

Butterfly surveys in Albania during 2014 including the discovery of two new species for the country

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Abstract

During field surveys conducted in Albania in 2014, we encountered 90 species of butterflies. *Anthocharis damone* Boisduval, 1836 is a new species for the fauna of Albania while *Apatura metis* Freyer, 1829 is confirmed for the country. With these discoveries the number of butterfly species known to occur in Albania has risen to 200 and our surveys added many new sites for species considered rare and local in Albania. In addition, the life cycles of *Lycaena ottomana* (Lefèbvre, 1830) and *Apatura metis* from Albania are documented and discussed.

Key words: Lepidoptera, faunistics, diversity, distribution, rearing.

Introduction

In recent years there have been significant developments regarding the knowledge of the distribution of Lepidoptera species in Albania. These studies, predominantly focusing on butterfly fauna, were carried out by foreign entomologists (Gaskin 1990; Abadjiev & Beshkov 1996a, b; Verovnik & Popović 2013a, b; Šašić *et al.* 2015) along with local entomologists (Misja 2005; Striniqi-Laçež & Misja 2013). They include some remarkable findings such as the discovery of one of the most enigmatic European Satyrids – *Pseudochazara amymone* Brown, 1976, not encountered since its initial description in 1976 and considered a rare endemic species in Greece (Eckweiler 2012; Verovnik *et al.* 2014, Gascoigne-Pees *et al.* 2014; Cuvelier & Mølgaard 2015).

In a series of surveys aimed at the continual improvement of knowledge to the butterfly fauna of Albania, the authors conducted three research trips during 2014. Their main aim was to add new information to the data accumulated from previous surveys (Šašić *et al.* 2015) in particular the spring fauna; thus two trips were organised in May. The authors specifically targeted areas of the country previously overlooked, including the coastal region of southern Albania. Another objective was to look for new species for the country. The presence of *Anthocharis damone* in Albania was considered to be a distinct possibility after

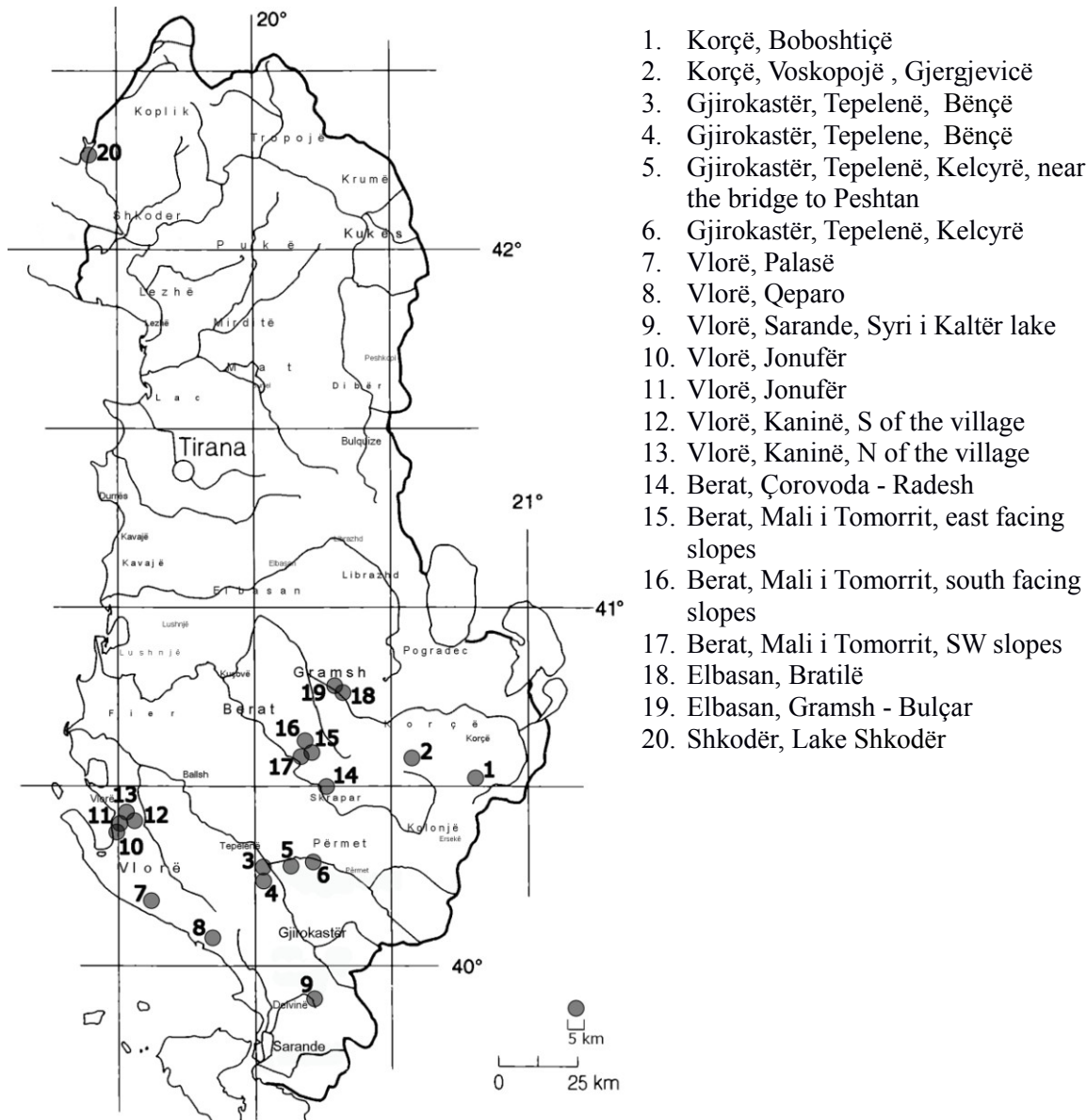
MGP's observations of several specimens of *Isatis tinctoria* Linnaeus in the Devoll gorge during the July 2013 expedition, indicating potentially suitable habitat for the species in this area. Due to inclement weather during the summer of 2014 not all the planned survey areas were visited and many potentially interesting areas still remain unstudied.

Material and Methods

Three surveys were carried out by three different research groups in the period between May and July 2014. Most of the butterflies encountered were identified in the field or photographed for subsequent identification. Only a few voucher specimens were sampled for later determination and DNA analysis. Butterfly identification was based on Tolman & Lewington (2008) and Lafranchis (2004). Additionally, males of the first generation of *Pieris balcana* Lorković, 1970 were identified consulting the website of Ziegler (2013). Taxonomy and nomenclature follow van Swaay *et al.* (2010) and Fauna Europaea (2015).

The surveys took place in six Albanian counties (Korçë, Gjirokastër, Vlorë, Berat, Elbasan and Shkodër), most of which are located in the southern part of the country. In total 20 localities (Fig. 1) were visited:

1. Korçë, Boboshtiçë (40°32.753'N, 20°46.804'E; 1040-1140 m). Dry rocky slopes with limited vegetation cover, patches of flowers near a stream.
2. Korçë, Voskopojë - Gjergjevicë, small gorge/hillside next to the road E of the village (40°35.047'N, 20°33.598'E; 1170-1270 m). Dry rocky slopes with shrubs and grasses.
3. Gjirokastër, Tepelenë, Bëncë, along the road above the valley S of the village (40°16.965'N, 20°0.893'E; 220 m). Rocky slopes, shrubby areas.
4. Gjirokastër, Tepelenë, Bëncë, at the old bridge S of the village (40°15.890'N, 20°0.361'E; 220 m). Rocky and bushy/shrubby slopes, meadows.
5. Gjirokastër, Tepelenë, Kelcyrë, in the gorge W of the town near the bridge to Peshtan (40°17.791'N, 20°6.448'E; 170 m). Rocky slopes, field margins, shrubby areas.
6. Gjirokastër, Tepelenë, Kelcyrë, next to the cemetery (40°18.542'N, 20°11.145'E; 180 m). Ruderal area.
7. Vlorë, Palasë, gorge along the road NW of the village (40°10.652'N, 19°36.552'E; 290 m). Rocky slopes, scree.
8. Vlorë, Qeparo, along the road and E slopes of the valley NW of the town (40°3.849'N, 19°49.416'E; 30 m). Grazed shrubby areas and rocky slopes.
9. Vlorë, Sarandë, Syri i Kaltër lake, at the Blue Eye Spring (39°55.450'N, 20°11.527'E; 160 m). Damp meadows.
10. Vlorë, Jonufër, on the slopes above the shoreline (40°23.615'N, 19°29.067'E; 20-330 m). Rocky slopes, scree, pastures.
11. Vlorë, Jonufër, on steep slopes along the road N of the shoreline (40°24.542'N, 19°28.837'E; 10 m). Rocky slopes, scree, shrubby areas.
12. Vlorë, Kaninë, along the road south of the village above the quarry (40°25.604'N, 19°31.360'E; 540 m). Shrubby and rocky slopes.
13. Vlorë, Kaninë, along the road N of the village (40°26.799'N, 19°31.128'E; 290 m). Ruderal areas.
14. Berat, Çorovoda - Radesh, at the entrance to the gorge SE of the village (40°31.094'N, 20°14.860'E; 360 m). Grassland, rocky slopes.
15. Berat, Mali i Tomorrit, east facing slopes below the summit, above the forest belt (40°36.958'N, 20°11.133'E; 1871 m). Alpine slopes with areas covered in grasses and flowers.
16. Berat, Mali i Tomorrit, south facing slopes below the mountain ridge (40°38.100'N, 20°9.767'E; 2339 m). Alpine scree slopes with limited grass cover.
17. Berat, Mali i Tomorrit, along the road on SW slopes W of big quarry (40°35.857' N, 20°8.957' E, 800-920 m). Rocky and shrubby slopes, pastures.
18. Elbasan, Bratilë (40°46.628'N, 20°17.961'E; 515 m). Dry rocky slopes with limited vegetation cover.
19. Elbasan, Gramsh - Bulçar (40°47.610'N, 20°16.533'E; 408 m). Grazed meadows surrounded by shrubby vegetation.
20. Shkodër, Lake Shkodër, near the village Kasani (42°15.794'N, 19°22.628'E; 5 m). Lakeside scrubland/meadows, flooded pastures and meadows with scattered *Salix alba* Linnaeus trees.



1. Korçë, Boboshtiçë
2. Korçë, Voskopojë , Gjergjevicë
3. Gjirokaštër, Tepelenë, Bënçë
4. Gjirokaštër, Tepelene, Bënçë
5. Gjirokaštër, Tepelenë, Kelcyrë, near the bridge to Peshtan
6. Gjirokaštër, Tepelenë, Kelcyrë
7. Vlorë, Palasë
8. Vlorë, Qeparo
9. Vlorë, Sarandë, Syri i Kaltër lake
10. Vlorë, Jonufër
11. Vlorë, Jonufër
12. Vlorë, Kaninë, S of the village
13. Vlorë, Kaninë, N of the village
14. Berat, Çorovoda - Radesh
15. Berat, Mali i Tomorrit, east facing slopes
16. Berat, Mali i Tomorrit, south facing slopes
17. Berat, Mali i Tomorrit, SW slopes
18. Elbasan, Bratilë
19. Elbasan, Gramsh - Bulçar
20. Shkodër, Lake Shkodër

Figure 1. Map of Albania with surveyed areas indicated with numerals.

Results

During our surveys, we recorded a total of 90 species of butterflies. Most of them were already known for the country, however, *Anthocharis damone* was recorded for the first time in Albania and *Apatura metis* was confirmed after a period of more than eighty years since its initial discovery in Albania (Rebel & Zerny 1931). We present a list of species accompanied with the names of each locality (numerated as in the methods section) along with dates of observations in brackets:

Hesperiidae (Latreille, 1802)

1. *Pyrgus armoricanus* (Oberthür, 1910): 4 (17.V.2014), 14 (18.V.2014), 20 (16.VII.2014)
2. *Pyrgus malvae* (Linnaeus, 1758): 4 (17.V.2014), 9 (16.V.2014), 14 (18.V.2014), 17 (18.V.2014), 19 (2.V.2014)
3. *Pyrgus sidae* (Esper, 1784): 15 (14.VII.2014), 17 (18.V.2014)
4. *Spialia orbifer* (Hübner, [1823]): 1 (13.VII.2014), 2 (12.VII.2014), 4 (17.V.2014), 14 (18.V.2014)
5. *Carcharodus alceae* (Esper, [1780]): 5 (17.VII.2014), 9 (16.VII.2014)
6. *Carcharodus lavatherae* (Esper, [1783]): 1 (13.VII.2014), 2 (12.VII.2014)

7. *Carcharodus floccifera* (Zeller, 1847): 2 (12.VII.2014)
8. *Carcharodus orientalis* Reverdin, 1913: 4 (17.V.2014), 5 (17.V.2014), 7 (15.V.2014), 14 (18.V.2014), 17 (18.V.2014)
9. *Erynnis marloyi* (Boisduval, [1834]): 4 (17.V.2014), 17 (18.V.2014)
10. *Gegenes pumilio* (Hoffmannsegg, 1804): 10 (15.V.2014), 11 (15.V.2014)
11. *Muschampia proto* (Ochsenheimer 1808): 7 (15.V.2014), 8 (16.V.2014), 10 (15.V.2014), 11 (15.V.2014), 12 (15.V.2014), 13 (15.V.2014) [all records are of larvae]

Papilionidae (Latreille, 1802)

12. *Parnassius apollo* (Herbst, 1798): 2 (12.VII.2014)
13. *Papilio alexanor* Esper, 1800: 5 (17.V.2014), 11 (15.V.2014)
14. *Papilio machaon* Linnaeus, 1758: 17 (18.V.2014)
15. *Iphiclides podalirius* (Linnaeus, 1758): 3 (17.V.2014), 17 (18.V.2014), 18 (2.V.2014), 19 (2.V.2014)

Pieridae (Swainson, 1820)

16. *Aporia crataegi* (Linnaeus, 1758): 5 (17.V.2014), 10 (15.V.2014)
17. *Pieris brassicae* (Linnaeus, 1758): 5 (17.V.2014), 8 (16.V.2014), 11 (15.V.2014)
18. *Pieris rapae* (Linnaeus, 1758): 6 (17.V.2014), 11 (15.V.2014), 17 (18.V.2014), 19 (2.V.2014)
19. *Pieris mannii* (Mayer, 1851): 3 (17.V.2014), 4 (17.V.2014), 5 (17.V.2014), 17 (18.V.2014)
20. *Pieris ergane* (Geyer, [1828]): 1 (13.VII.2014), 2 (12.VII.2014), 3 (17.V.2014), 4 (17.V.2014), 17 (18.V.2014)
21. *Pieris balcana* Lorković, 1968: 5 (17.V.2014), 8 (16.V.2014)
22. *Pieris napi* (Linnaeus, 1758): 1 (13.VII.2014), 2 (12.VII.2014), 20 (16.VII.2014)
23. *Pontia edusa* (Fabricius, 1777): 2 (12.VII.2014)
24. *Euchloe ausonia* (Hübner, [1804]): 4 (17.V.2014), 5 (17.V.2014), 6 (17.V.2014), 8 (16.V.2014), 10 (15.V.2014)
25. *Anthocharis cardamines* (Linnaeus, 1758): 3 (17.V.2014), 4 (17.V.2014), 5 (17.V.2014), 14 (18.V.2014), 17 (18.V.2014)
26. *Anthocharis damone* Boisduval, 1836: 18 (2.V.2014)
27. *Anthocharis gruneri* Herrich-Schäffer, [1851]: 17 (18.V.2014)
28. *Colias alfacariensis* Ribbe, 1905: 1 (13.VII.2014), 2 (12.VII.2014), 14 (18.V.2014), 17 (18.V.2014)
29. *Colias croceus* (Fourcroy, 1785): 1 (13.VII.2014), 2 (12.VII.2014), 3 (17.V.2014), 4 (17.V.2014), 5 (17.V.2014), 8 (16.V.2014), 10 (15.V.2014), 14 (18.V.2014), 15 (14.VII.2014), 17 (18.V.2014), 19 (2.V.2014), 20 (16.VII.2014)
30. *Gonepteryx rhamni* (Linnaeus, 1758): 1 (13.VII.2014), 8 (16.VII.2014), 11 (15.VII.2014), 17 (18.V.2014)
31. *Gonepteryx cleopatra* (Linnaeus, 1767): 11 (15.V.2014)
32. *Leptidea sinapis* (Linnaeus, 1758): 1 (13.VII.2014), 2 (12.VII.2014), 5 (17.V.2014), 7 (15.V.2014), 17 (18.V.2014), 20 (16.VII.2014)
33. *Leptidea duponcheli* (Staudinger, 1871): 1 (13.VII.2014), 17 (18.V.2014)

Lycaenidae (Leach, 1815)

34. *Satyrium acaciae* (Fabricius, 1787): 1 (13.VII.2014)
35. *Callophrys rubi* (Linnaeus, 1758): 4 (17.V.2014), 5 (17.V.2014)
36. *Lycaena phlaeas* (Linnaeus, 1761): 1 (13.VII.2014), 2 (12.VII.2014), 4 (17.V.2014), 5 (17.V.2014), 8 (16.V.2014), 14 (18.V.2014), 17 (18.V.2014), 19 (2.V.2014)
37. *Lycaena ottomana* (Lefèbvre, 1830): 4 (17.V.2014), 6 (17.V.2014), 9 (16.V.2014)
38. *Lycaena alciphron* (Rottemburg, 1775): 1 (13.VII.2014), 2 (12.VII.2014), 15 (14.VII.2014)
39. *Lycaena candens* (Herrich-Schäffer, 1844): 15 (14.VII.2014)
40. *Cupido minimus* (Fuessly, 1775): 1 (13.VII.2014), 8 (16.V.2014)
41. *Celastrina argiolus* (Linnaeus, 1758): 1 (13.VII.2014), 20 (16.VII.2014)
42. *Iolana iolas* (Ochsenheimer, 1816): 3 (17.V.2014)
43. *Glaucopteryx alexis* (Poda, 1761): 5 (17.V.2014), 14 (18.V.2014), 17 (18.V.2014)
44. *Pseudophilotes vicrama* (Moore, 1865): 1 (13.VII.2014), 2 (12.VII.2014), 17 (18.V.2014)
45. *Plebejus sephirus* (Frivaldzky, 1835): 15 (14.VII.2014)
46. *Plebejus argus* (Linnaeus, 1758): 17 (18.V.2014)
47. *Plebejus idas* (Linnaeus, 1761): 2 (12.VII.2014)

48. *Aricia agestis* ([Denis & Schiffermüller], 1775): 1 (13.VII.2014), 4 (17.V.2014), 5 (17.V.2014), 6 (17.V.2014), 8 (16.V.2014), 9 (16.V.2014), 10 (15.V.2014), 14 (18.V.2014), 17 (18.V.2014), 19 (2.V.2014)
49. *Cyaniris semiargus* (Rottemburg, 1775): 8 (16.V.2014)
50. *Polyommatus ripartii* (Freyer, 1830): 1 (13.VII.2014)
51. *Polyommatus admetus* (Esper, [1783]): 1 (13.VII.2014)
52. *Polyommatus dorylas* ([Denis & Schiffermüller], 1775): 1 (13.VII.2014), 2 (12.VII.2014)
53. *Polyommatus daphnis* ([Denis & Schiffermüller], 1775): 1 (13.VII.2014), 2 (12.VII.2014)
54. *Polyommatus bellargus* (Rottemburg, 1775): 4 (17.V.2014), 14 (18.V.2014)
55. *Polyommatus icarus* (Rottemburg, 1775): 1 (13.VII.2014), 2 (12.VII.2014), 3 (17.V.2014), 4 (17.V.2014), 5 (17.V.2014), 6 (17.V.2014), 7 (15.V.2014), 8 (16.V.2014), 9 (16.V.2014), 10 (15.V.2014), 12 (15.V.2014), 14 (18.V.2014), 15 (14.VII.2014), 16 (14.VII.2014), 17 (18.V.2014), 19 (2.V.2014)
- Riodinidae (Grote, 1895)**
56. *Hamearis lucina* (Linnaeus, 1758): 1 (13.VII.2014)
- Nymphalidae (Rafinesque, 1815)**
57. *Libythea celtis* (Laicharting, 1782): 3 (17.V.2014) [larvae], 5 (17.V.2014)
58. *Apatura metis* Freyer, 1829: 20 (16.VII.2014)
59. *Limenitis reducta* Staudinger, 1901: 4 (17.V.2014)
60. *Nymphalis polychloros* (Linnaeus, 1758): 2 (12.VII.2014), 4 (17.V.2014)
61. *Aglais urticae* (Linnaeus, 1758): 12 (15.V.2014), 16 (14.VII.2014), 17 (18.V.2014)
62. *Vanessa atalanta* (Linnaeus, 1758): 1 (13.VII.2014), 2 (12.VII.2014), 5 (17.V.2014), 10 (15.V.2014), 13 (15.V.2014), 14 (18.V.2014), 16 (14.VII.2014)
63. *Vanessa cardui* (Linnaeus, 1758): 1 (13.VII.2014), 2 (12.VII.2014), 5 (17.V.2014), 8 (16.V.2014), 10 (15.V.2014), 14 (18.V.2014), 20 (16.VII.2014)
64. *Issoria lathonia* (Linnaeus, 1758): 15 (14.VII.2014), 20 (16.VII.2014)
65. *Polygonia c-album* (Linnaeus, 1758): 20 (16.VII.2014)
66. *Polygonia egea* (Cramer, 1775): 8 (16.V.2014)
67. *Melitaea cinxia* (Linnaeus, 1758): 14 (18.V.2014), 17 (18.V.2014)
68. *Melitaea phoebe* ([Denis & Schiffermüller], 1775): 4 (17.V.2014), 5 (17.V.2014)
69. *Melitaea didyma* (Esper, 1779): 2 (12.VII.2014), 3 (17.V.2014), 4 (17.V.2014), 5 (17.V.2014), 10 (15.V.2014)
70. *Melitaea trivia* ([Denis & Schiffermüller], 1775): 3 (17.V.2014), 5 (17.V.2014), 15 (14.VII.2014)
71. *Melitaea ornata* Christoph, 1893: 4 (17.V.2014), 17 (18.V.2014)
72. *Melanargia galathea* (Linnaeus, 1758): 1 (13.VII.2014), 15 (14.VII.2014)
73. *Melanargia russiae* (Esper, [1783]): 15 (14.VII.2014)
74. *Melanargia larissa* (Geyer, [1828]): 1 (13.VII.2014), 8 (16.V.2014)
75. *Hipparchia syriaca* (Staudinger, 1871): 1 (13.VII.2014), 2 (12.VII.2014)
76. *Hipparchia volgensis* (Mazochin-Porshnjakov, 1952): 1 (13.VII.2014)
77. *Pseudochazara anthelea* (Hübner, [1824]): 1 (13.VII.2014), 2 (12.VII.2014)
78. *Pseudochazara mniszechii* (Herrich-Schäffer, [1851]): 1 (13.VII.2014), 2 (12.VII.2014)
79. *Pseudochazara amymone* Brown, 1976: 1 (13.VII.2014), 2 (12.VII.2014)
80. *Satyrus ferula* (Fabricius, 1793): 1 (13.VII.2014)
81. *Brintesia circe* (Fabricius, 1775): 2 (12.VII.2014)
82. *Erebia medusa* ([Denis & Schiffermüller], 1775): 15 (14.VII.2014)
83. *Erebia gorge* (Hübner, [1804]): 16 (14.VII.2014)
84. *Maniola jurtina* (Linnaeus, 1758): 2 (12.VII.2014), 4 (17.V.2014), 8 (16.V.2014), 10 (15.V.2014), 12 (15.V.2014)
85. *Hyponephele lycaon* (Rottemburg, 1775): 2 (12.VII.2014)
86. *Coenonympha pamphilus* (Linnaeus, 1758): 1 (13.VII.2014), 2 (12.VII.2014), 4 (17.V.2014), 5 (17.V.2014), 6 (17.V.2014), 10 (15.V.2014), 14 (18.V.2014), 17 (18.V.2014), 19 (2.V.2014)
87. *Coenonympha arcania* (Linnaeus, 1761): 1 (13.VII.2014), 2 (12.VII.2014)
88. *Pararge aegeria* (Linnaeus, 1758): 3 (17.V.2014), 5 (17.V.2014), 14 (18.V.2014)
89. *Lasiommata megera* (Linnaeus, 1767): 1 (13.VII.2014), 2 (12.VII.2014), 3 (17.V.2014), 4 (17.V.2014), 5 (17.V.2014), 10 (15.V.2014), 12 (15.V.2014), 15 (14.VII.2014), 17 (18.V.2014)
90. *Lasiommata maera* (Linnaeus, 1758): 3 (17.V.2014), 4 (17.V.2014), 5 (17.V.2014), 6 (17.V.2014), 14 (18.V.2014), 17 (18.V.2014)

Discussion

Fifty-seven species were recorded during the spring surveys in 2014 (2.V.2014; 15-18.V.2014), comparable to the sixty species registered in neighbouring Macedonia at the same time of year (Verovnik 2012). The surveys in 2014 resulted in a significant increase in the number of records, and, more importantly, the discovery of two new species for the country. However, it should be noted that the weather in the Balkan Peninsula during 2014 was exceptionally poor with many rainy days, and very few prolonged sunny periods. Consequently some species that the authors fully expected to observe were not encountered.

Based on the Atlas of the Albanian butterfly fauna (Misja 2005), we provide new records for some rare, possibly overlooked species. The atlas is given with a 10 x 10 km square grid system and includes Misja's own data and references from literature. However, many records mentioned in previous published accounts (e.g. Rebel & Zerny 1931; Abadjiev & Beshkov 1996b) were not taken into consideration during the preparation of the distribution maps for the atlas and they are not mentioned in the faunistic part of the species descriptions.

By all accounts, and having studied the Albanian Atlas, we can deduce that in past surveys most of the Hesperid species were poorly studied and possibly overlooked. Some of them are reported from only two-three UTM squares (*Pyrgus alveus*, *P. armoricanus*, *P. carthami*), while others are sited from just a single locality (*Pyrgus sidae*, *P. serratulae*, *Carcharodus orientalis*).

Pyrgus armoricanus - mentioned only from two UTM squares (Misja 2005), but the records of Rebel & Zerny (1931) from Drenovë, Kulla e Lumës and Shkodër are not included in the Atlas. In recent surveys, one more record (Peshkopi) is given by Striniqi-Laçeç & Misja (2013) and a further sighting (Moglicë-Bratilë) by Šašić *et al.* (2015). During 2014 we confirm its presence at Lake Shkodër and in addition provide two new localities (Bënçë, Radesh); this indicates a much wider distribution for this species in Albania.

Pyrgus sidae - we found the species on Mali i Tomorrit at two different sites. These are only the second and third records for Albania. In neighbouring regions the species is generally sparsely distributed and flies in low densities, so we suspect it is more widely distributed.

Carcharodus orientalis - mentioned from only one UTM square at Lake Shkodër (Rebel & Zerny 1931; Misja 2005), but the record of Abadjiev & Beshkov (1996b) from Butrinti, South Albania is not included in the Atlas. Due to its similarity with *Carcharodus floccifera*, it has possibly been overlooked in the past. Three new localities were reported from the south-eastern part of the country (Šašić *et al.* 2015), which, together with our additional five new records, indicate that the species has a much wider distribution, at least in southern Albania.

Erynnis marloyi - observed on two occasions. Both localities (Bënçë and Mali i Tomorrit) are new sites for the species. Together with the three existing UTM squares (Misja 2005) and the three additional records from southeastern Albania (Šašić *et al.* 2015), we can conclude that the species is probably more widespread in the country.

Papilio alexanor - confirmed from Vlorë (Misja 2005). In addition we recorded this species from one new locality, at Kelcyrë.

Leptidea duponcheli - another overlooked species in Albania, mentioned only in the Atlas from Elbasan (Misja 2005). Šašić *et al.* (2015) give seven new localities and we found it at two more sites. The combined records would indicate that the species is not rare in Albania.

Anthocaris damone - The discovery of *A. damone* was not unexpected. The butterfly is present in the neighbouring Republic of Macedonia, where it has been reported from several areas close to the Albanian border, such as the Mt. Galičica and the Struga valley (Schaidler & Jakšić 1989). In addition the butterfly has been recorded in northern Greece, also near the Albanian border (Pamperis 2009), and on the island of Corfu (Tolman & Bernhard 1984) which is only 2 km off the Albanian mainland. On 2.V.2014 FF visited the Devoll gorge from the direction of Gramsh, but was denied access due to ongoing construction work on a new dam (Statkraft 2013). On passing through Bratilë village on his way back to Gramsh, FF noticed several

yellow-orange butterflies patrolling the dirt road. One specimen flew close to the car, making a positive identification possible. Above the road, the host plant (*Isatis tinctoria*), was growing in abundance. A few hundred meters further on, in the direction of Gramsh, several smaller patches of the host plant were observed on steep slopes, but most had already been destroyed by the construction work. At this location, several males and a possible female, were observed. In all probability the habitat at this site has now been completely destroyed and additional surveys will be required to see whether *A. damone* still flies in this region of Albania.

Lycaena ottomana - confirmed from Syri i Kaltër (Abadjiev & Beshkov 1996b) and in two new localities (Bencë, Kelcyrë). The complete life cycle of the species has been documented (see additional notes).

Melitaea ornata - recorded for the first time in Albania in 2013 at Drenovë (Šašić *et al.* 2015). During our surveys in 2014 we observed the species in two new localities in south Albania: Bencë, Mali i Tomorrit. Our records support the hypothesis that the species is possibly widely distributed and was previously overlooked due to its close resemblance to *Melitaea phoebe*. The authors determinations are based on wing morphology and the shape of the antennal club (Varga *et al.* 2005; Varga 2007).

Hipparchia syriaca - With the exception of observations from Jorgucati and Dhërmi in southern Albania (Abadjiev & Beshkov, 1996a), most records are located in the northern part of the country (Rebel & Zerny 1931). Misja (2005) and Striniqi-Laçeçj & Misja (2013) listed it as *Hipparchia alcyone* ([Denis & Schiffermüller], 1775). Furthermore, in the last publication on the butterfly fauna of Albania (Šašić *et al.* 2015), another three localities from the southern part of the country were reported, which together with our two new records (Boboshtiçë and Gjergjeviçë), indicate that the species is not limited to the northernmost part of Albania.

Apatura metis - Although not listed in the recent checklist (Verovnik & Popović 2013a) the species was first mentioned for Albania already by Rebel and Zerny (1931) for surroundings of Tirana. The discovery of *A. metis* at Lake Shkodër was also not unexpected since it inhabits the Montenegrin side of the lake (Lake Skadar) as indicated in the provisional distribution maps of the butterflies of Yugoslavia (Jakšić 1988, Franeta pers. obs.). On 16.VII.2014 MGP and FF visited the northeastern shore of Lake Shkodër in search of this species. Upon arriving at the lakeside northwest of the village of Kasani (locality nr. 20), several specimens of *A. metis* were immediately observed basking in the morning sun, imbibing water and salts from a puddle on a dirt track close to the lake. In nearby trees and thickets the species was seen in large numbers predominantly patrolling the lower and upper branches of *Salix alba*. Most specimens looked very fresh, which is unusual as the flight period of this bivoltine species in other parts of the Balkan Peninsula is from the end of May until the end of June (for the first generation) and from the end of July until the end of August in a prolonged second generation (Tolman & Lewington 2008; Lafranchis 2004; Franeta pers. obs.). The 'unseasonable' flight period of this species at Lake Shkodër is in accordance with FF's observations regarding Montenegrin populations, where most sightings were made in the first week of July until the end of July. The fact that the habitat is located so far south, within close proximity to the coast and at a low altitude suggests that the authors were possibly observing second generation specimens, and that an earlier brood could be on the wing at the end of April or the beginning of May.

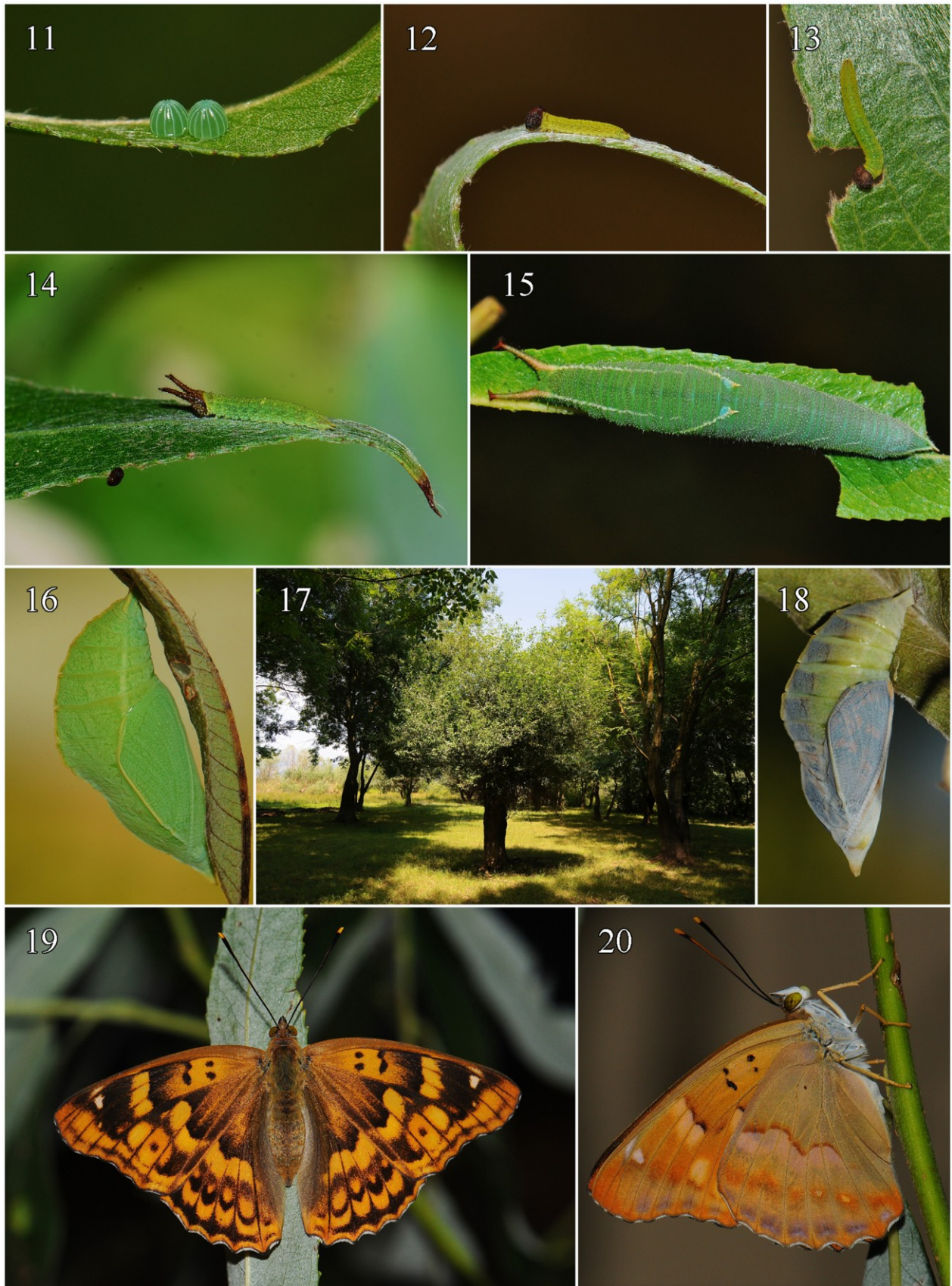
Rearing reports of Apatura metis and Lycaena ottomana

Lycaena ottomana

Two females, one from the site at Kelcyrë the other from Tepelenë, were placed in a netted pot containing *Rumex acetosa* Linnaeus, brought specifically to Albania by MGP for the purpose of a rearing experiment. Ova were laid on the leaves (a majority on the undersides) and the stems of the plant (Fig. 3). On hatching, L₁ larvae immediately started to feed on the underside leaves of their host plant (Fig. 4). Once transferred back to the UK the larvae developed rapidly (Figs. 5-6), brought on by the warmth of MGP's conservatory, and pupation took place on 20.VI.2014 (Fig. 7). The first adult, a male, emerged on 30.VI.2014 (Fig. 8), the first female on 7.VII.2014 (Figs. 10-11).



Figures 2-10. *L. ottomana* from Bënçë, 5 km. S of Tepelenë, Gjirokastrër county, Albania. **Fig. 2:** Ova, 26.V.2014. **Fig. 3:** L₁ larvae on *Rumex acetosa*, 26.V.2014. **Fig. 4-5:** Final instar larva, 18-20.VI.2014. **Fig. 6:** Pupa, 20.VI.2014. **Fig. 7:** Adult ♂, ex ova, 30.VI.2014. **Fig. 8:** Adult ♂, ex ova, 05.VII.2014. **Figs. 9-10:** Adult ♀♀, ex ova, 07.VII.2014. (Photographs: Martin Gascoigne-Pees).



Figures 11-20. *A. metis* from Lake Shkodër, Albania. **Fig. 11:** Ova, 16.VII.2014. **Fig. 12:** L₁ larva, 22.VII.2014. **Fig. 13:** L₁ larva, 23.VII.2014. **Fig. 14:** L₂ larva, 26.VII.2014. **Fig. 15:** Final instar larva, 07.VIII.2014. **Fig. 16:** Pupa, 16.VIII.2014. **Fig.17:** Breeding habitat, 16.VII.2014. **Fig. 18:** Pupa pre-hatching, 22.VIII.2014. **Fig. 19-20:** Adult ♀♀, ex ova, 23.VIII.2014. (Photographs: Filip Franeta).

Apatura metis

On 16.VII.2014, while exploring the shoreline along the Albanian side of Lake Skadar (Lake Shkodër), a female of *A. metis* was observed flying around a small *Salix alba* tree growing in partial shade surrounded by larger trees (Fig. 18). On inspection, two eggs were discovered on the underside of a leaf of a newly formed shoot (Fig. 12). The ova were sampled for a rearing programme. A detailed description of the lifecycle of *A. metis* has previously been published (Weidemann 1982a, 1982b, 1982c, 1982d; Lorković 1983), but, nevertheless, we include some brief notes on the rearing programme of this interesting population. The rearing regime was completed in plastic containers, one larva per receptacle. The freshly laid eggs were pale green in colour, quickly changing dark green within 24 hours. Prior to hatching, the eggs became darker. The first caterpillar hatched on 22.VII.2014 (Fig. 13), the second larva a day later. Fresh shoots of *Salix alba* were introduced every one to two days, and the young larvae developed rapidly on new leaves. The larvae fed predominantly on the leaf margins (Fig. 14), retreating to the leaf tips when at rest. The first L₁ caterpillar moulted on 26.VII.2014 (Fig. 15), the second larva the day after. The skin change to L₃ was not witnessed by FF, but on 2.VIII.2014 one caterpillar had changed to L₄ and by 7.VIII.2014 was already in its final instar (Fig. 16). On 13.VIII.2014 the first larva pupated on a branch inside the breeding enclosure. The pupae was light green in colour (Fig. 17), becoming darker prior to hatching (Fig. 19). On 23.VIII.2014 a female hatched (Figs. 20-21). The second caterpillar had a slower development, reaching its final instar four days later. Due to possible dehydration, as a consequence of a rearing error, this larva did not pupate normally and the malformed pupae failed to hatch. The fact that both caterpillars refused to enter diapause supports the hypothesis that a possible second or even third generation could occur at the end of August/beginning of September. Third generation is known from the eastern part of the species range in Far East Asia (Lee 2009).

Conclusions

Despite recent efforts most parts of Albania are still poorly studied and provide ample opportunities for discovery of rare and local species, including those new for the country. In particular, the vast mountain areas bordering Montenegro and Kosovo (Albanian Alps), and the Republic of Macedonia (Korab-Mali i Korabit, Jablanica-Shebenik Mountain) are among the main targets for further studies. Moreover, there are mountain systems in central and southern Albania which are also worth visiting such as Mali i Polisit, Mali i Lunxhërisë, Mali i Ostrovicës, Mali i Gramozit. All these surveys will provide important information on the butterfly fauna in now still mainly undisturbed rural country that is bound to change in the near future following the patterns already seen in other European countries.

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