, 33, 35, 36, 38, 39, 41, 42, 43, 45, 51, 57, 59, 59, 60, 61, 64, 67, 67, 68, 69, 69, 71, 72, 74, 76, 81, 82</b>
Pineta Ragabo, Strada Mare Neve, Linguaglossa	1386	37.808°, 15.073°	<b>11, 45, 51, 59, 63, 74, 81, 82</b>
Pioppe e Betulle, Montargano	729	37.775°, 15.140°	<b>2, 3, 4, 8, 14, 16, 19, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 35, 37, 38, 39, 40, 41, 42, 45, 47, 48, 49, 50, 52, 57, 58, 64, 66, 67, 68, 79, 80, 81, 83</b>
Plaia Sud di Catania	2	37.485°, 15.084°	<b>13</b>
Presa	529	37.792°, 15.151°	<b>14, 16, 19, 21, 23, 24, 25, 26, 27, 28, 31, 33, 35, 38, 39, 41, 42, 45, 50, 83</b>
Puntalazzo	586	37.753°, 15.142°	<b>21, 24, 28, 50, 83</b>
Radicepura Horticultural Park, Giarre	143	37.693°, 15.178°	<b>16, 19, 21, 36, 45, 81</b>

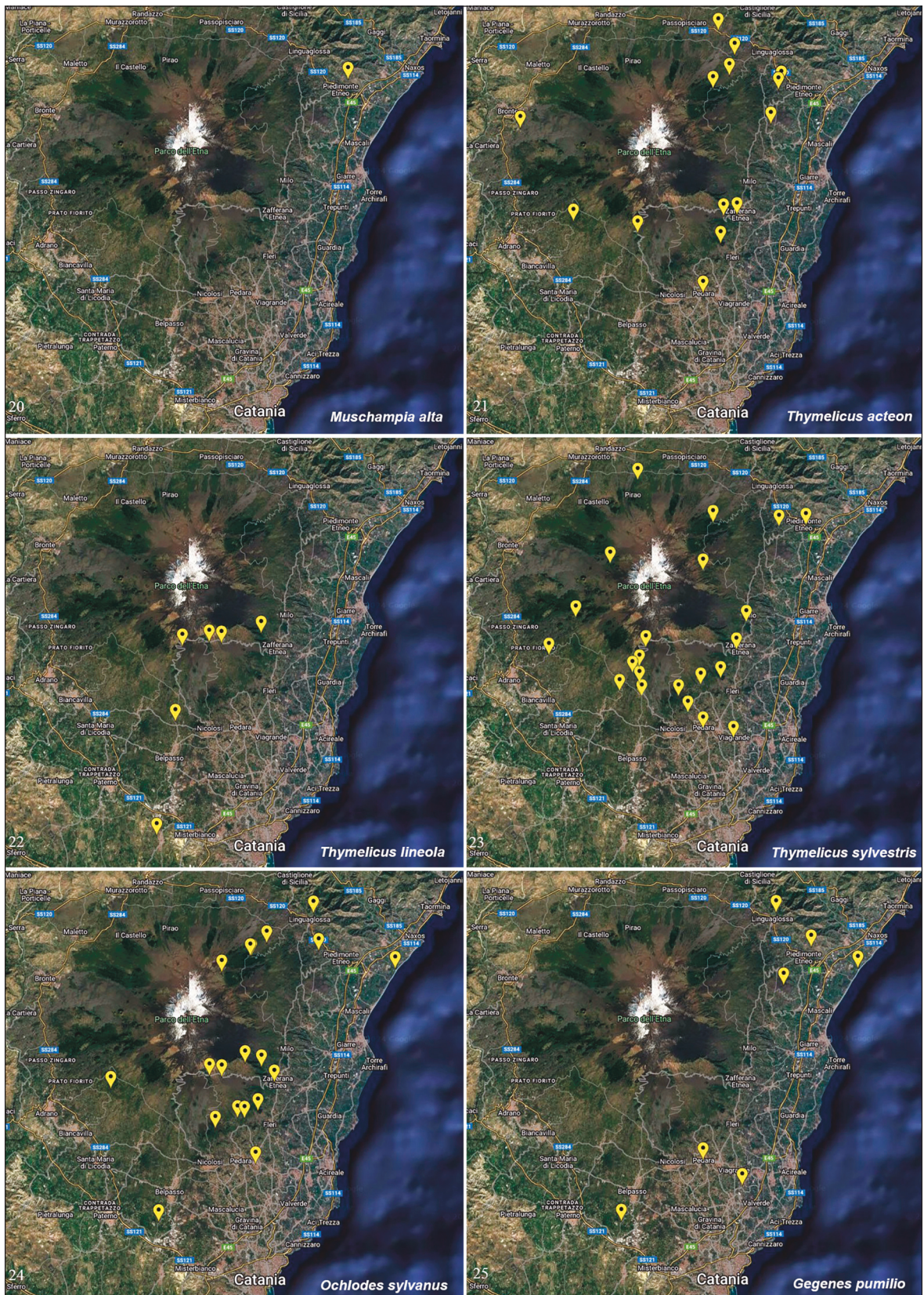
Ragala	800	37.634°, 15.044°	<b>10, 14, 16, 23, 24, 25, 26, 27, 30, 31, 33, 39, 40, 41, 42, 63, 65, 76</b>
Ragalna	815	37.640°, 14.949°	17, 18, 19, 23, 24, 25, 26, 27, 31, 35, 39, 41, 45, 52, 62, 63, 64, 66, 68, 74, 80, 81, 82, 83
Ragalna	830	37.636°, 14.951°	17, 18, 19, 23, 24, 25, 31, 35, 39, 41, 45, 52, 62, 63, 64, 66, 68, 74, 80, 81, 83
Randazzo	800	37.871°, 14.950°	<b>4, 14, 16, 16, 17, 18, 21, 22, 23, 24, 25, 26, 29, 31, 39, 40, 41, 42, 43, 45, 51, 52, 53, 64, 80, 81, 82, 83</b>
Randazzo Contrada La Nave	1110	37.834°, 14.932°	<b>67</b>
Randazzo contrada La Nave	1100	37.838°, 14.939°	<b>61</b>
Randazzo Contrada La Nave	1250	37.837°, 14.975°	<b>2, 75</b>
Rifugio Citelli	1741	37.765°, 15.059°	<b>1, 10, 56, 19, 19, 21, 21, 26, 27, 27, 28, 30, 30, 31, 31, 33, 35, 38, 38, 39, 42, 44, 45, 47, 50, 56, 58, 59, 59, 61, 63, 68, 69, 69, 70, 71, 74, 82, 83</b>
Rifugio della Galvarina	1900	37.732°, 14.950°	<b>1, 2, 51, 60</b>
Rifugio di Monte Palestra	1939	37.746°, 14.953°	2, 51, 60, 66
Rifugio Monte Scavo	1710	37.770°, 14.950°	18, 27, 52, 58
Rifugio Sapienza	1880	37.699°, 15.007°	<b>2, 30, 40, 58, 68, 71, 73</b>
Road between Montargano and Presa	680	37.780°, 15.145°	35, 38, 39, 45, 64, 65
road from Fornazzo to Rifugio Citelli	1600	37.774°, 15.066°	63
Road from Zafferana to Rifugio Sapienza	1100	37.695°, 15.075°	19, <b>20</b> , 21, <b>22</b> , 27, 30, 31, 39, <b>41</b> , 51, 64, 80
Ruvulazzo, 2 km SW of Linguaglossa	670	37.824°, 15.122°	81
San Gerardo (Millicuccio), 5 km W of Piedimonte Etneo	516	37.807°, 15.149°	3, 4, 8, 10, 14, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 32, 33, 35, 38, 39, 41, 42, 43, 45, 48, 49, 50, 52, 53, 56, 62, 64, 65, 66, 67, 68, 70, 74, 76, 79, 80, 81, 82, 83
San Giovanni Galermo	350	37.557°, 15.047°	<b>19, 21, 23, 31, 38, 41, 80, 83</b>
San Giovanni La Punta	350	37.577°, 15.094°	<b>4, 14, 37</b>
Sant' Alfio	525	37.740°, 15.141°	19, 21, 26, 27, 45, 48, 50, 83
Santa Maria di Licodia	442	37.616°, 14.886°	<b>2, 16, 53</b>
Santa Maria La Scala	10	37.612°, 15.173°	21, 28
Santa Maria La Stella di Acireale	350	37.627°, 15.123°	<b>84</b>
Sciarelle, 2 km NW of Piedimonte Etneo	476	37.813°, 15.152°	2, 3, 4, 8, 11, 13, 14, 19, 21, 22, 23, 24, 25, 26, 27, 29, 31, 33, 35, 37, 39, 41, 42, 45, 47, 48, 50, 52, 53, 64, 66, 67, 70, 76, 79, 80, 81, 83
Serra la Nave	1600	37.691°, 14.978°	<b>1, 2, 27, 28, 30, 31, 42, 43, 45, 49, 51, 56, 57, 60, 62, 68, 70, 71, 74, 80, 83</b>
Solicchiata	680	37.862°, 15.078°	8, 19, 21, 26, 27, 31, 45, 62, 63, 67, 69, <b>75, 76</b>
Solicchiata	711	37.866°, 15.070°	19, 21, 26, 63, 67, 75

Strada Adrano-Monte San Leo 10 km	1300	37.686°, 14.933°	<b>67</b>
Strada Adrano-Monte San Leo 13.8 km	1350	37.683°, 14.945°	<b>54</b>
Tarderìa	875	37.658°, 15.057°	<b>2, 10, 11, 17, 19, 20, 21, 22, 23, 24, 24, 25, 25, 26, 27, 29, 31, 32, 33, 35, 36, 37, 38, 39, 43, 45, 47, 48, 49, 51, 52, 57, 59, 62, 65, 66, 68, 68, 73, 74, 76, 76, 80, 81, 81, 83</b>
Torrente Minissale, 1.5 km NE of Marina di Cotone	5	37.796°, 15.242°	4, 11, 12, 19, 21, 22, 23, 24, 26, 28, 38, 49, 52, 81
Tre Monti	728	37.634°, 15.063°	17, 48, 52
Trecastagni	574	37.615°, 15.078°	11, 24, 33, 49, 50, 52, 53
Valle del Bove	1615	37.711°, 15.059°	<b>27, 28, 31, 81, 83</b>
Valle San Giacomo	888	37.705°, 15.085°	<b>2, 9, 11, 17, 22, 23, 24, 25, 28, 29, 31, 39, 42, 45, 49, 50, 56, 52, 65, 66, 74, 80, 81</b>
Vallone Salta del Bue, Linguaglossa, Highway 120	510	37.833°, 15.143°	2, 3, 4, 16, 17, 19, 21, 22, 23, 24, 25, 26, 27, 31, 39, 41, 42, 43, 45, 47, 48, 53, 64, 80, 81, 83
Vall. Zambataro, below Mt S. Michele, (Serra Conca) NE of Piedimonte Etneo	200	37.816°, 15.187°	3, 4, 6, 7, 12, 13, 14, 19, 22, 23, 24, 31, 38, 41, 42, 45, 46, 47, 48, 63, 70, 76, 78, 79, 80, 81, 83
Vena	747	37.792°, 15.137°	2, 3, 14, 19, 21, 22, 24, 25, 27, 28, 31, 32, 36, 38, 39, 41, 42, 45, 49, 50, 52, 53, 57, 65, 70, 76, 79, 80, 81, 83
Versante meridionale, Bivio Cantoniera	1700-1800	37.699°, 14.995°	<b>1, 30, 50, 69</b>
Viagrande	400	37.609°, 15.096°	<b>3, 10, 37</b>
Viale John Kennedy, Bronte, Mt Etna Ovest	894	37.771°, 14.845°	4, 8, 14, 19, 21, 23, 24, 25, 26, 27, 30, 31, 35, 38, 39, 40, 41, 42, 45, 49, 50, 66, 68, 76, 80, 81, 83
Villa Marabbecca, Via San Gerardo (Millicucco)	475	37.780°, 15.155°	4, 12, 14, 16, 19, 21, 26, 27, 28, 31, 38, 42, 45, 47, 49, 50, 52, 66, 67, 68, 79, 80, 81, 83
Zafferana	675	37.691°, 15.100°	<b>2, 4, 8, 10, 11, 16, 18, 19, 21, 23, 24, 25, 27, 29, 31, 32, 41, 42, 43, 45, 48, 50, 69, 74, 79, 80, 81, 83</b>
	1020	37.774°, 15.110°	30
	1030	37.775°, 15.111°	19, 21
	1060	37.775°, 15.110°	21
	1090	37.775°, 15.109°	21, 30
	1120	37.775°, 15.108°	21, 30, 42
	1666	37.772°, 15.060°	27
	1670	37.772°, 15.059°	27, 45
	1670	37.773°, 15.058°	21, 27, 31
	1674	37.773°, 15.057°	21
	1680	37.773°, 15.056°	21, 27, 80
	1685	37.773°, 15.055°	58

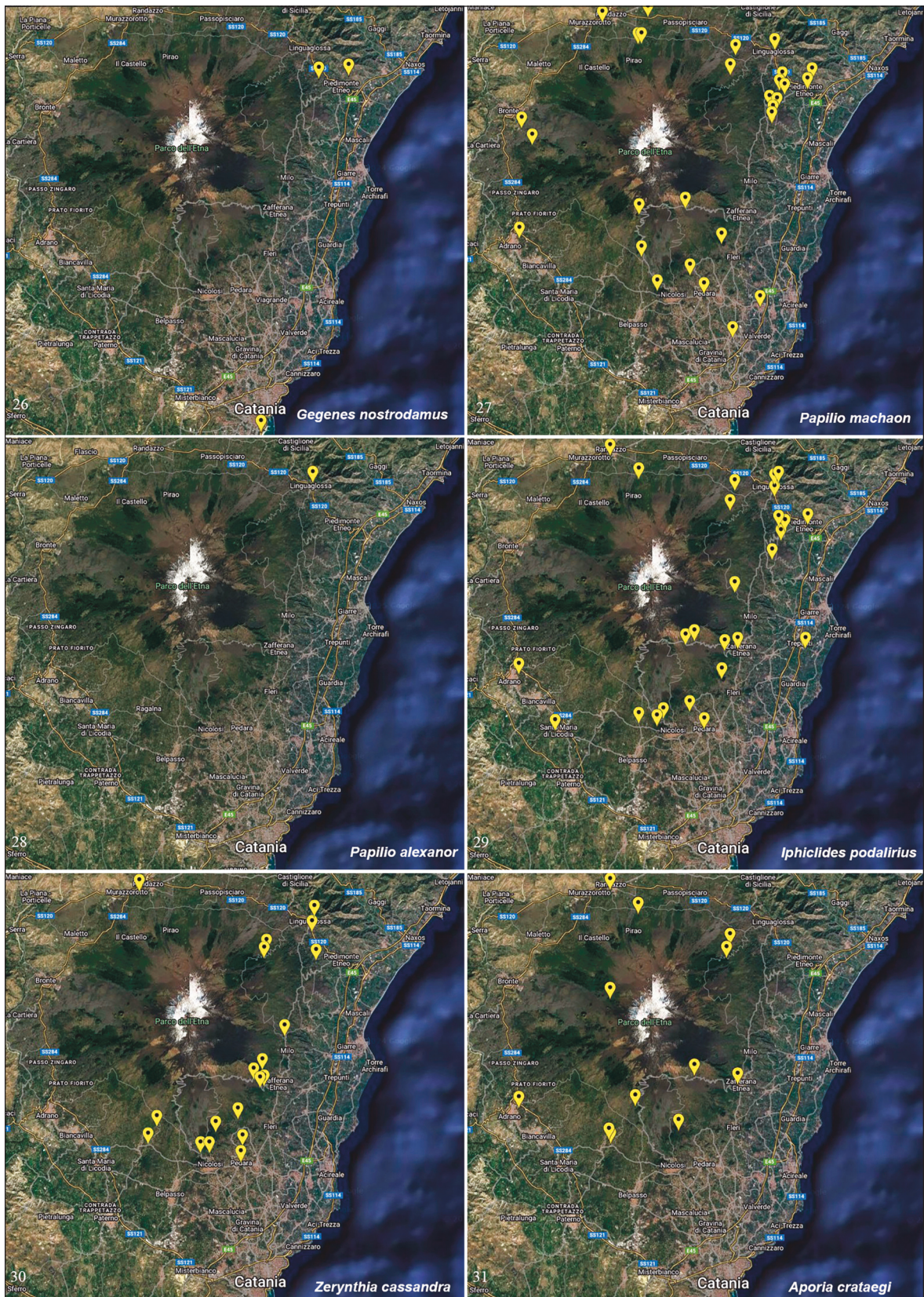
	1688	37.774°, 15.056°	32
	1690	37.773°, 15.054°	27, 60
	1700	37.773°, 15.053°	19
	1700	37.776°, 15.060°	27, 30, 50
	1710	37.776°, 15.059°	32
	1720	37.776°, 15.057°	30
	1730	37.776°, 15.055°	27
	1750	37.775°, 15.055°	30, 50



Figures 14–19. Mapped Mt Etna coordinate location data for Hesperiiidae.

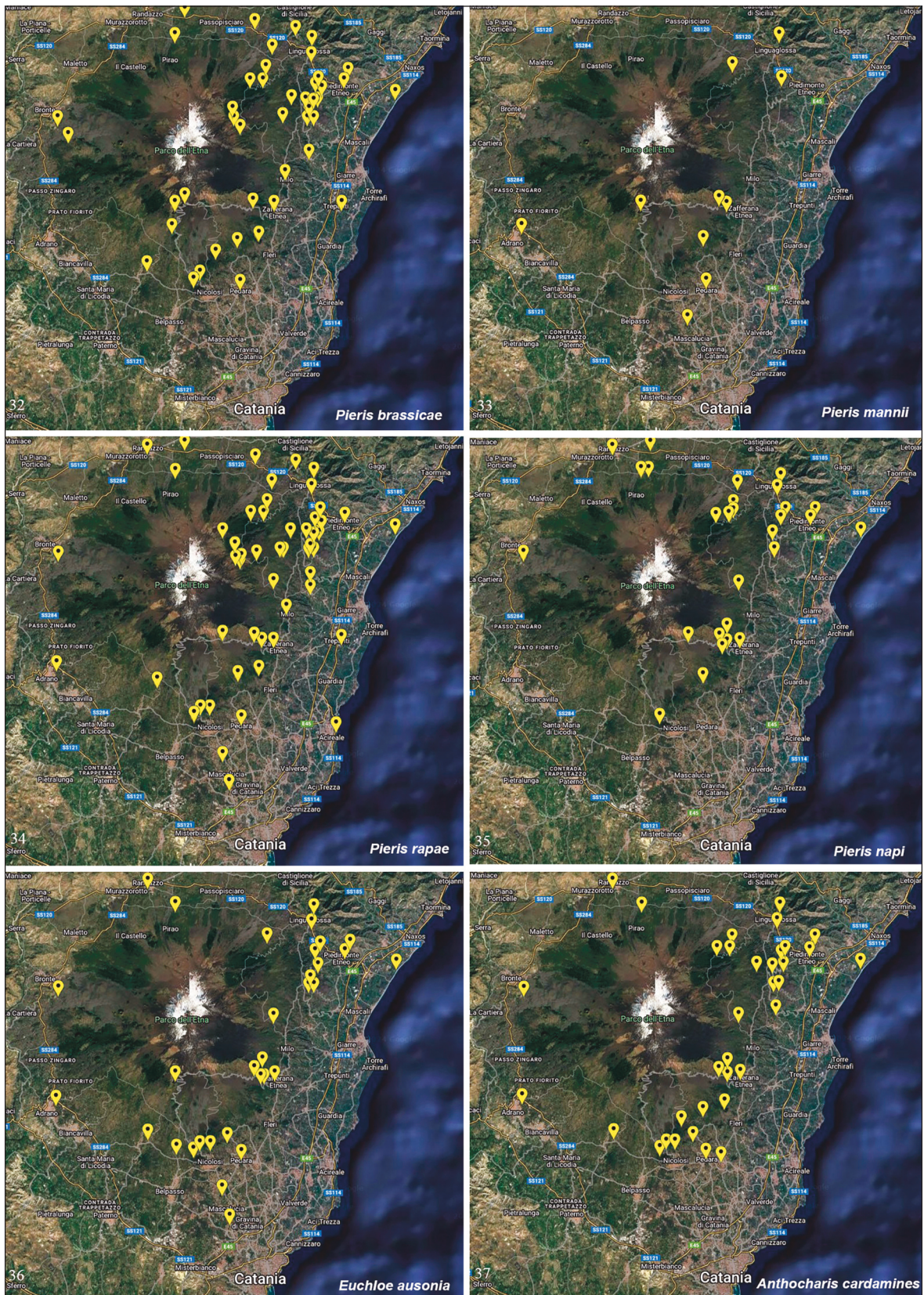


Figures 20–25. Mapped Mt Etna coordinate location data for Hesperidae.

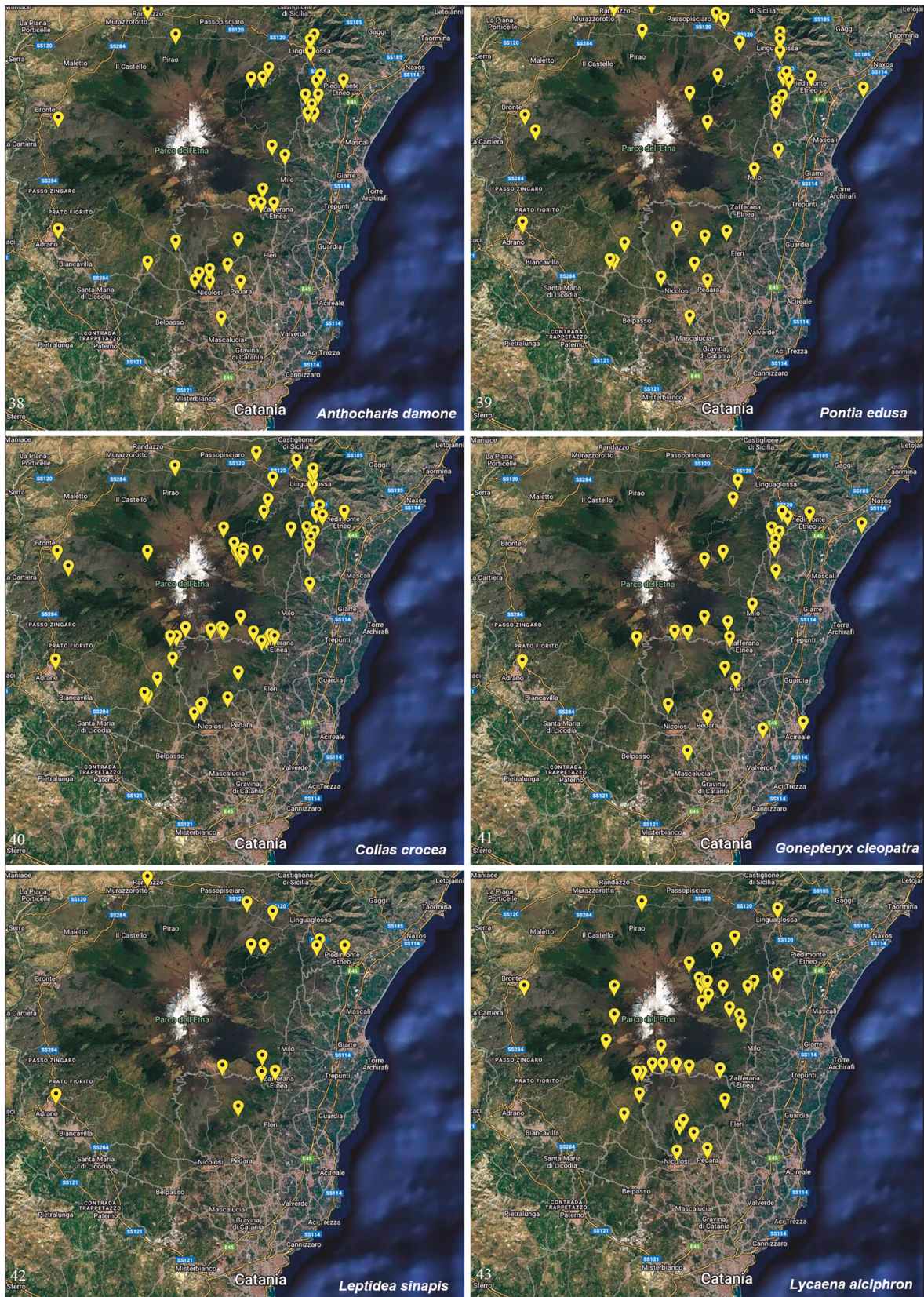


Figures 26–31. Mapped Mt Etna coordinate location data for HesperIIDae, Papilionidae and Pieridae.

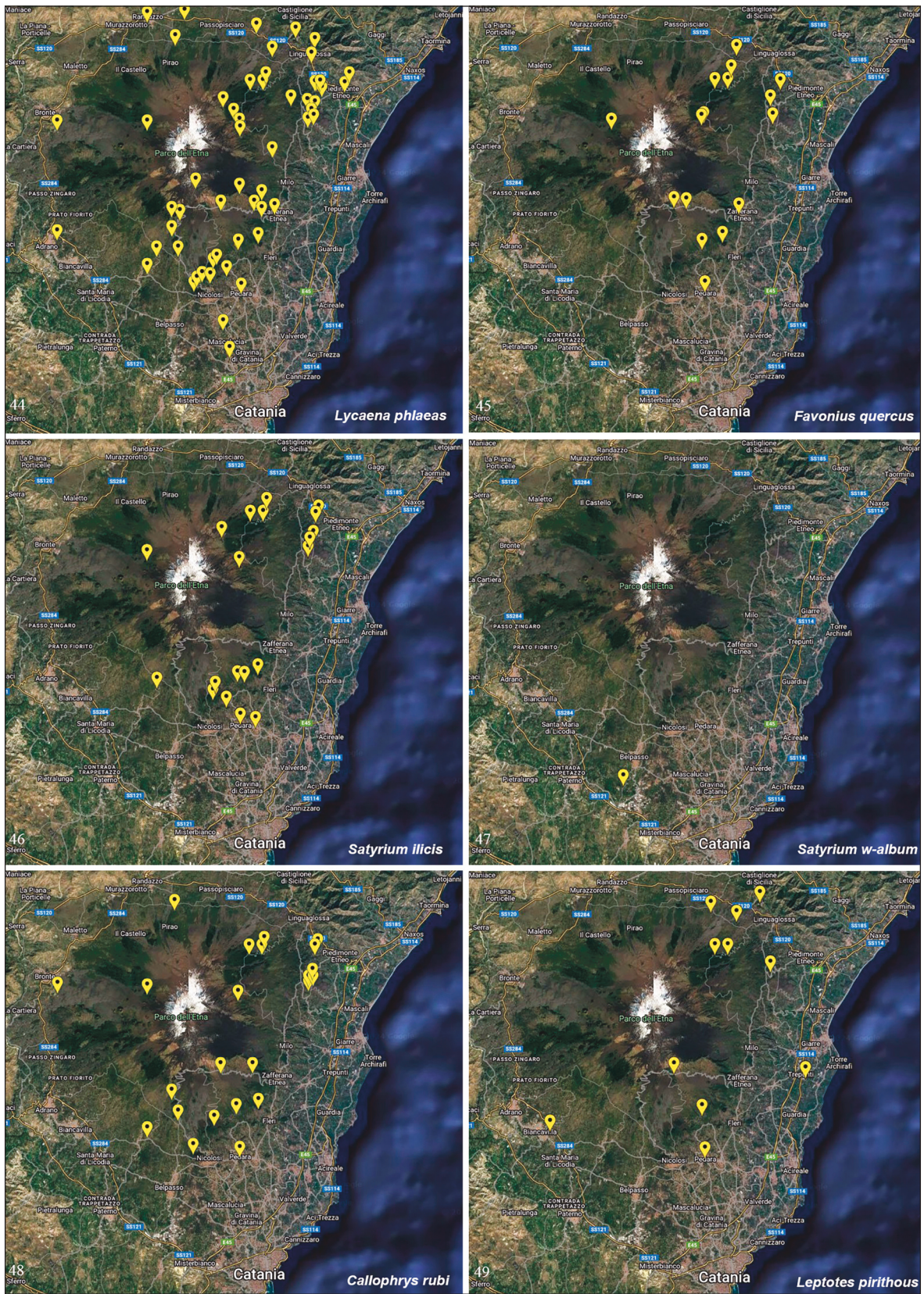




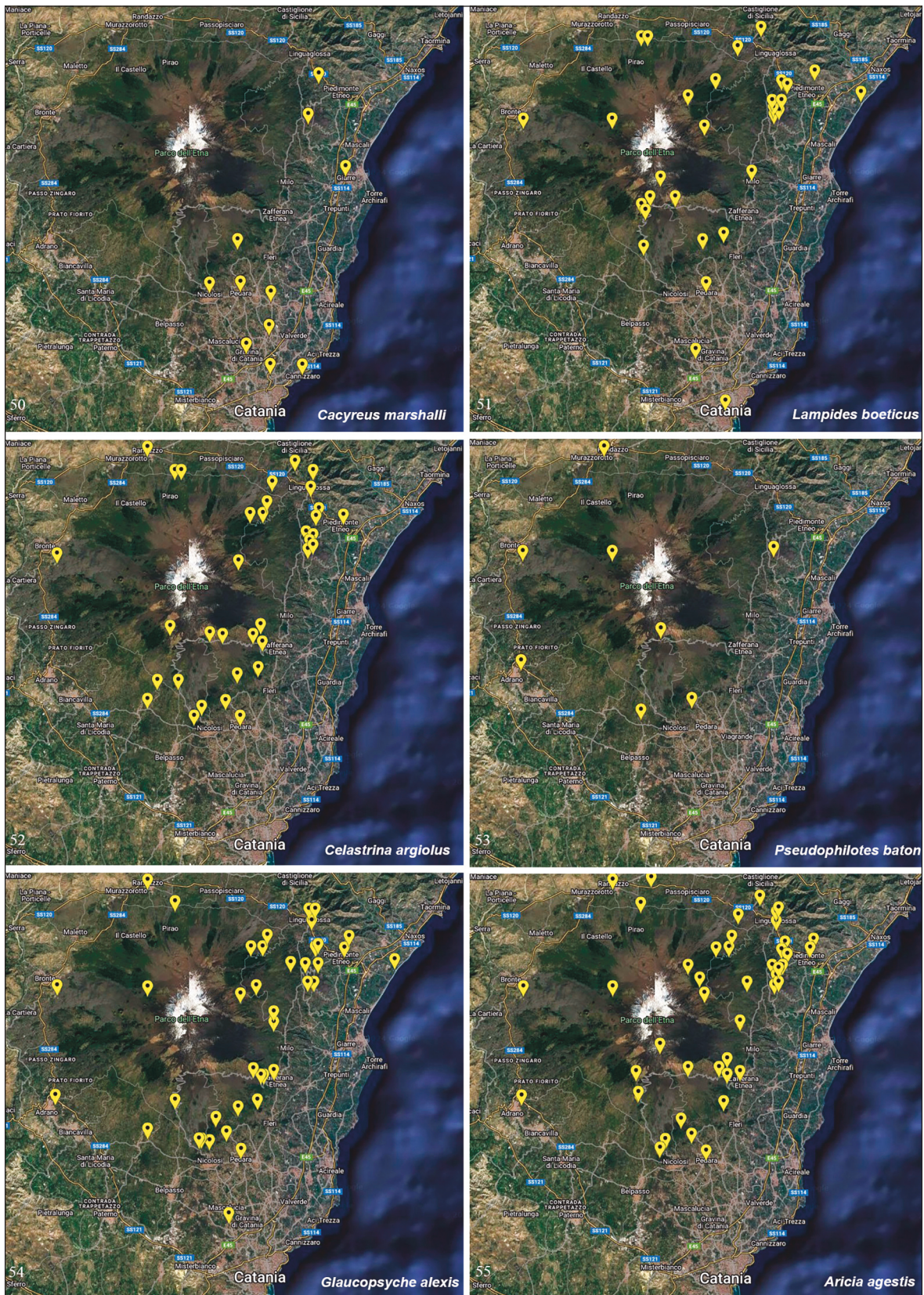
Figures 32–37. Mapped Mt Etna coordinate location data for Pieridae.



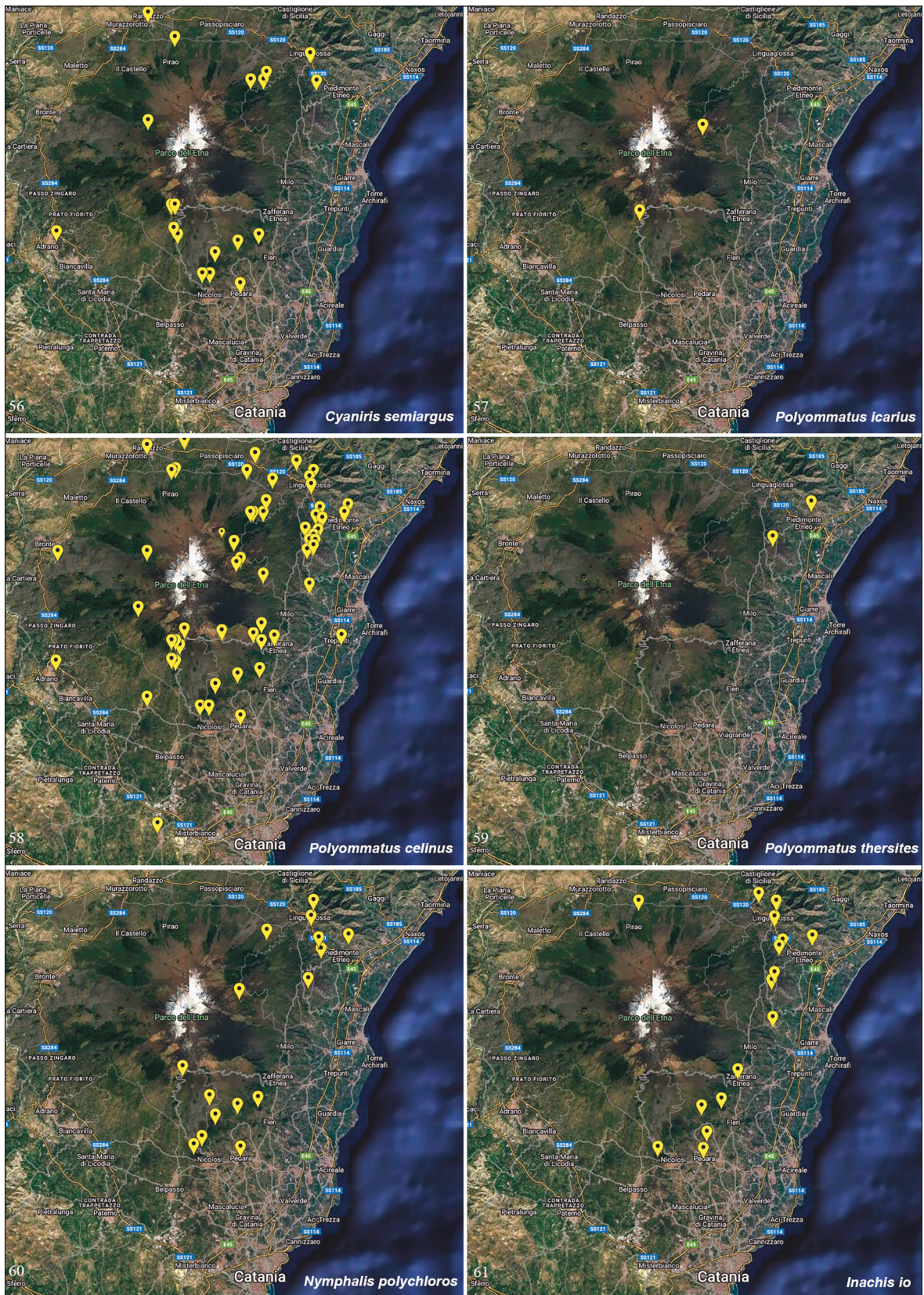
Figures 38–43. Mapped Mt Etna coordinate location data for Pieridae and Lycaenidae.



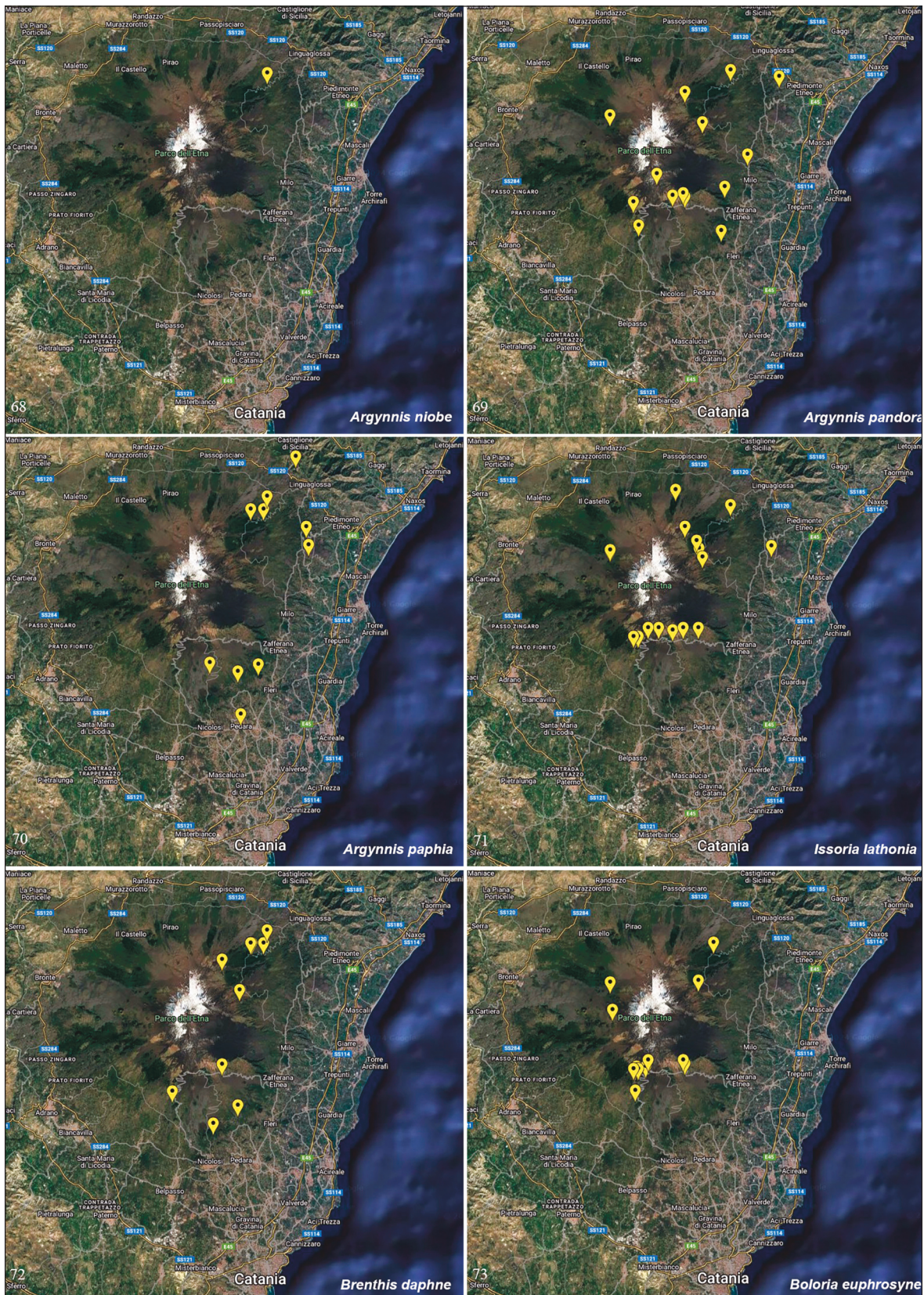
Figures 44–49. Mapped Mt Etna coordinate location data for Lycaenidae.



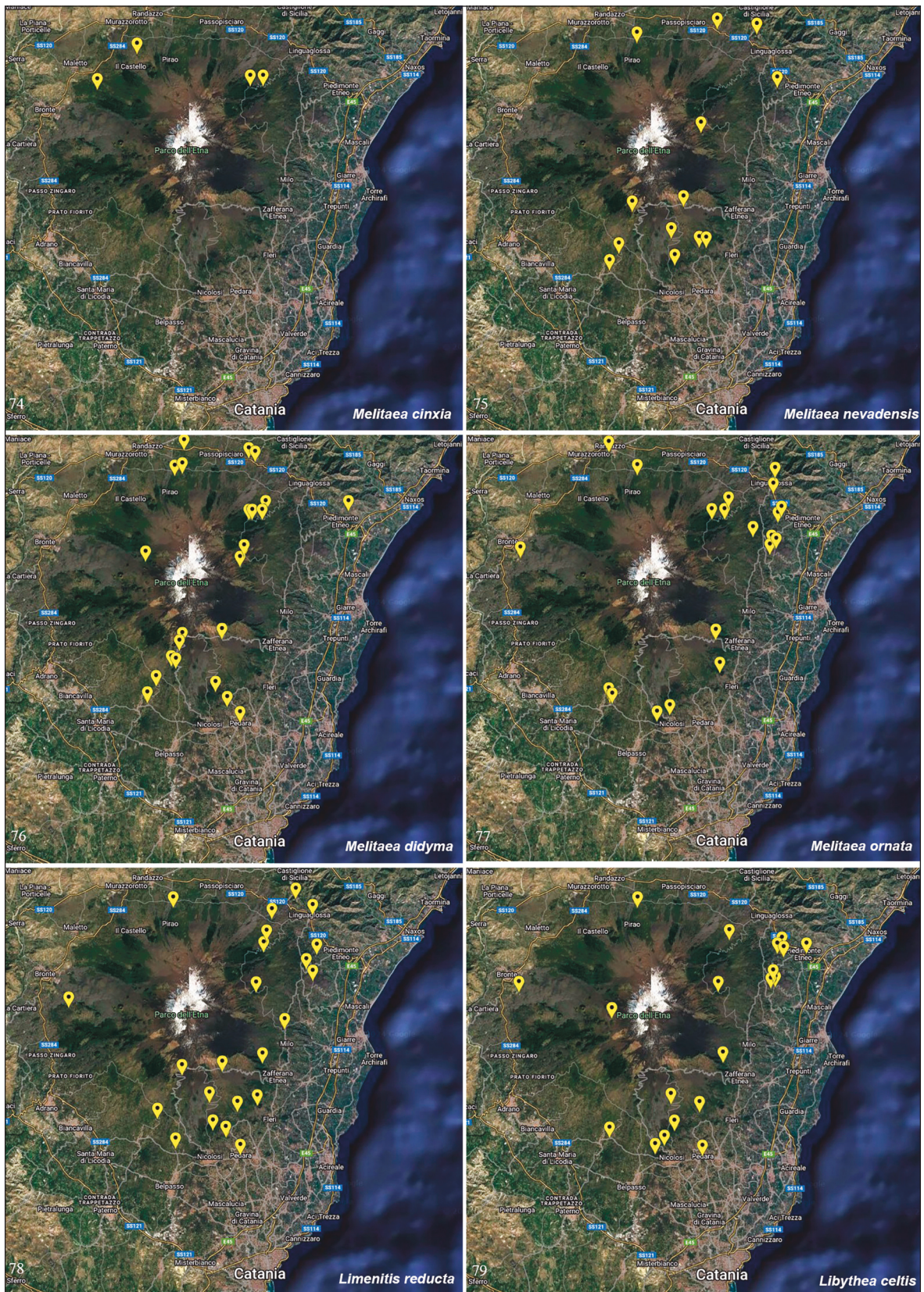
Figures 50–55. Mapped Mt Etna coordinate location data for Lycaenidae.



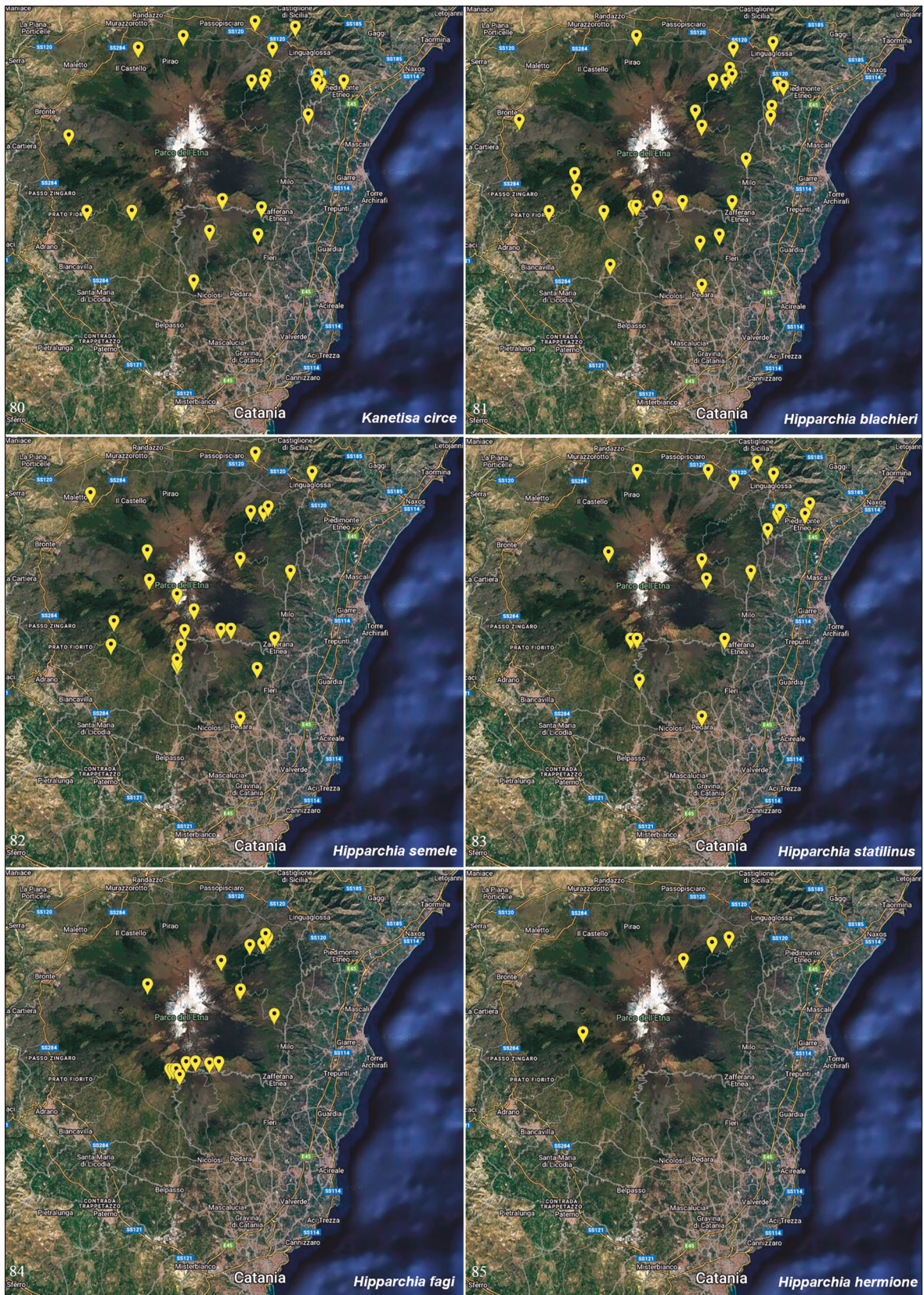
Figures 56–61. Mapped Mt Etna coordinate location data for Lycaenidae and Nymphalidae.



Figures 62–67. Mapped Mt Etna coordinate location data for Nymphalidae.

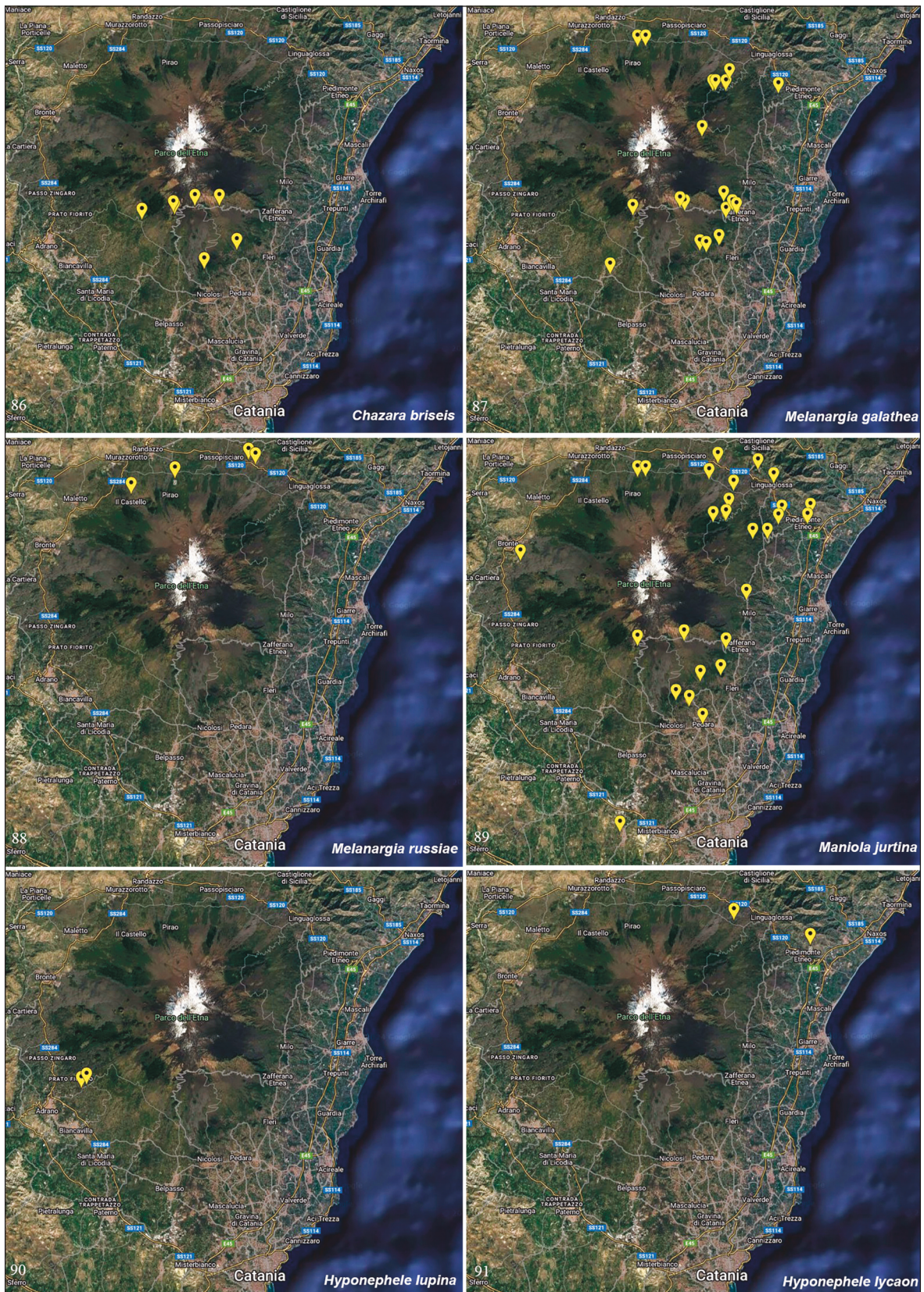


Figures 68–73. Mapped Mt Etna coordinate location data for Nymphalidae.

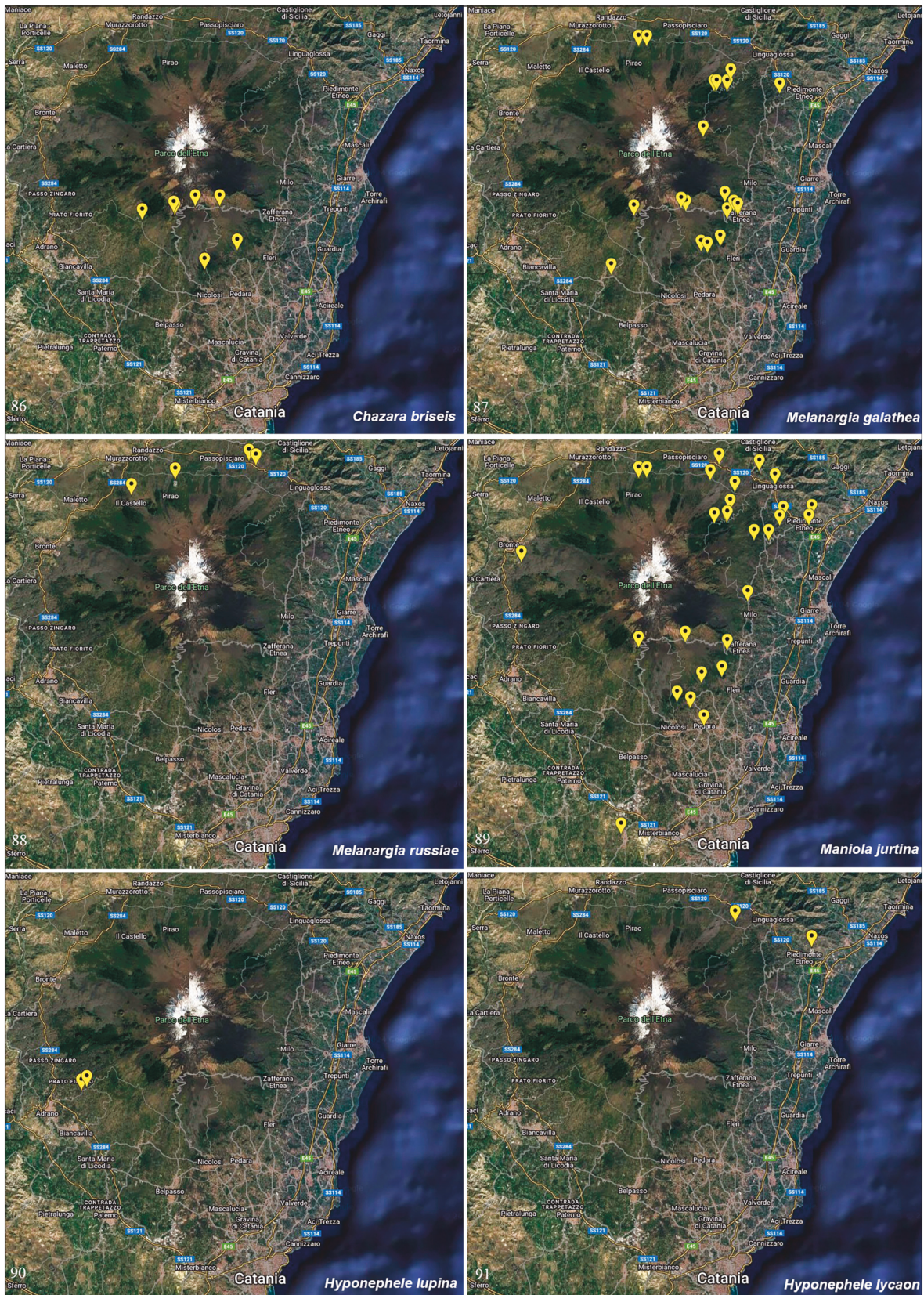


Figures 74–79. Mapped Mt Etna coordinate location data for Nymphalidae.

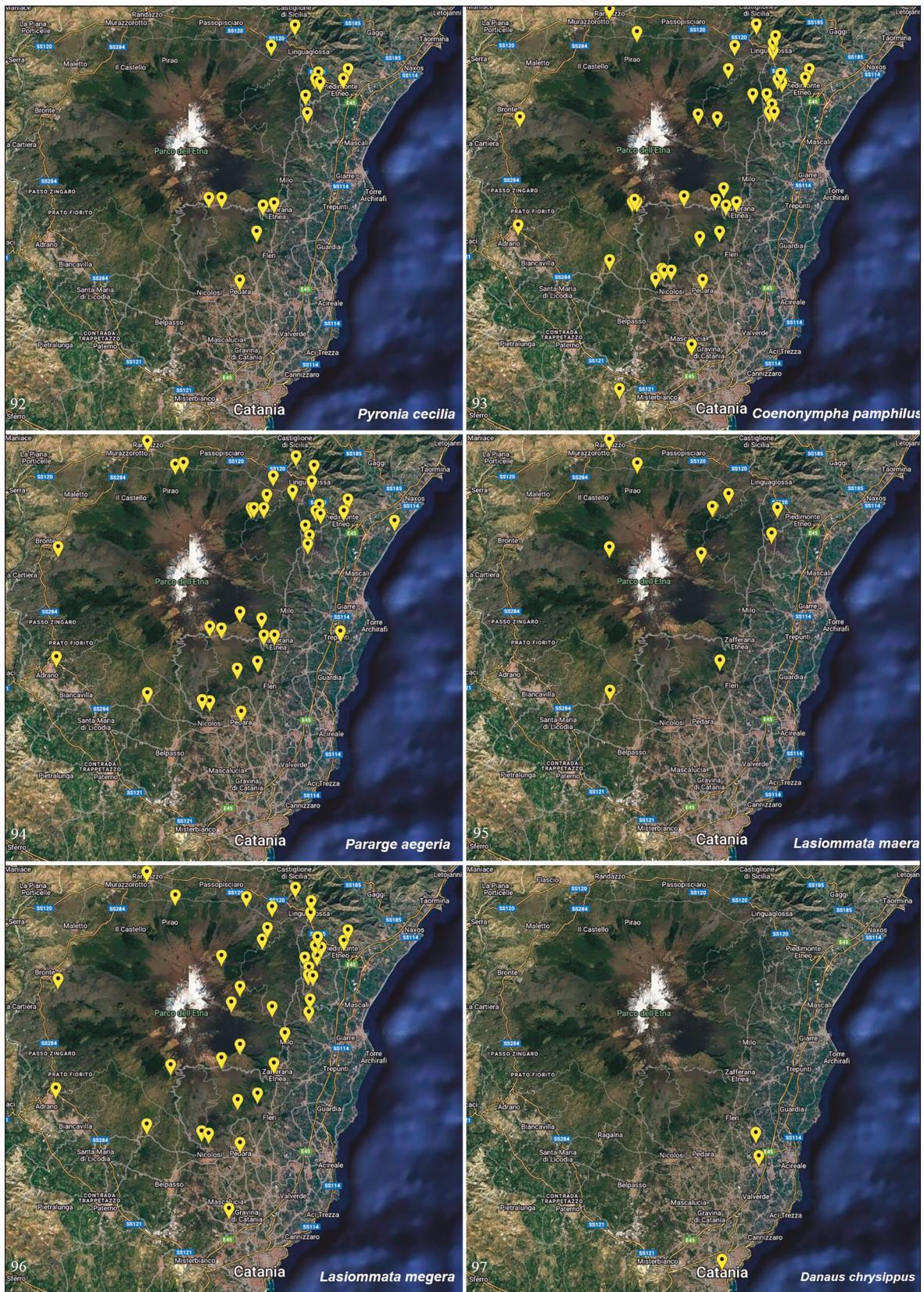




Figures 80–85. Mapped Mt Etna coordinate location data for Nymphalidae.



Figures 86–91. Mapped Mt Etna coordinate location data for Nymphalidae.



Figures 92–97. Mapped Mt Etna coordinate location data for Nymphalidae.



Figure 98. Mapped total Mt Etna coordinate locations (176) where butterflies were observed or collected, and data were used for this study.

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