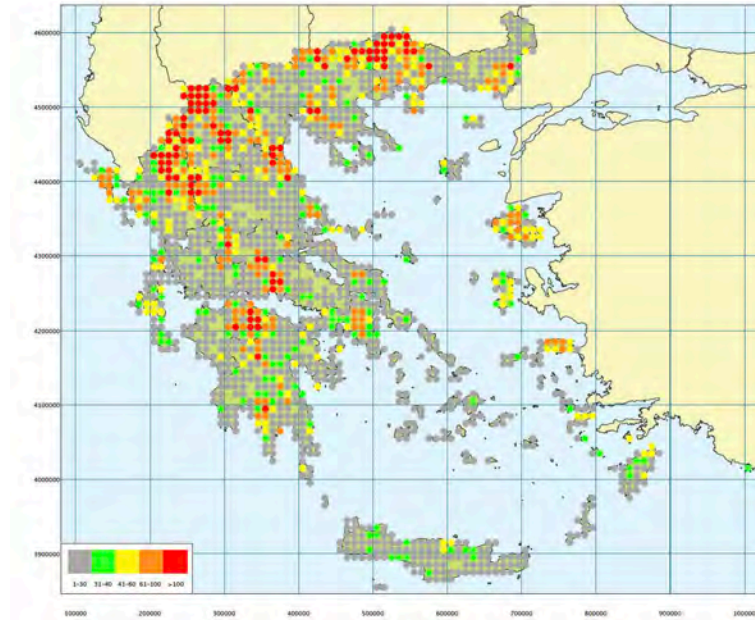


# ΟΙ ΠΕΤΑΛΟΥΔΕΣ ΤΗΣ ΕΛΛΑΔΑΣ

Νέοι Χάρτες κατανομής των ειδών 3.3', Νέος Χάρτης 3.4', Νέος Χάρτης 4.15' και Νέος Χάρτης 4.16'  
του Λάζαρου Ν. Παμπέρη



GGRS87

# THE BUTTERFLIES OF GREECE

New Maps distribution of species 3.3', New Map 3.4', New Chart 4.15' and New Chart 4.16'

by Lazaros N. Pamperis

2024

## ΠΡΟΛΟΓΟΣ

Στις επόμενες σελίδες παρουσιάζονται νέοι 236 χάρτες εξάπλωσης των ειδών δηλαδή οι Χάρτες 3.3', νέος Χάρτης 4.15' (ανάλογος αυτόν στην σελίδα 736 της δεύτερης έκδοσης του βιβλίου ΟΙ ΠΕΤΑΛΟΥΔΕΣ ΤΗΣ ΕΛΛΑΔΑΣ, 2009) και νέος Χάρτης 4.16' (στην σελίδα 738).

Οι νέοι αυτοί χάρτες έχουν συντεταγμένες του συστήματος GGRS87 και αφορούν συνολικά τις 1673 τοποθεσίες 10X10 km, που έχουν εξερευνηθεί. Για όλα τα είδη σημειώνεται στους Χάρτες 4.3' η ΑΟΟ (Area Of Occurance, 2X2Km) σε Km<sup>2</sup>.

Οι νέοι αυτοί Χάρτες προέρχονται και αυτοί από τις συνολικά 484555 καταγραφές για τις πεταλούδες της Ελλάδας, που συγκεντρώθηκαν μέχρι 31 XII 2023 (αντίστοιχα 265134 καταγραφές, το 2008).

Αυτή η αύξηση των καταγραφών οφείλεται στις προσωπικές εξερευνήσεις (από το 2008-2023) αλλά κυρίως στις δημοσιευμένες εργασίες σε εντομολογικά περιοδικά και στην αποστολή (μετά την δεύτερη έκδοση του βιβλίου) σχολίων και καταγραφών για τις πεταλούδες της Ελλάδας από πολλούς, από την Ελλάδα και το εξωτερικό, των οποίων τα ονόματα αναφέρονται παρακάτω. Σε όσους μου προσέφεραν τα σχόλια και όσους μου εμπιστεύθηκαν τις καταγραφές των, αφιερώνεται το παρόν μαζί με την ευγνωμοσύνη μου.

Επισημαίνεται η ανάρτηση πολλών φωτογραφιών και καταγραφών σε ιστοτόπους (μερικές διευθύνσεις των οποίων αναφέρονται παρακάτω) και ιδιαίτερα στην ομάδα του Facebook για τις πεταλούδες της Ελλάδας και της Κύπρου (Butterflies & Moths of Greece & Cyprus με 4013 μέλη την 7 XII 2023) στο <http://www.facebook.com/groups/420659294633829/>.

Τώρα στην Ελλάδα υπάρχουν 236 είδη πεταλούδων σύμφωνα με το Wiemers et al (2018) στο <https://doi.org/10.3897/zookeys.811.28712> και στο και το Zhang et al (2020) στο <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8018707/>

Οι αναφορές για την παρουσία των ειδών *Thaleropsis ionia* (Κατελλόριζο), *Deudorix livia* (Αττική) και *Hipparchia semele* (Πελοπόννησος) δεν έχουν επιβεβαιωθεί έως σήμερα.

Σε ορισμένες από τις σελίδες παρουσιάζονται, κατά περίπτωση εάν απαιτείται, και πρόσθετα διευκρινιστικά σχόλια και σύνδεσμοι (Links) για ιστοσελίδες με φωτογραφίες και λεπτομέρειες των φτερών, που προτείνονται ως χρήσιμες για αναγνώριση των ειδών με τις φωτογραφίες.

Για επιπλέον 165 νέες φωτογραφίες και περισσότερες λεπτομέρειες στο URL: <https://www.pamperis.gr> και στις 6 ελεύθερες εφαρμογές στο [https://www.pamperis.gr/btf\\_site/](https://www.pamperis.gr/btf_site/) και στο <https://www.pamperis.gr/recognition/index.html> για την αυτόματη αναγνώριση των πεταλούδων.



## PREFACE

The new Maps 3.3' (of distribution of species) are presented, the new Map 4.15' (as in the page 736 of the second edition of the book THE BUTTERFLIES OF GREECE, 2009) and the new Chart 4.16' (as in page 738).

The new Maps are made with coordinates in GGRS87, after in total 484555 records for the butterflies of Greece (till 31 XII 2023) for the 1673 investigated localities 10X10 km (compare to 265134 records, in 2008). For all species AOO (Area Of Occupancy 2X2Km) is noted on Maps 3.3' in Km<sup>2</sup>.

This increase in records is made after personal investigations (from 2008-2023) and mainly after the many published papers in entomological magazines and the generous offer from many recorders (listed below) from Greece and abroad, who send comments and records for the butterflies of Greece. This update is dedicated to all those who offer their comments and send and trust to me their records; to all I express my gratitude.

A list with a number of sites (from which records for the butterflies of Greece were obtained) is presented; the existence of a group in Facebook for the Butterflies and Moths of Greece and Cyprus is also noted (with 4013 members at 7 XII 2023) in <http://www.facebook.com/groups/420659294633829/> .

Now there are 236 species in Greece; see in Wiemers et al (2018) in <https://doi.org/10.3897/zookeys.811.28712> and in Zhang et al (2020) in <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8018707/>

Reports on the presence of the species *Thaleropsis ionia* (Kastellorizo), *Deudorix livia* (Attiki) and *Hipparchia semele* (Peloponnisos) has not been confirmed to date.

Additional comments are noted in some of the pages; also there are Links to web pages with photos and details of the wings, suggested for a correct identification from photos.

For 165 new photographs, 6 free applications and more details see in URL: <https://www.pamperis.gr> and in [https://www.pamperis.gr/btf\\_site/](https://www.pamperis.gr/btf_site/) and in <https://www.pamperis.gr/recognition/index.html> for automatic recognition of butterflies.

Larissa 1 January 2024

Lazaros N. Pamperis

**SELECTED SITES FROM WHICH DATA FOR THE BUTTERFLIES OF GREECE WERE OBTAINED  
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ΠΕΤΑΛΟΥΔΕΣ ΤΗΣ ΕΛΛΑΔΑΣ**

**FLICKR** <http://www.flickr.com>

**Butterflies & Moths of Palaearctic Regions** <http://www.euroleps.ch>

**EUROPEAN INTERESTS GROUP** <https://butterfly-conservation.org/in-your-area/european-interests-group>

**FACEBOOK Butterflies & Moths of Greece & Cyprus** <http://www.facebook.com/groups/420659294633829/>

**GREENWINGS** <http://greenwings.co/>

**HOME OF EUROBUTTERFLIES** <http://www.eurobutterflies.com>

**HONEYGUIDE TOURS** <http://www.honeyguide.co.uk/>

**iNaturalist** <https://www.inaturalist.org>

**LEPIFORUM** <http://www.lepiforum.de/>

**NATURALIST** <http://www.naturalist.co.uk>

**NATURE LINK** [www.geocities.com/pelionnature/](http://www.geocities.com/pelionnature/)

**NATURETREK** <https://www.naturetrek.co.uk/>

**OBSERVATION** <https://observation.org/>

**PROJECT NOAH** <https://www.projectnoah.org/>

**pyrgus.de** [http://www.pyrgus.de/index\\_en.php](http://www.pyrgus.de/index_en.php)

**SPARTIA WILDLIFE** <http://www.spatiawildlife.com/>

**ΔΙΚΤΥΟ ΕΡΕΥΝΗΤΩΝ ΠΕΡΙΒΑΛΛΟΝΤΟΣ** <http://62.38.203.210/natura/>

**ΘΡΑΚΙΚΟΣ ΗΛΕΚΤΡΟΝΙΚΟΣ ΘΗΣΑΥΡΟΣ** <http://www.xanthi.ilsp.gr/>

**ΜΟΥΣΕΙΟ ΓΟΥΛΑΝΔΡΗ ΦΥΣΙΚΗΣ ΙΣΤΟΡΙΑΣ** <http://www.gnhm.gr/>

**BUTTERFLIES of Crete** <https://butterfliesofcrete.com>

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**ΠΡΟΣΩΠΙΚΕΣ ΕΠΙΚΟΙΝΩΝΕΙΕΣ PERSONAL COMMUNICATIONS**

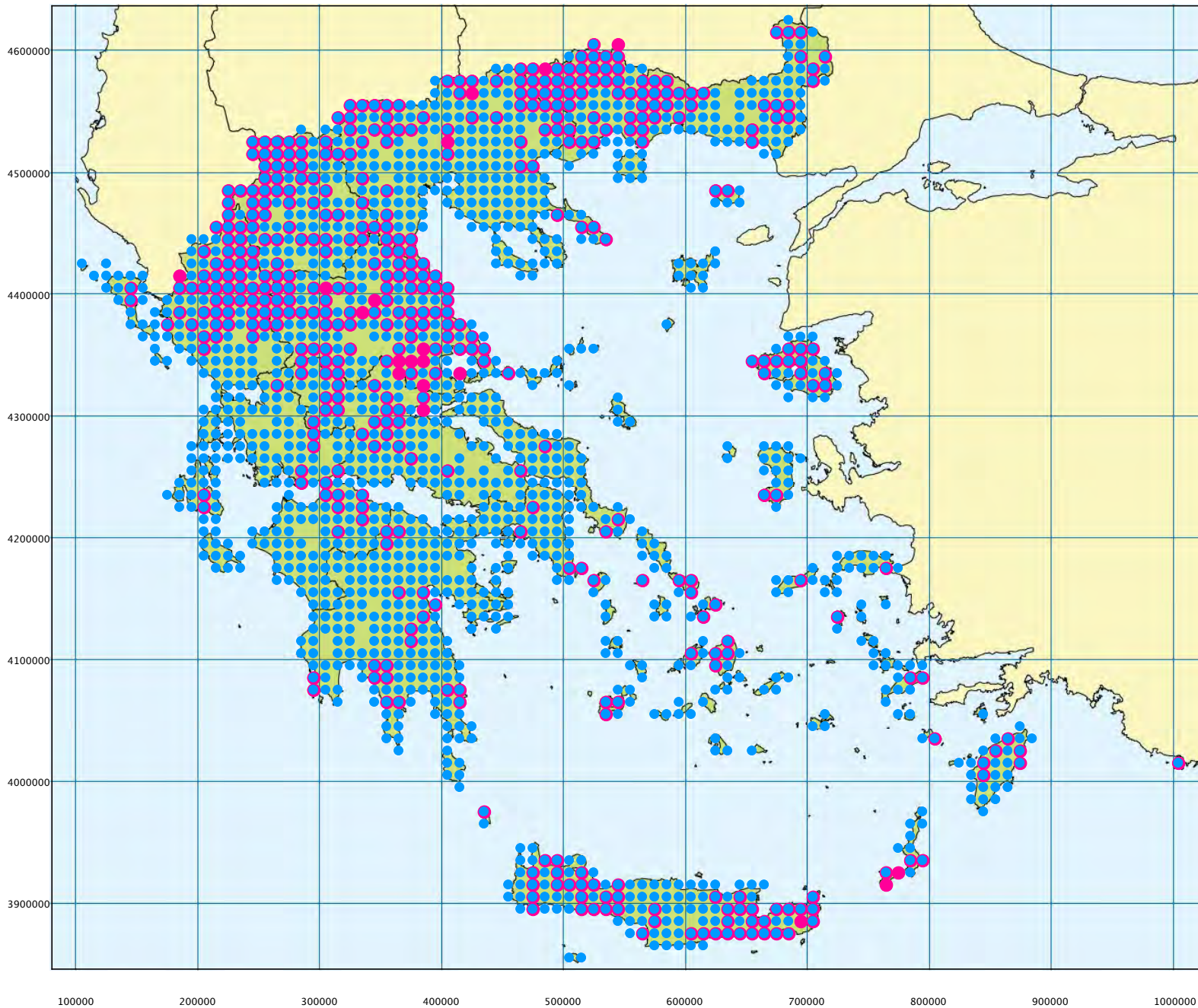
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ΣΤΑΥΡΙΔΗΣ ΣΤΑΥΡΟΣ  
ΣΤΡΑΧΙΝΗΣ ΗΛΙΑΣ  
ΣΥΚΑΣ ΒΑΣΙΛΗΣ  
ΣΩΤΗΡΙΟΥ ΦΩΤΕΙΝΗ  
ΤΑΜΒΑΚΑΣ ΚΩΣΤΑΣ  
ΤΖΑΝΟΓΙΩΡΓΗΣ ΔΗΜΗΤΡΗΣ  
ΤΖΑΦΕΤΑΣ ΧΡΗΣΤΟΣ  
ΤΖΑΧΕΙΛΑΣ ΔΗΜΗΤΡΙΟΣ  
ΤΖΗΜΟΥΛΗΣ ΟΔΥΣΣΕΑΣ  
ΤΖΩΡΤΖΑΚΑΚΗ ΟΛΓΑ  
ΤΣΕΛΟΣ ΗΛΙΑΣ  
ΤΣΙΡΙΔΗΣ ΑΛΕΞΑΝΔΡΟΣ  
ΤΣΙΦΛΑΚΗΣ ΕΛΕΥΘΕΡΙΟΣ  
ΤΣΟΥΚΛΕΙΔΗΣ ΓΕΩΡΓΙΟΣ  
ΦΑΚΑΣ ΓΕΩΡΓΙΟΣ  
ΦΑΤΣΕΑ ΣΤΑΥΡΟΥΛΑ  
ΦΟΥΝΤΟΥΛΗΣ ΧΡΥΣΟΣΤΟΜΟΣ  
ΧΑΛΚΙΑΔΑΚΗΣ ΠΕΤΡΟΣ  
ΧΑΛΚΙΑΣ ΒΑΣΙΛΗΣ  
ΧΑΤΖΗΑΘΑΝΑΣΙΟΥ ΓΙΑΝΝΗΣ  
ΧΑΤΖΗΔΑΚΗΣ ΠΑΝΑΓΙΩΤΗΣ Ι  
ΧΡΙΣΤΟΠΟΥΛΟΥ ΜΑΙΡΗ  
ΧΡΙΣΤΟΦΙΔΗΣ ΓΙΑΝΝΗΣ  
ΨΑΛΛΙΔΑΣ ΒΑΣΙΛΗΣ

ALBRECHT MARTIN  
BAUDRAZ MICHEL  
BEAUCKOMP PETER C  
BERRY MATT  
BESHKOV STOYAN  
BONETTI ANDREA  
BOWERS JOHN K  
BOZANO GIAN  
BROWN JOHN  
BURRETT PETER  
BYGATE PETER  
CARPENTER ALAN  
CHAULIAC ANDRE  
COBB CHRIS  
COUPE J.  
COURCY WILLIAMS MICHAEL  
COWAN PAUL  
CREPIN M.P  
CUVELIER SYLVAIN  
DAHL MAGNUS  
DARCEMONT CHRISTIAN  
DIJON CATHERINE  
DINCĂ VLAD  
DOWDING JULIAN  
DROUET ERIC  
DUDLEY STEVE  
DURDIN CHRIS  
EDDIE JOHN  
EDMUNDS HENRY. A  
ELLIS SAM  
FENN PATRICIA  
FOLEY MICHAEL  
FOWLES ANDRIAN P.  
FOX KIM  
FOX RITCHARD  
FULLER MICHAEL  
GATTI FRANCESCO  
GIBSON CHRIS  
GODDARD DAVID  
GOETHALS VALERIE  
GOOR WALTER  
GREATOREX-DAVIES NICK  
GUILFOYLE A.  
HAATELA TARI  
HABELER HEINZ  
HALL D  
HAPKA TAMAS  
HEAP JOHN  
HULL MIKE  
HUNT PETER  
JORDAN JAN  
JUTZELER DAVID  
KAPPES EVA  
KAPPES WULF  
KOLEV ZDRAVKO  
LAFRANCHIS TRISTAN  
MAIER MARIO  
MAJER JINDRICH  
MANDZIEJEWICZ R.  
MANN JOHN  
MASON STEPHEN A  
MAUNDER MIKE  
MAZZEI PAOLO

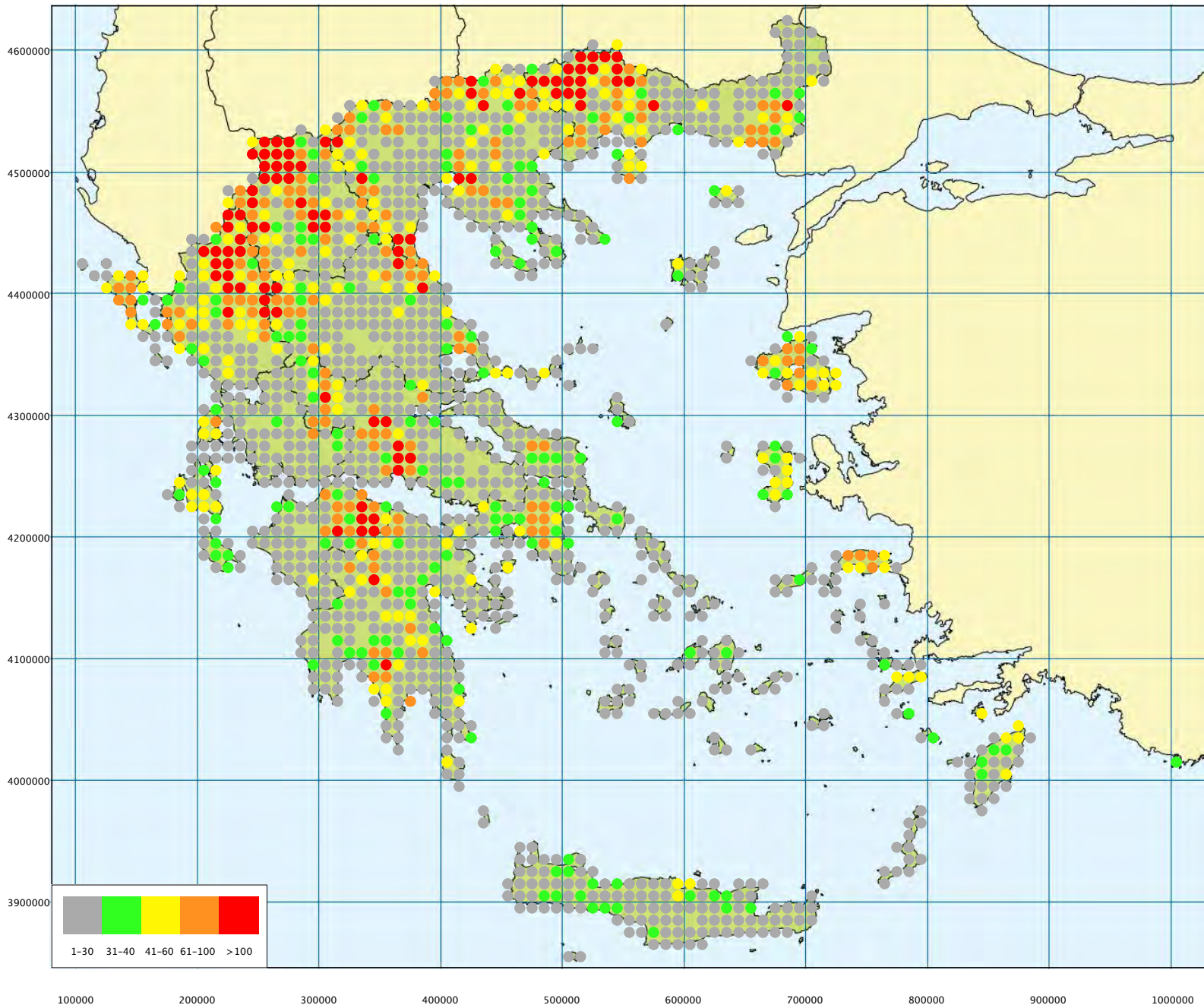
MEREDITH GUY  
MOORE DAVID  
MURPHEY CHRIS  
MOLGAARD MORTEN S  
NABBE MARINA  
NORBERT ULMAN  
OISTEIN BERG  
PALMI PAOLO  
PEACE NIGEL  
PERKINS ROGER  
PETTERSSON LARS  
PLOWMAN FRANCIS  
PLOWMANE DAVE  
POOT ROB  
PRENTICE MIKE  
PRINGLE GORDON  
RAMEL GORDON  
RAVIGLIONE MARIO  
REYNOLDS W.J  
RODGERS PETER  
ROWLINGS MATTHEW  
RUSSELL PETER  
RUTHERFORD JAN  
SALMON JOHN  
SAVAGE LYNDON  
SCARLAU ASTRID  
SCHAIDER PAUL  
SEEPMA HERRE  
SELBY PAUL  
SIOUX LEFTY  
SMETHURST MIKE  
SPENCER SIMON  
SPEYBROEK JEROEN  
SPILLER JOY  
SPRUYTTE STEF  
STANDRING KEVIN  
STANLEY G. A.  
STEUR JOEP  
STUBGAARD JORGEN  
SUTTON PETER  
SVELKUTIS MICK  
SZEKELY LEVENTE  
TAYLOR MIKE  
THOMPSON NEIL  
THOMSON G.  
THORSEN NIELS  
TOLMAN TOM  
TOWNSEND DENIS  
TSHIKOLOVETS VADIM  
ULMAN NORBERT  
van DOG JOHANNES  
van HANS OOSTERHOUT  
van SWAAY CHRIS  
VEROVNIK RUDI  
VLIEGENTHART ALBERT  
WAGENER SIGBERT P.  
WATTS BERNARD  
WICKMAN PER-OLOF  
WIRTH ALEXANDER  
WRIGHT DAVE  
WYNNE IAN R  
ZIEGLER HEINER



**New Map 3.4'**  
(update 2024)  
Investigated  
localities  
for all species

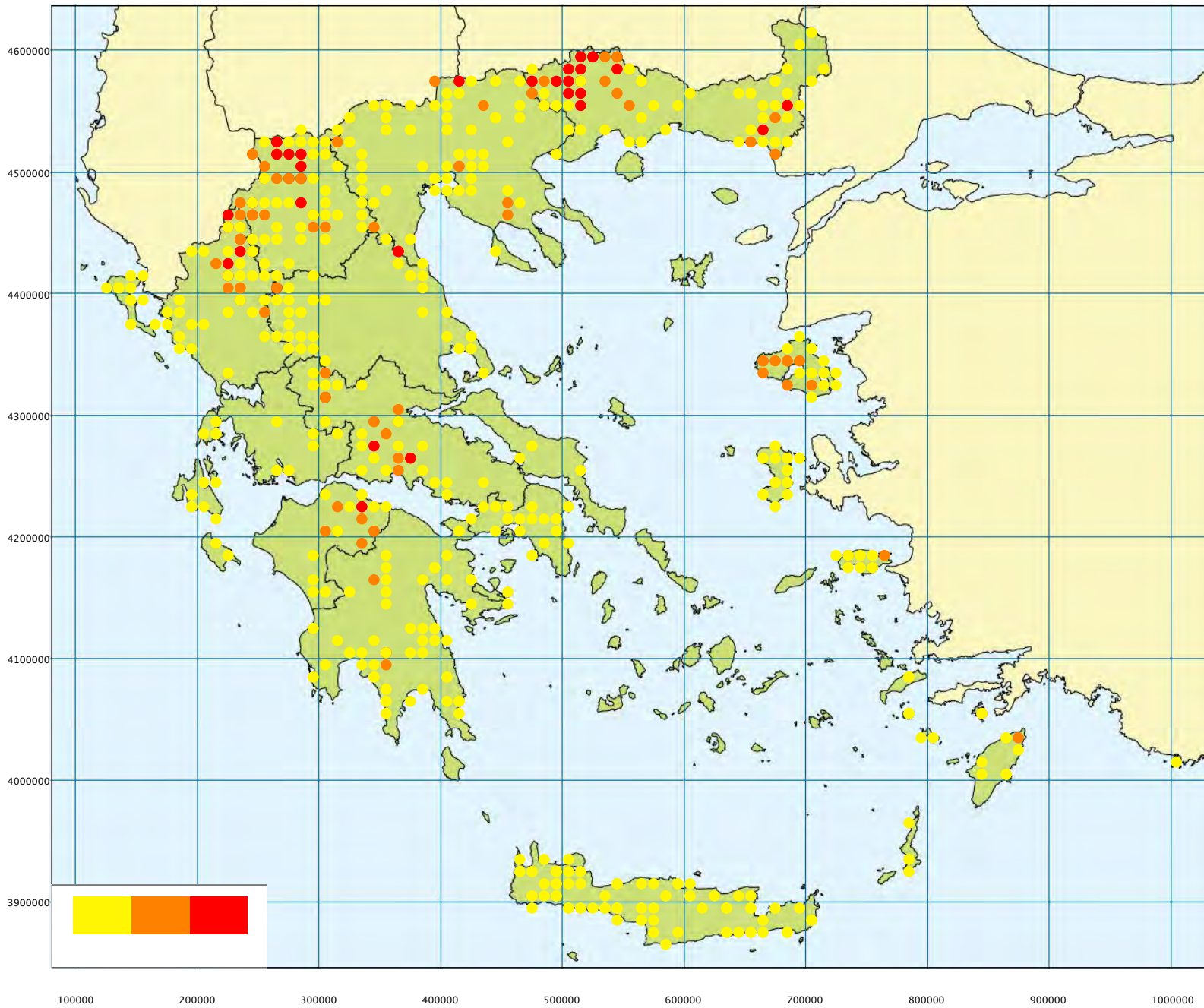
**Νέος Χάρτης 3.4'**  
(επικαιροποίηση  
2024)  
Οι εξερευνηθείσες  
τοποθεσίες για  
όλα  
τα είδη





**New Chart 4.15'**  
 (update 2024 version in  
 GGRS87)  
 Total number of species for all  
 1673 localities 10X10 km

**Νέος Χάρτης 4.15'**  
 (επικαιροποίηση 2024 με  
 συντεταγμένες GGRS87)  
 Συνολικός  
 αριθμός των ειδών για όλες  
 τις  
 1673 τοποθεσίες 10X10 km



**New Chart 4.16'**  
 (update 2024 version in GGRS87)  
 Important butterfly areas in  
 Greece

**Νέος Χάρτης 4.16'**  
 (επικαιροποίηση 2024 με  
 συντεταγμένες GGRS87)  
 Σημαντικές περιοχές για τις  
 πεταλούδες της Ελλάδας



## Comments on the species distribution maps that follow Σχόλια για τους χάρτες εξάπλωσης των ειδών που ακολουθούν

1. Endemic species/ Ενδημικά Είδη
  - *Zerynthia cretica*
  - *Kretania psylorita*
  - *Maniola chia*
  - *Hipparchia cretica*
  - *Coenonympha thyrasis*
  - *Hipparchia christenseni*
  - *Polyommatus timfristos*
  
2. Identification uncertain / Αμφίβολη αναγνώριση
  - *Pieris napi*
  - *Pieris balcana*
  - *Colias erate*
  - *Leptidea sinapis*
  - *Leptidea juvernica*
  - *Melitaea athalia*
  - *Melitaea aurelia*
  - *Hipparchia senthes*
  - *Hipparchia volgensis*
  - *Pyrgus alveus*
  - *Pyrgus armoricanus*
  - *Muschampia orientalis*
  - *Muschampia floccifera*
  
3. Species reported only once / είδη που αναφέρθηκαν μόνον μια φορά.
  - *Thaleropsis ionia*
  - *Deudorix livia*
  - *Hipparchia semele*
  
4. ***Polyommatus ripartii***
  - As published by VISHNEVSKAYA MS, SAIFITDINOVA AF, LUKHTANOV VA (2016): Karyosystematics and molecular taxonomy of the anomalous blue butterflies (Lepidoptera, Lycaenidae) from the Balkan Peninsula. Comparative Cytogenetics 10(5): 1–85. <https://doi.org/10.3897/CompCytogen.v10i5.10944>, the new endemic species *Polyommatus timfristos* was found in Mt Paranssos and Mt Tymfristos, very similar (in external characters) to *P. ripartii*. All records of *P. ripartii*, in this map, should be revised because of the possibility that new cryptic species is hidden.
  - Όπως δημοσιεύθηκε στο VISHNEVSKAYA MS, SAIFITDINOVA AF, LUKHTANOV VA (2016): Karyosystematics and molecular taxonomy of the anomalous blue butterflies (Lepidoptera, Lycaenidae) from the Balkan Peninsula. Comparative Cytogenetics 10(5): 1–85. <https://doi.org/10.3897/CompCytogen.v10i5.10944>, the new endemic species *Polyommatus timfristos* was found in Mt Paranssos and Mt Tymfristos, very similar (in external characters) to *P. ripartii*. All records of *P. ripartii*, in this map, should be revised because of the possibility that new cryptic species is hidden.

doi.org/10.3897/ CompCytogen.v10i5.10944, το νέο είδος *Polyommatus timfristos* βρέθηκε στα βουνά Παρνασσός και Τυμφρηστός, το οποίο είναι πάρα πολύ όμοιο με το *P. ripartii* (στα εξωτερικά χαρακτηριστικά). Όλες οι καταγραφές του *P. ripartii*, σε αυτόν τον χάρτη, θα πρέπει να επανεξεταστούν επειδή υπάρχει η πιθανότητα να υπάρχουν και άλλα κρυπτικά είδη.

#### 5. *Polyommatus aroaniensis*

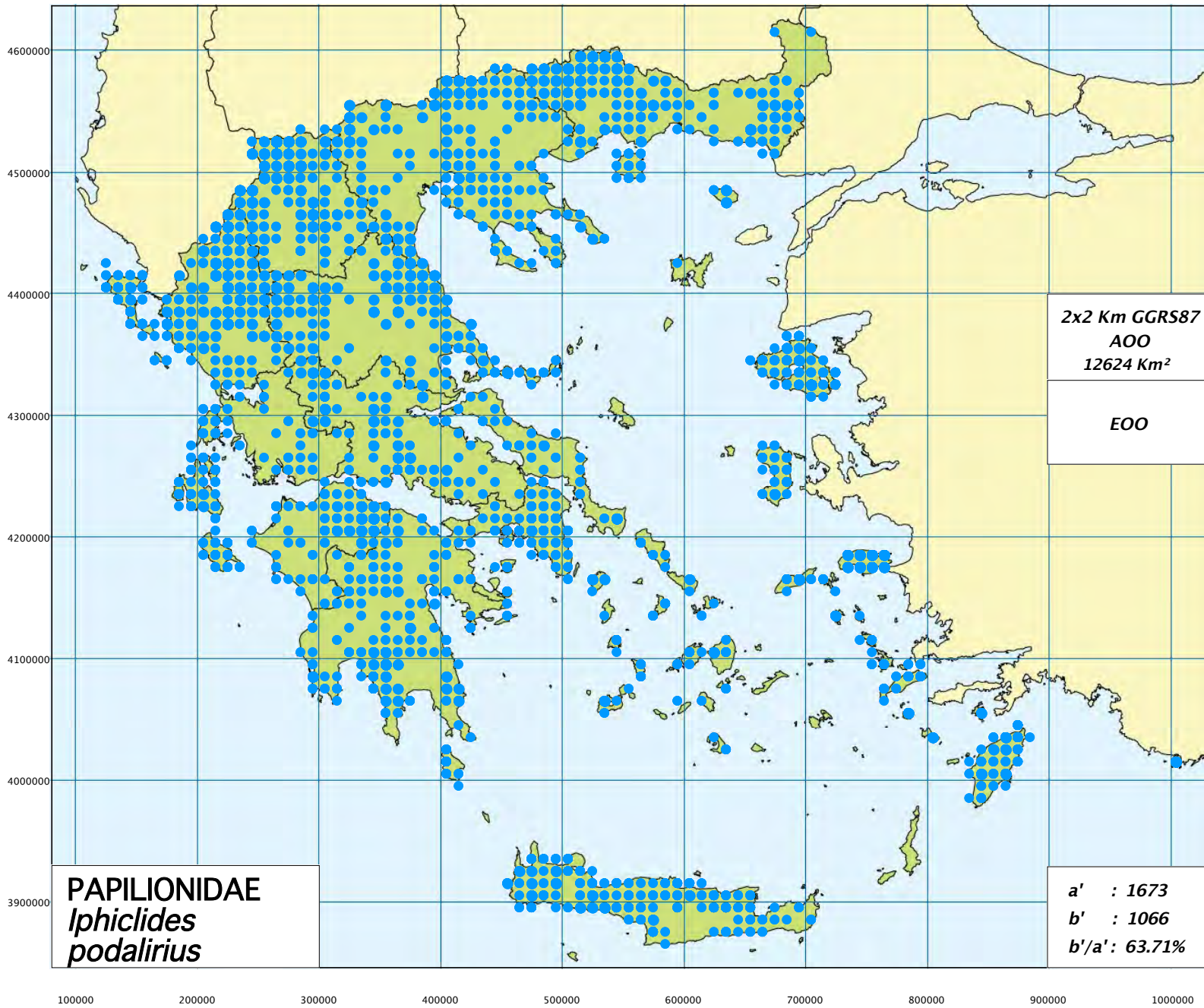
- It was published recently [by Parmentier L, Vila R, Lukhtanov V (2022) Integrative analysis reveals cryptic speciation linked to habitat differentiation within Albanian populations of the anomalous blues (Lepidoptera, Lycaenidae, *Polyommatus* Latreille, 1804). *Comparative Cytogenetics* 16(4): 211-242. <https://doi.org/10.3897/ CompCytogen.v16.i4.90558>] that a new cryptic species *Polyommatus lurae* was found in Albania, very similar (in external characters) to *P. orphicus eleniae* and *P. aroaniensis*. All records of *P. aroaniensis*, in this map, should be revised because of the possibility that new cryptic species is hidden.
- Δημοσιεύθηκε πρόσφατα [στο Parmentier L, Vila R, Lukhtanov V (2022) Integrative analysis reveals crypticspeciation linked to habitat differentiation within Albanian populations of the anomalous blues (Lepidoptera, Lycaenidae, *Polyommatus* Latreille, 1804). *Comparative Cytogenetics* 16(4): 211-242. <https://doi.org/10.3897/ CompCytogen.v16.i4.90558> ] ότι ένα νέο είδος το *Polyommatus lurae* βρέθηκε στην Αλβανία, το οποίο είναι πάρα πολύ όμοιο με τα *P. orphicus eleniae* και *P. aroaniensis*. Όλες οι καταγραφές του *P. aroaniensis*, σε αυτόν τον χάρτη πρέπει να επανεξεταστούν επειδή υπάρχει η πιθανότητα να υπάρχουν κρυπτικά είδη.

#### 6. *Polyommatus orphicus*

- *Polyommatus orphicus eleniae*, a new subspecies as suggested by VISHNEVSKAYA MS, SAIFITDINOVA AF, LUKHTANOV VA (2016): Karyosystematics and molecular taxonomy of the anomalous blue butterflies (Lepidoptera, Lycaenidae) from the Balkan Peninsula. *Comparative Cytogenetics* 10(5): 1– 85. <https://doi.org/10.3897/ CompCytogen.v10i5.10944>. Very similar to *P. aroaniensis*; see photos of *P. eleniae* in pages 296-297 of the book the Butterflies of Greece (2009).
- *Polyommatus orphicus eleniae*, το οποίο έχει προταθεί με το VISHNEVSKAYA MS, SAIFITDINOVA AF, LUKHTANOV VA (2016): Karyosystematics and molecular taxonomy of the anomalous blue butterflies (Lepidoptera, Lycaenidae) from the Balkan Peninsula. *Comparative Cytogenetics* 10(5): 1–85. <https://doi.org/10.3897/ CompCytogen.v10i5.10944>. Μεγάλη ομοιότητα με το *P. aroaniensis*. Δείτε για φωτογραφίες του *P. eleniae*, στις σελίδες 296-297 του βιβλίου Οι Πεταλούδες της Ελλάδας (2009).

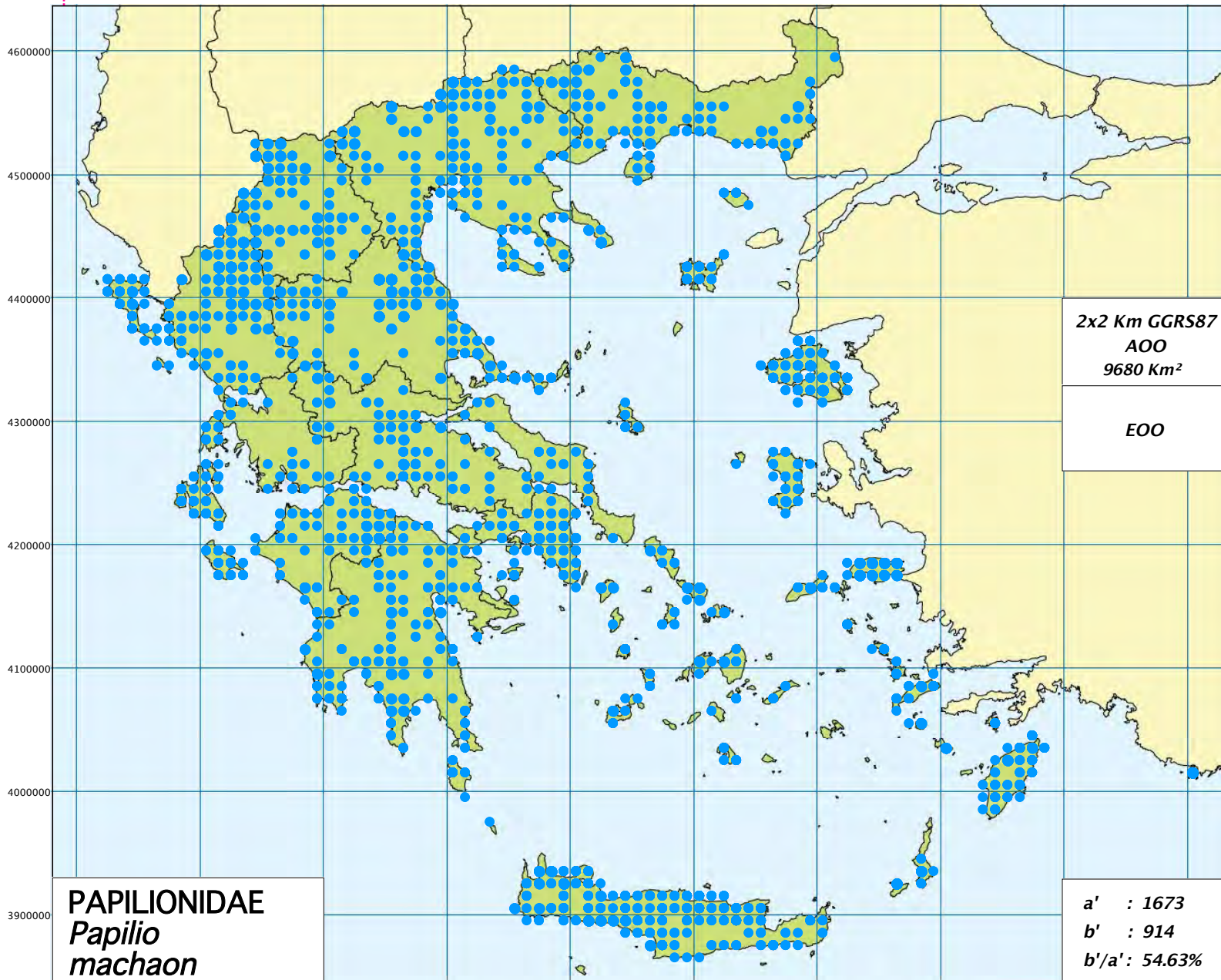
7. See more details for several species in the next page or in / Δες περισσότερες λεπτομέρειες για τα είδη στην επόμενη σελίδα ή στο <https://pamperis.gr/butterflies-of-greece/>

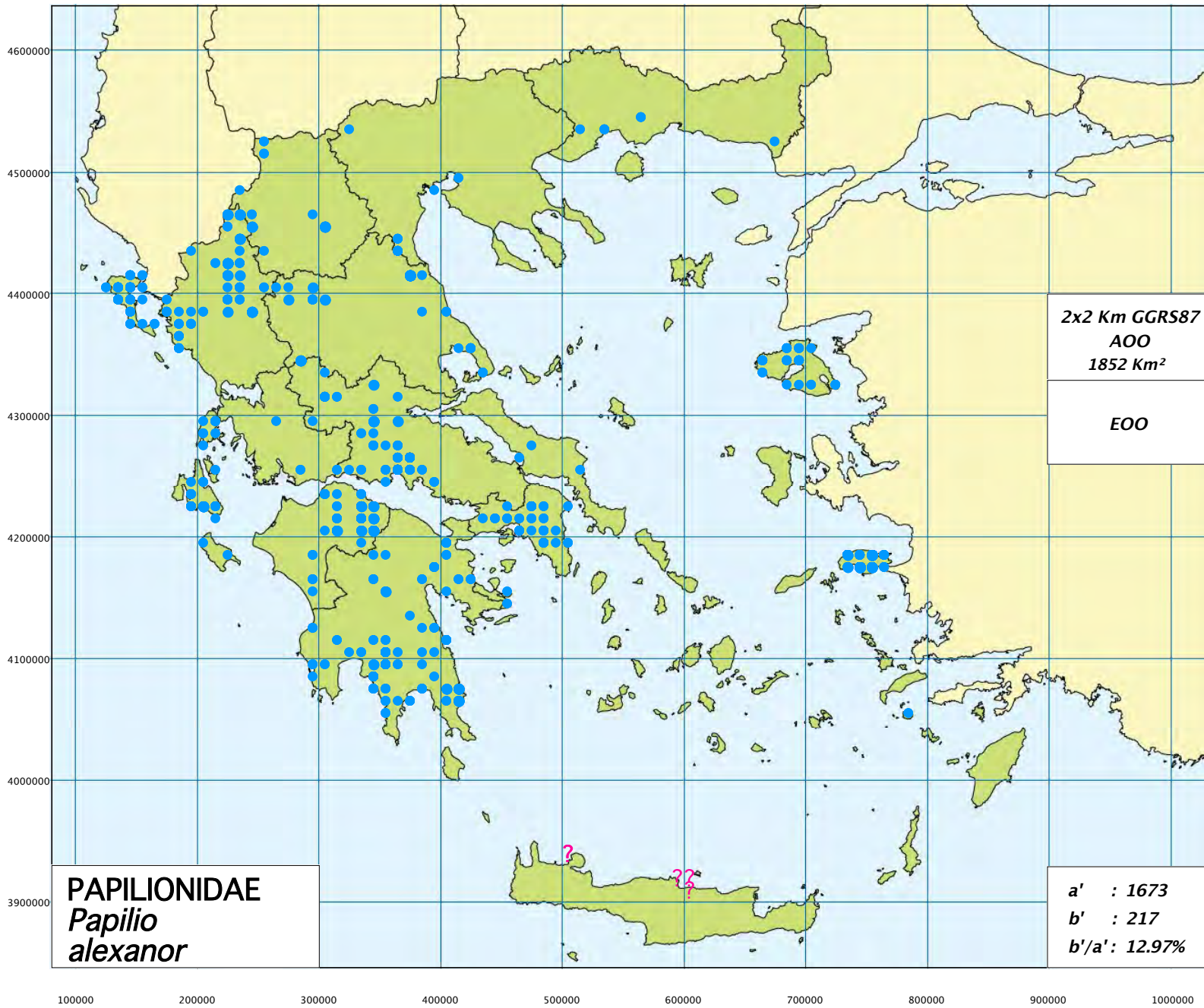
<i>Pieris napi/balcana</i> complex	<i>Thymelicus sylvestris</i> , <i>Thymelicus hyrax</i> ,
<i>Colias crocea/erate</i> complex	<i>Thymelicus lineola</i> , <i>Thymelicus acteon</i>
<i>Lepidea sinapis/juvernica</i> complex	<i>Melitaea didyma</i> , <i>Melitaea trivialis</i>
<i>Plebejus argus/idas/argyrognomon</i> complex	<i>Hipparchia fatua</i> , <i>Hipparchia statilinus</i>
<i>Polyommatus ripartii/timfristos</i> complex	<i>Hyponephele lupina</i> , <i>Hyponephele lycaon</i>
<i>Melitaea athalia/aurelia</i> complex	<i>Lasiommata maera</i> , <i>Lasiommata megera</i> ,
<i>Hipparchia fagi/syriaca</i> complex	<i>Lasiommata petropolitana</i>
<i>Hipparchia</i>	<i>Melitaea phoebe</i> , <i>Melitaea ornata</i>
<i>synthes/volgensis/cretica/christenseni/mersina</i>	<i>Polyommatus escheri</i> , <i>Polyommatus</i>
complex	<i>thersites</i>
<i>Pseudochazara anthelea/amalthea</i> complex	<i>Polyommatus icarus</i> , <i>Polyommatus eros</i>
<i>Maniola telmessia/chia/hallicarnassus</i>	<i>Aricia agestis</i> , <i>Aricia artaxerxes</i> , <i>Aricia</i>
complex	<i>anteros</i>
<i>Gegenes pumilio/nostrodamus</i> complex	<i>Lysandra coridon</i> , <i>Lysandra bellargus</i>
<i>Pyrgus armoricanus/alveus</i> complex	<i>Gonepteryx</i>
<i>Muschampia alta/proteides</i> complex	<i>Pyrgus</i>
<i>Muschampia orientalis/floccifera</i> complex	<i>Carcharodus</i>
	<i>Muschampia</i>
	<i>Lycaena</i>
	<i>Pseudochazara</i>
	<i>Colias alfacariensis</i> , <i>Colias crocea</i>
	<i>Erebia neleus</i> , <i>Erebia ottomana</i>





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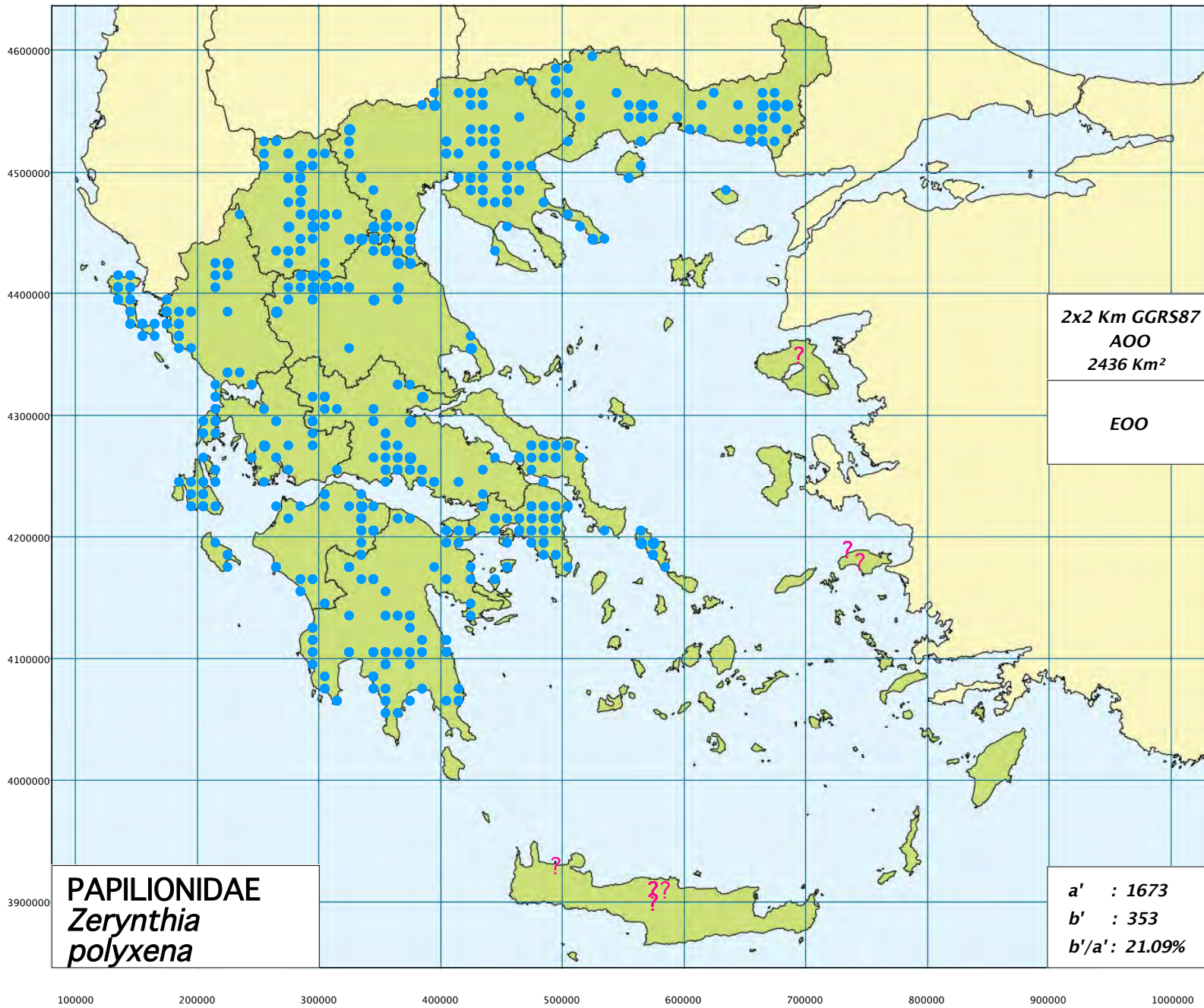
**PAPILIONIDAE**  
*Papilio alexanor*

2x2 Km GGRS87  
 AOO  
 1852 Km<sup>2</sup>

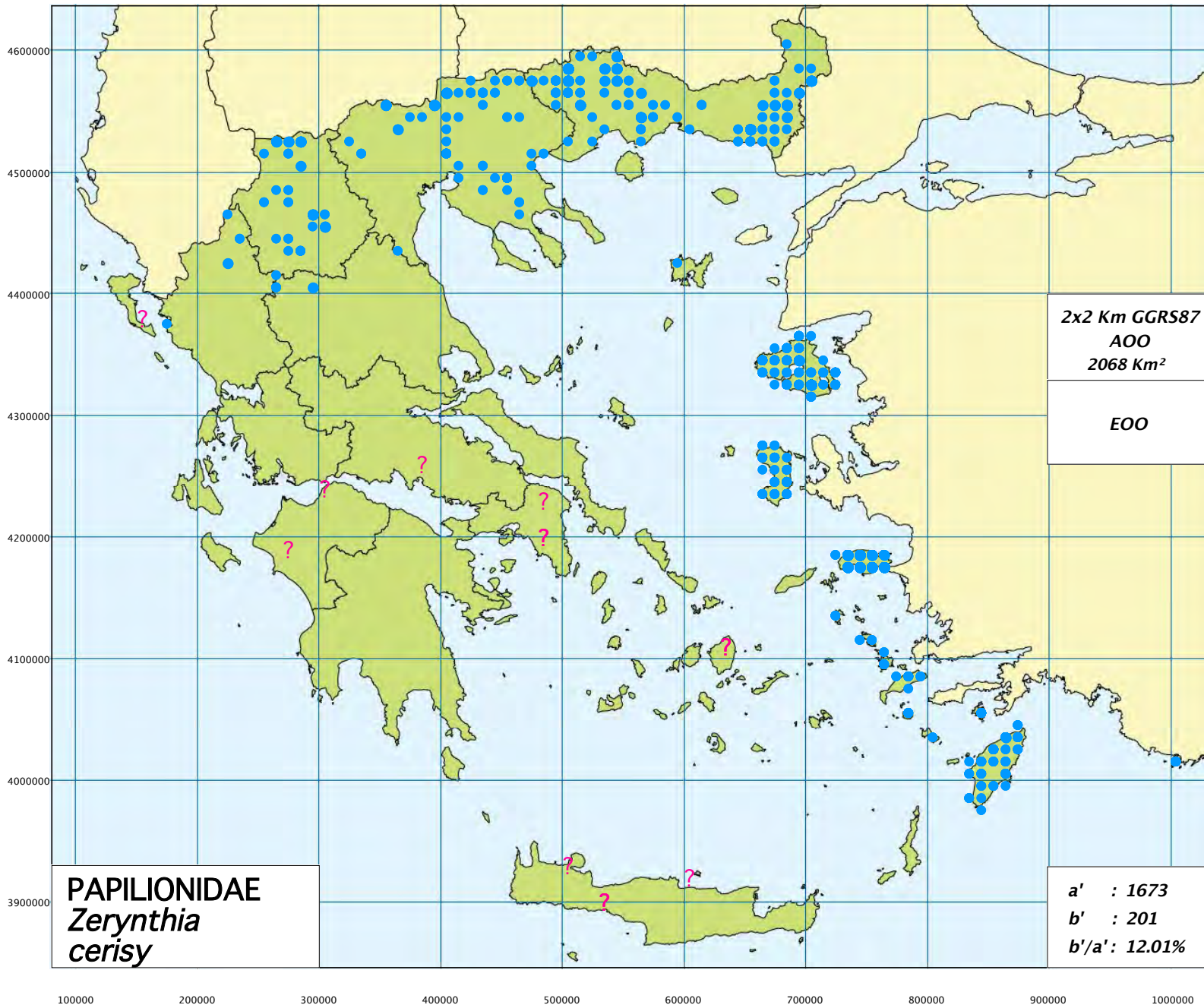
EOO

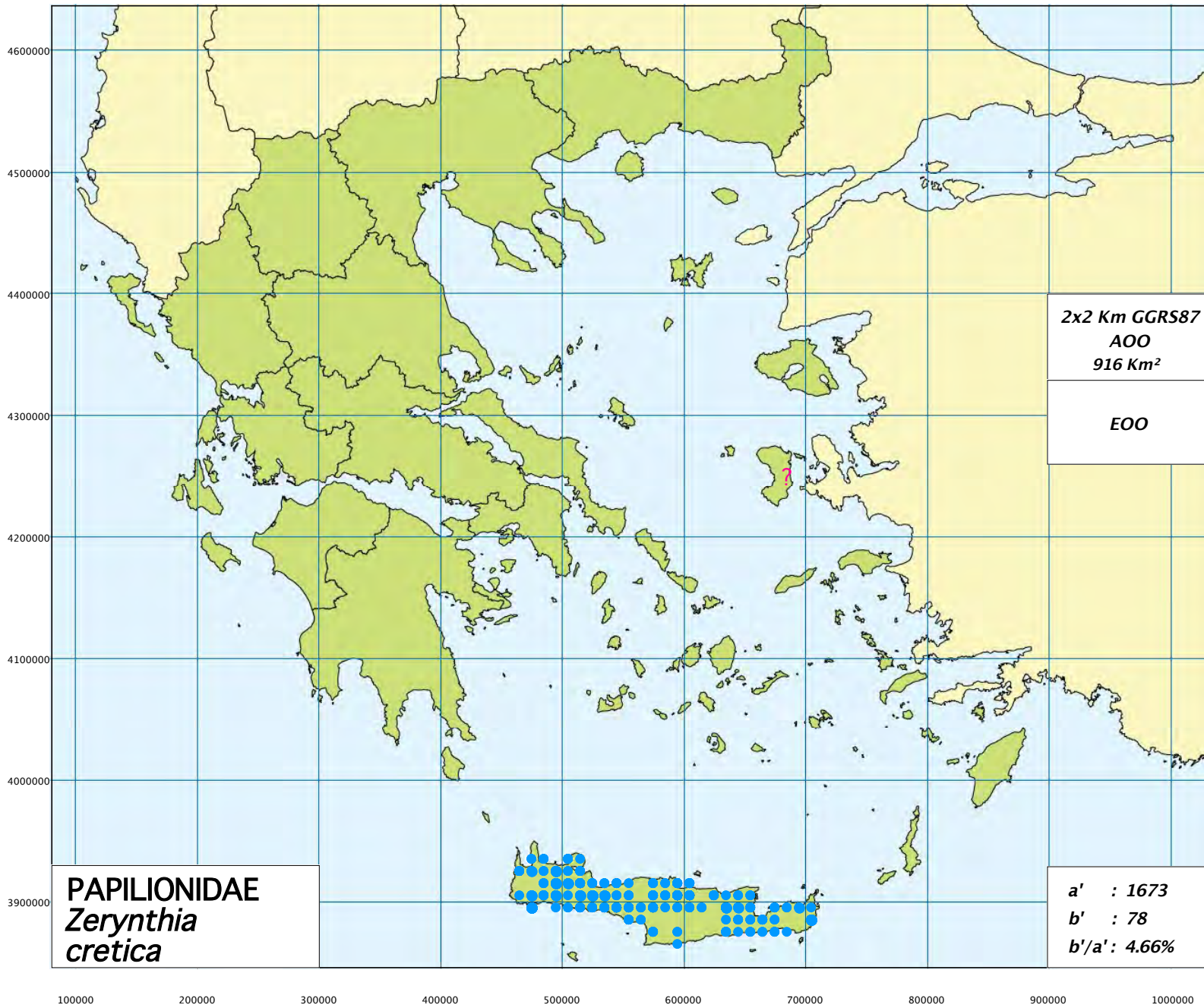
a' : 1673  
 b' : 217  
 b'/a' : 12.97%











**PAPILIONIDAE**  
*Zerynthia*  
*cretica*

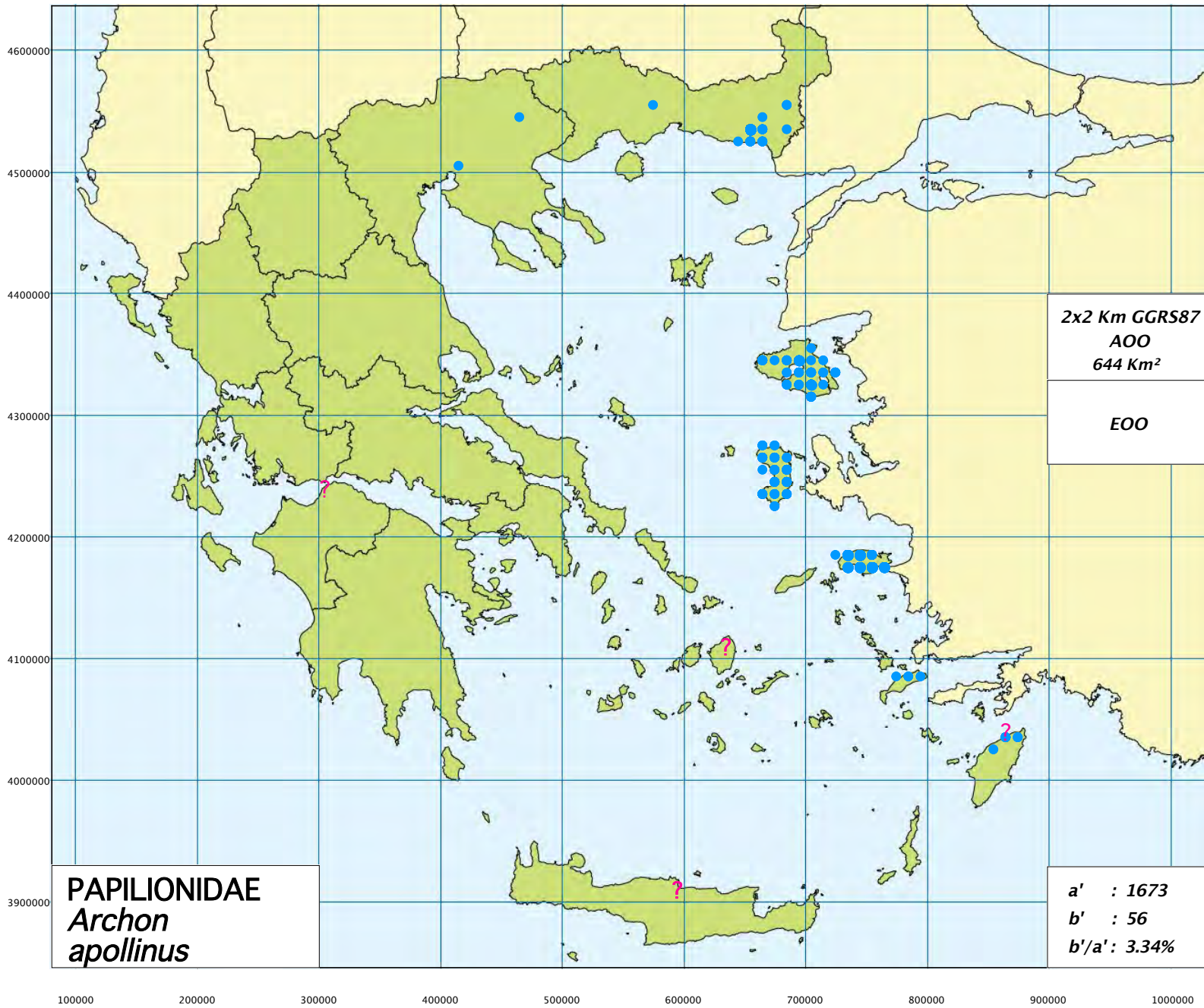
**2x2 Km GGRS87**  
**AOO**  
**916 Km<sup>2</sup>**

**EOO**

**a' : 1673**  
**b' : 78**  
**b'/a' : 4.66%**

100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000



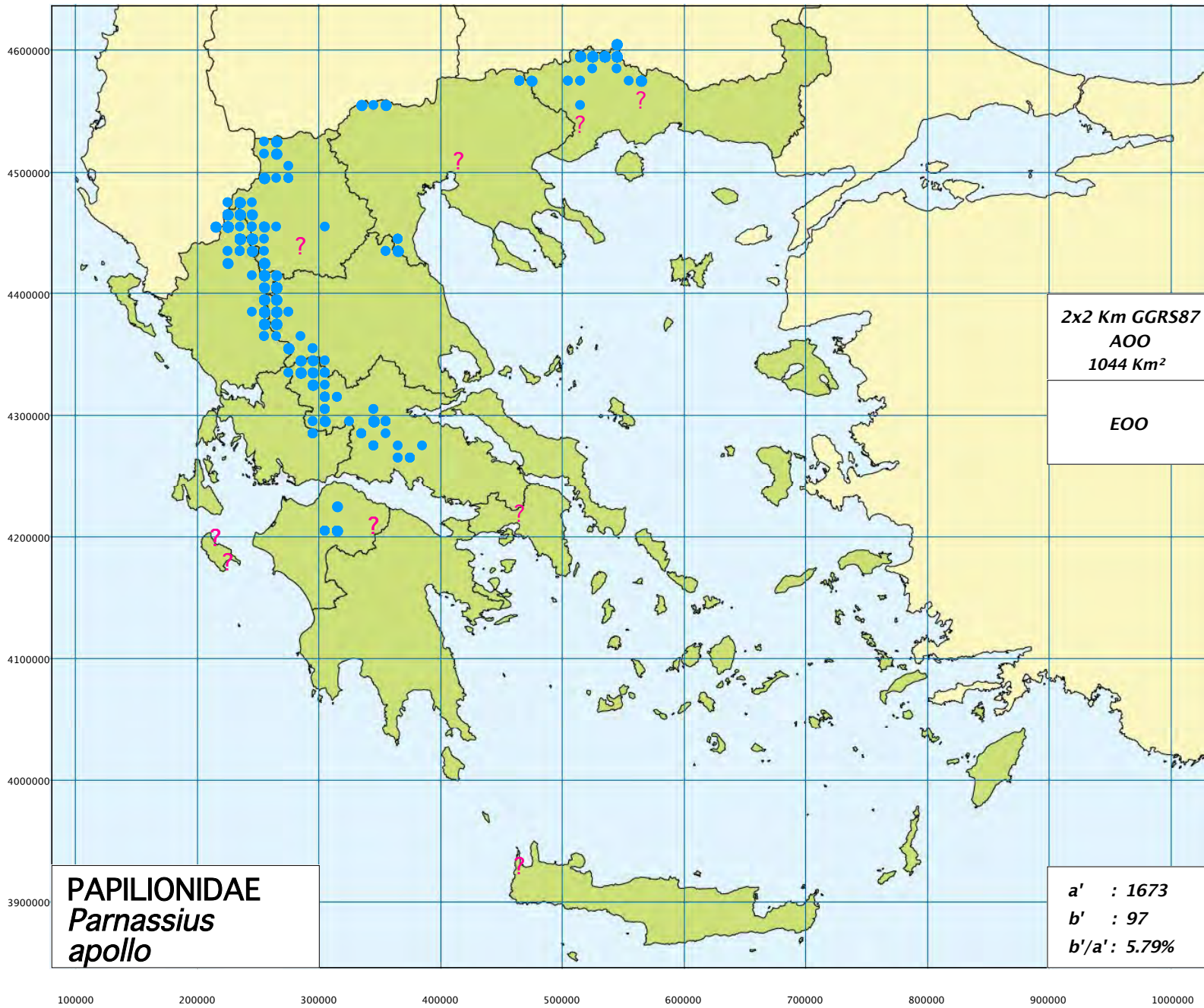


2x2 Km GGRS87  
AOO  
644 Km<sup>2</sup>

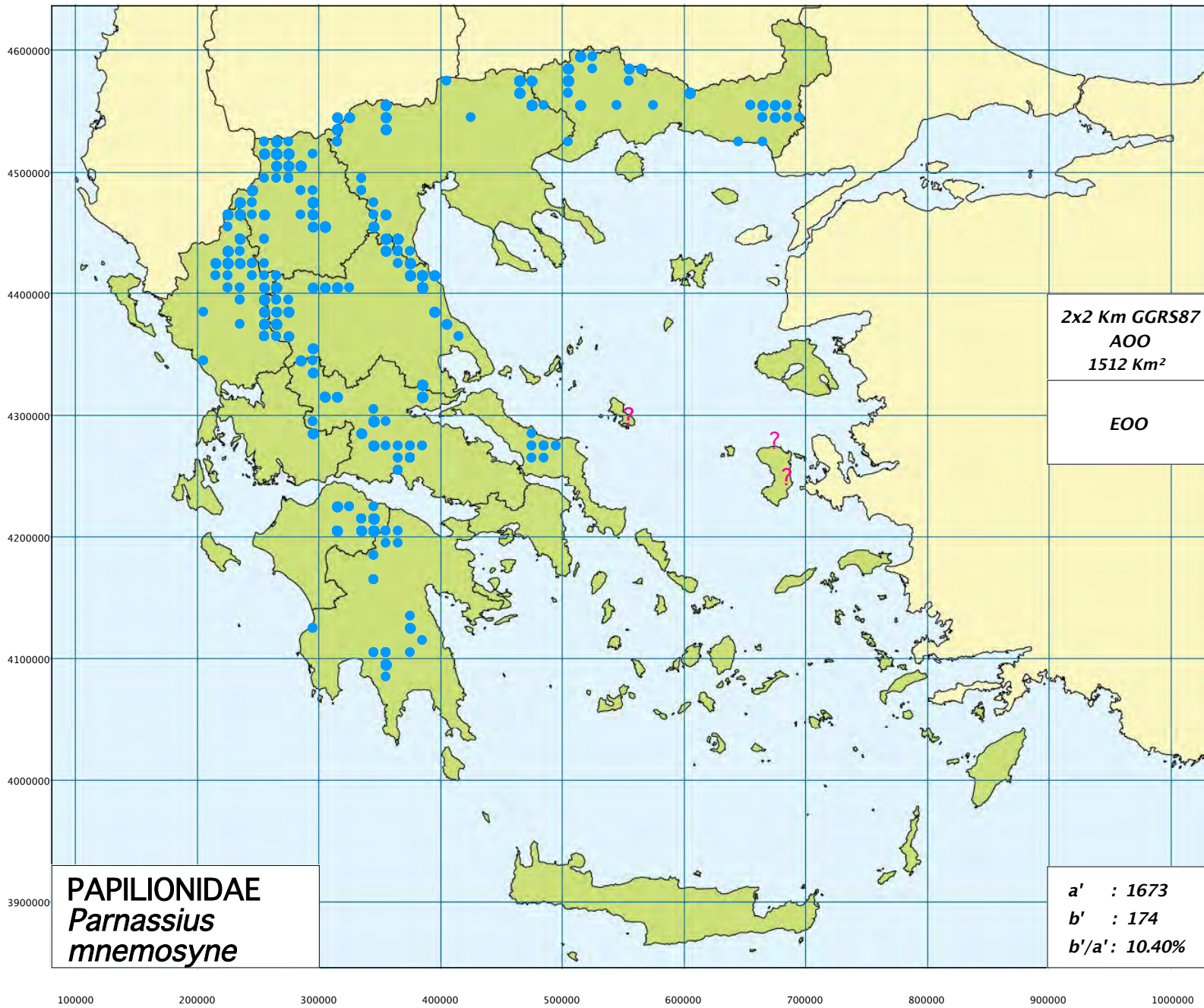
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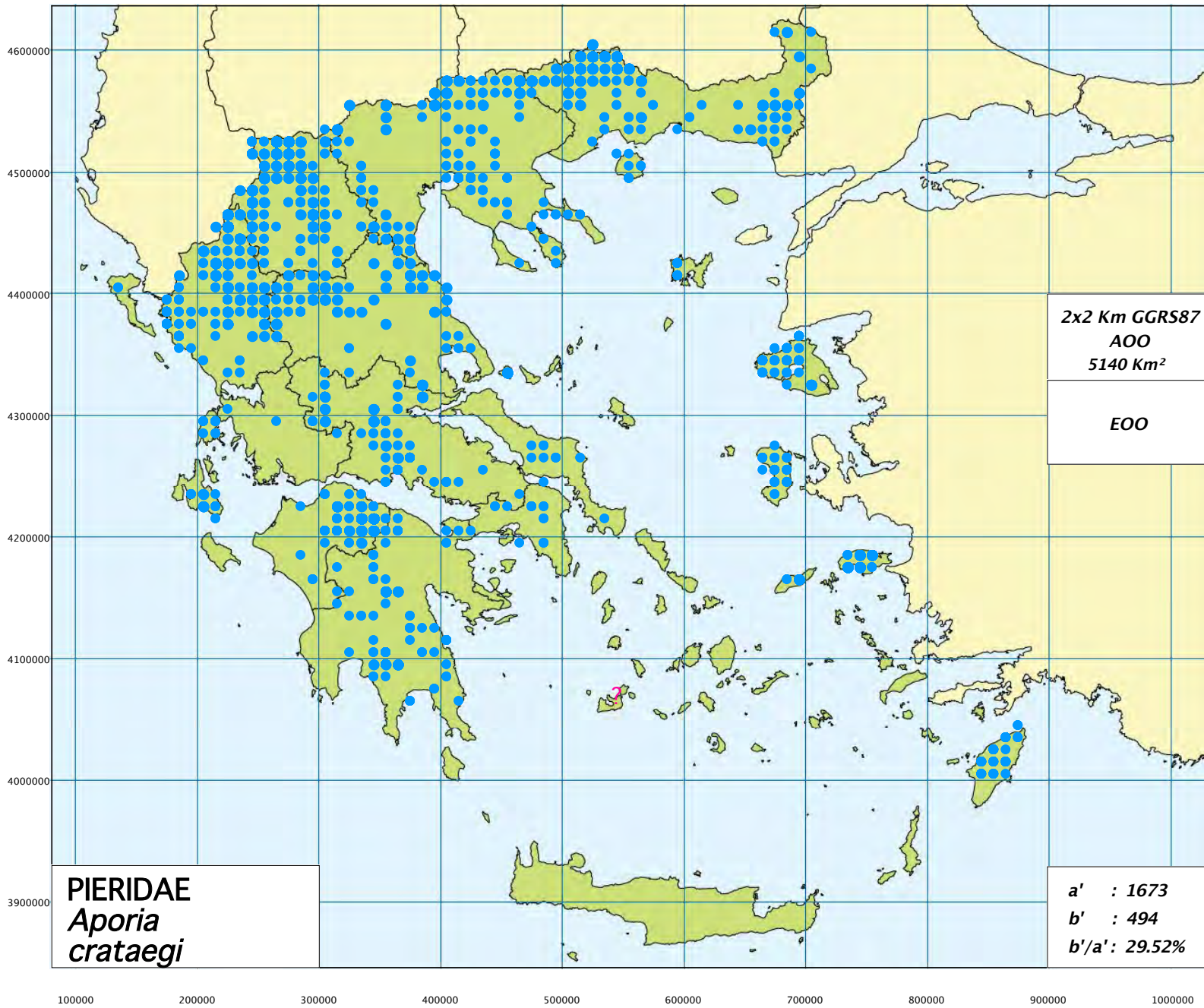
PAPILIONIDAE  
*Archon*  
*apollinus*

*a'* : 1673  
*b'* : 56  
*b'/a'* : 3.34%

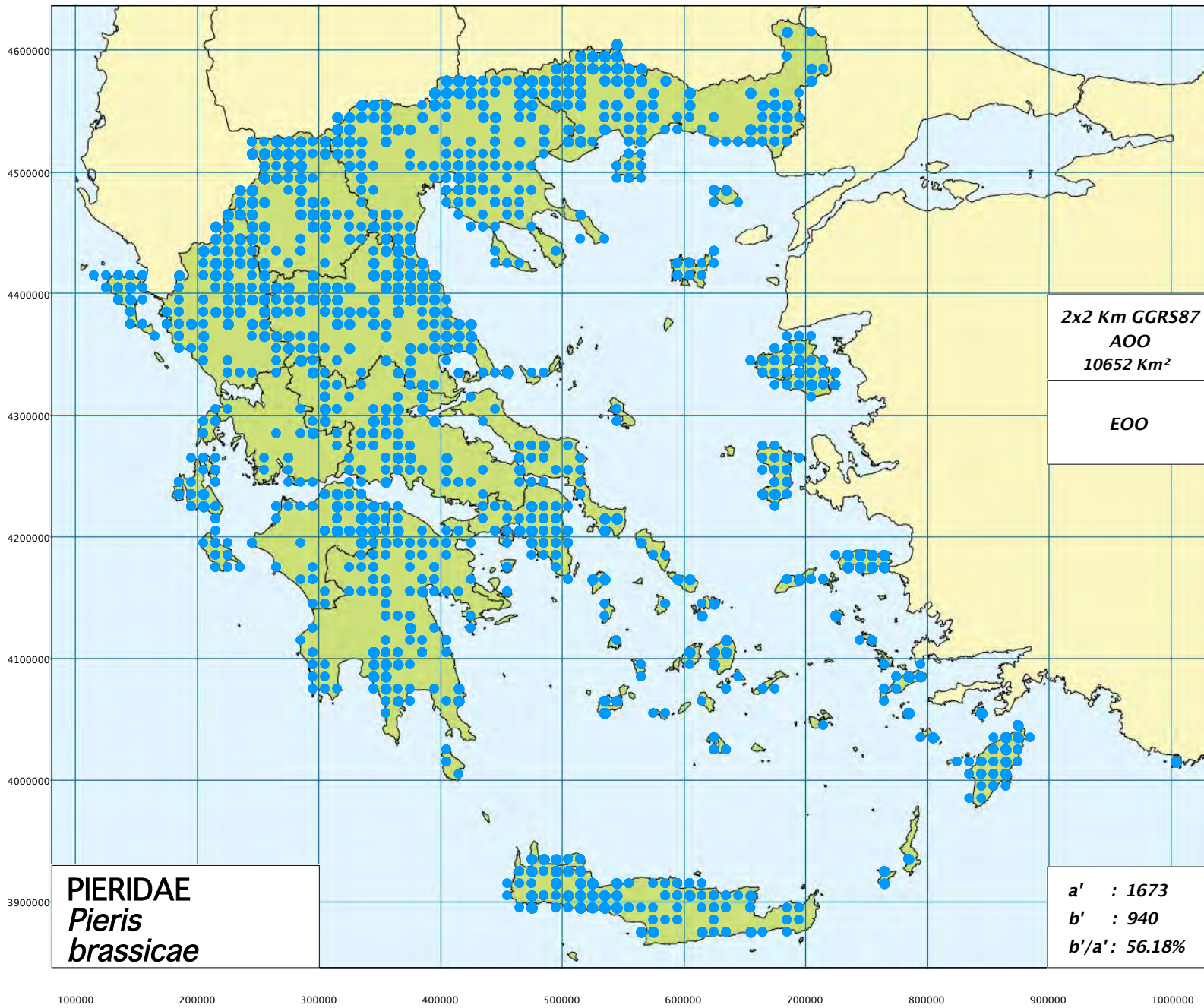




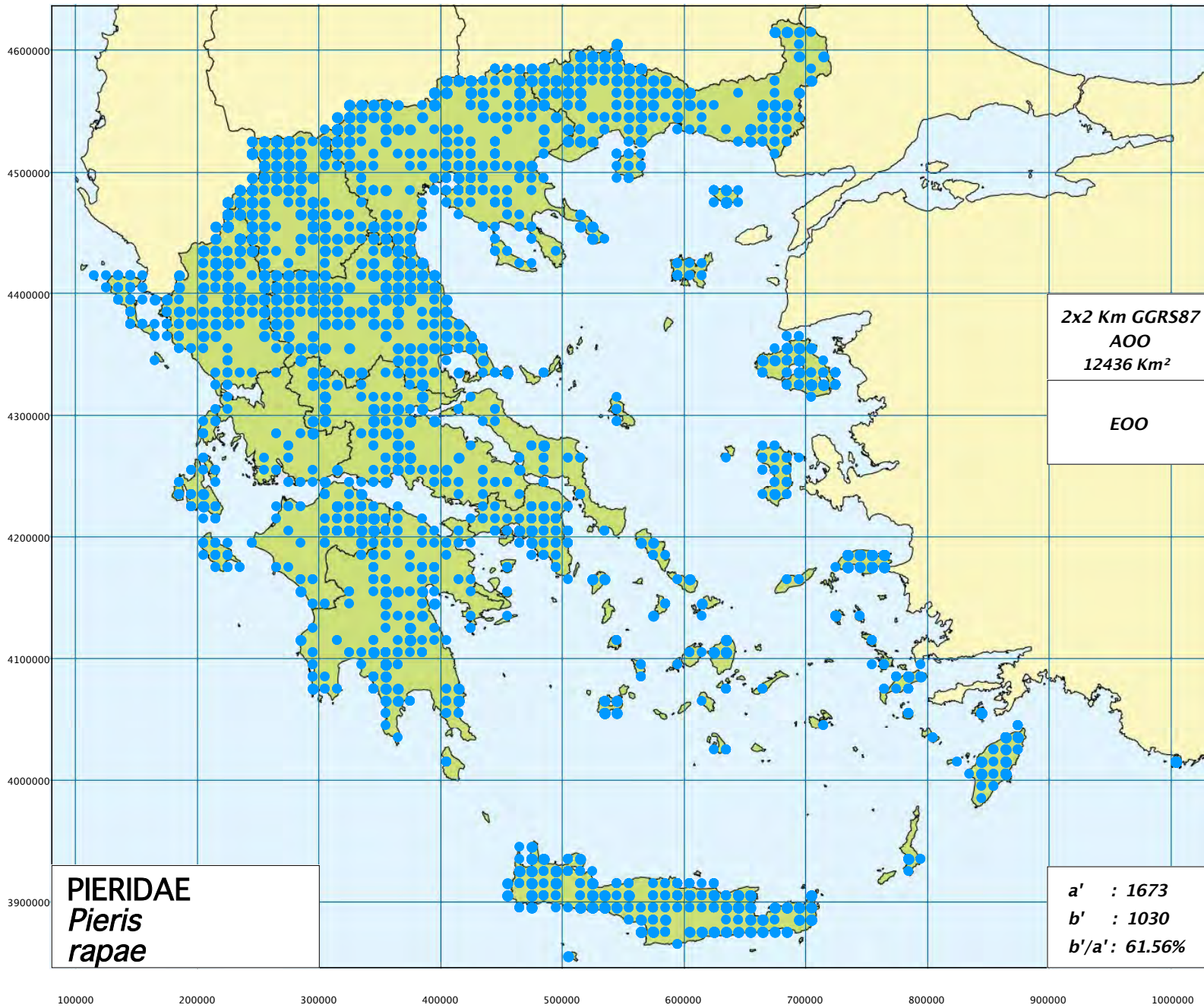


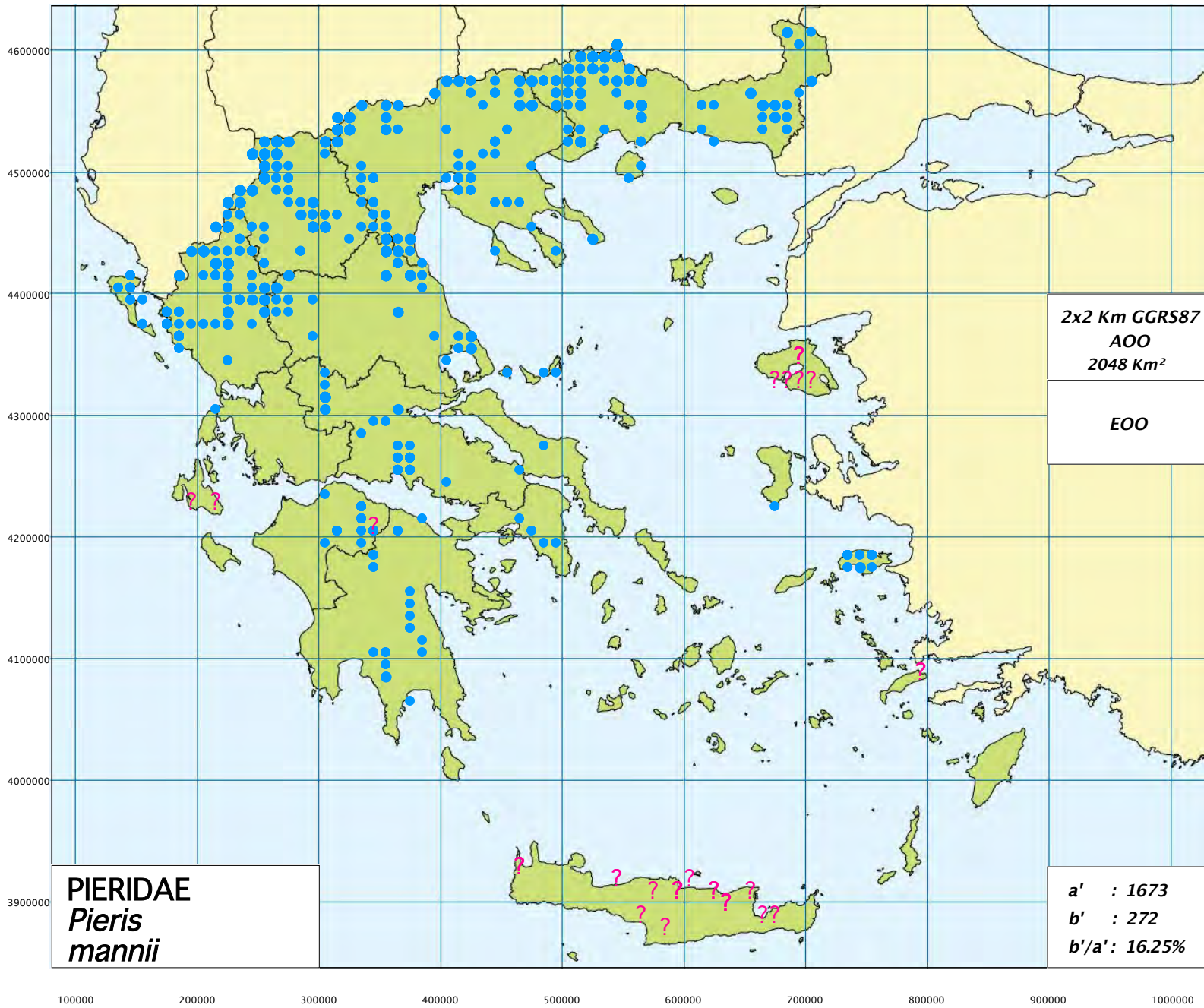




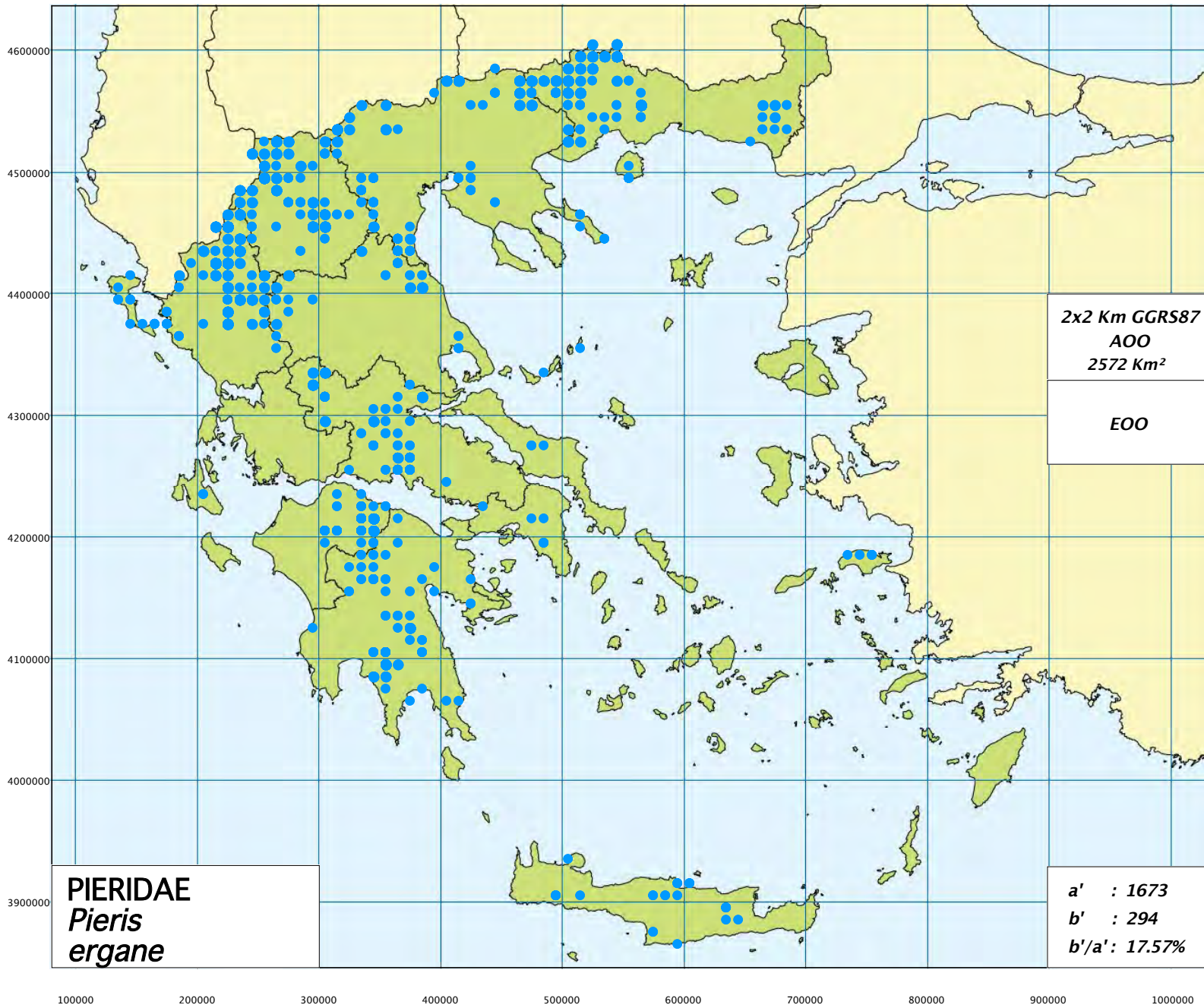












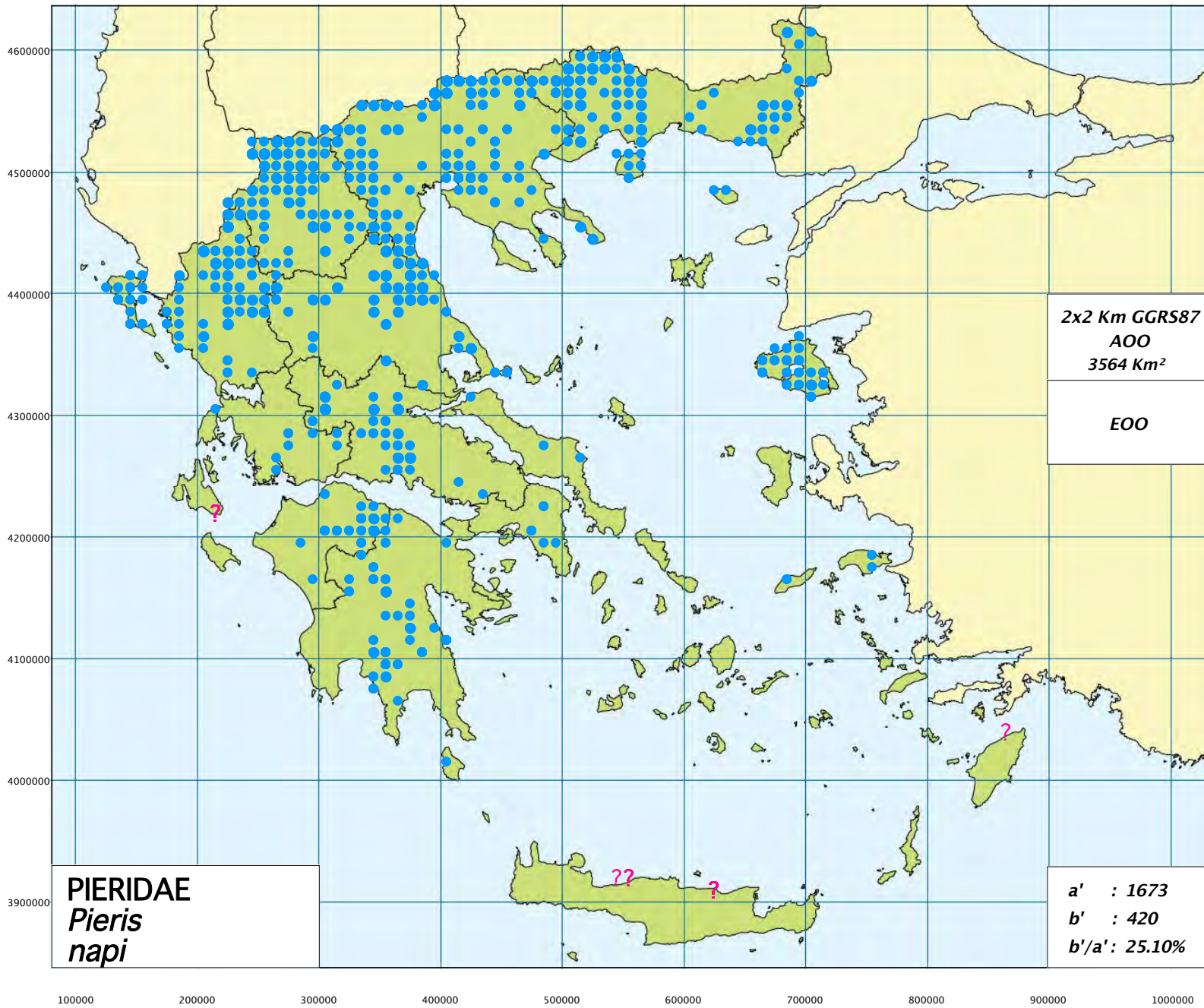
**PIERIDAE**  
*Pieris*  
*ergane*

2x2 Km GGRS87  
 AOO  
 2572 Km<sup>2</sup>

EOO

*a'* : 1673  
*b'* : 294  
*b'/a'* : 17.57%

100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000



2x2 Km GGRS87  
AOO  
3564 Km<sup>2</sup>

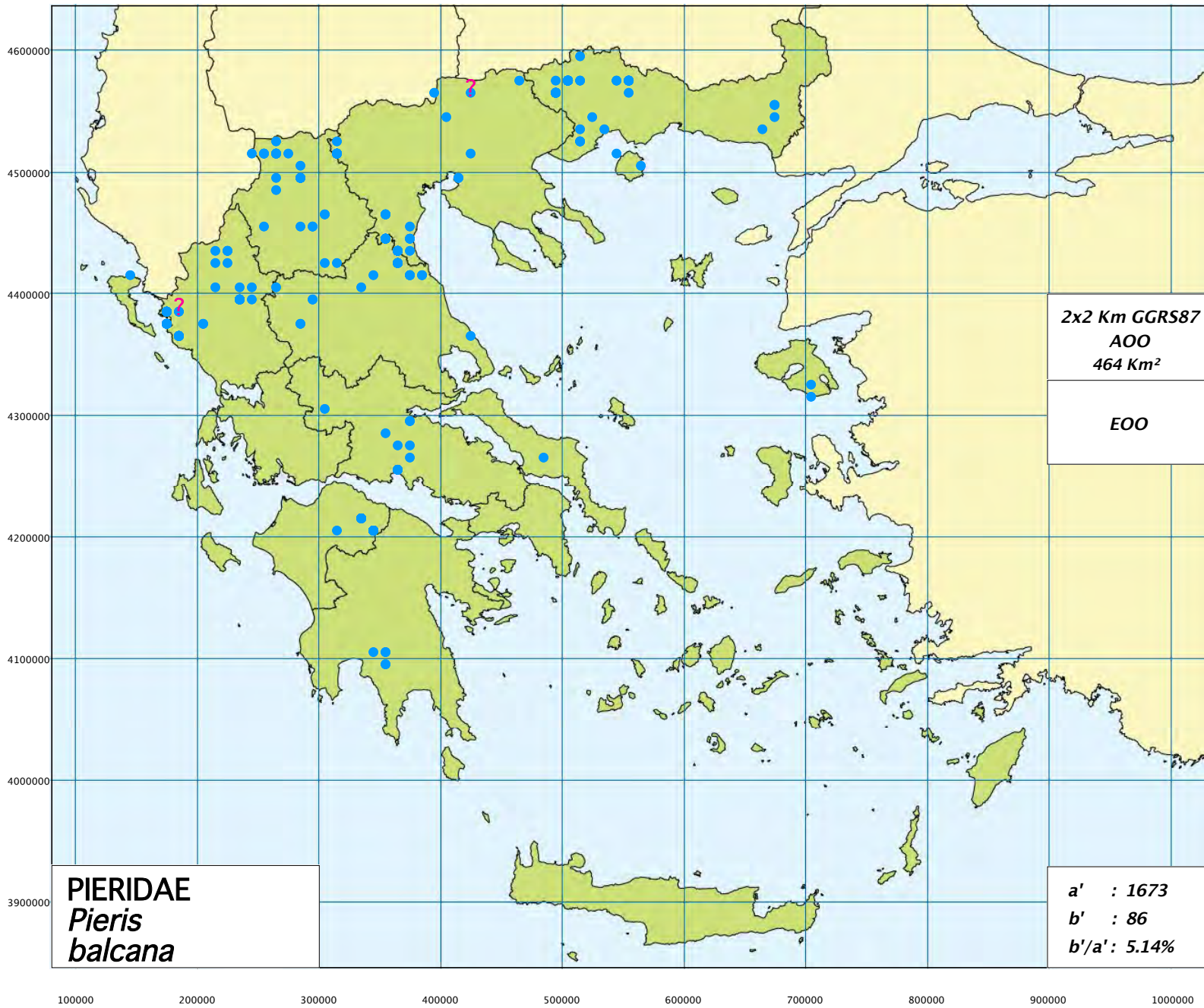
EOO

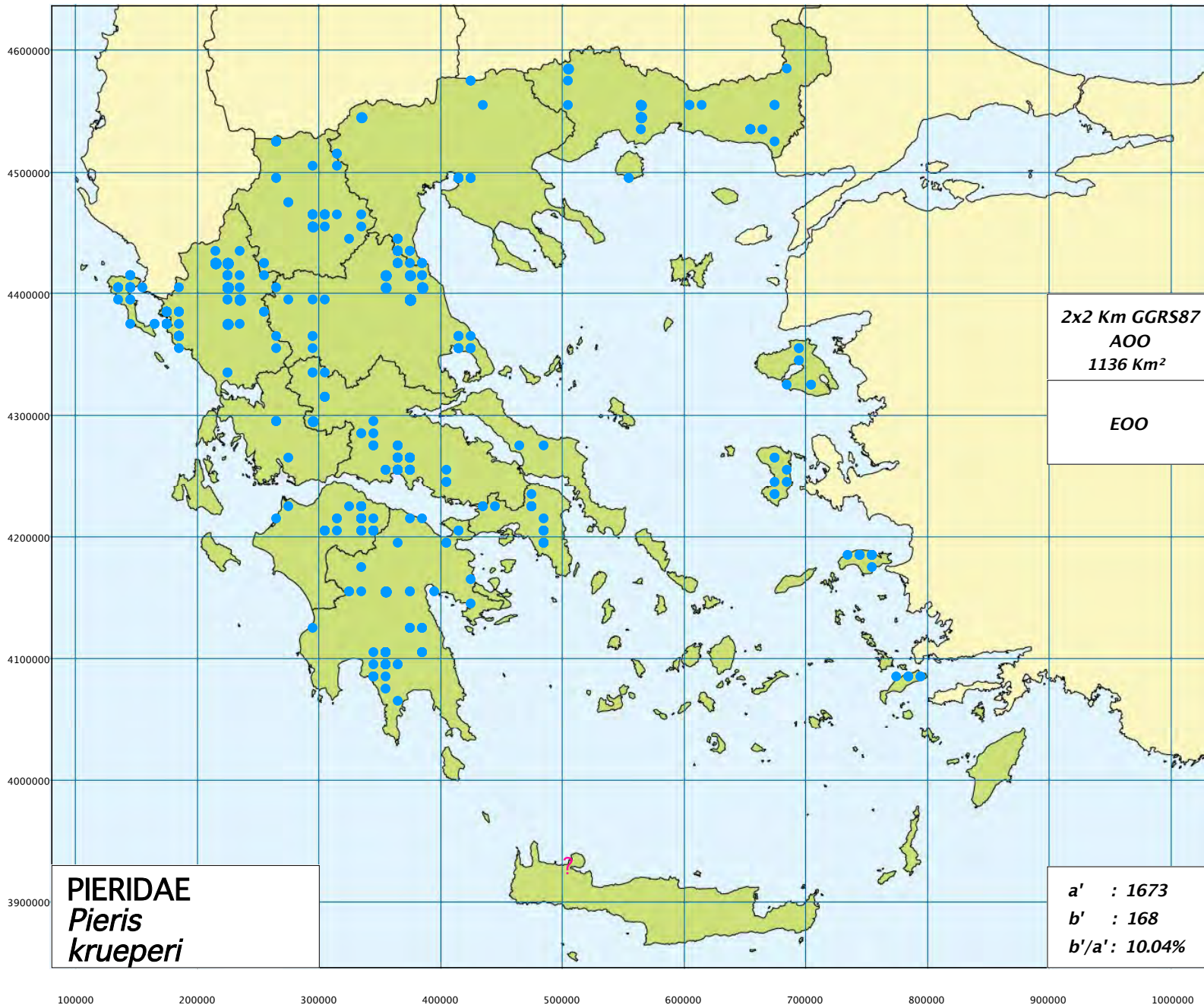
**PIERIDAE**  
*Pieris*  
*napi*

*a'* : 1673  
*b'* : 420  
*b'/a'* : 25.10%

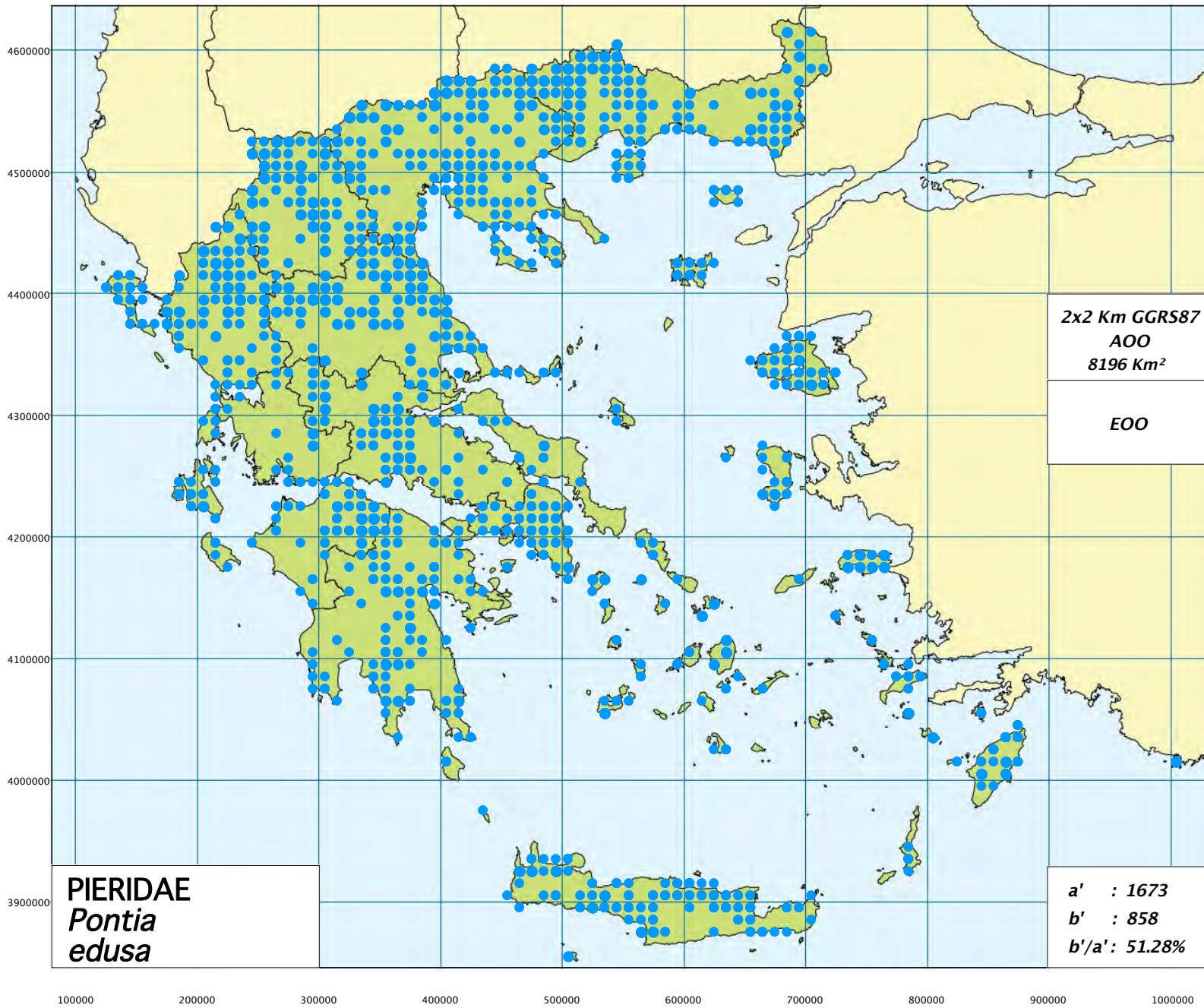
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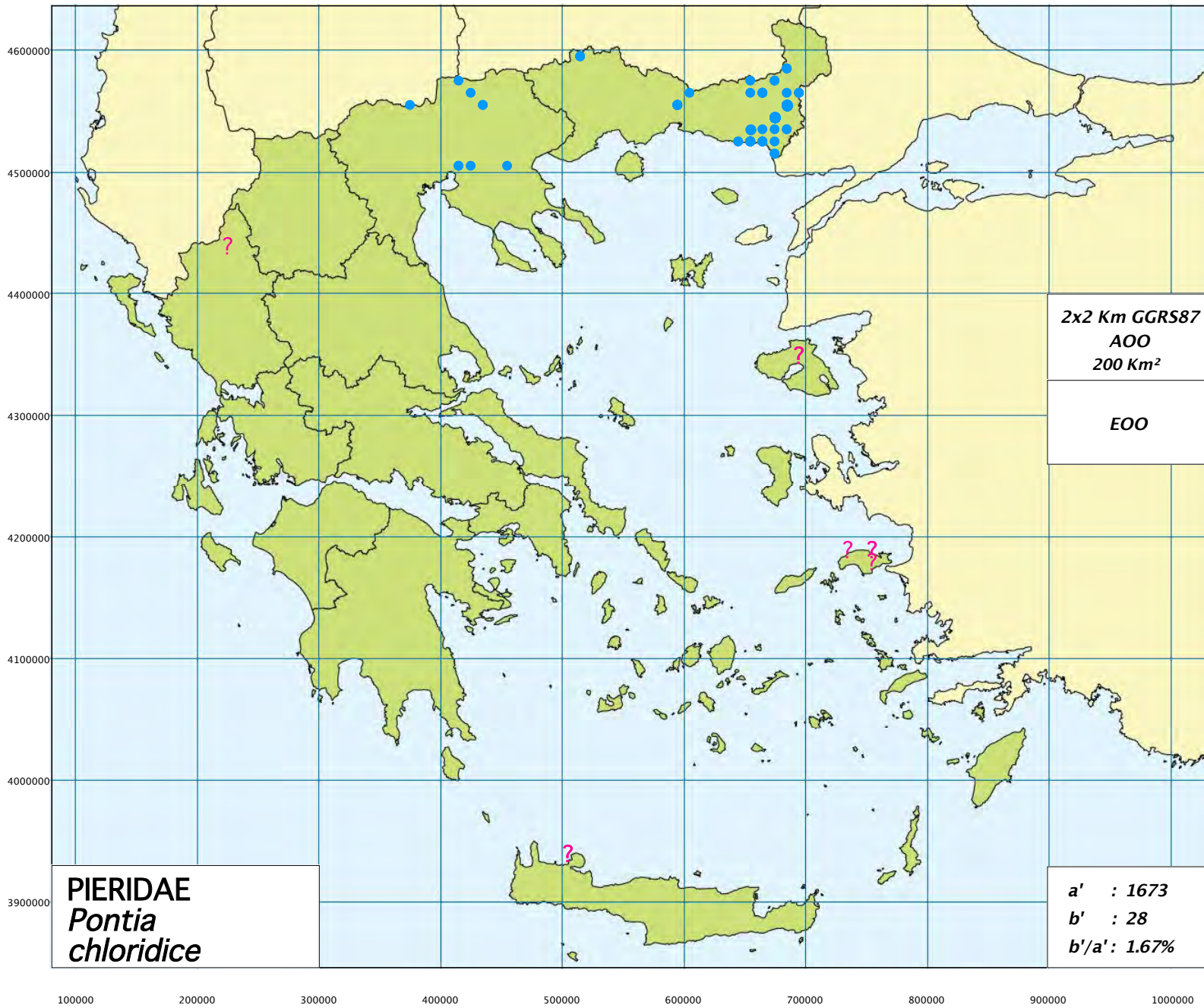


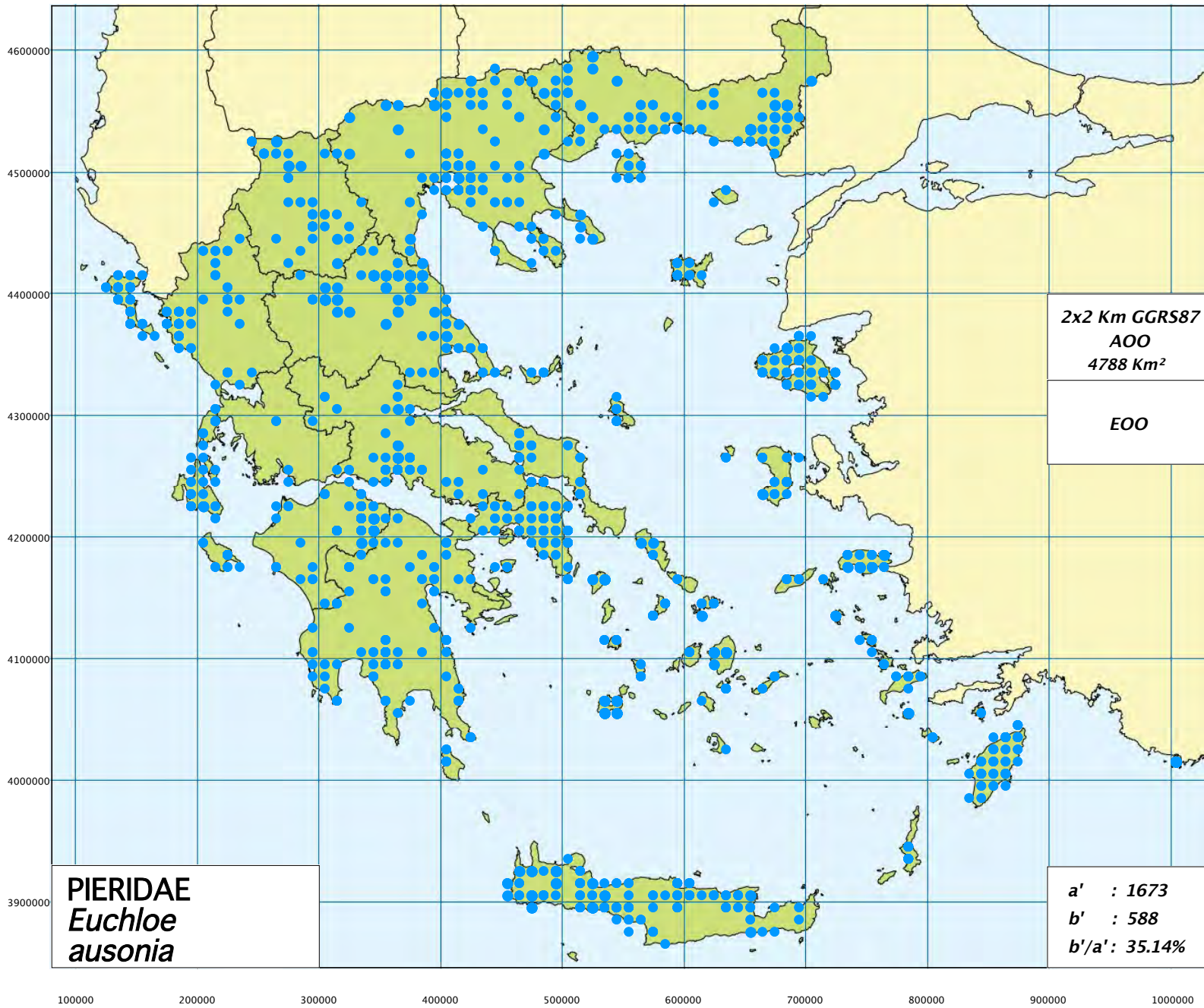




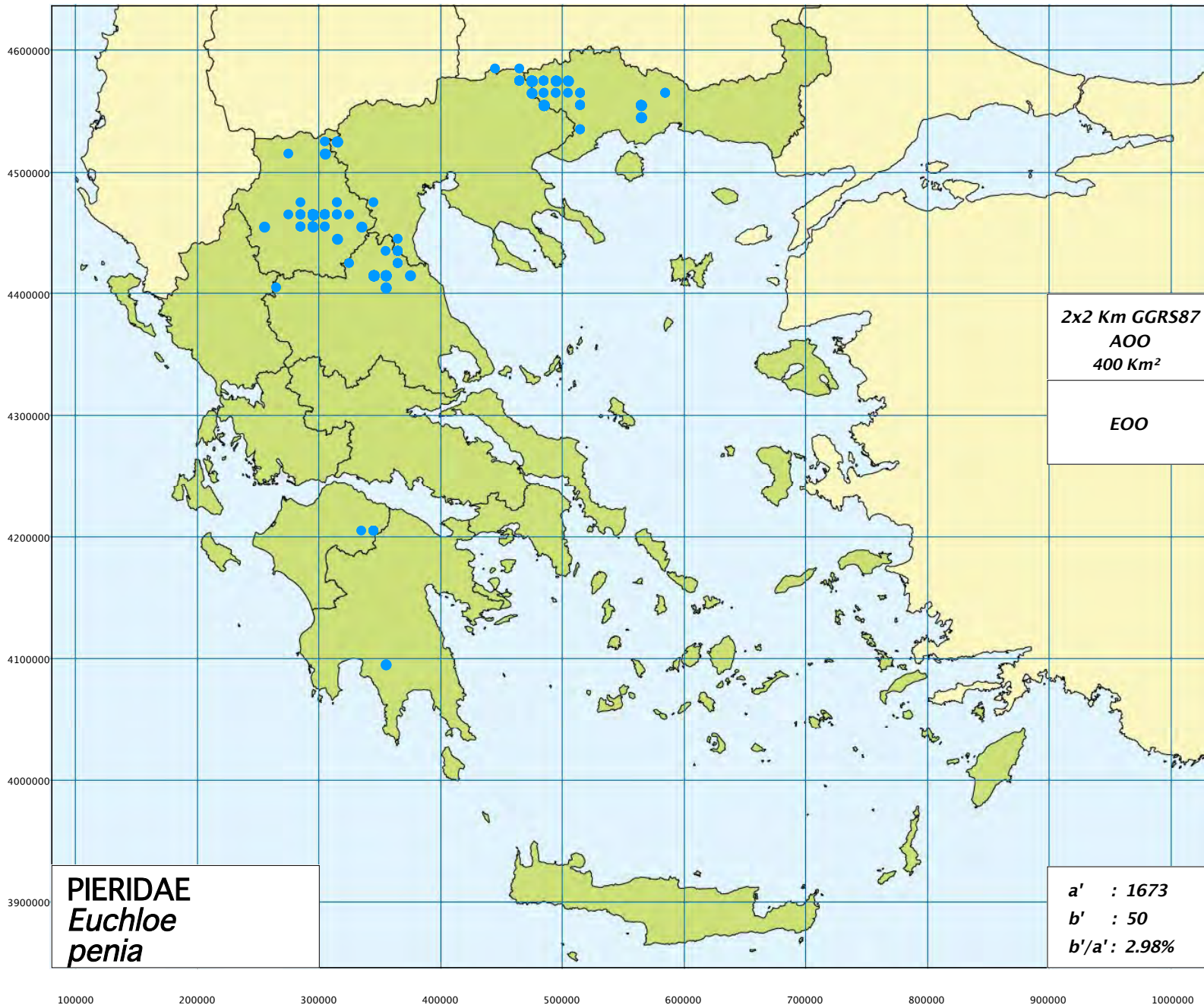


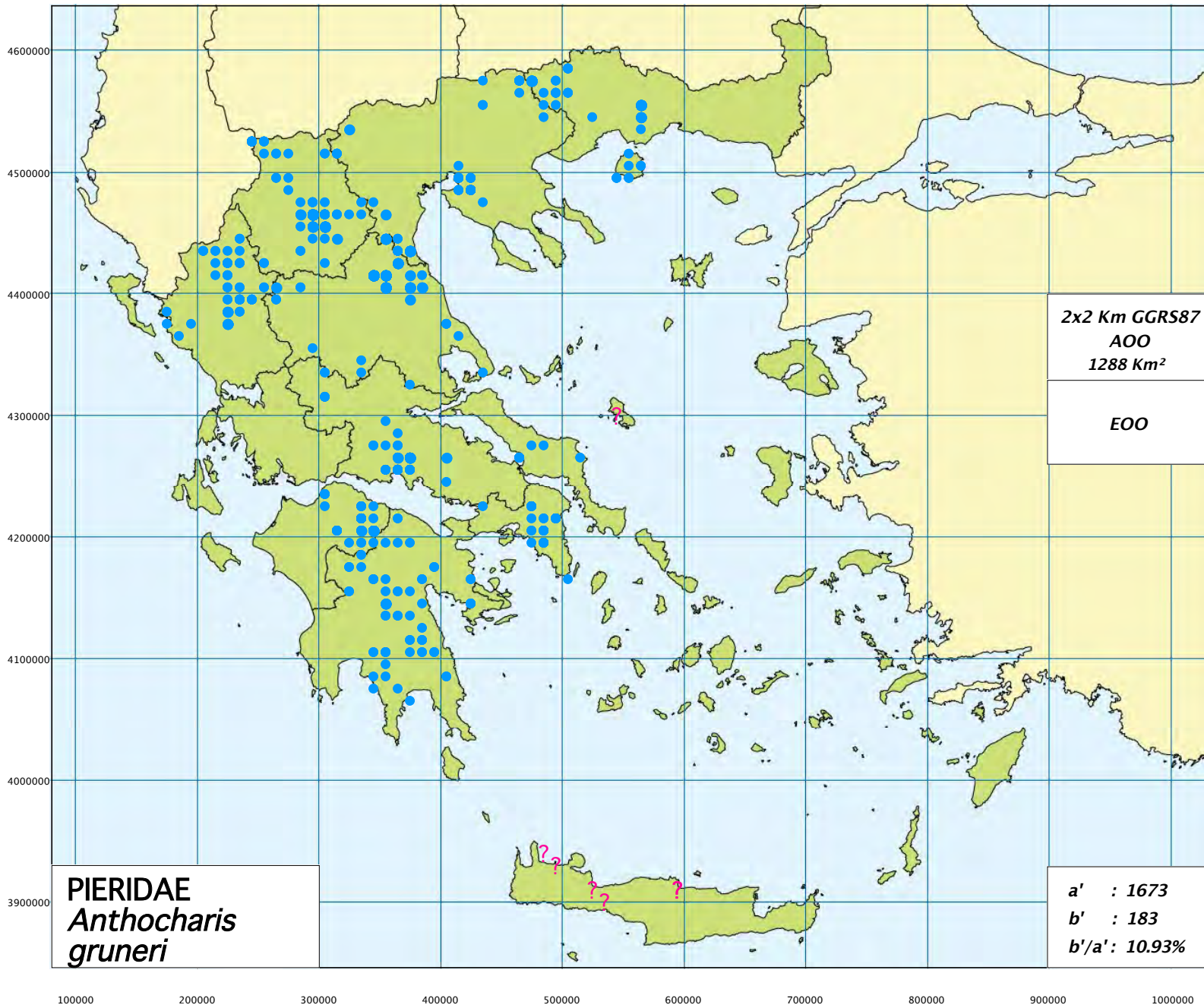




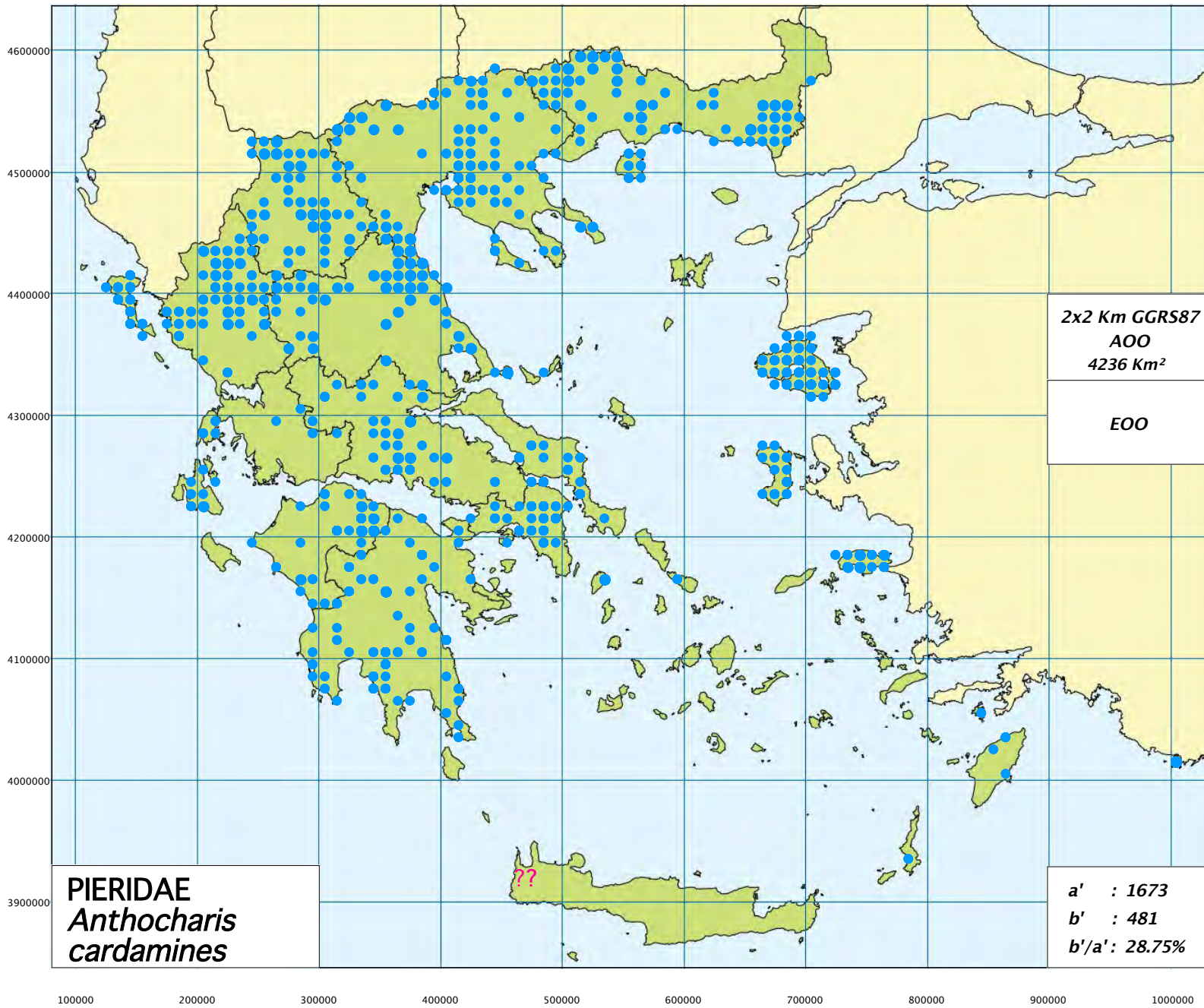




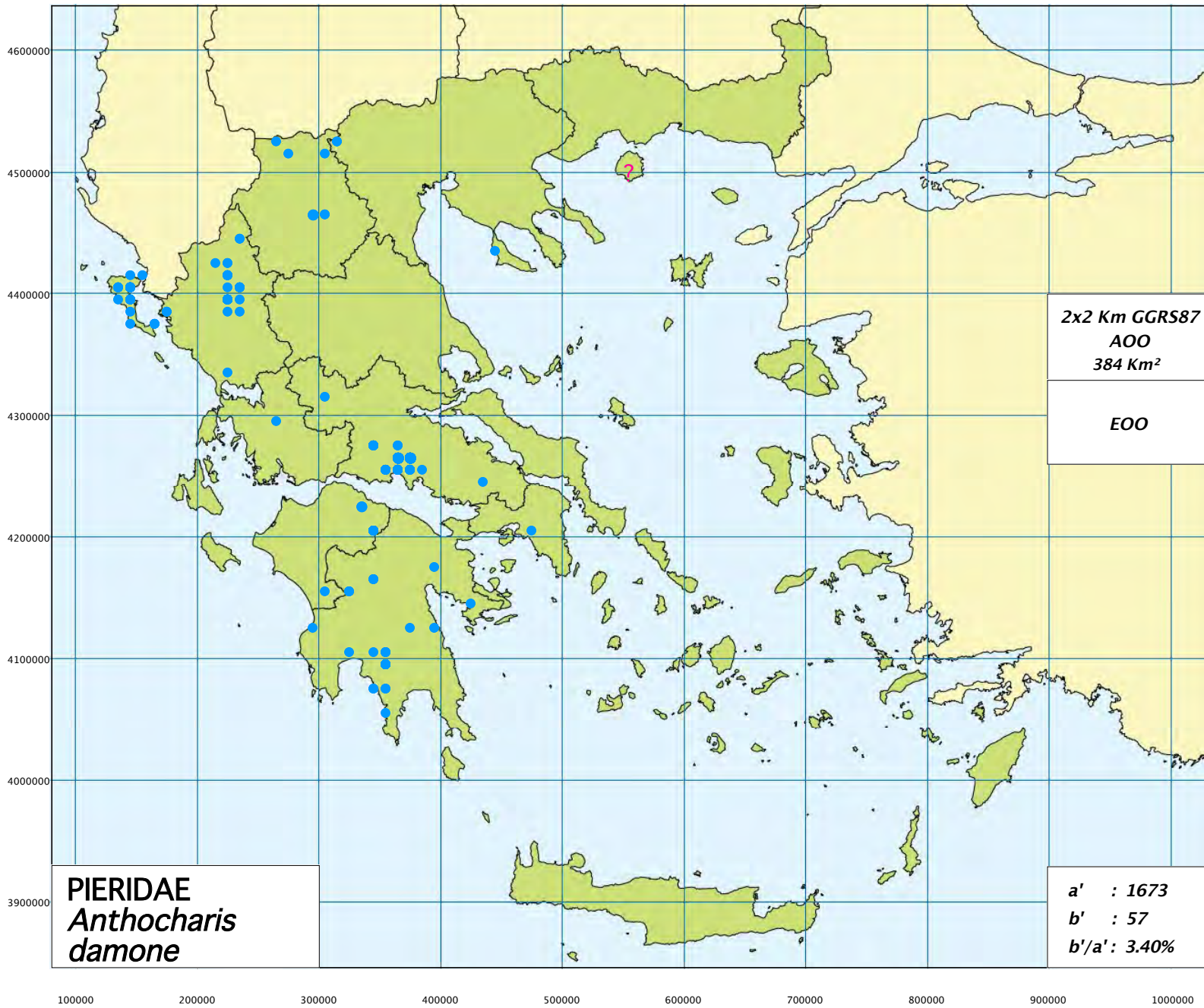










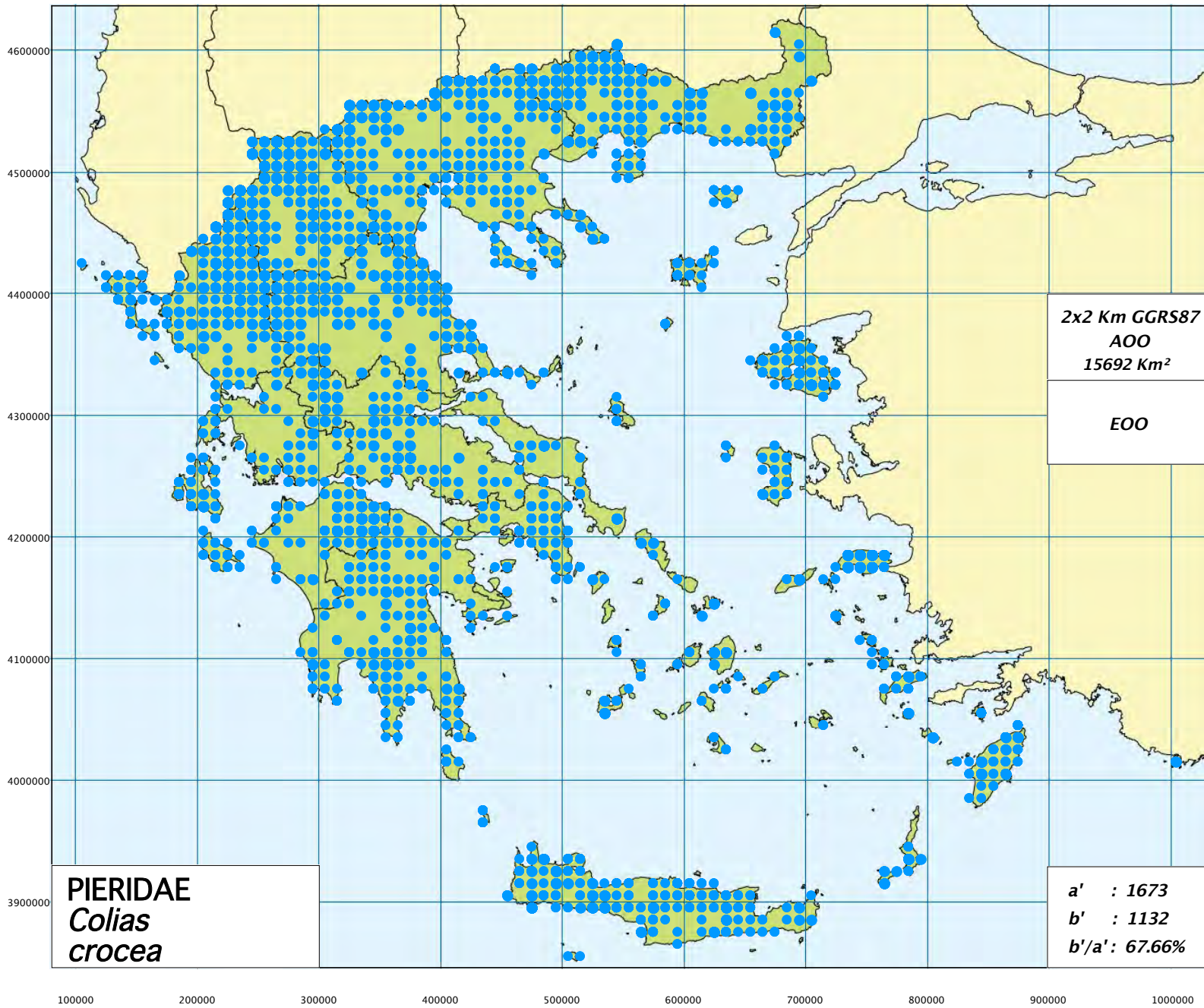


**PIERIDAE**  
*Anthocharis damone*

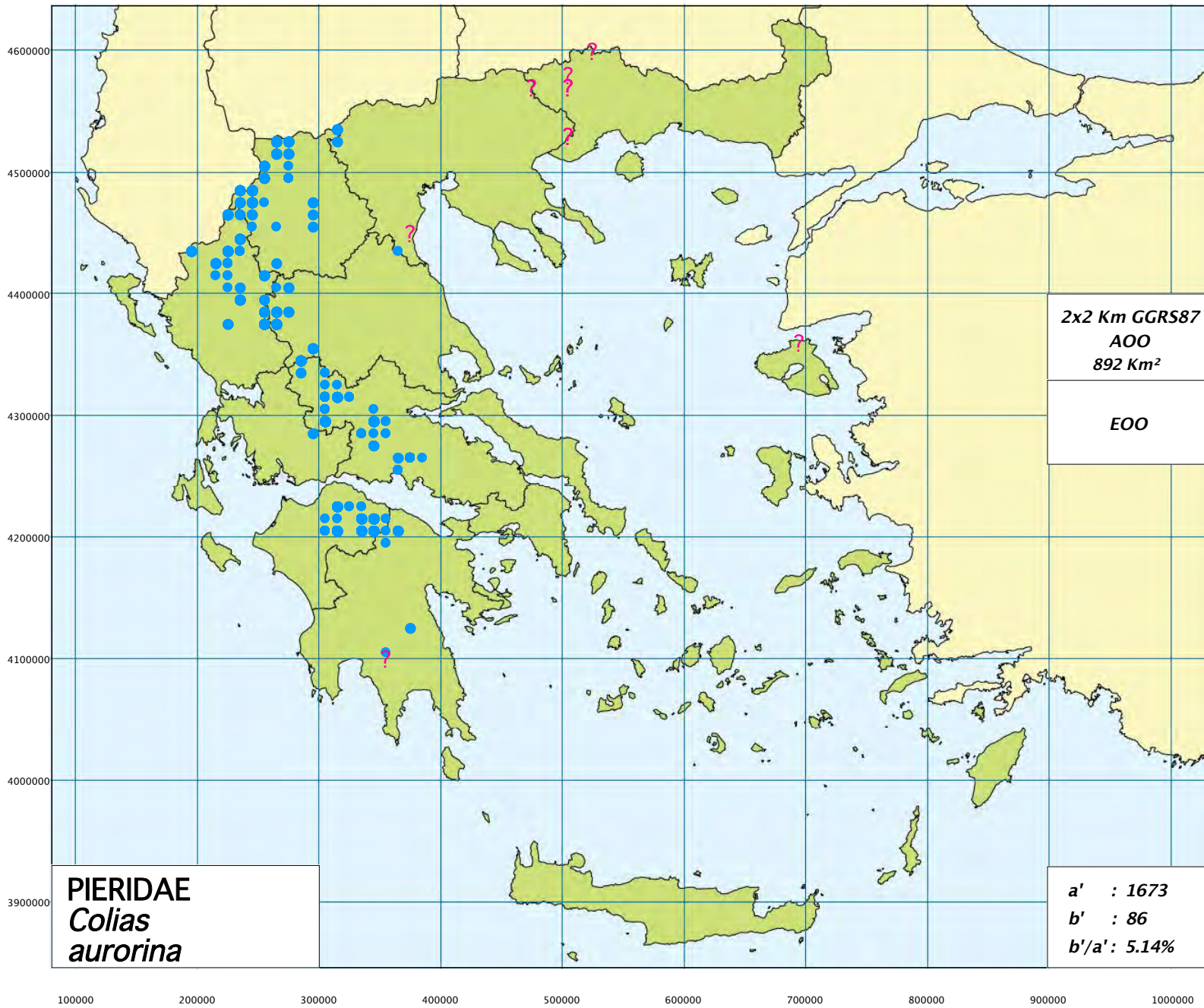
2x2 Km GGRS87  
 AOO  
 384 Km<sup>2</sup>

EEO

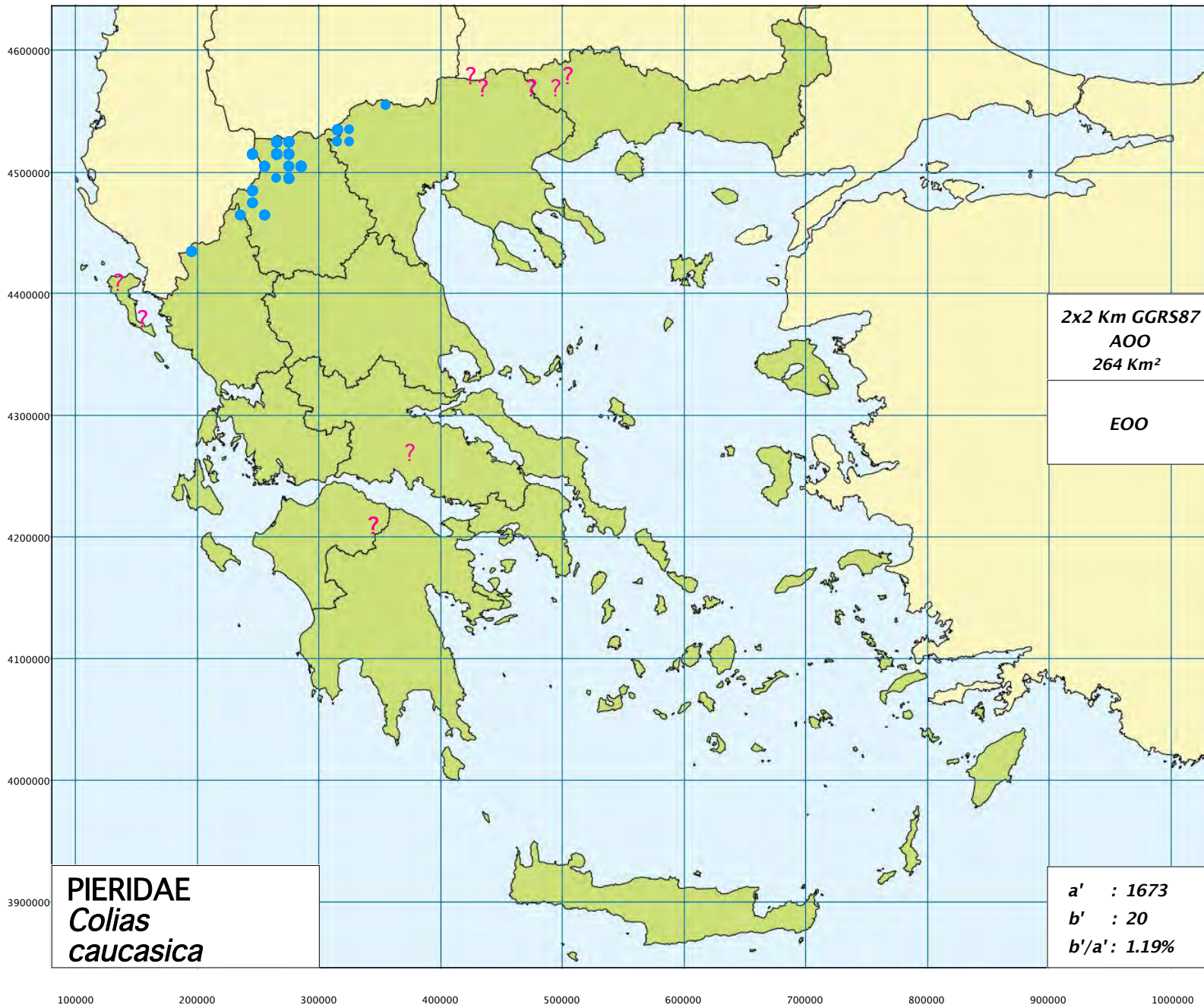
a' : 1673  
 b' : 57  
 b'/a' : 3.40%

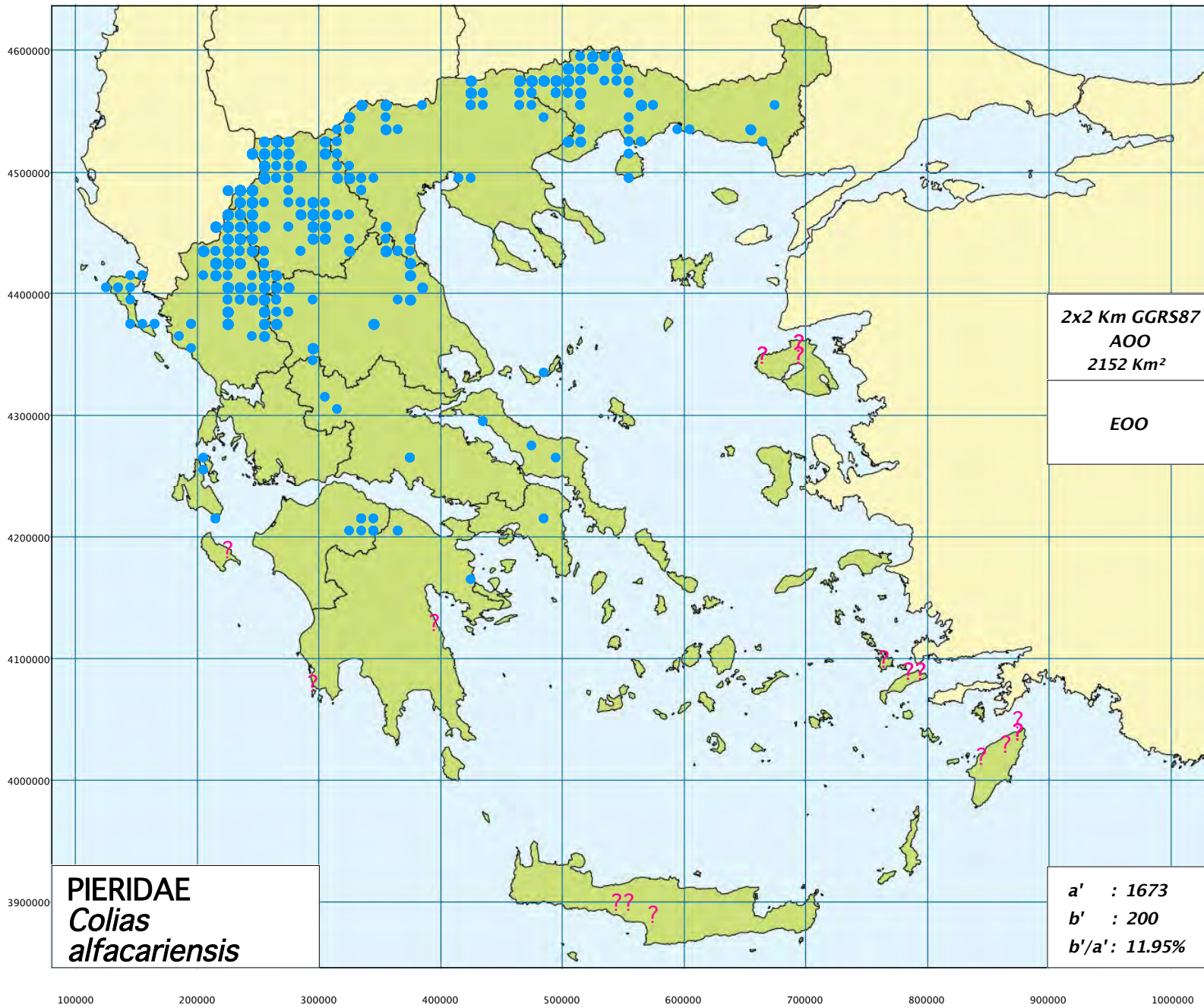




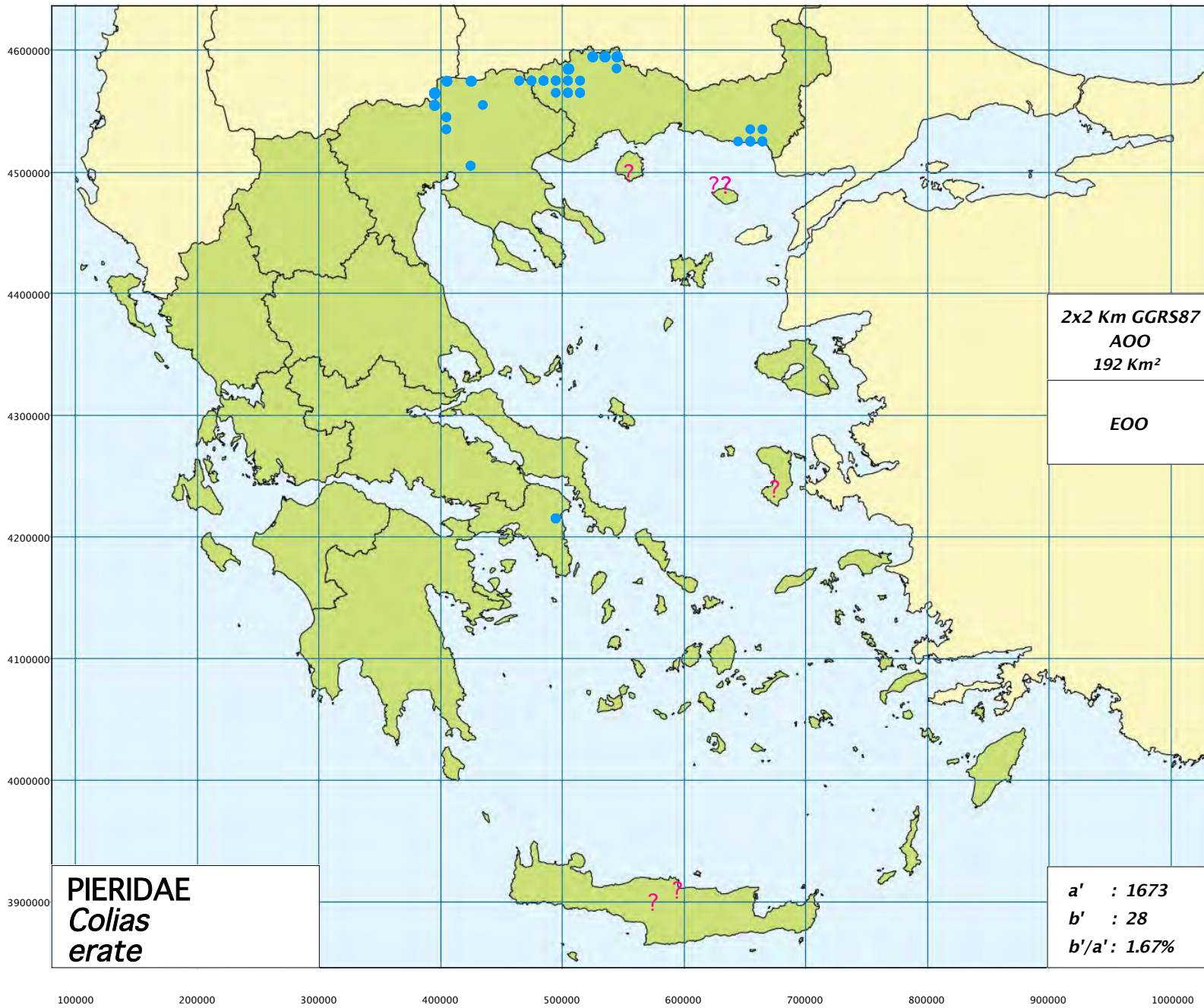






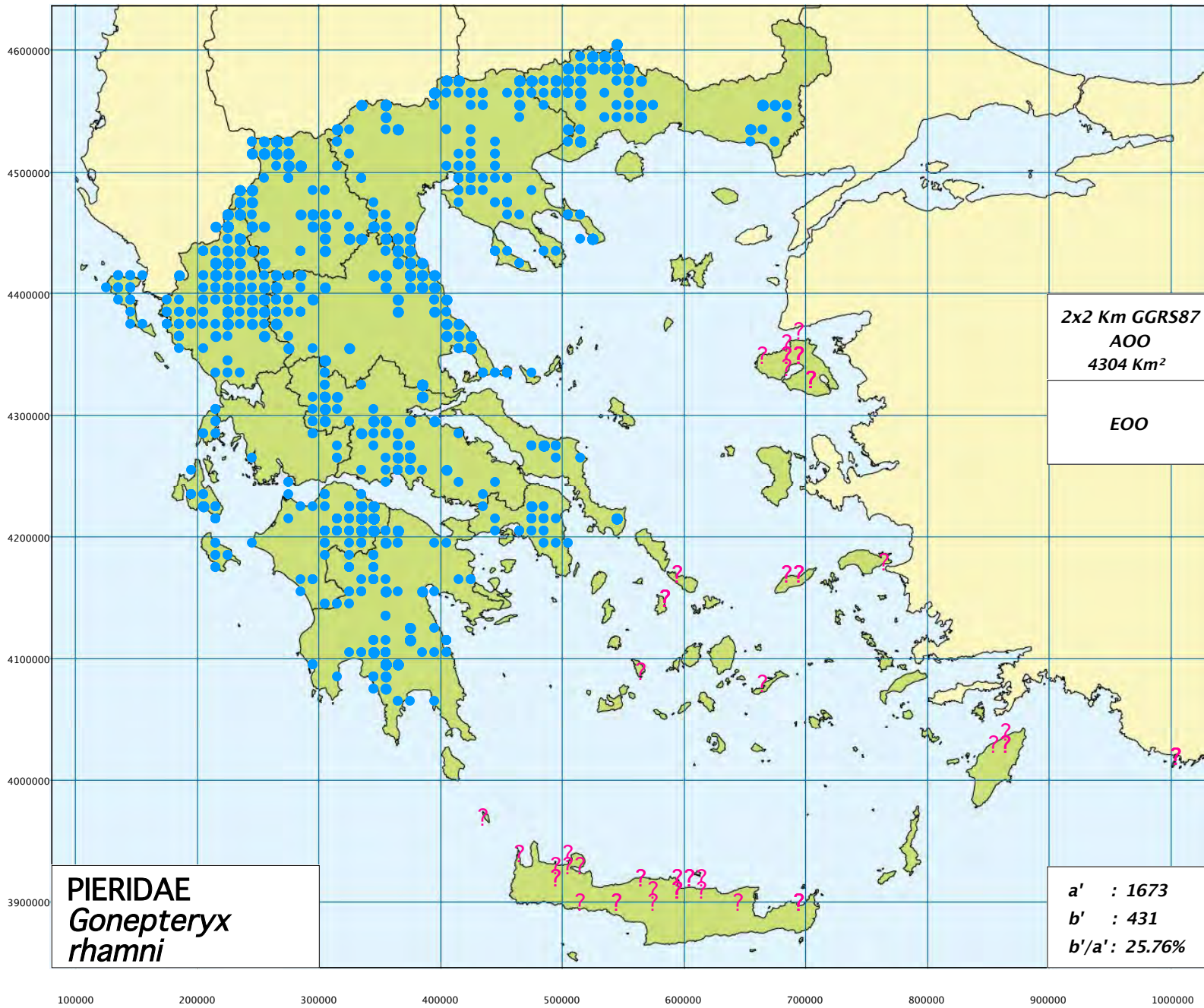


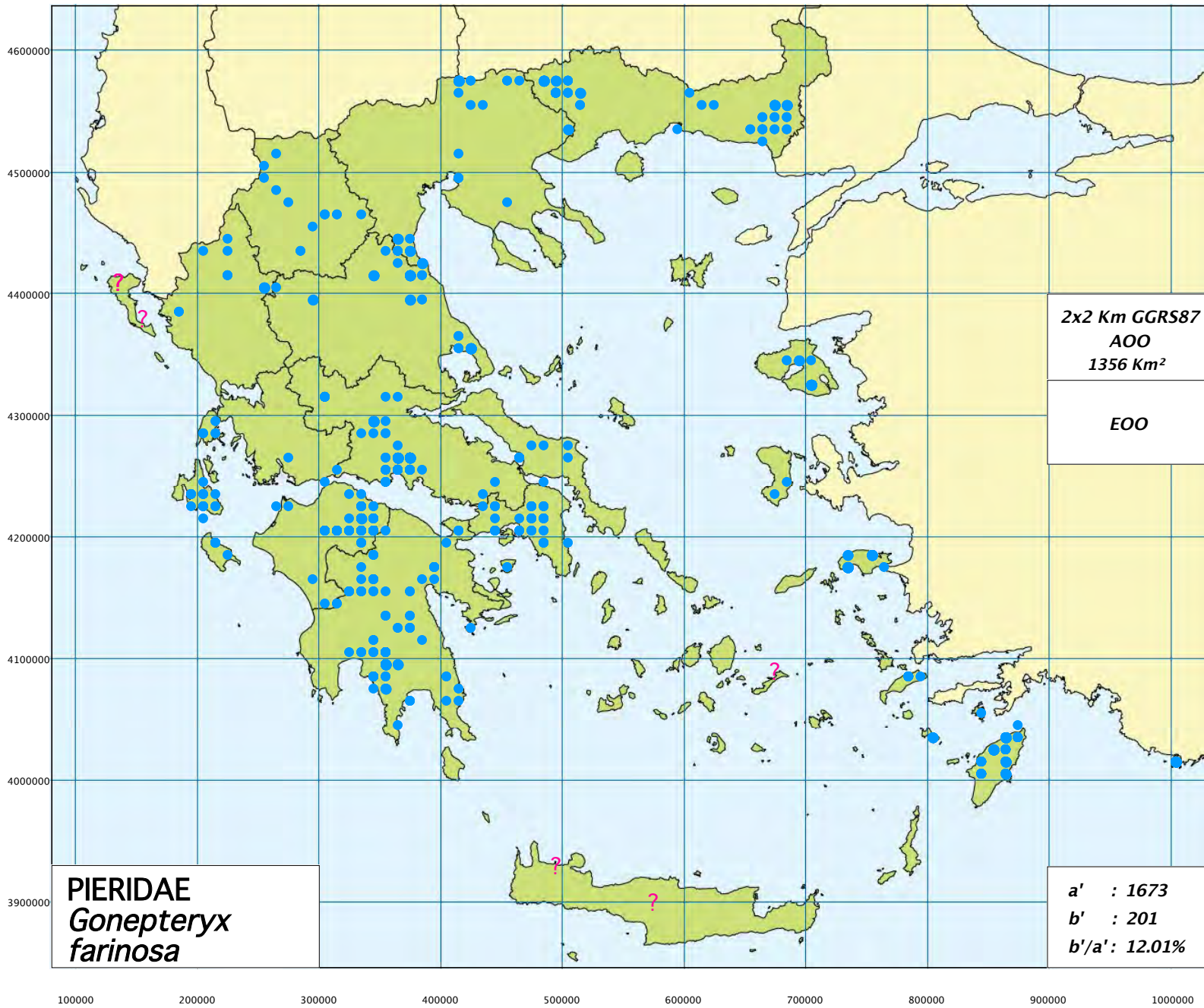




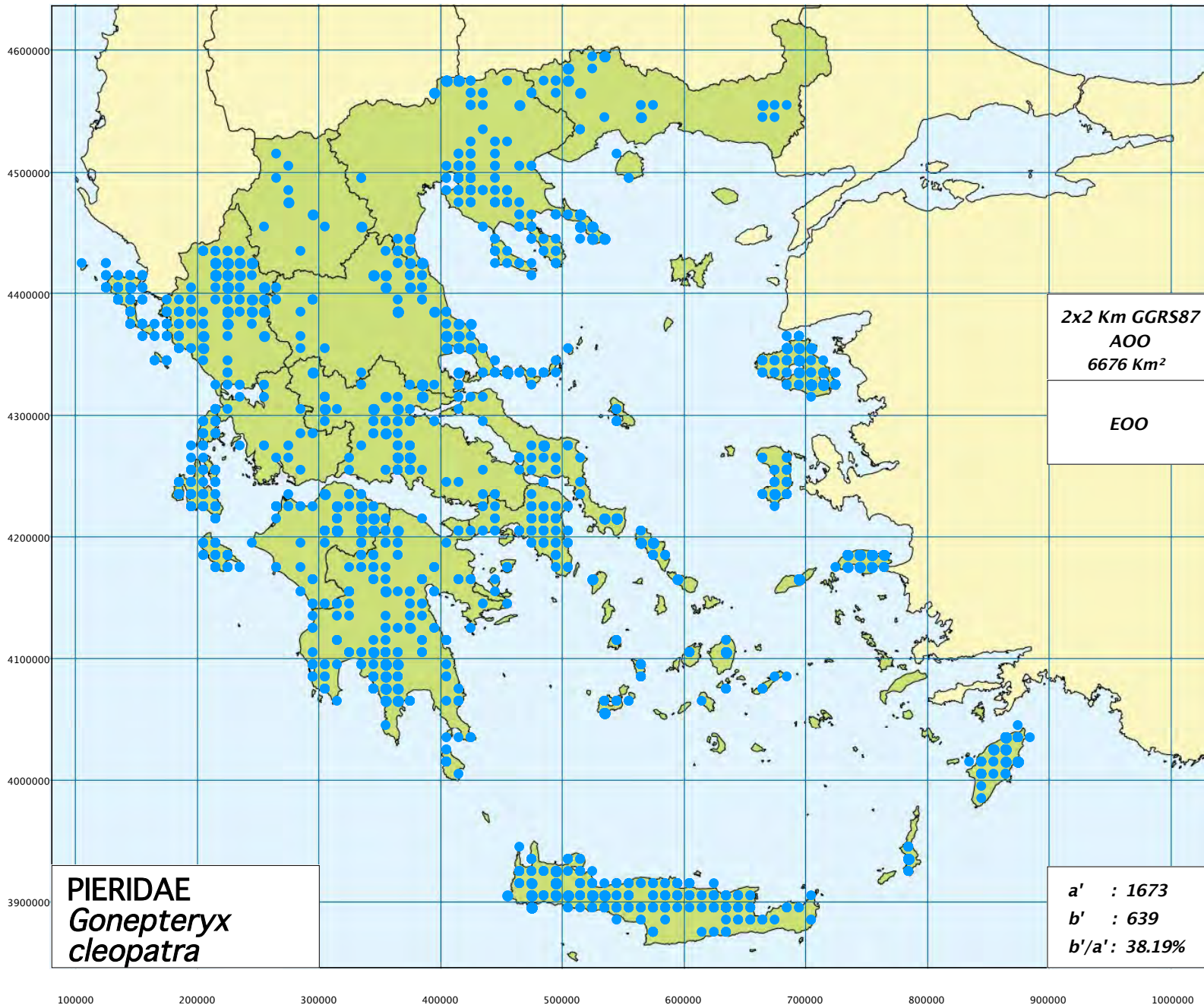
**PIERIDAE**  
*Colias*  
*erate*



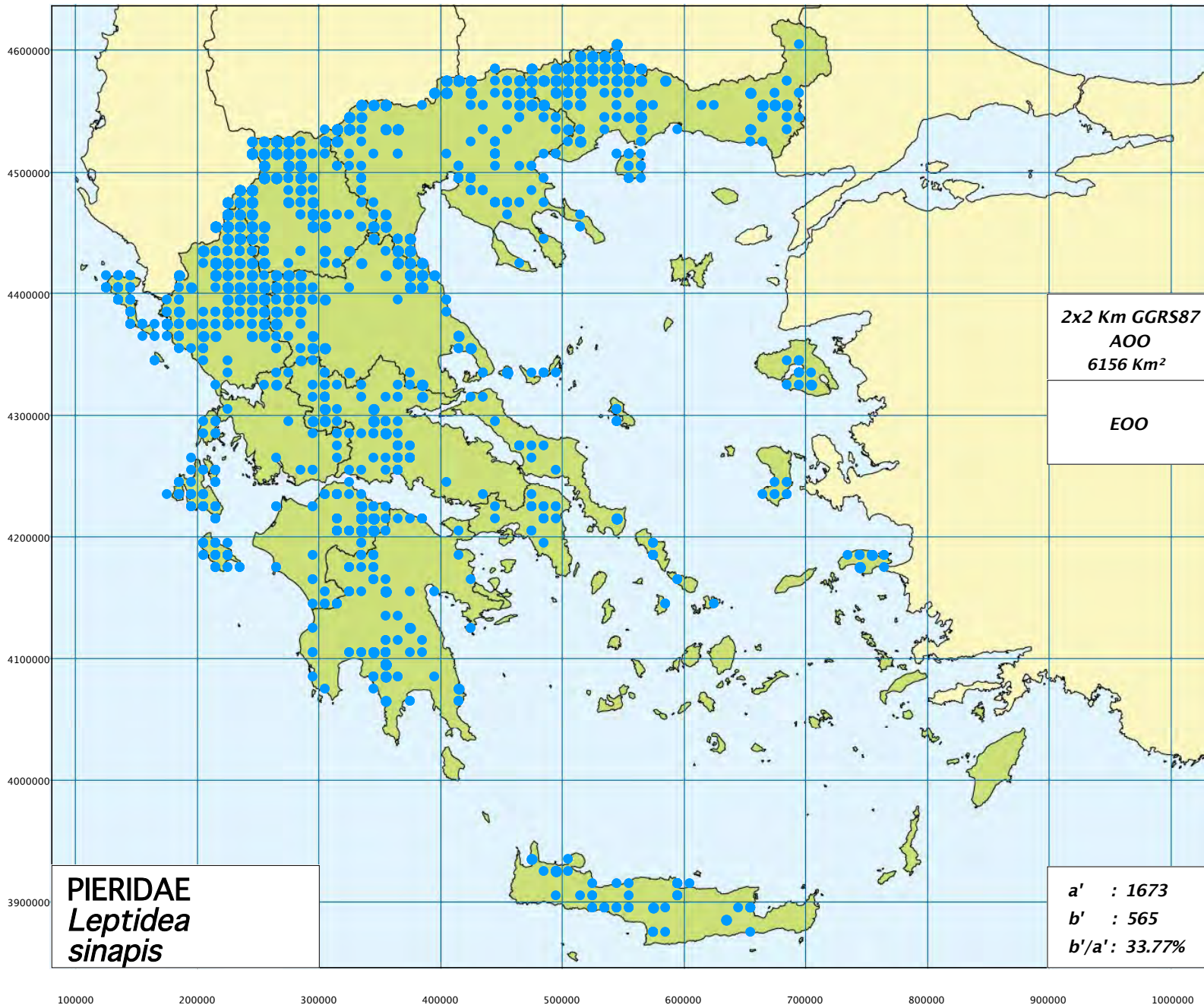


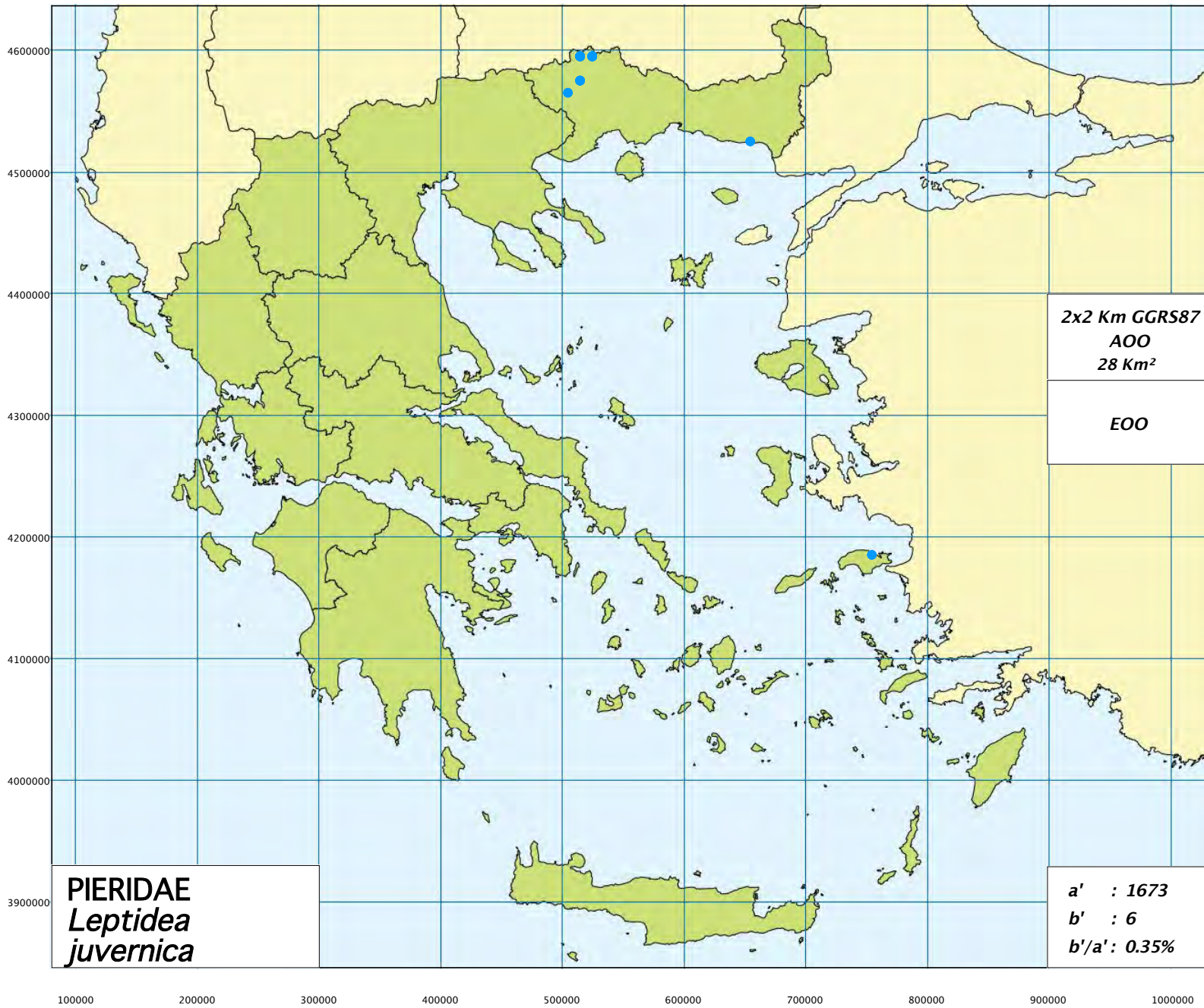




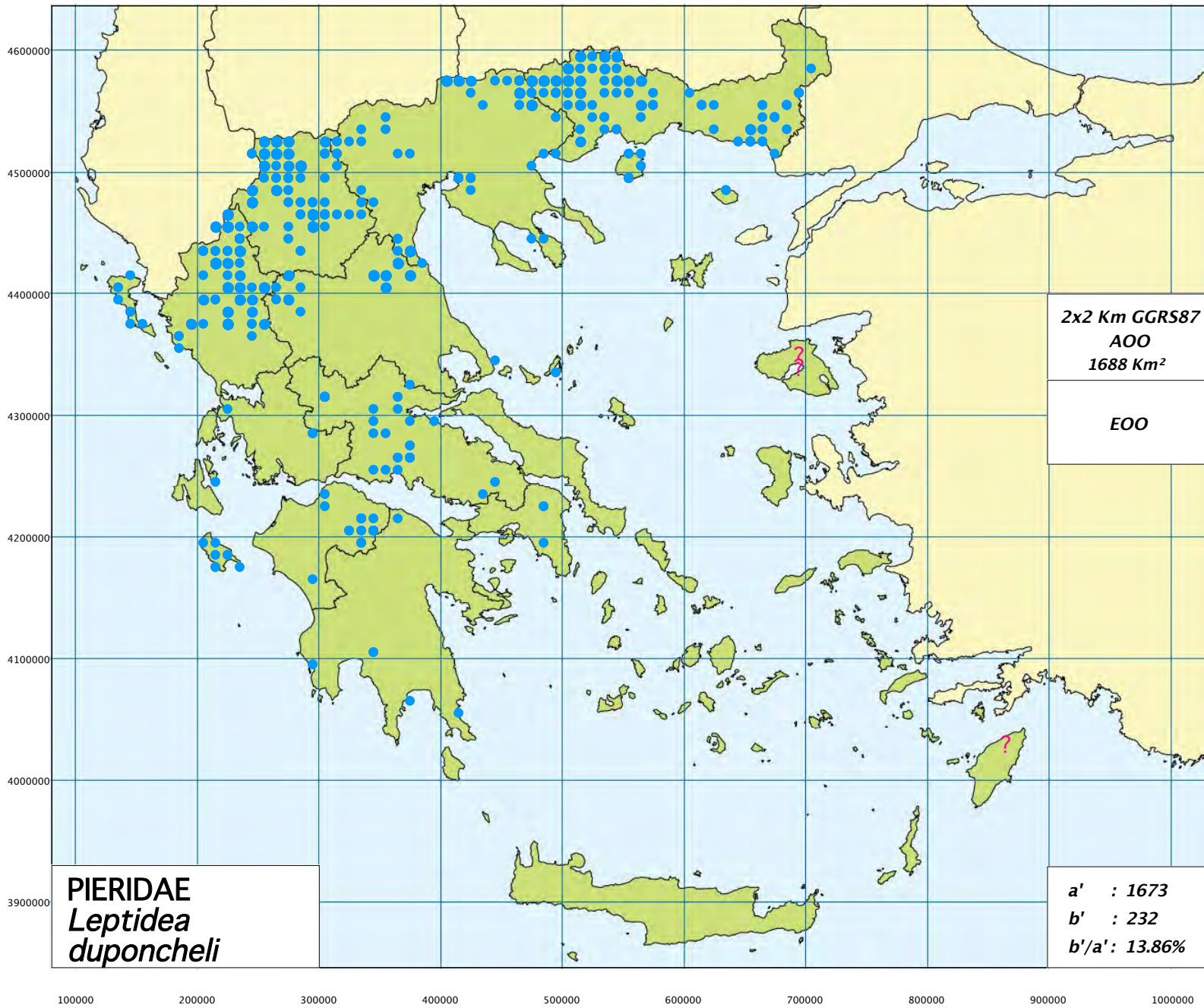




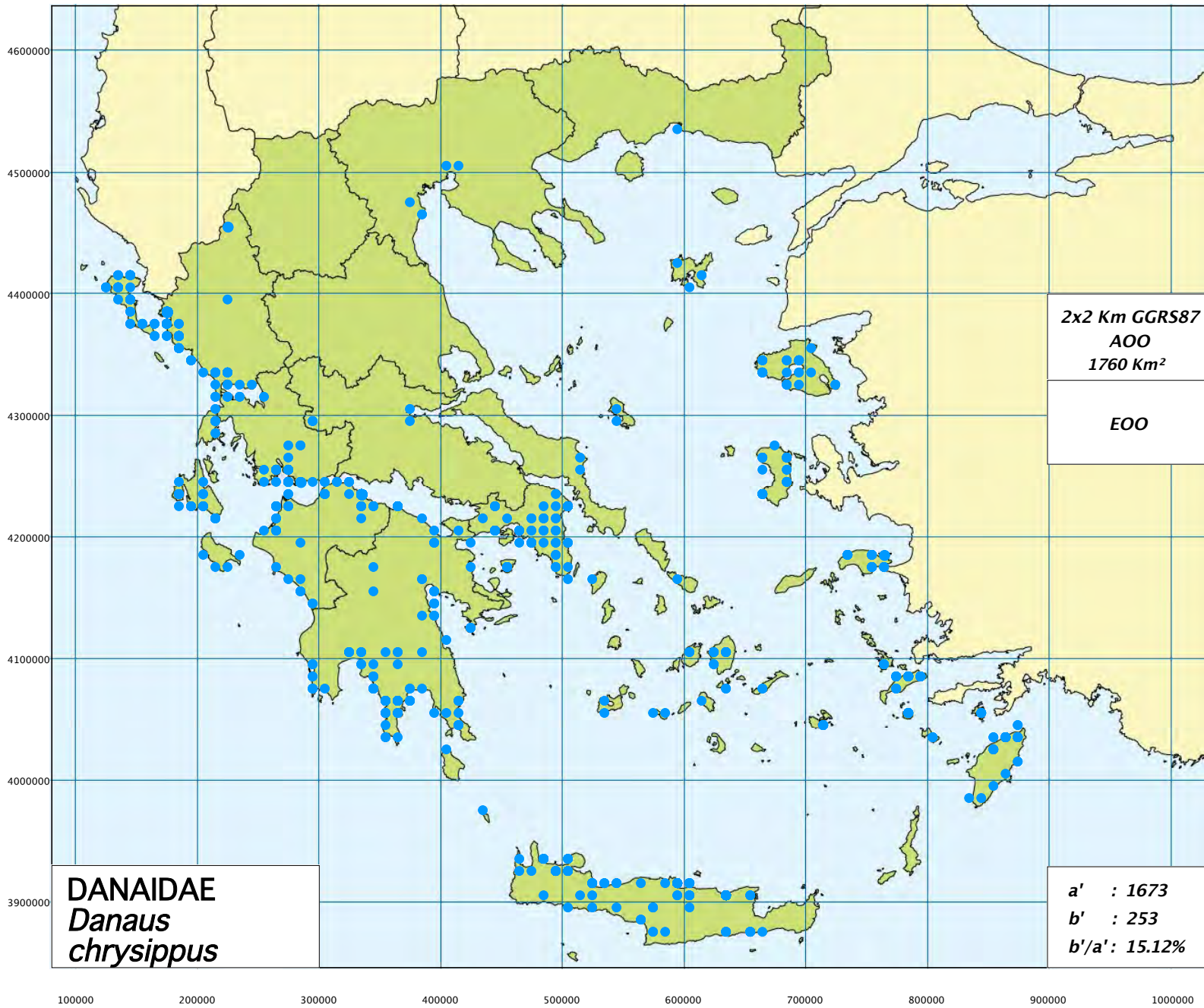


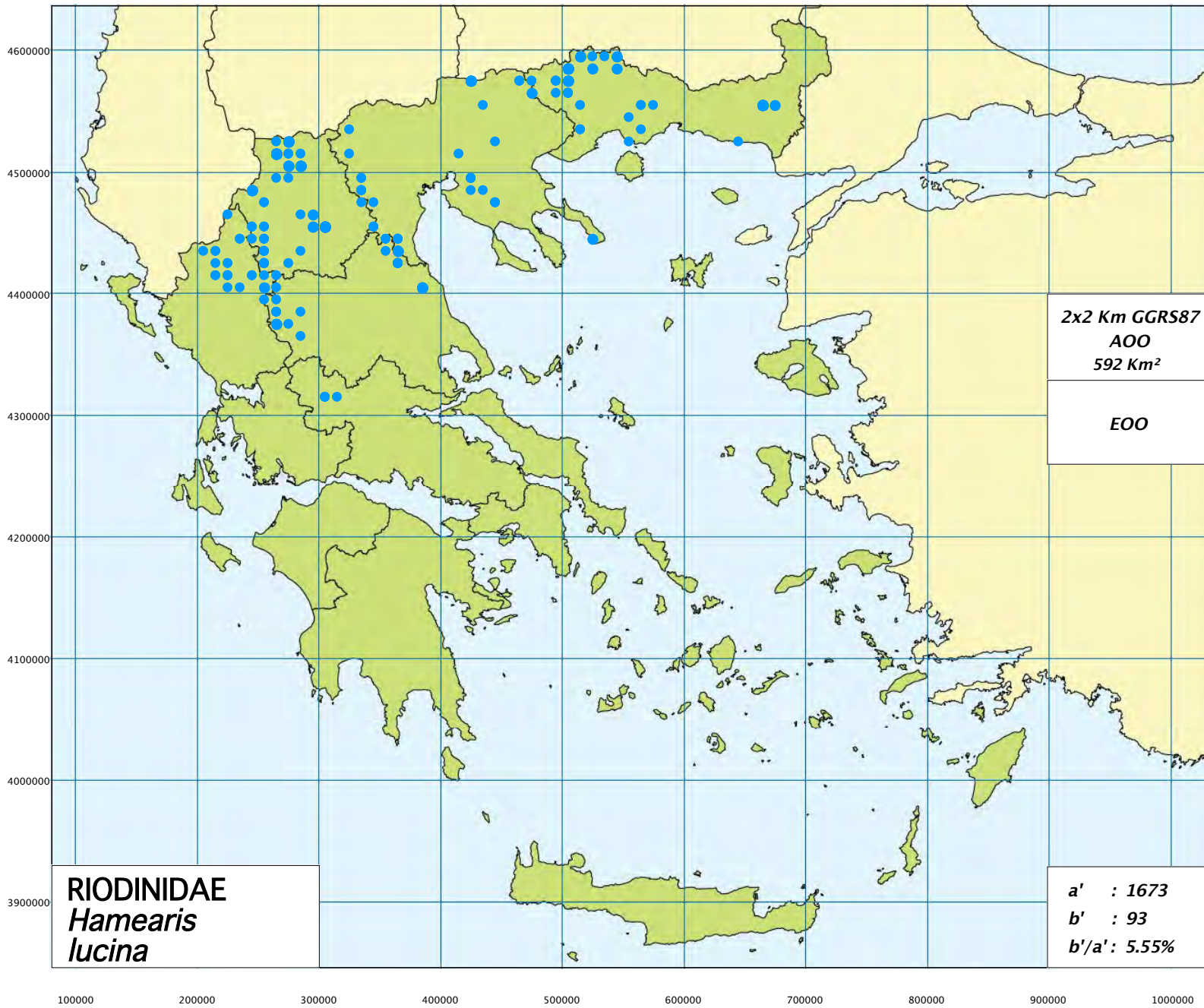




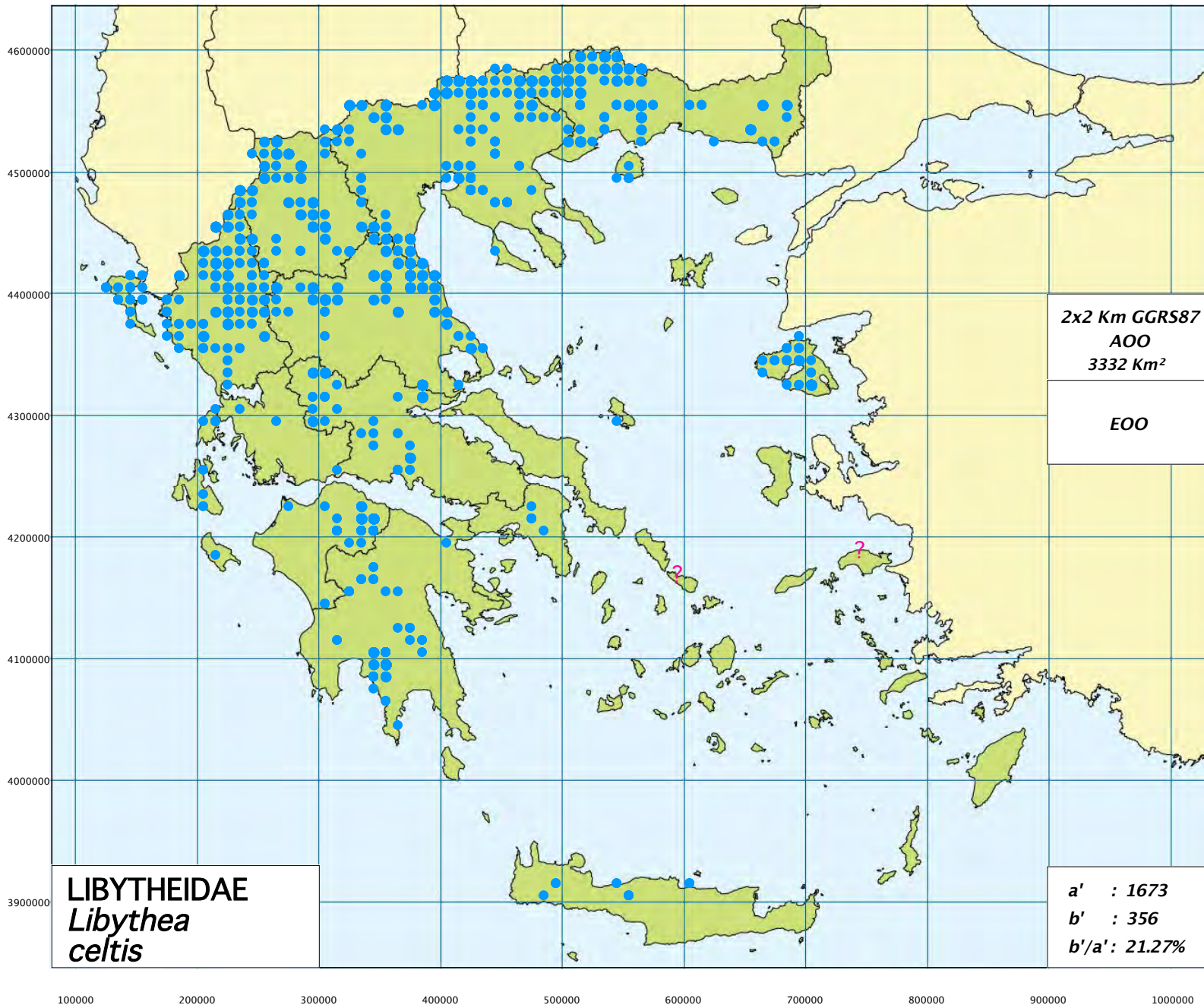






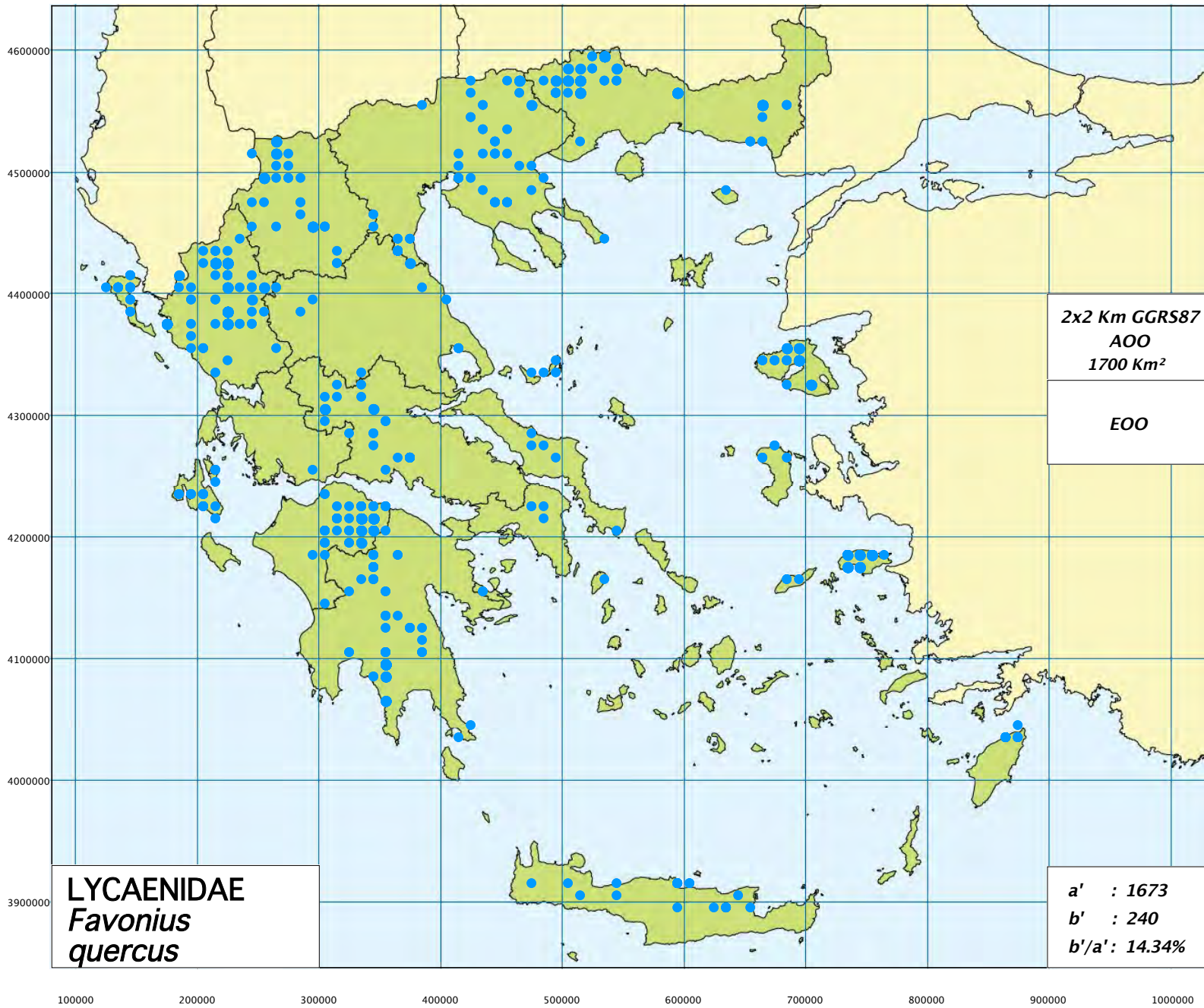




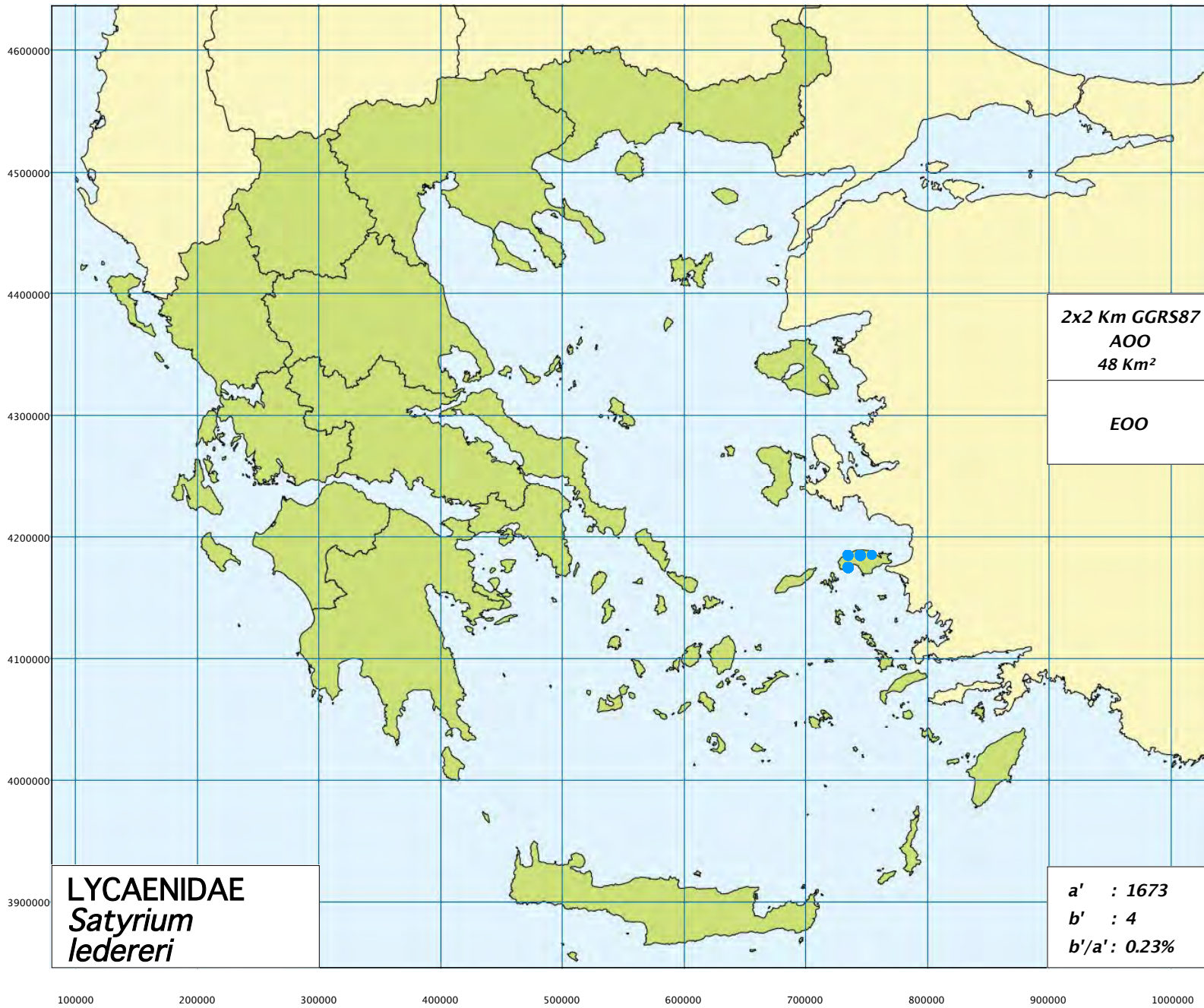


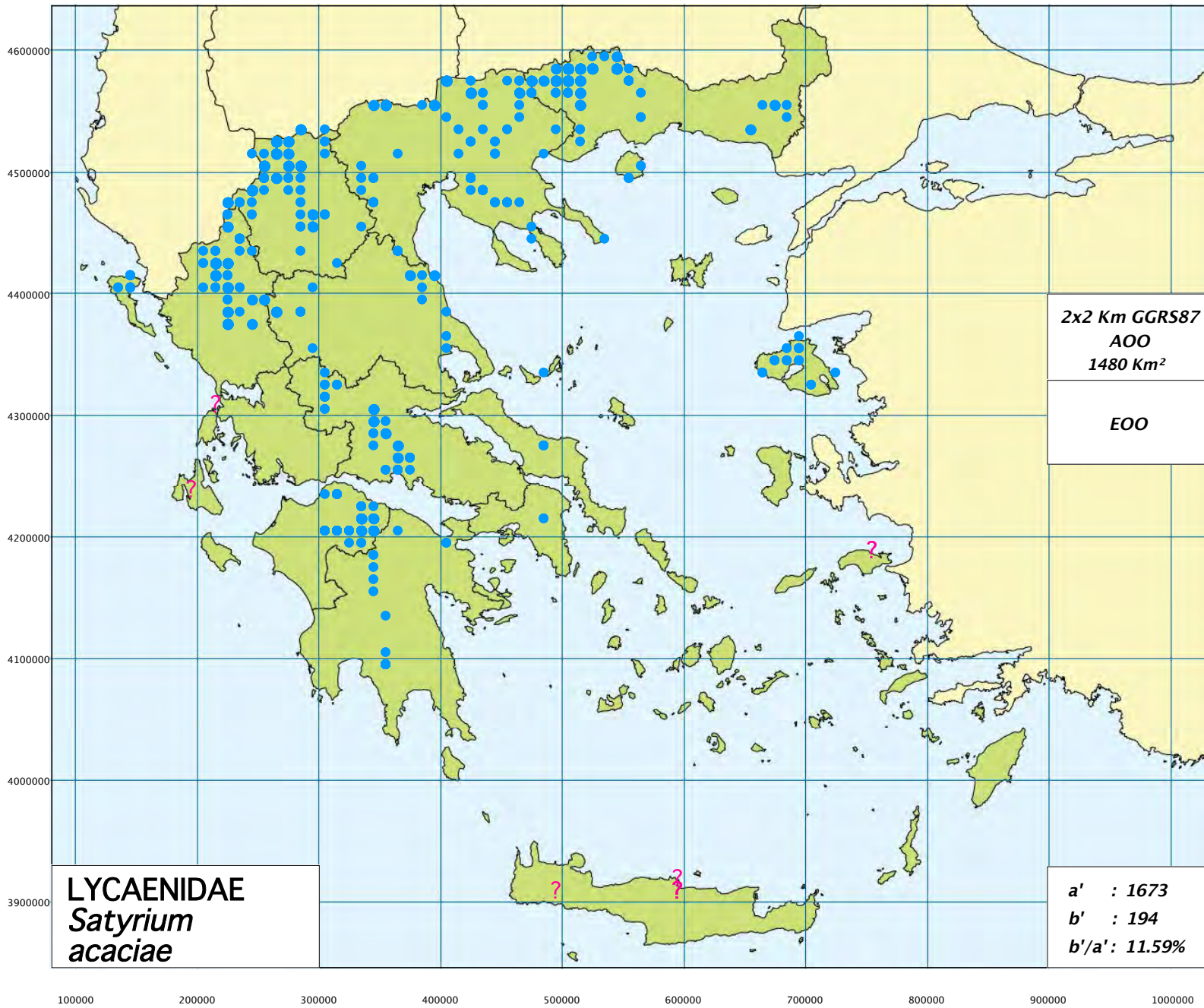




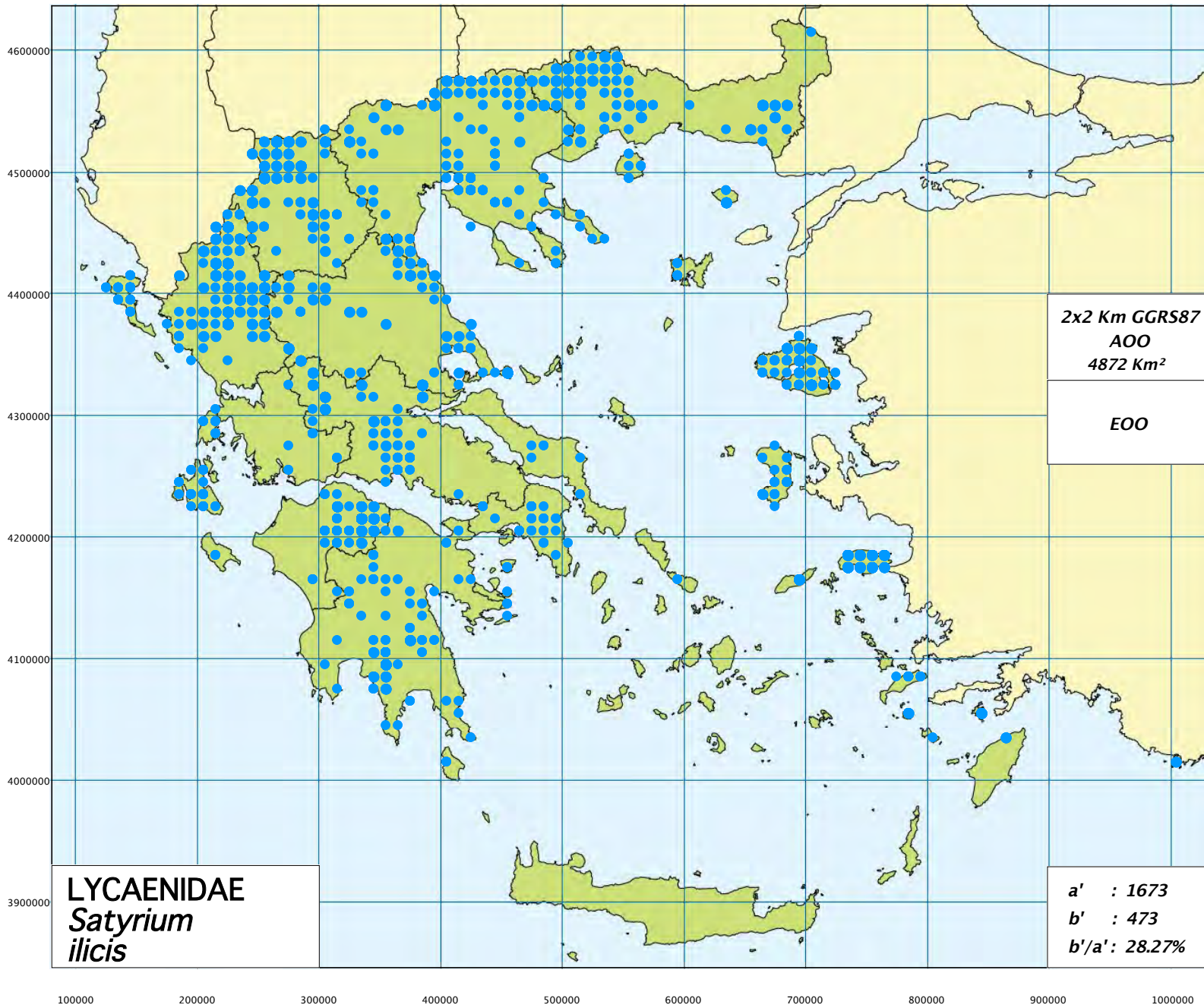


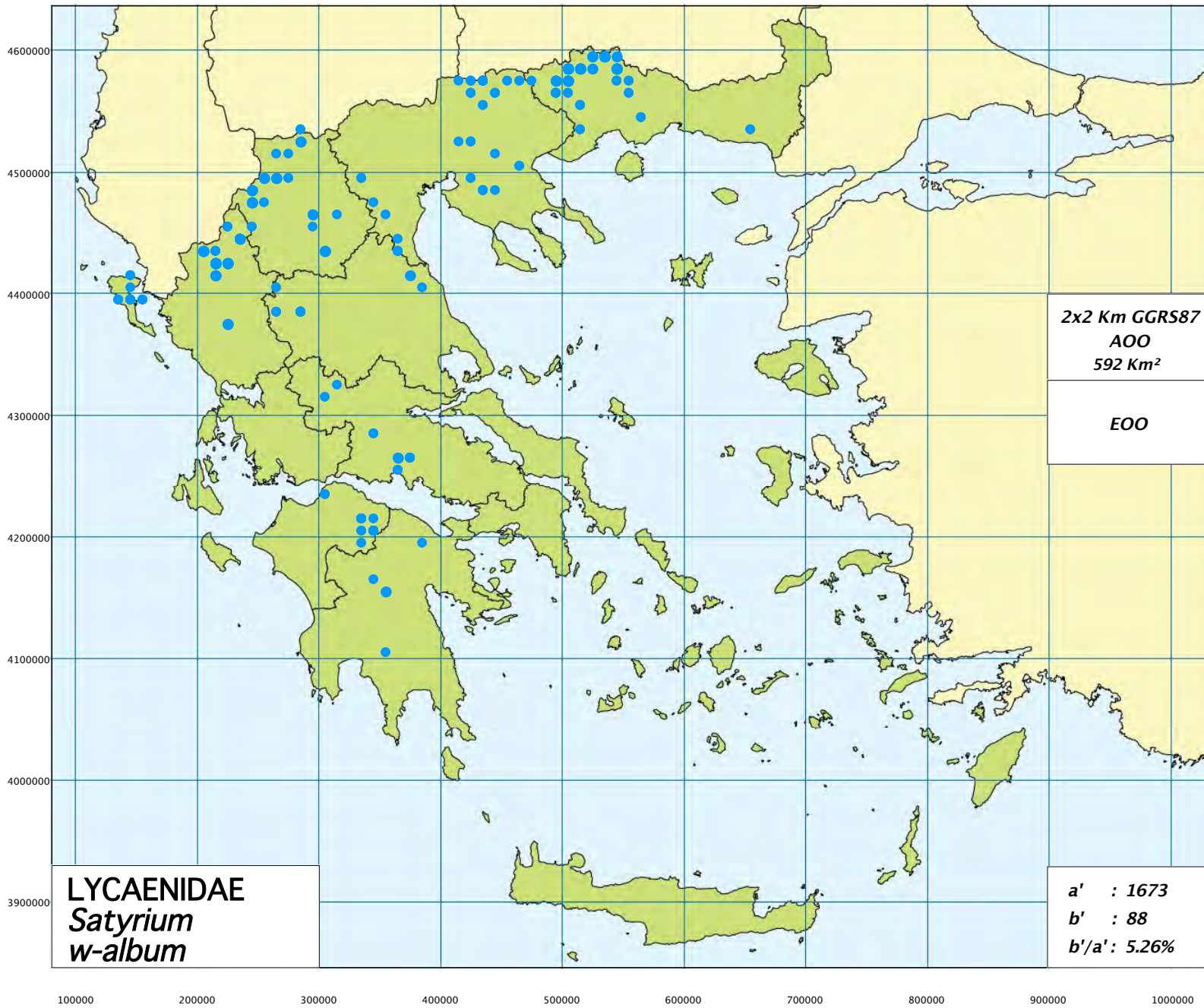




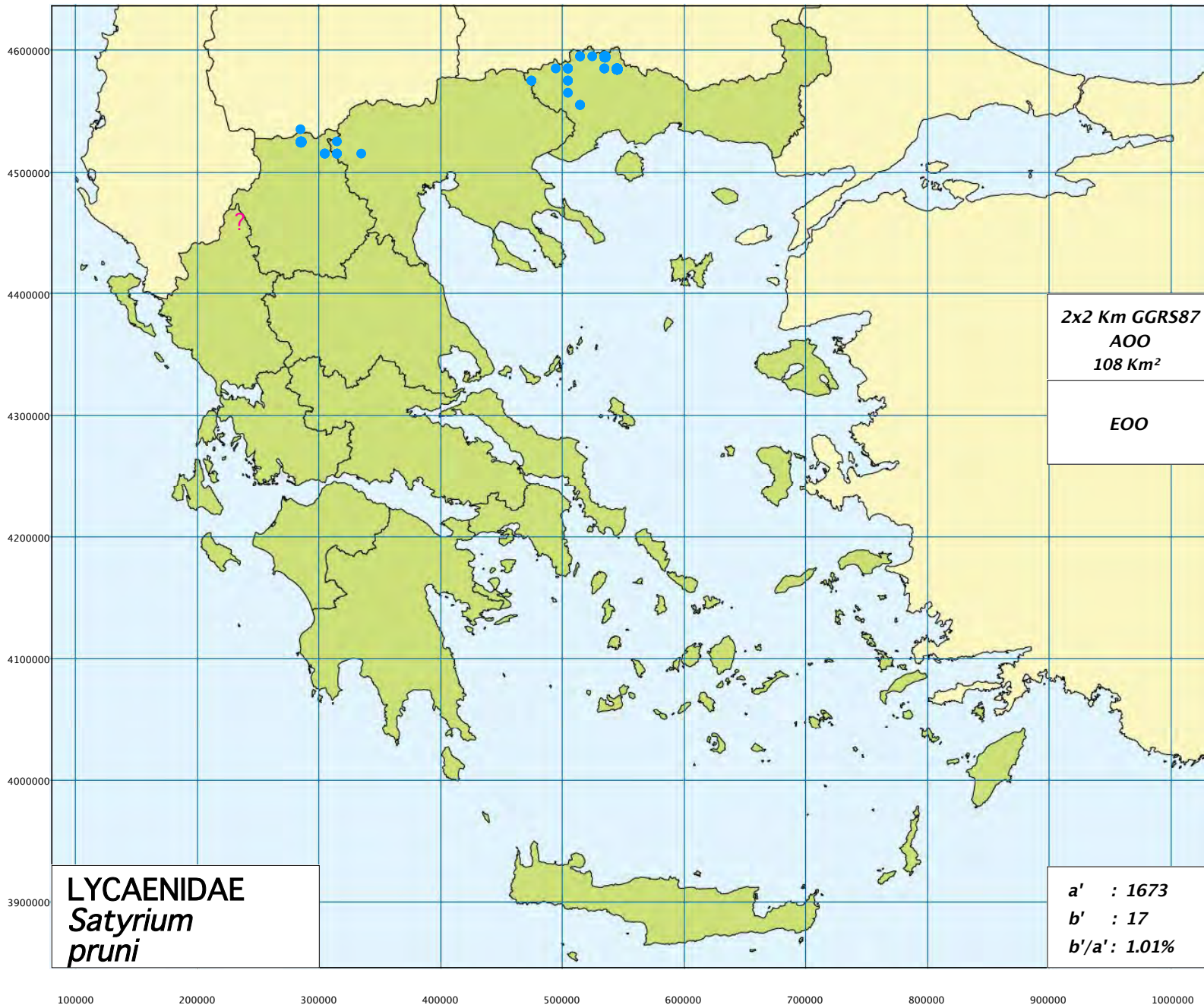


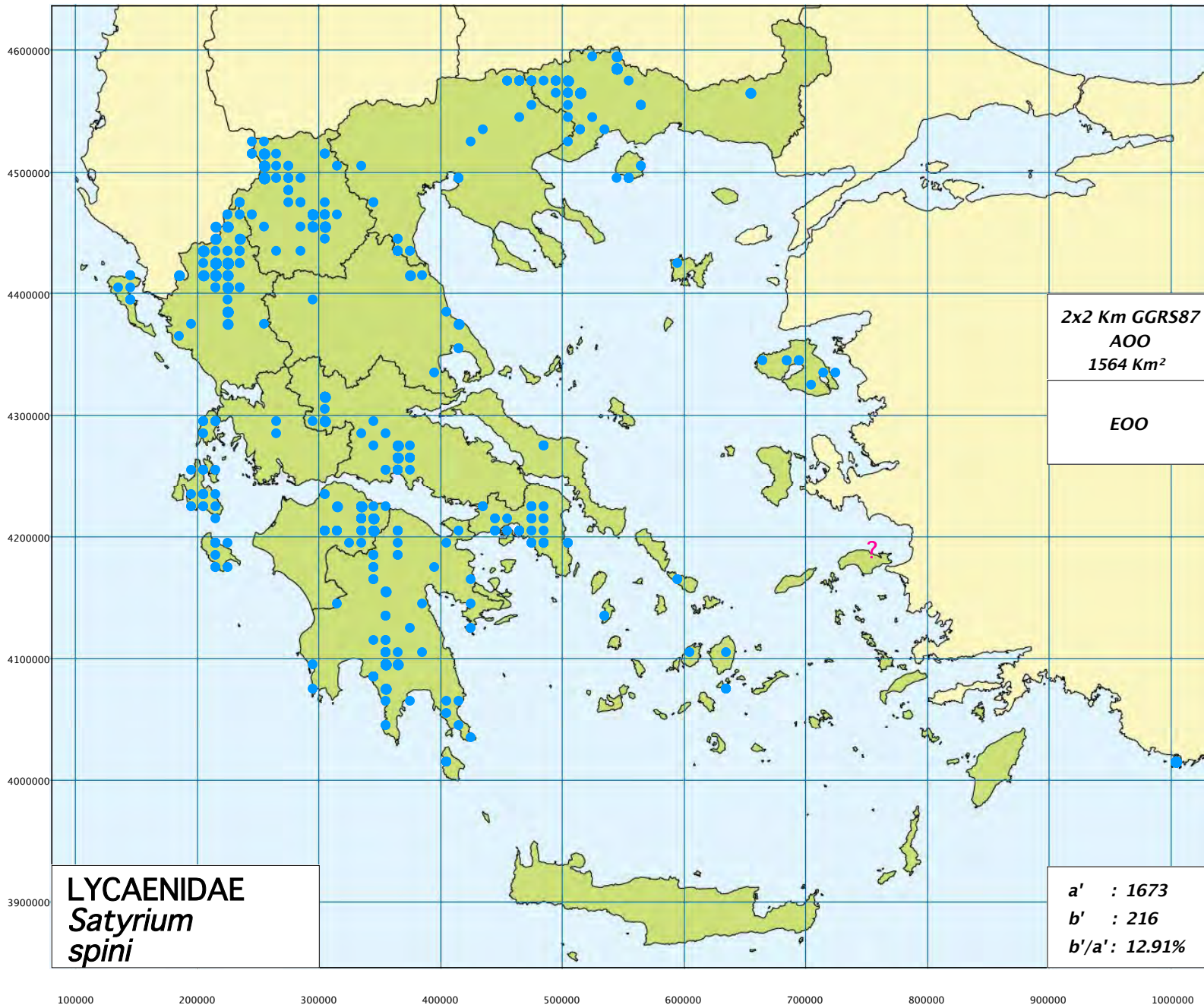












**LYCAENIDAE**  
*Satyrium*  
*spini*

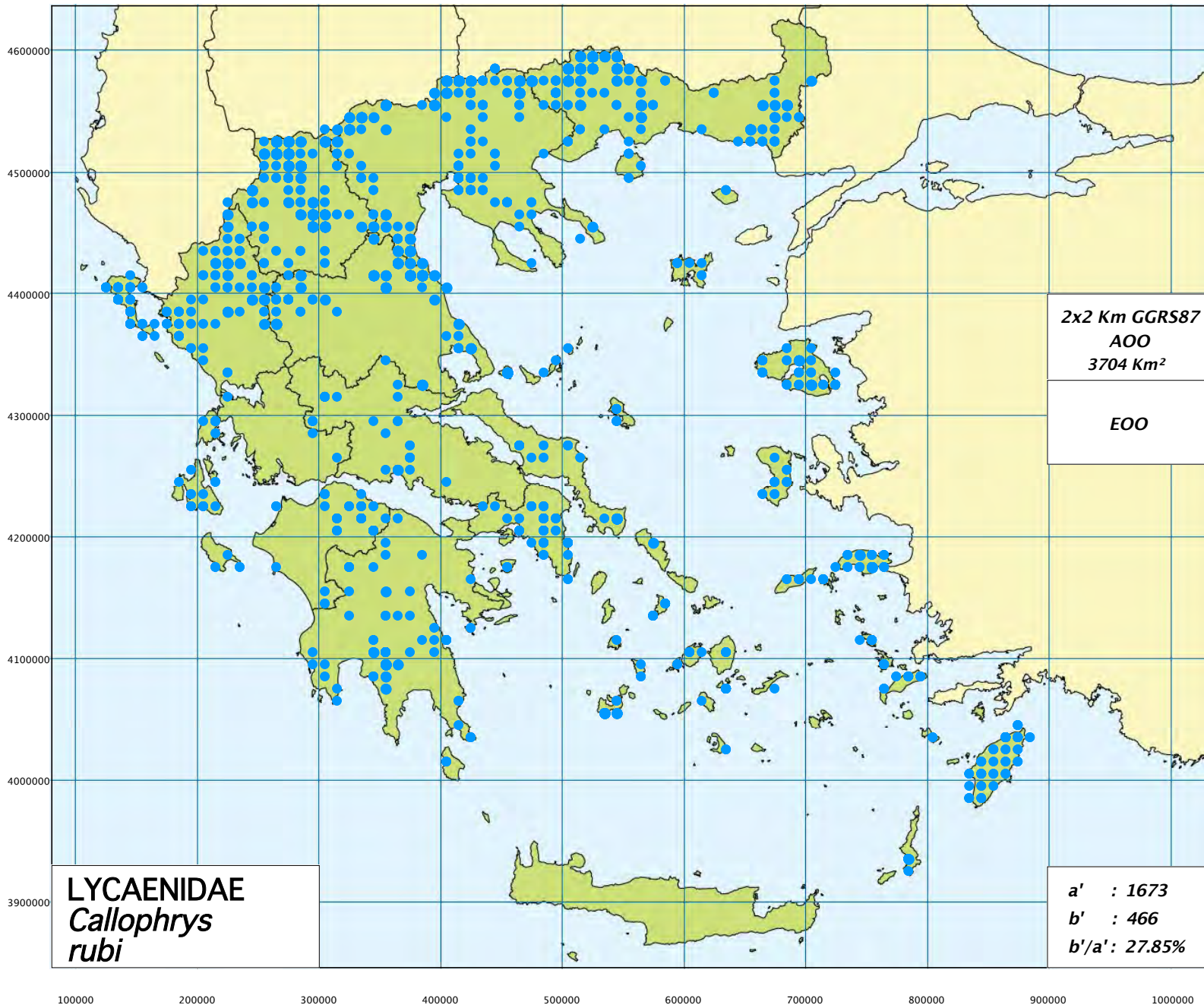
**2x2 Km GGRS87**  
**AOO**  
**1564 Km<sup>2</sup>**

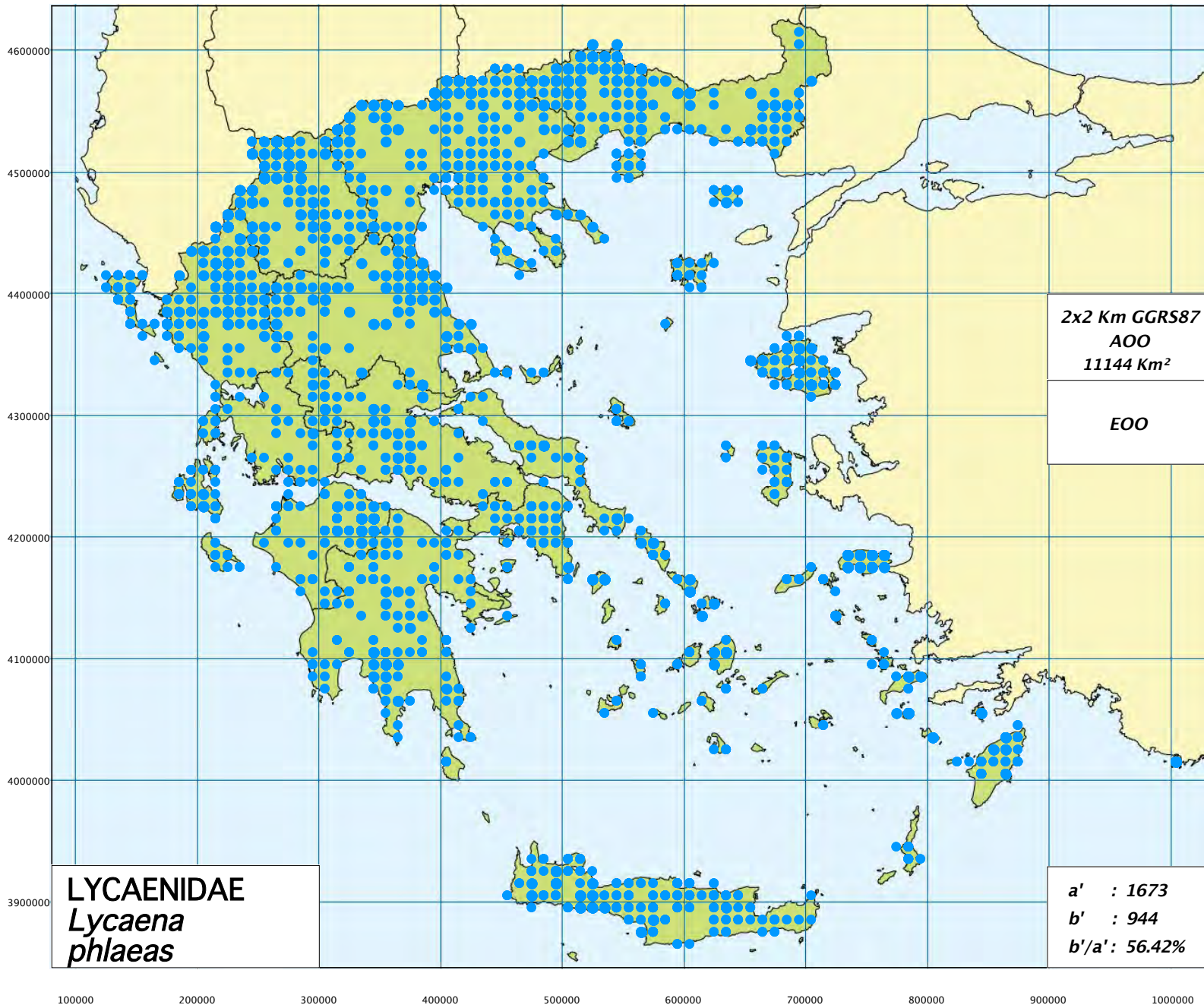
**EOO**

**a' : 1673**  
**b' : 216**  
**b'/a' : 12.91%**

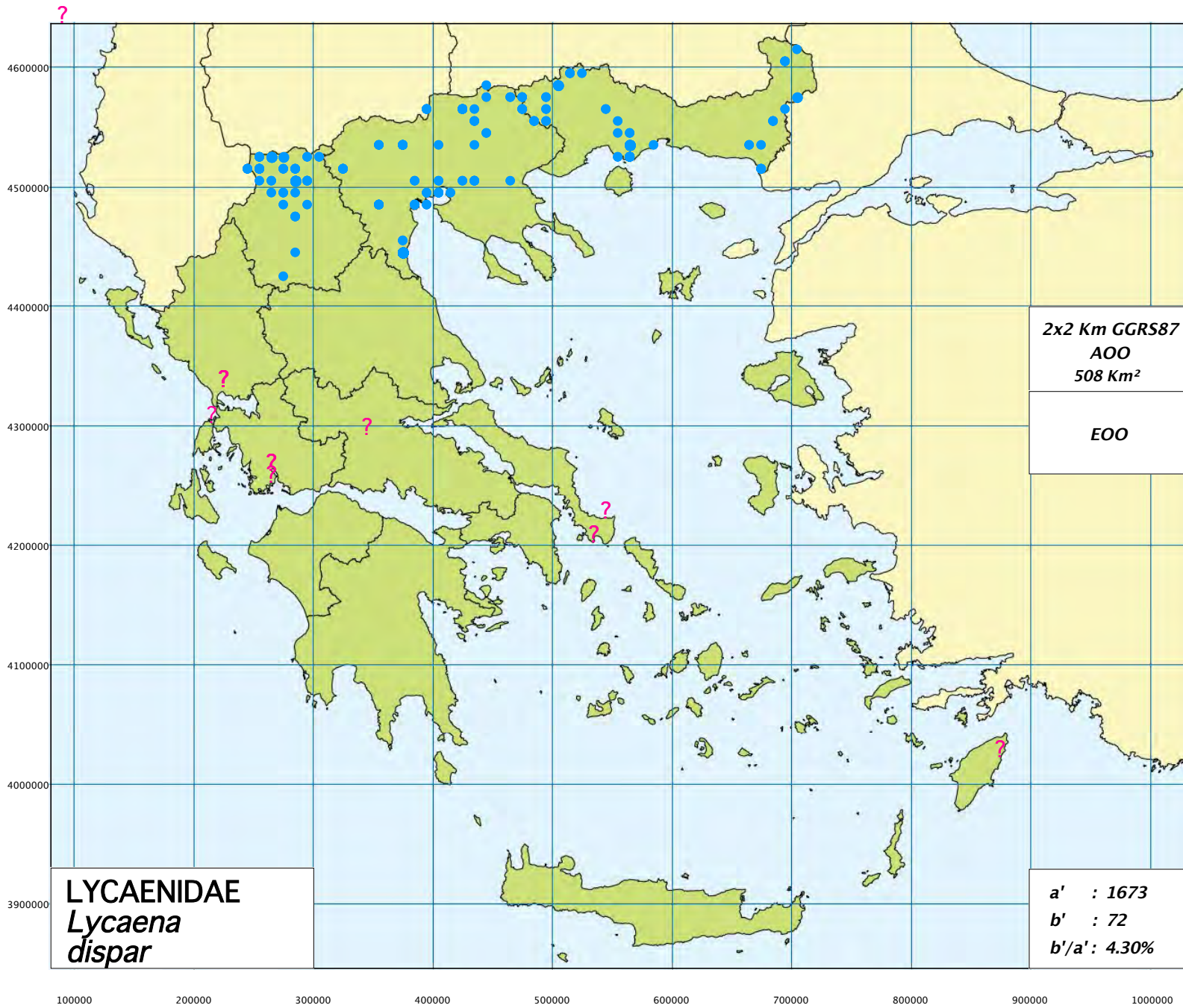
100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000

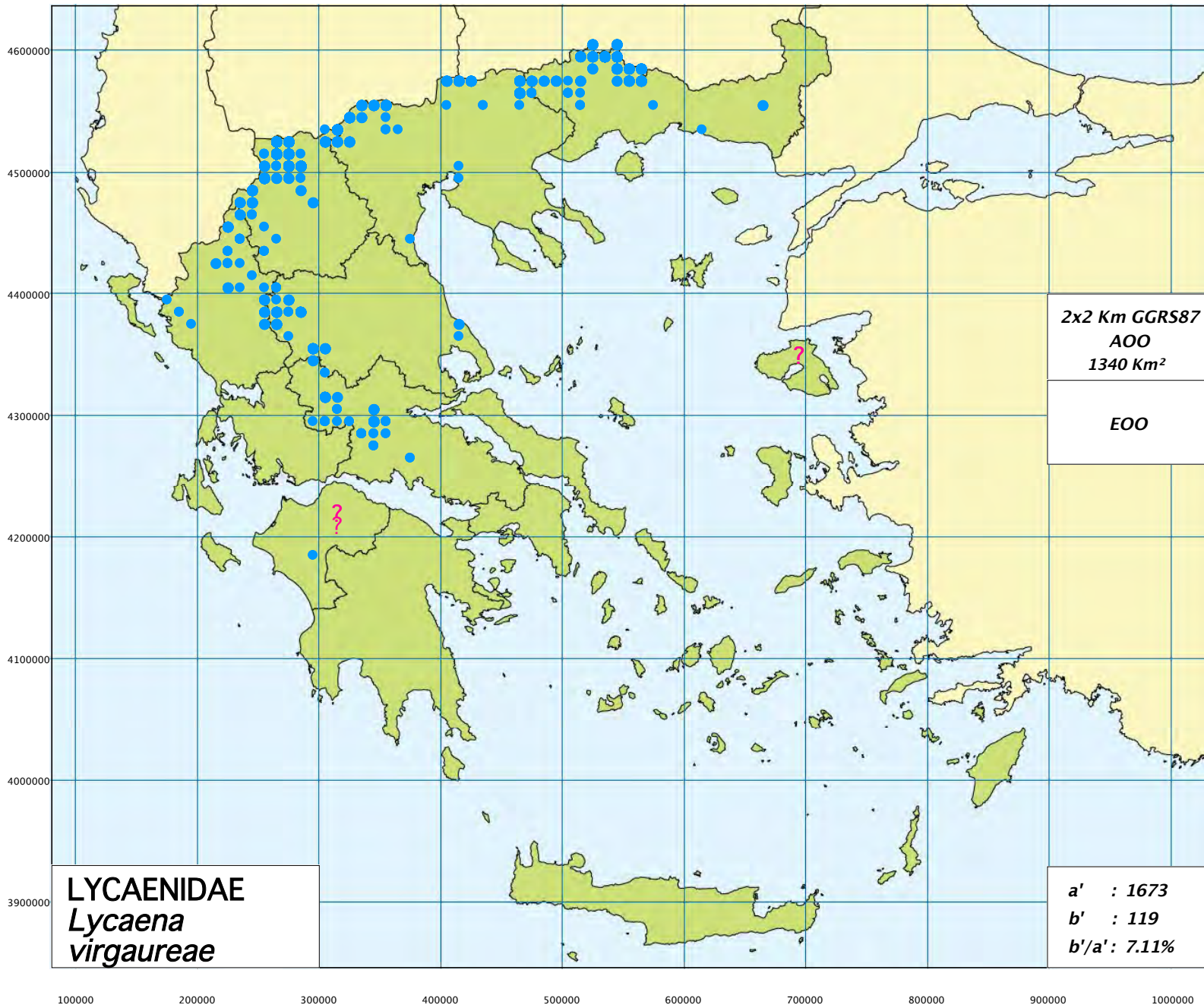




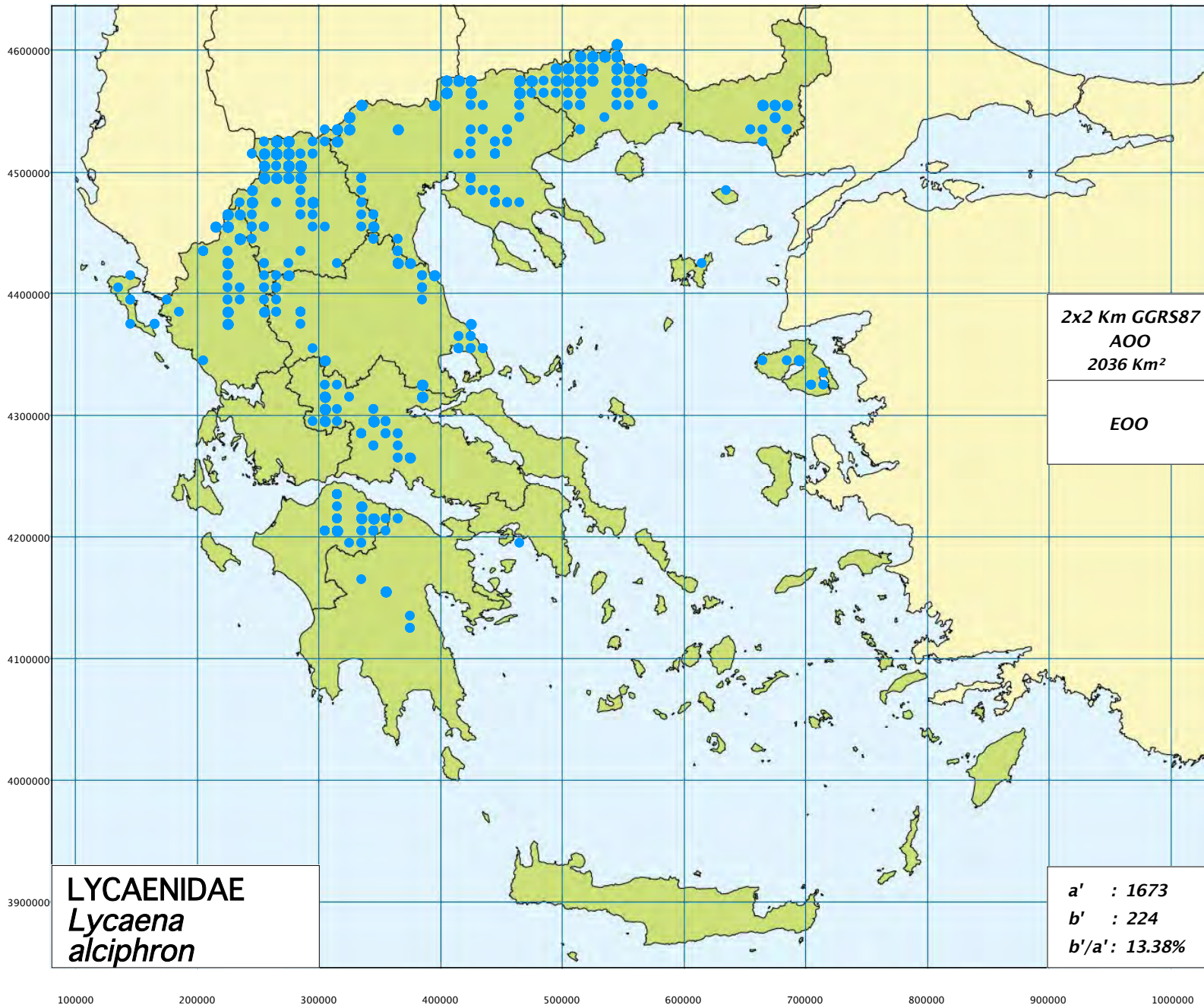


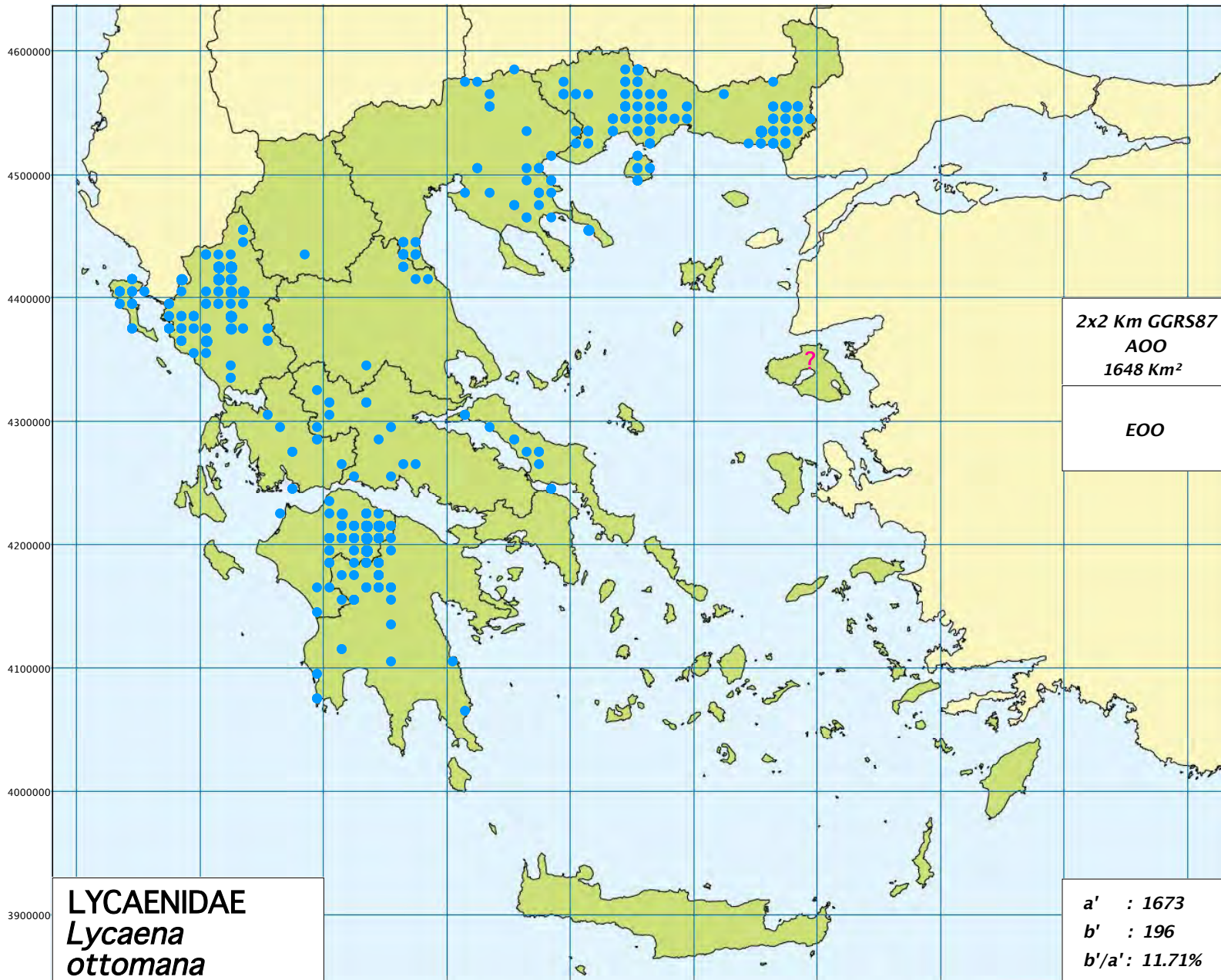




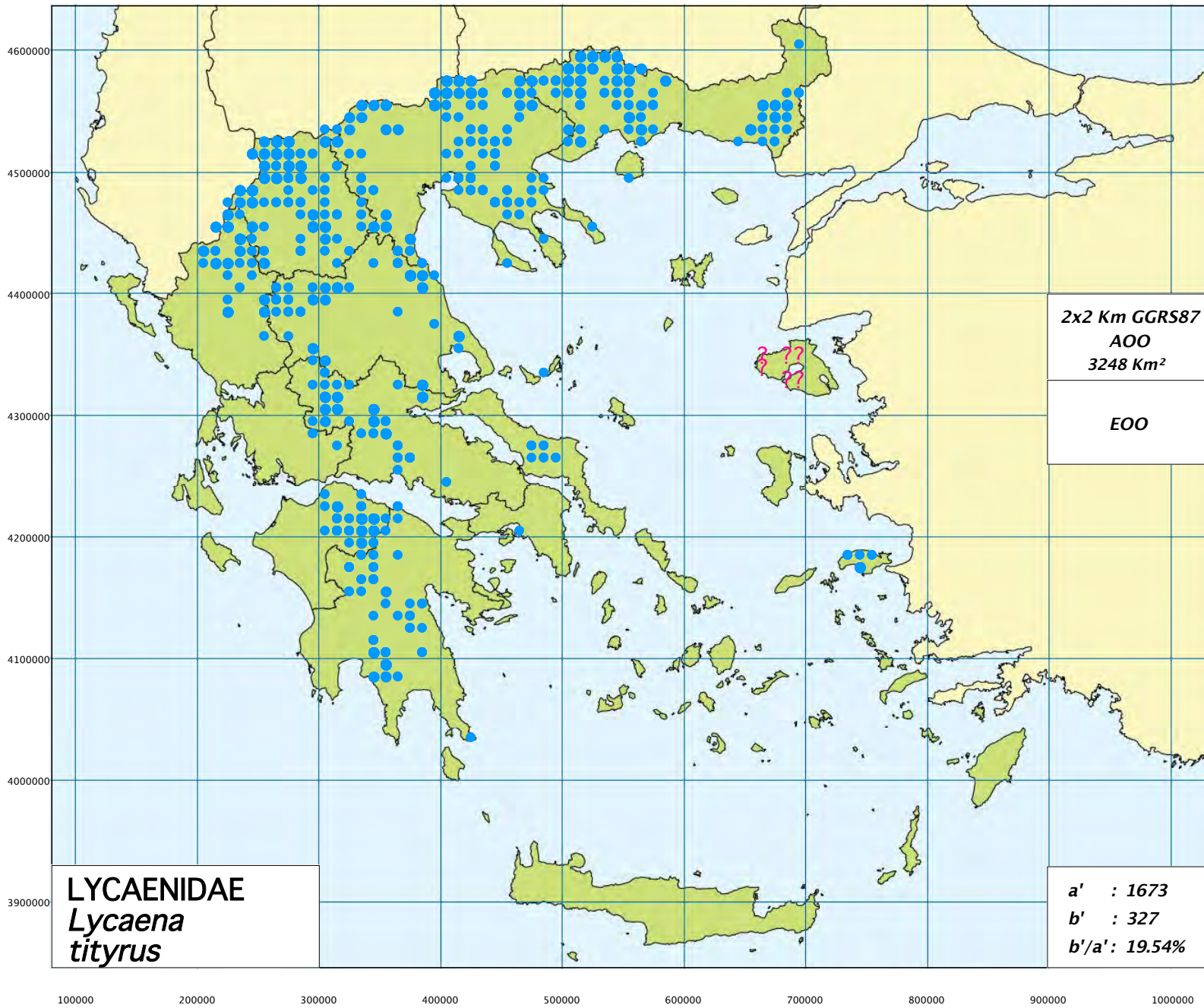


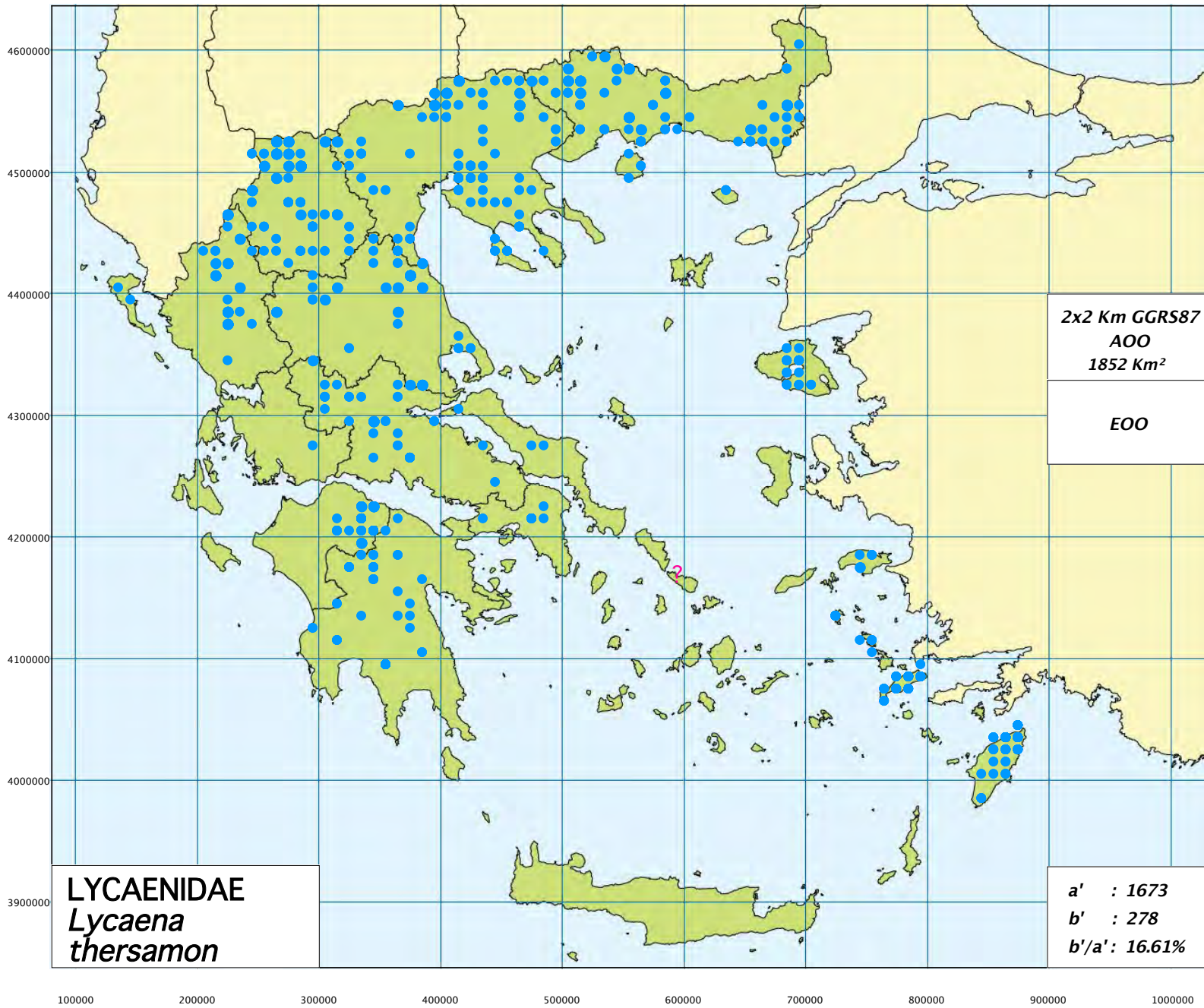




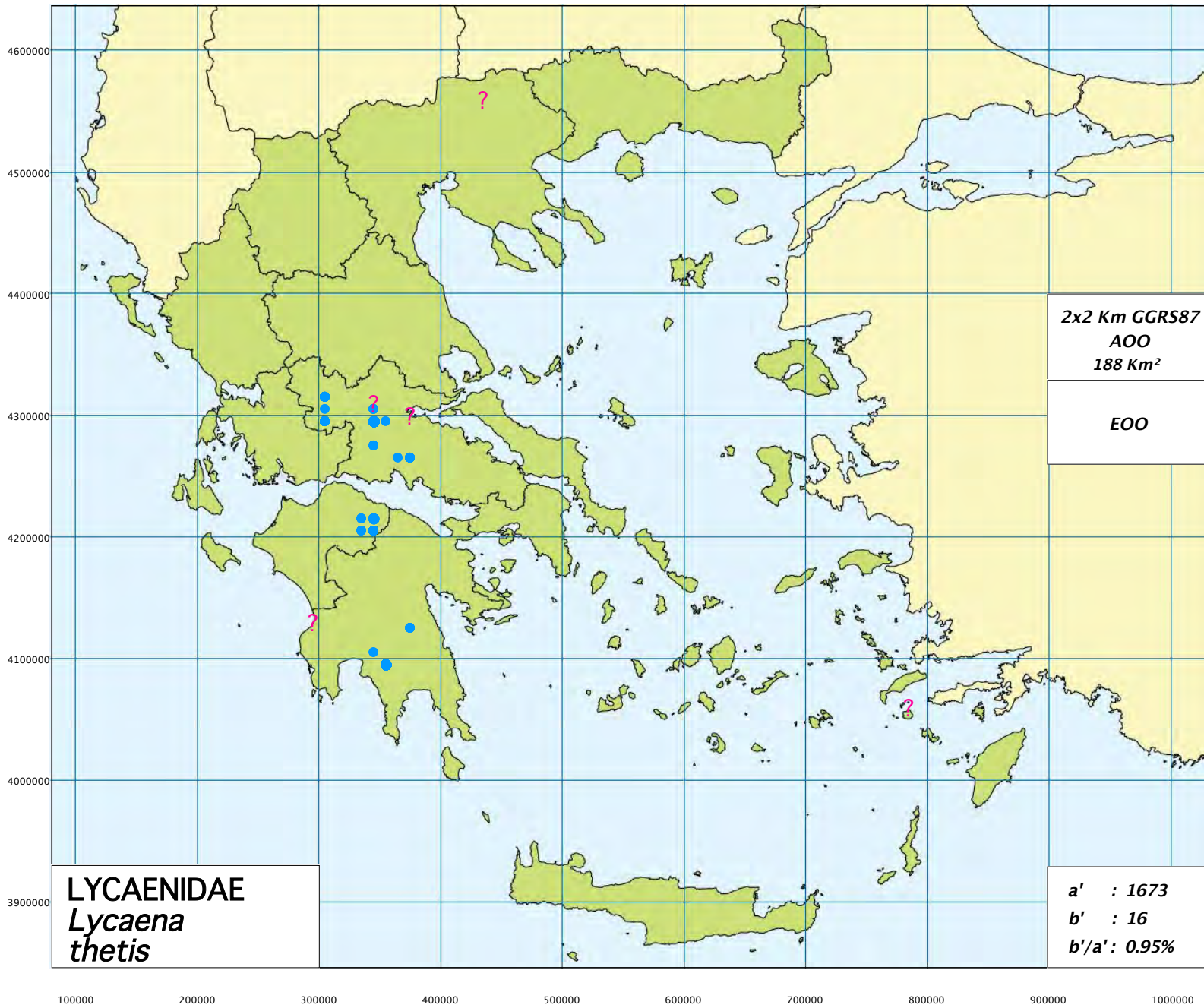


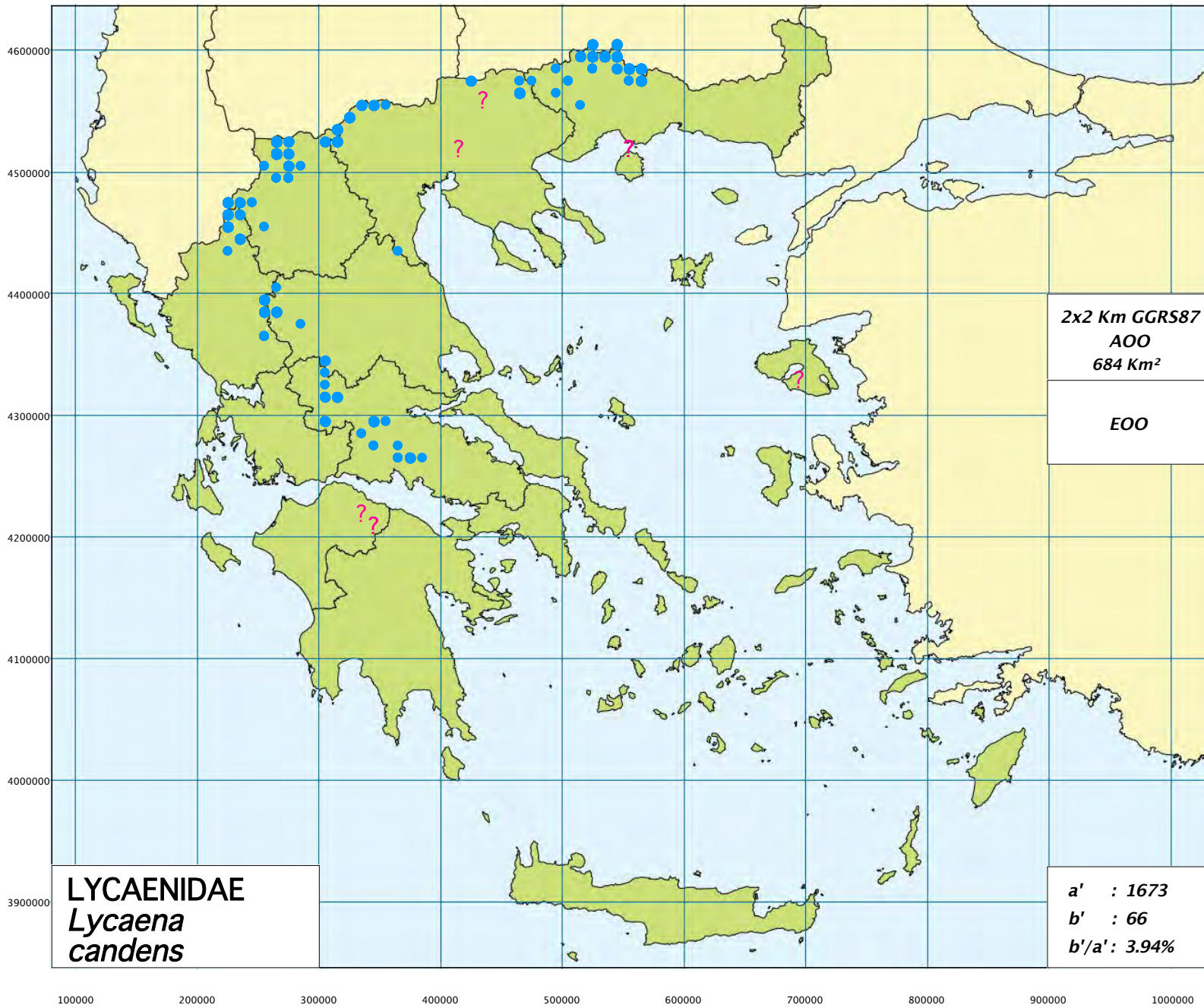




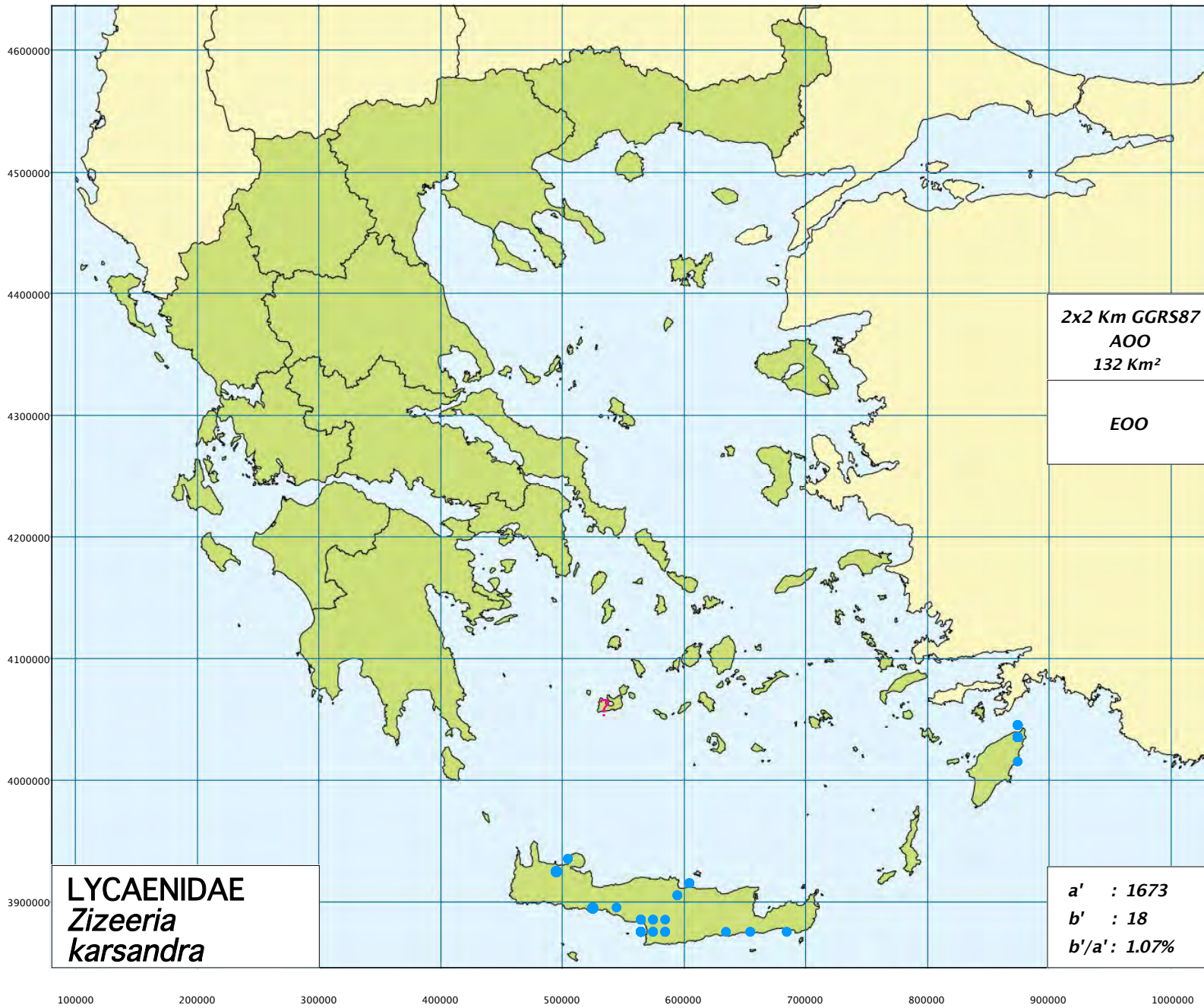


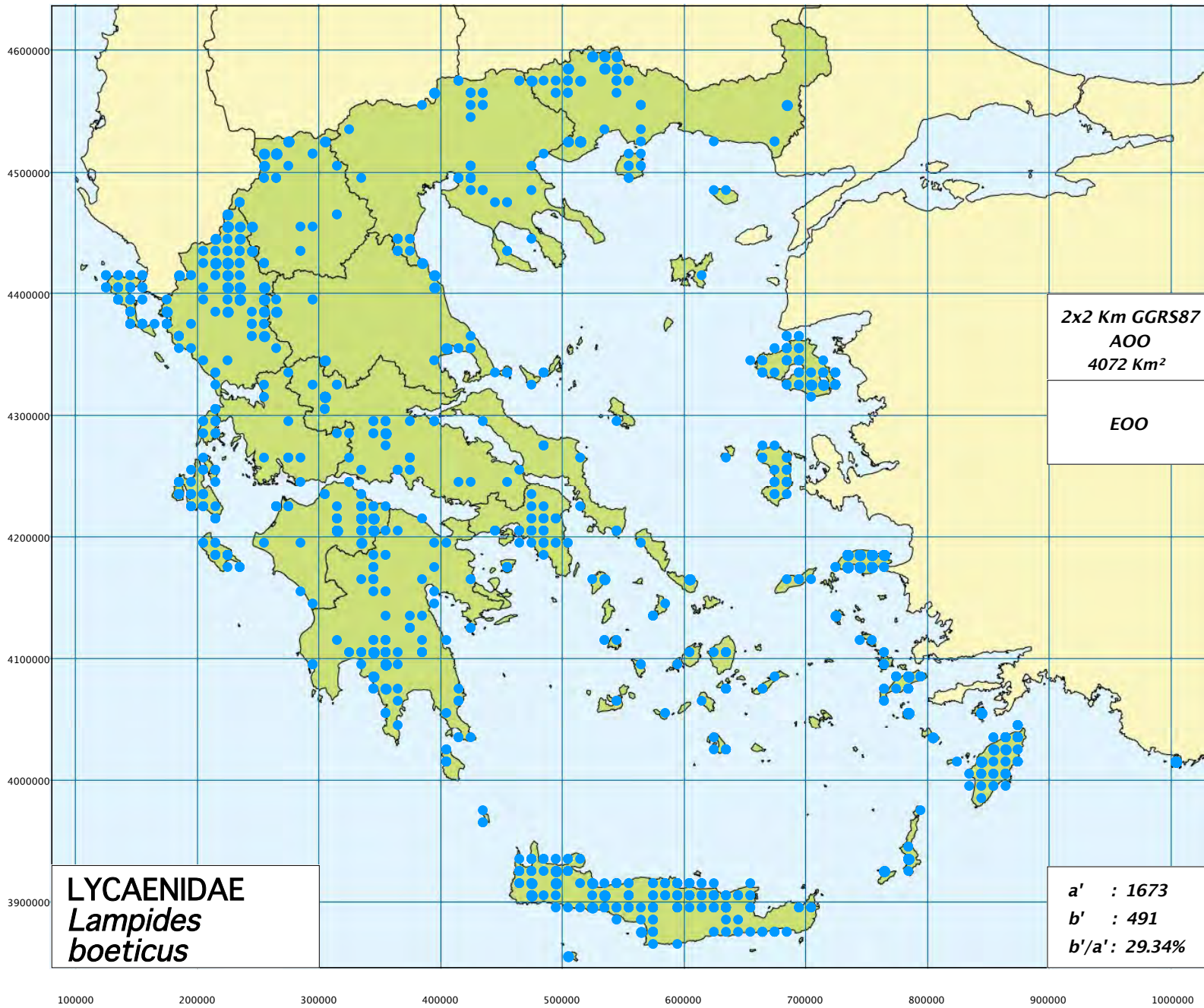




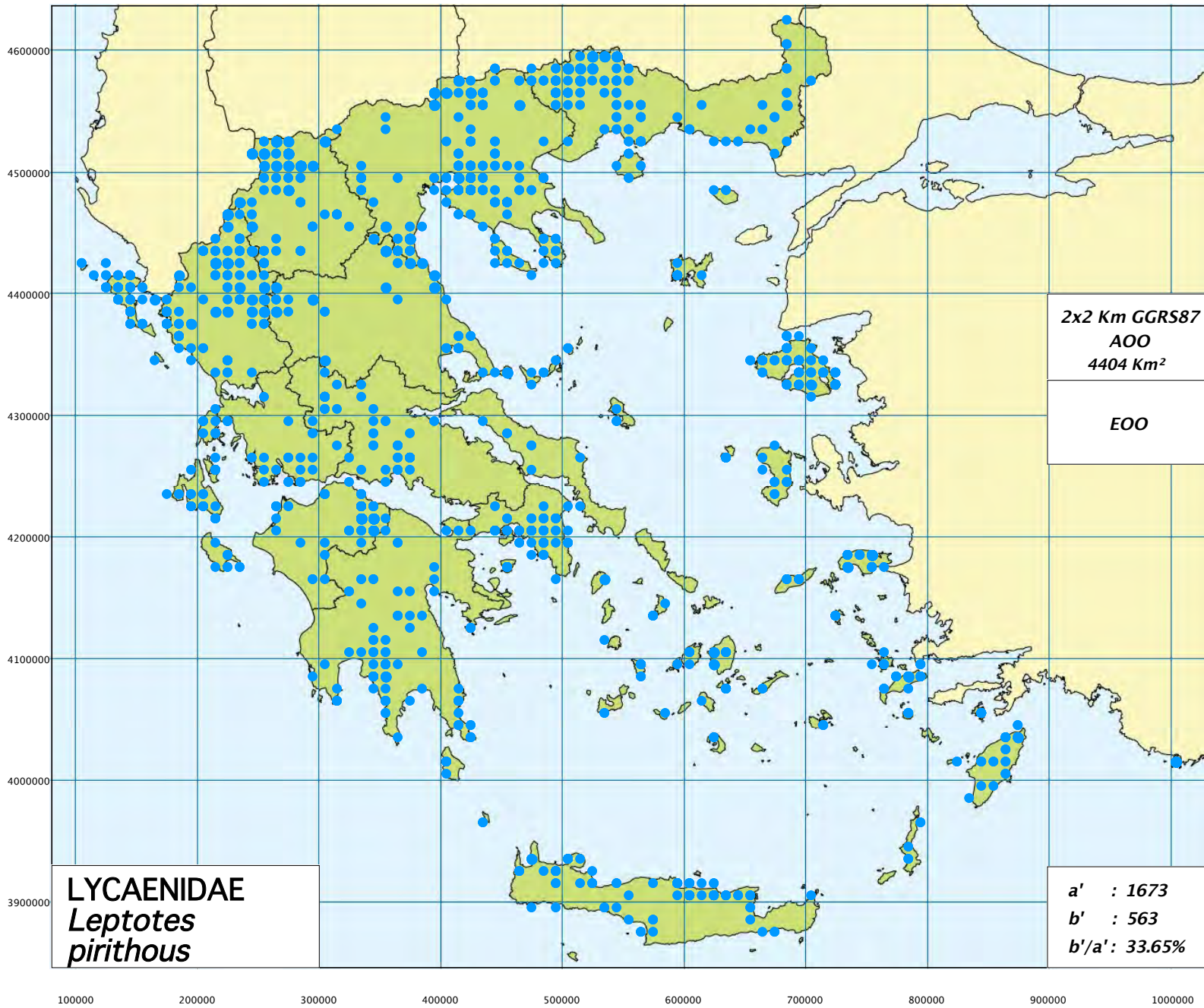


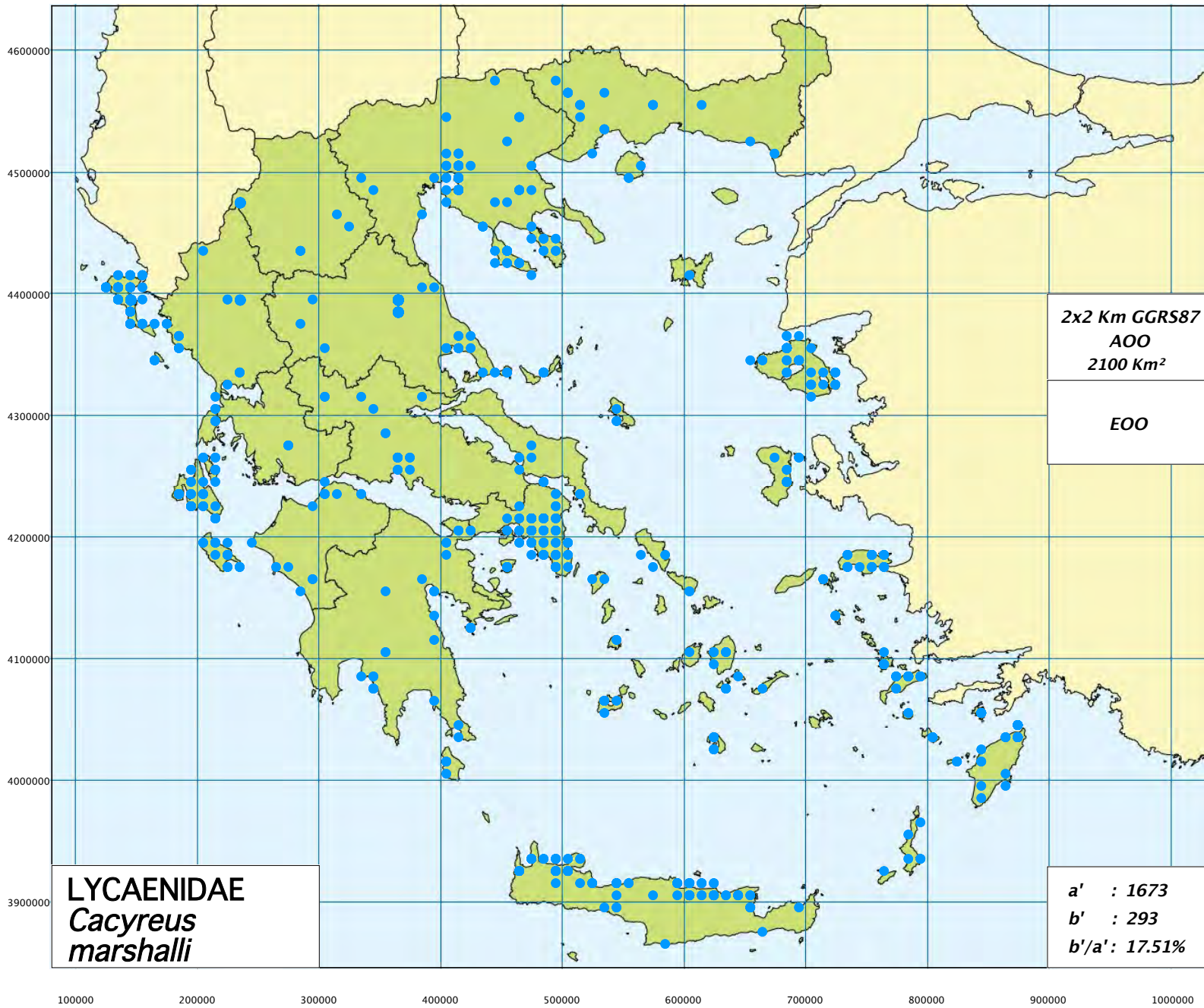




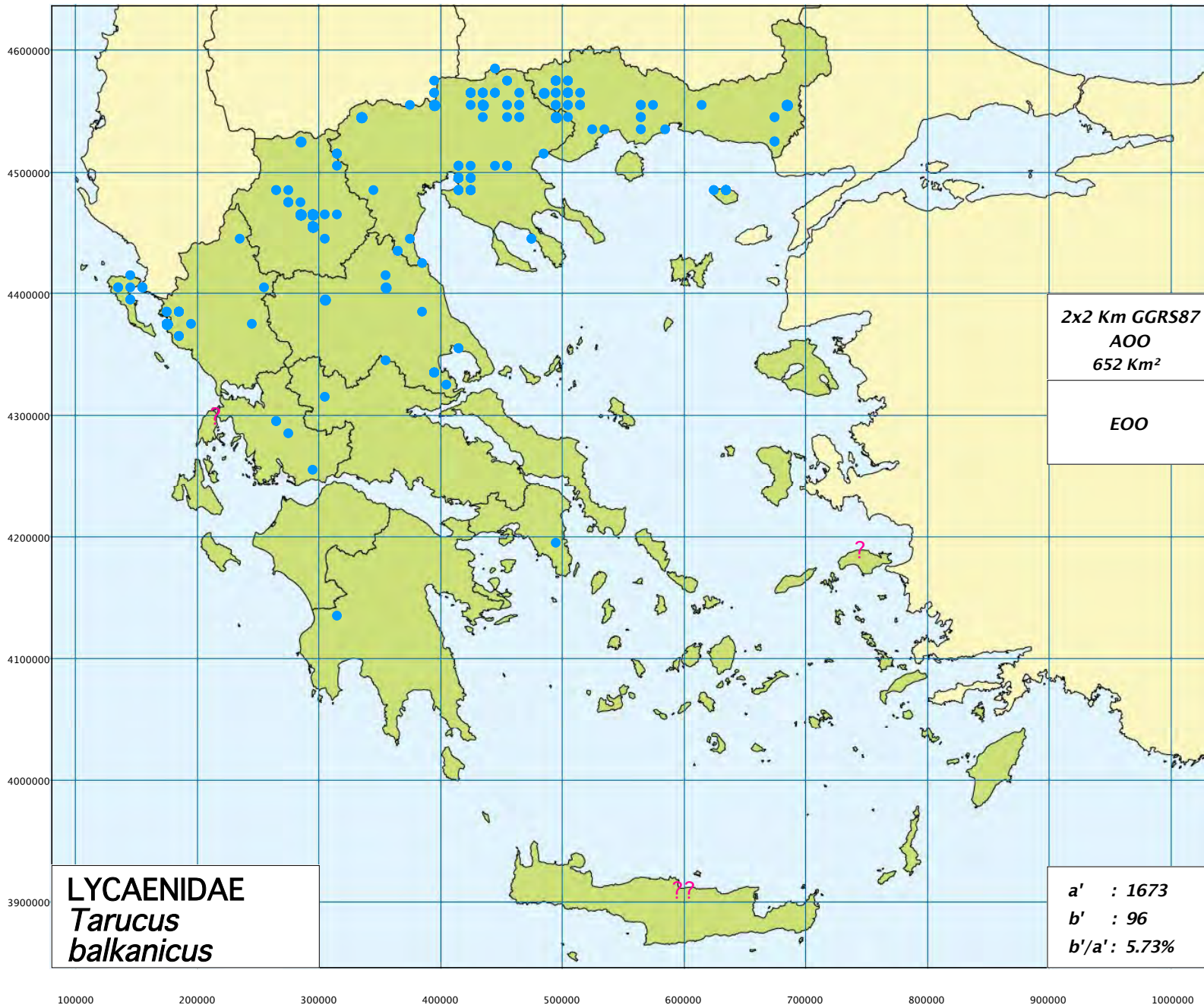


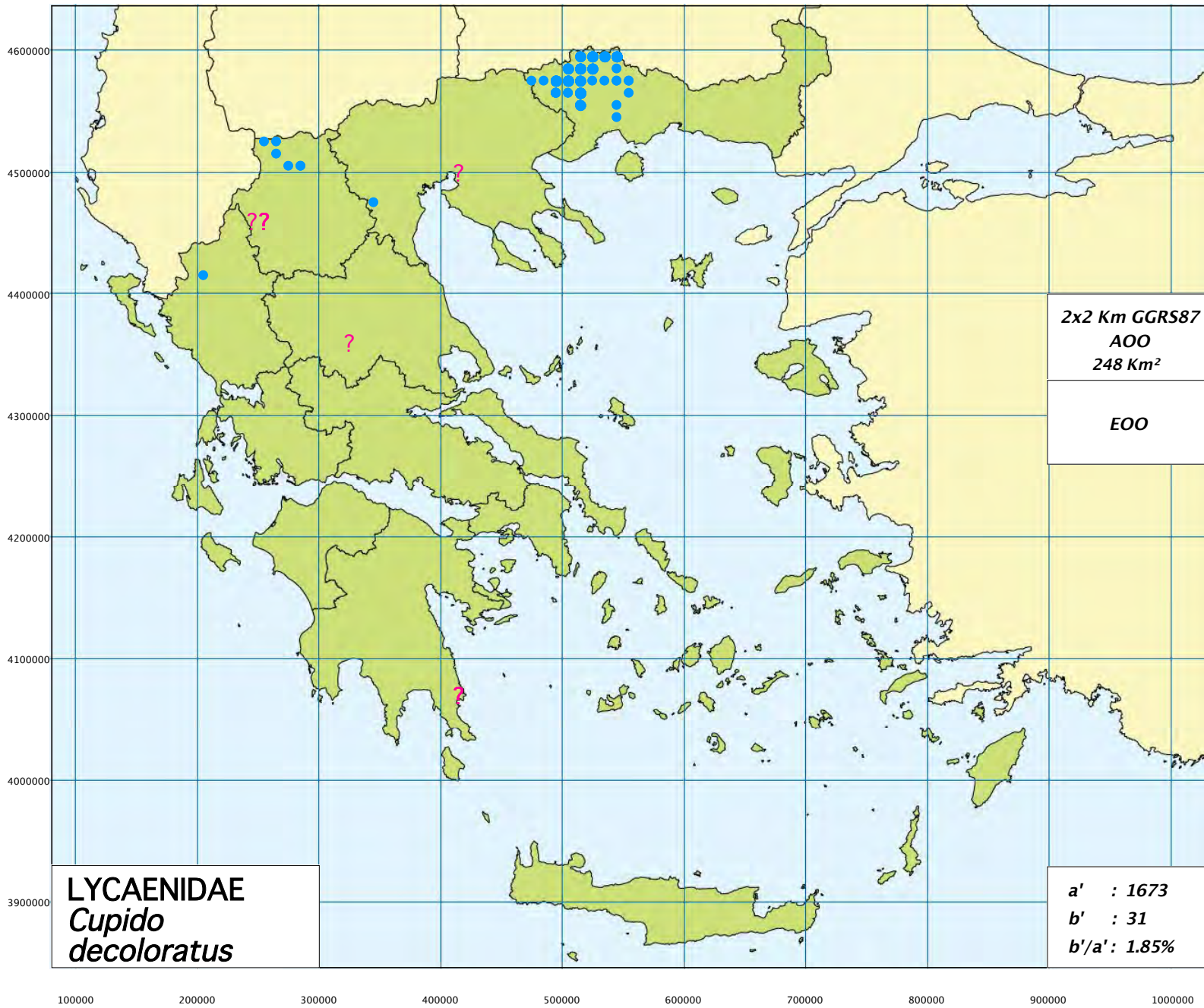




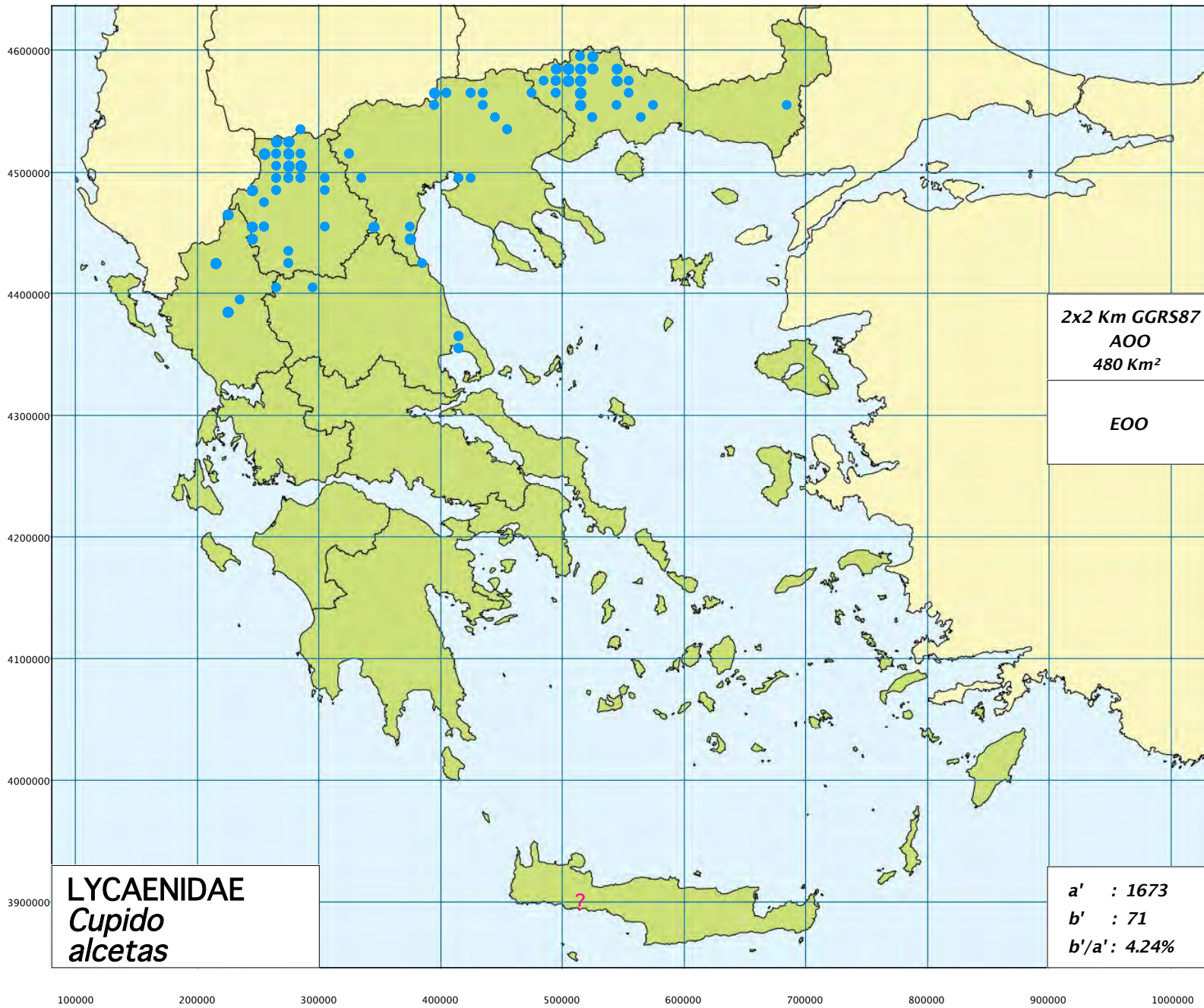


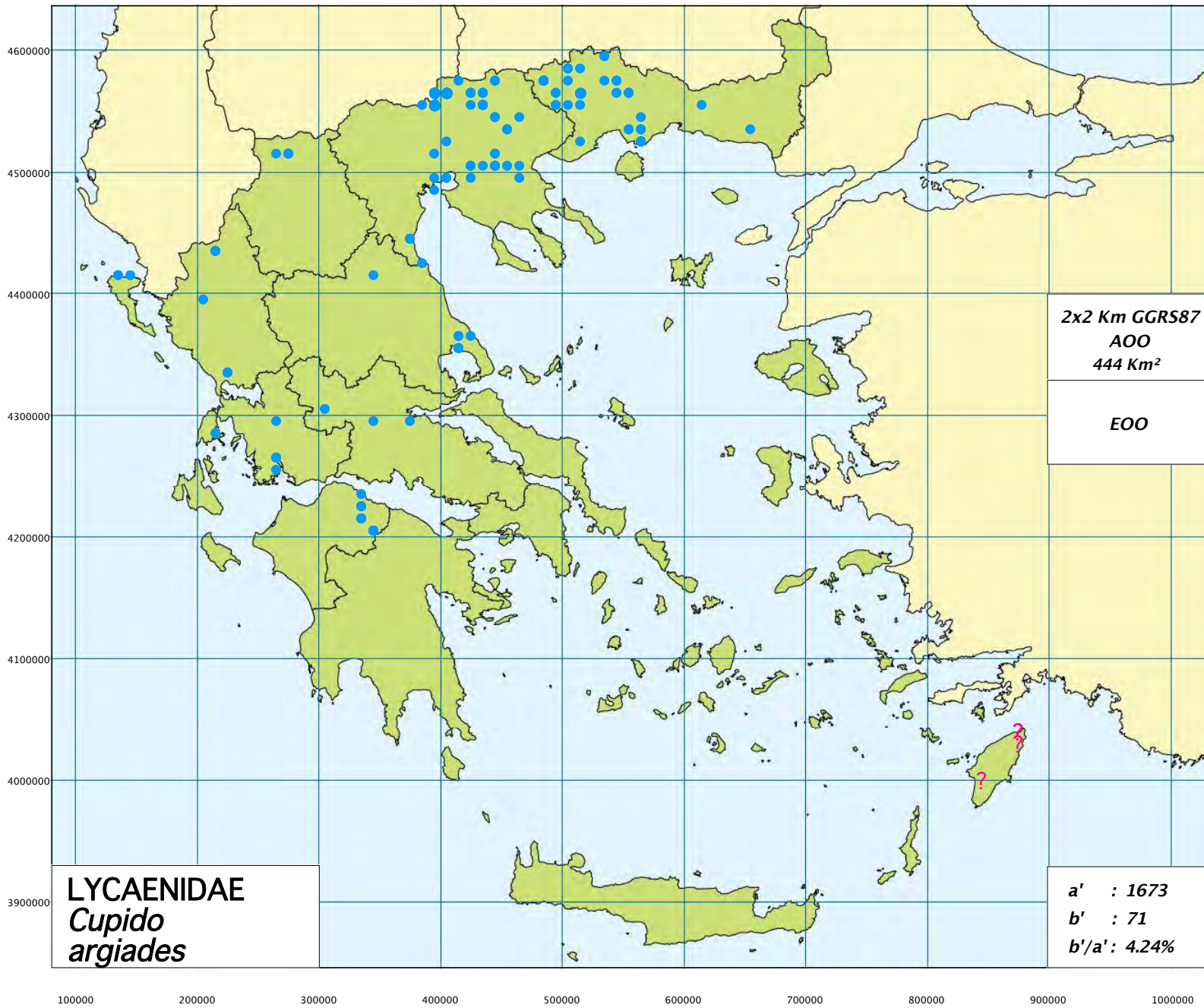




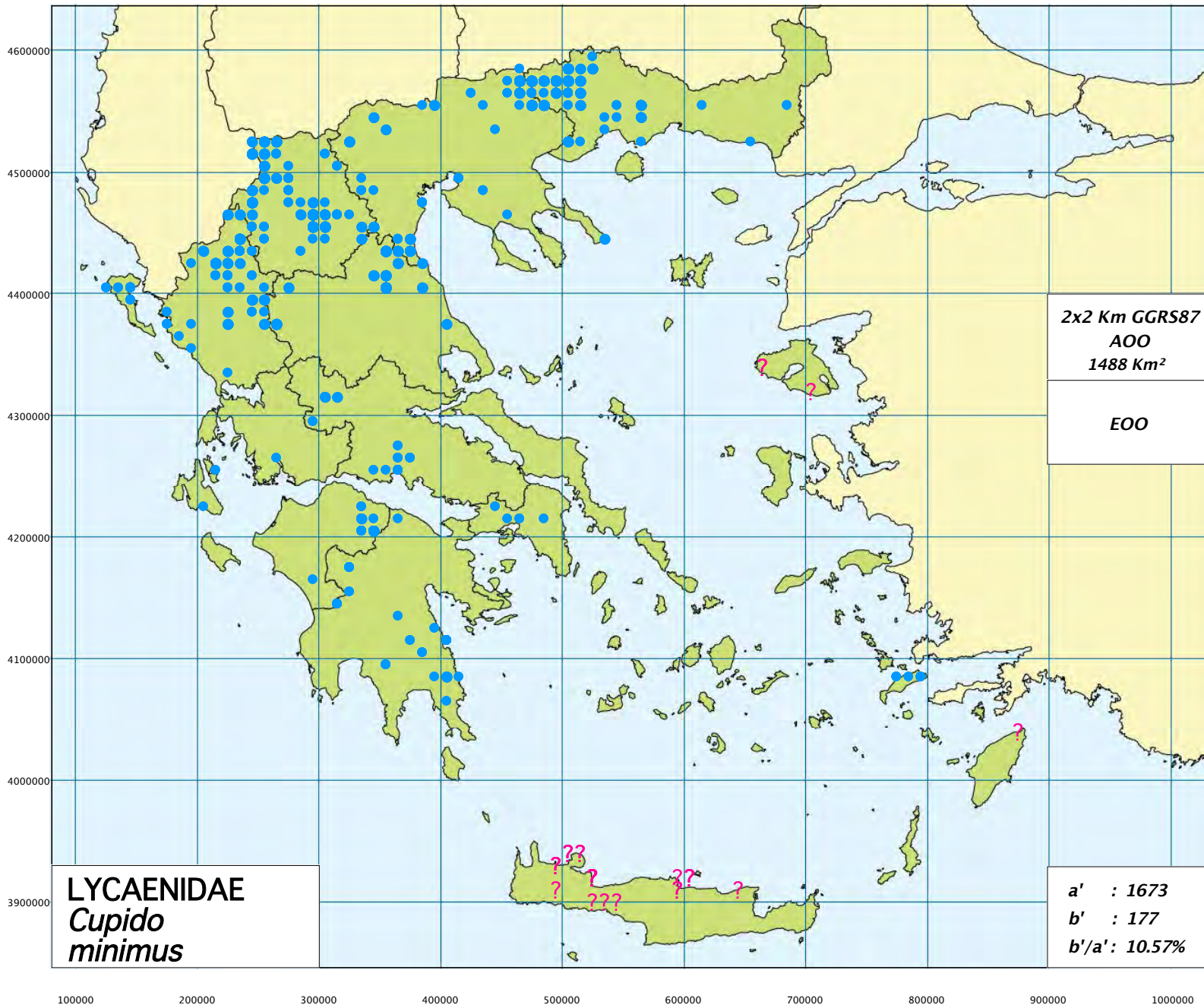


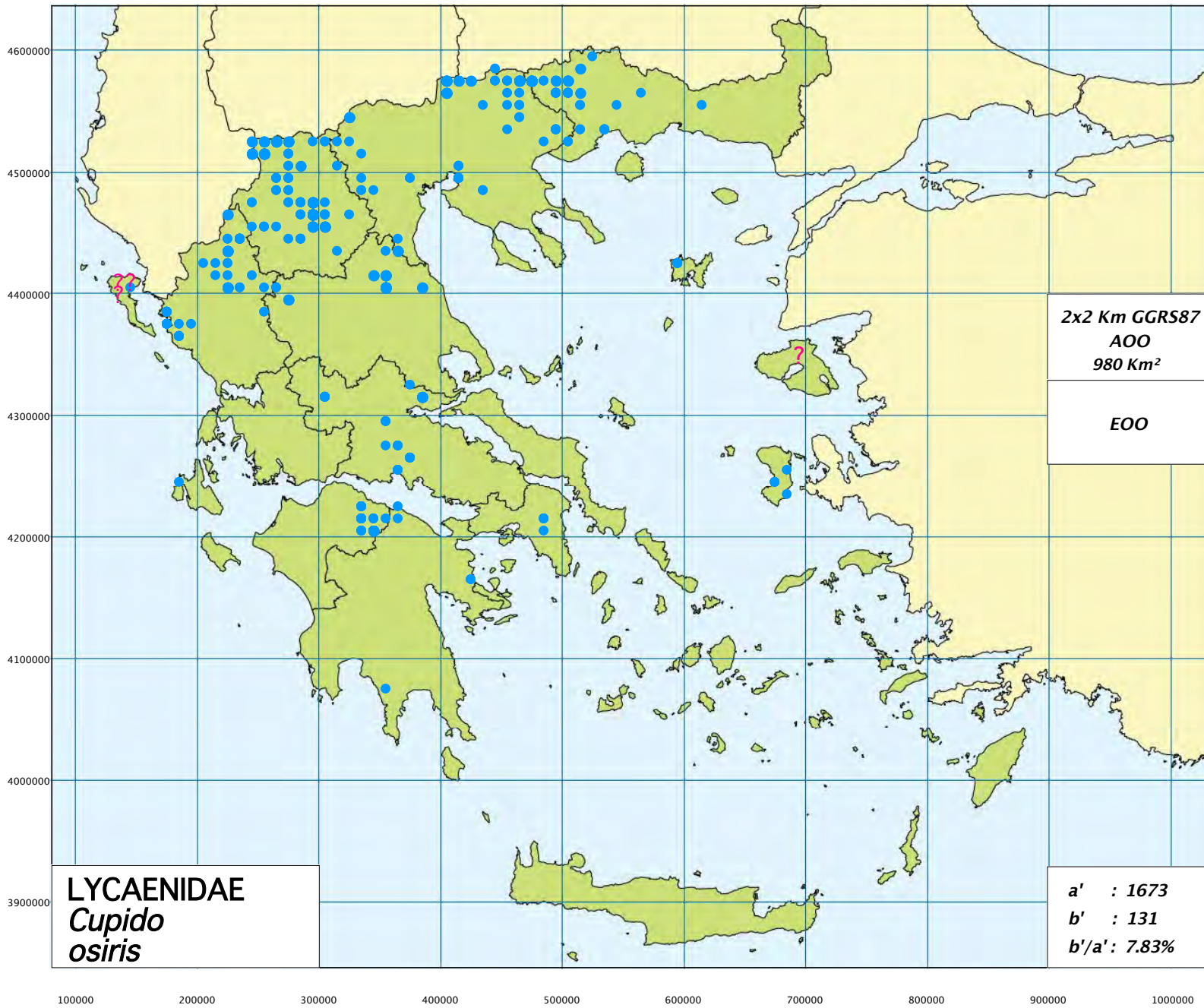




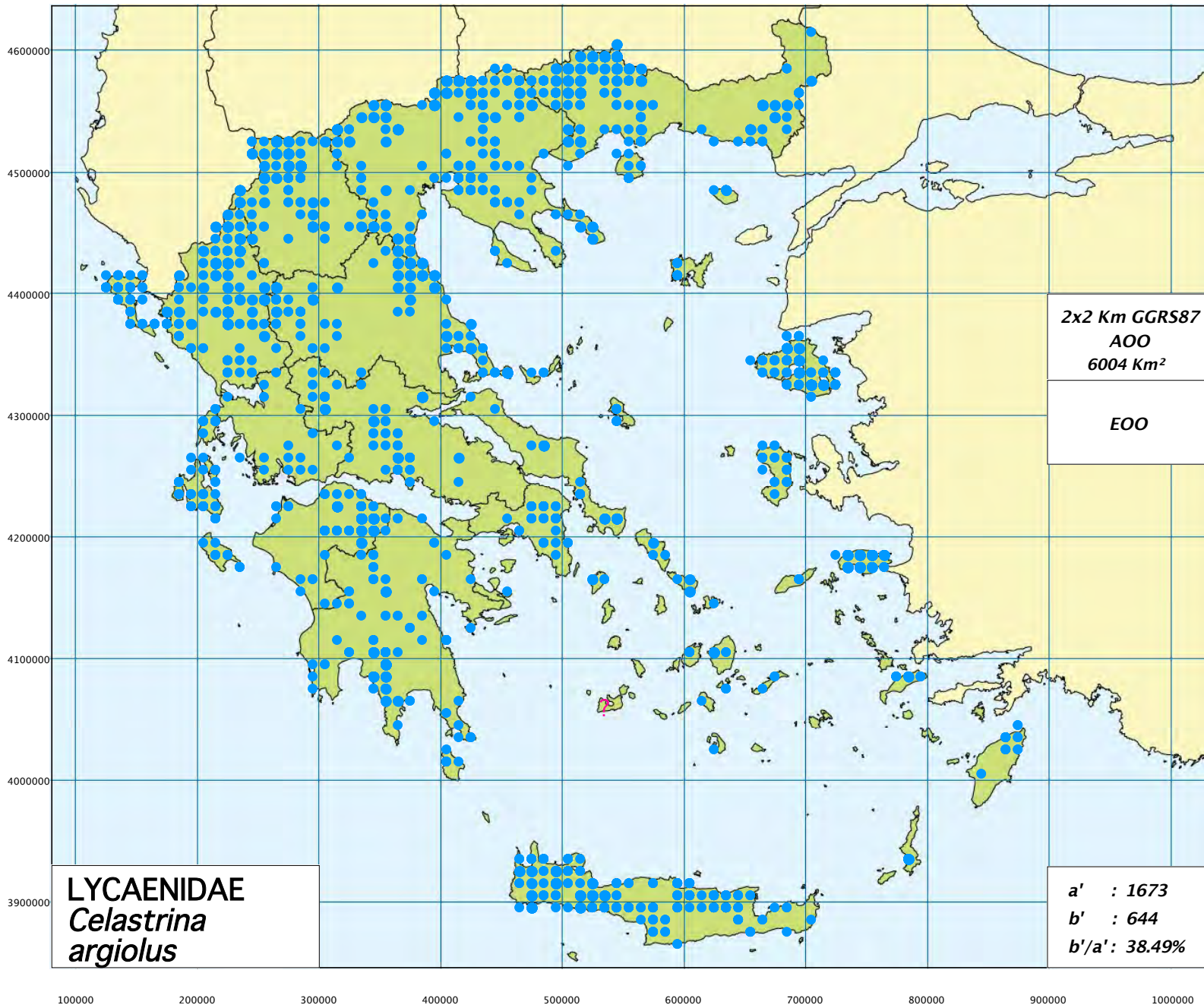


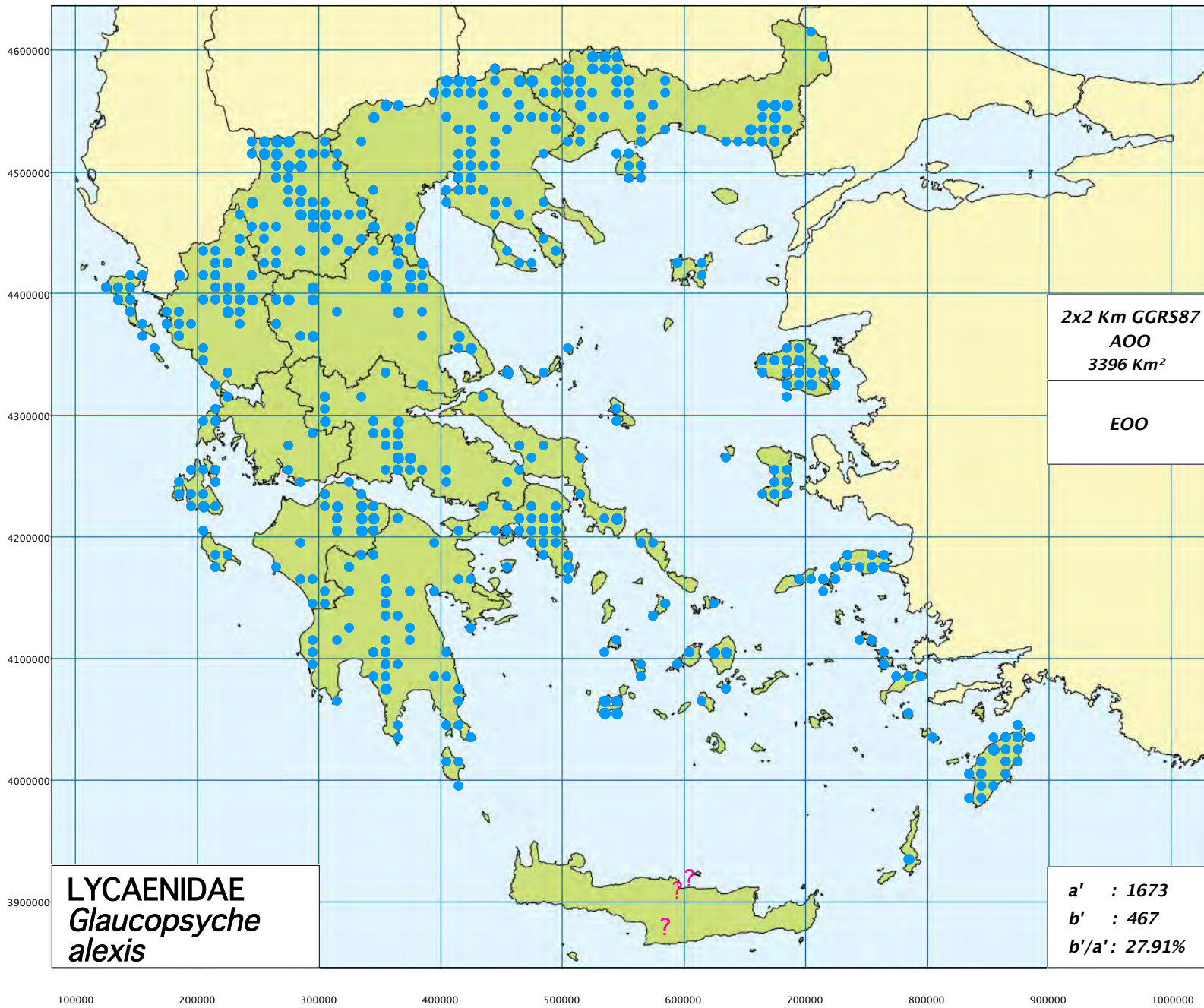




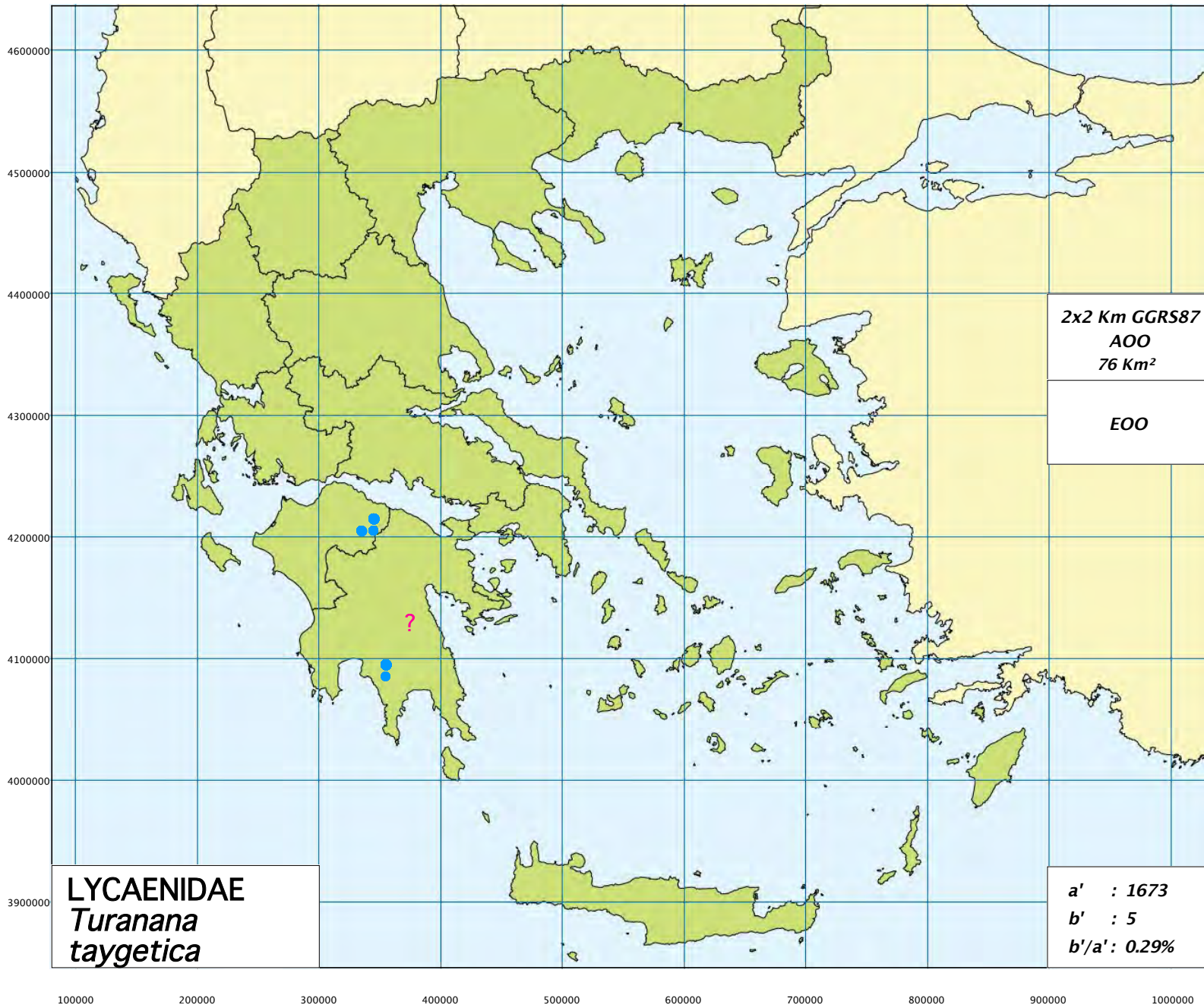


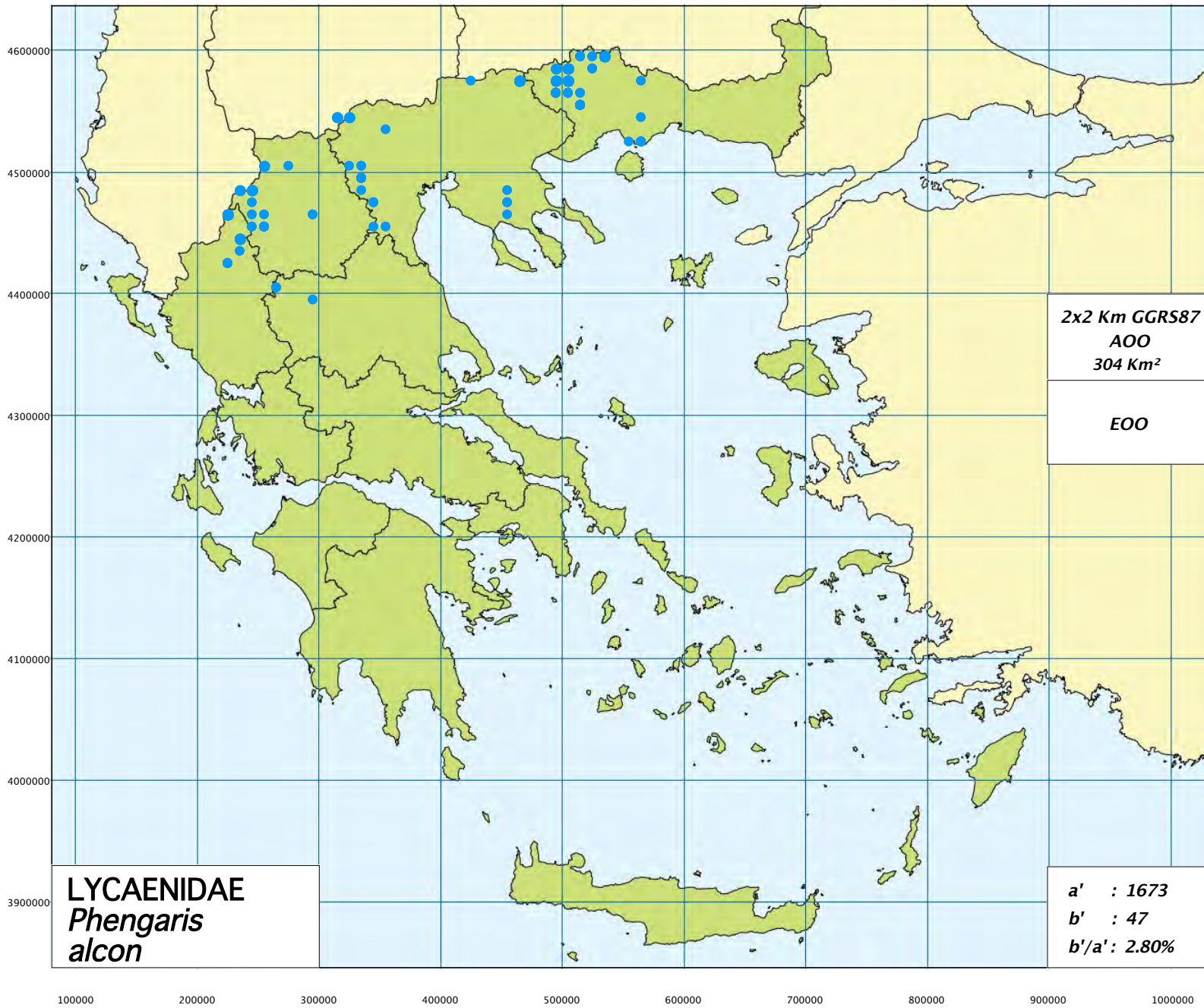




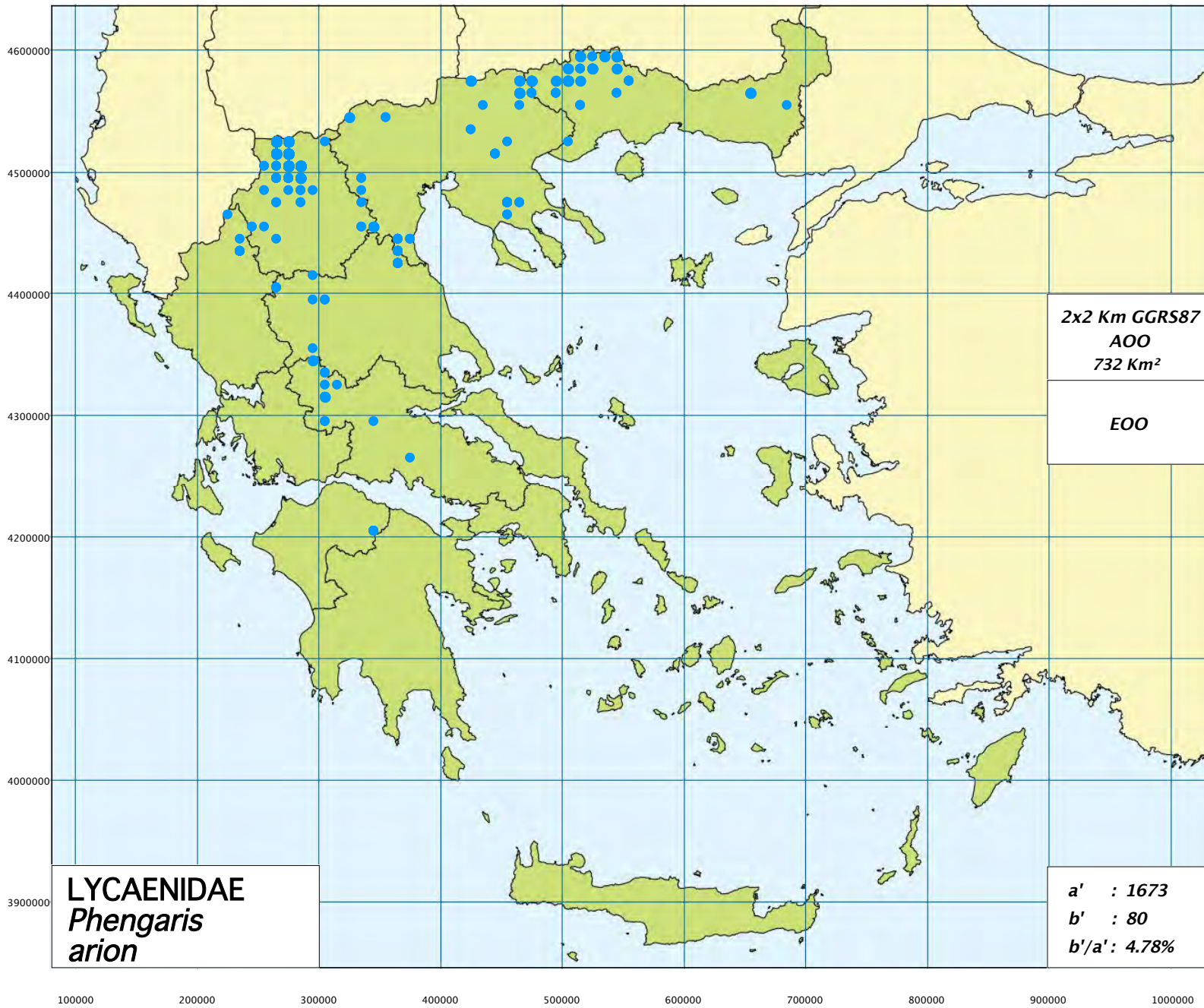


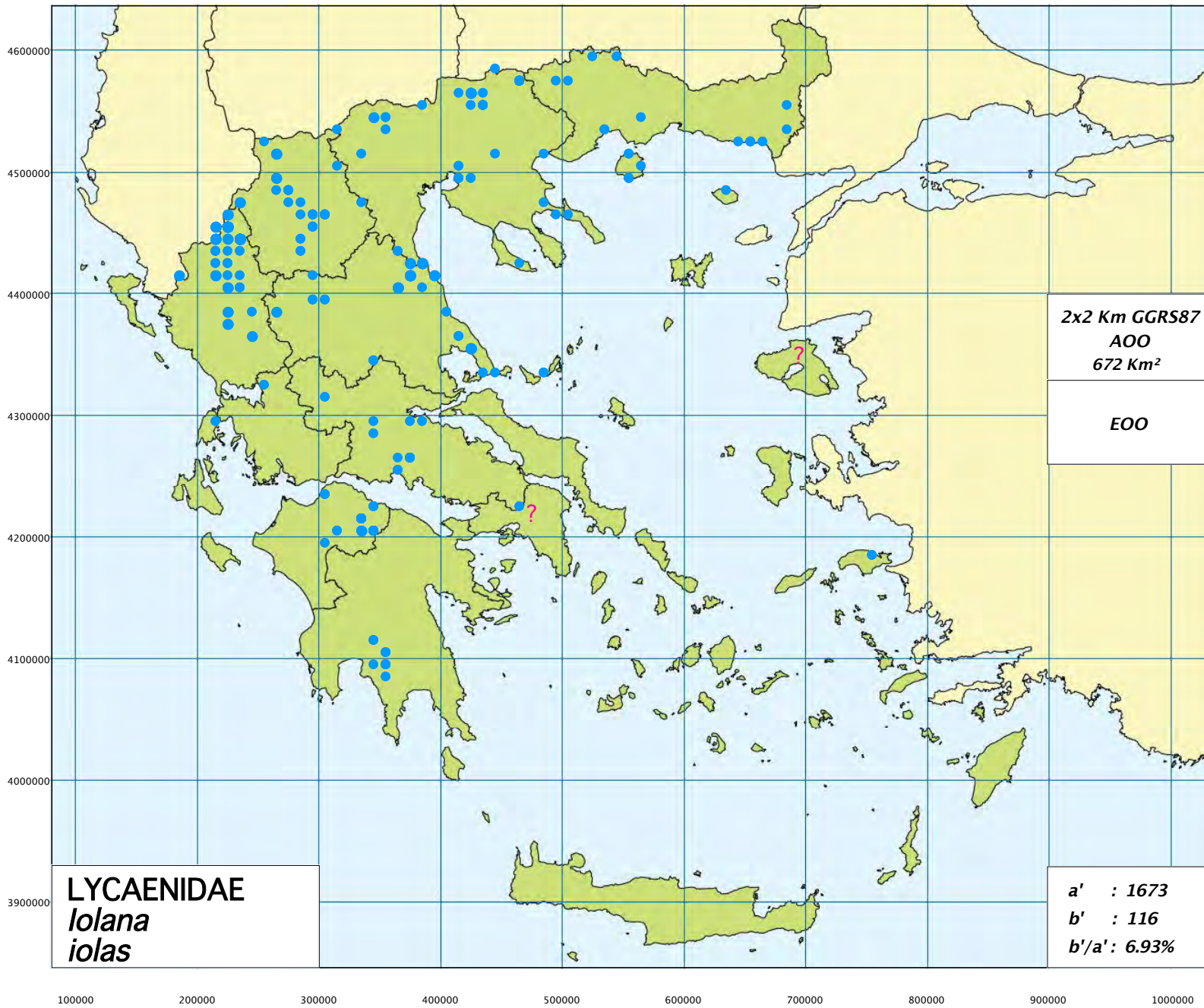




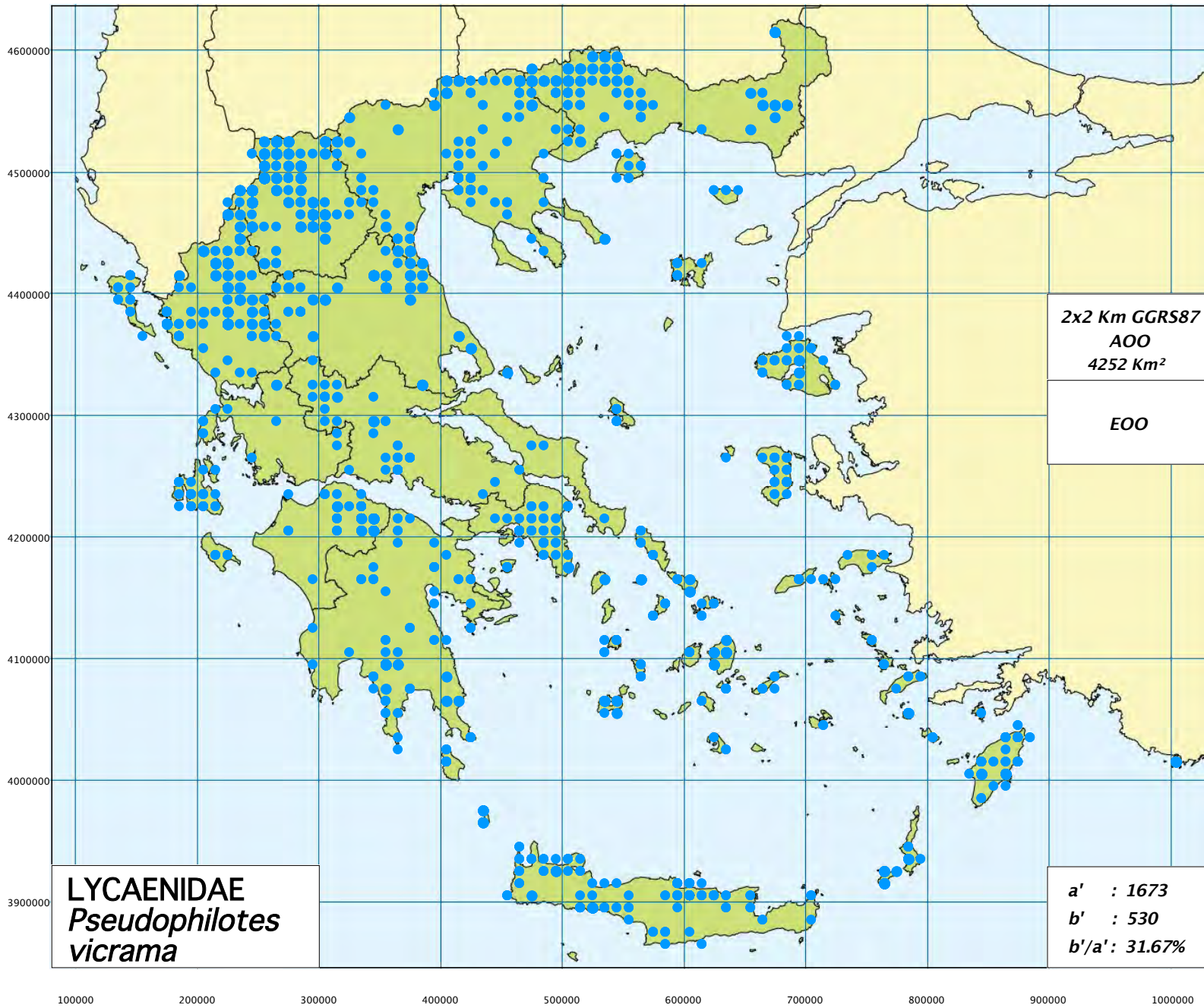






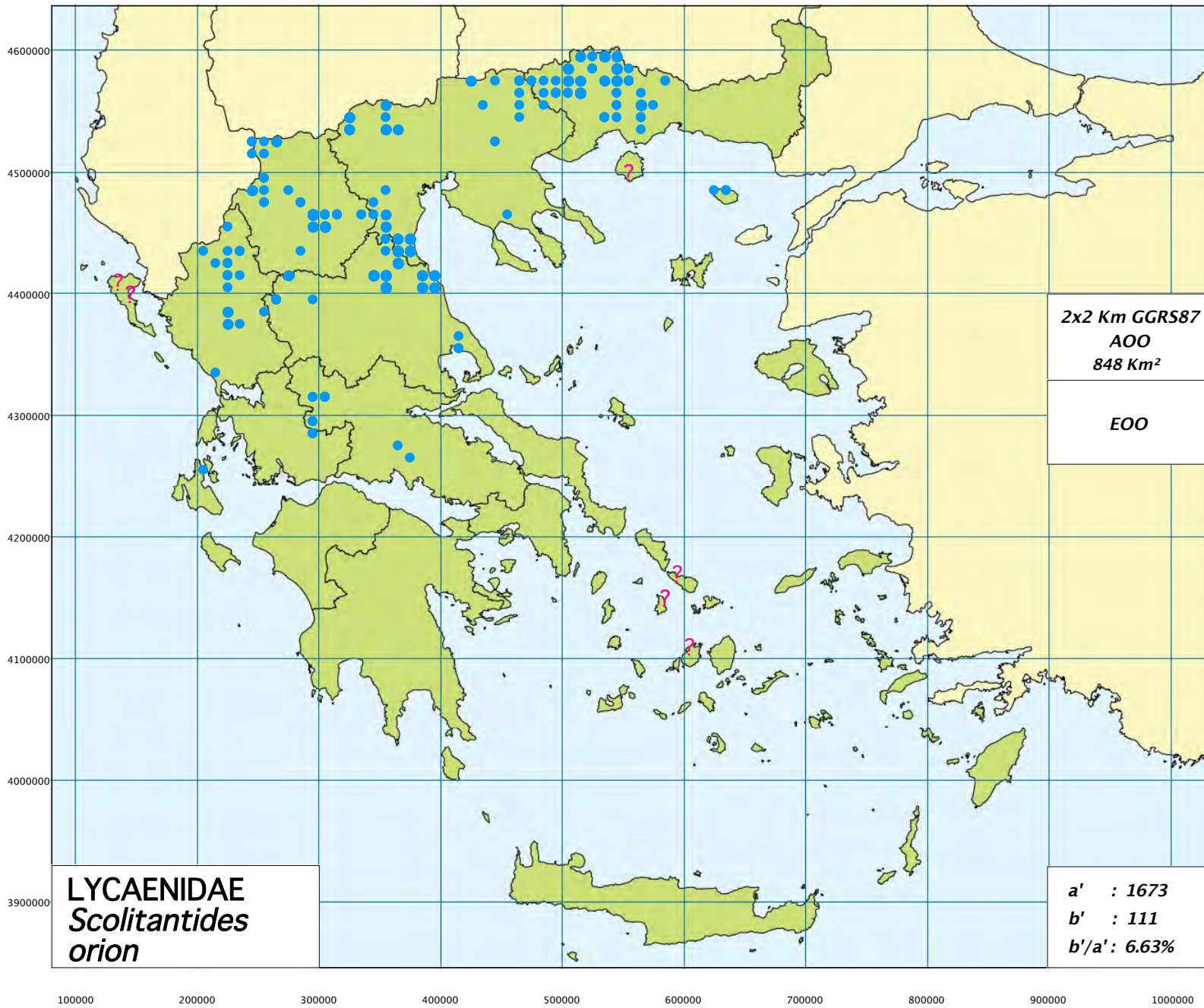


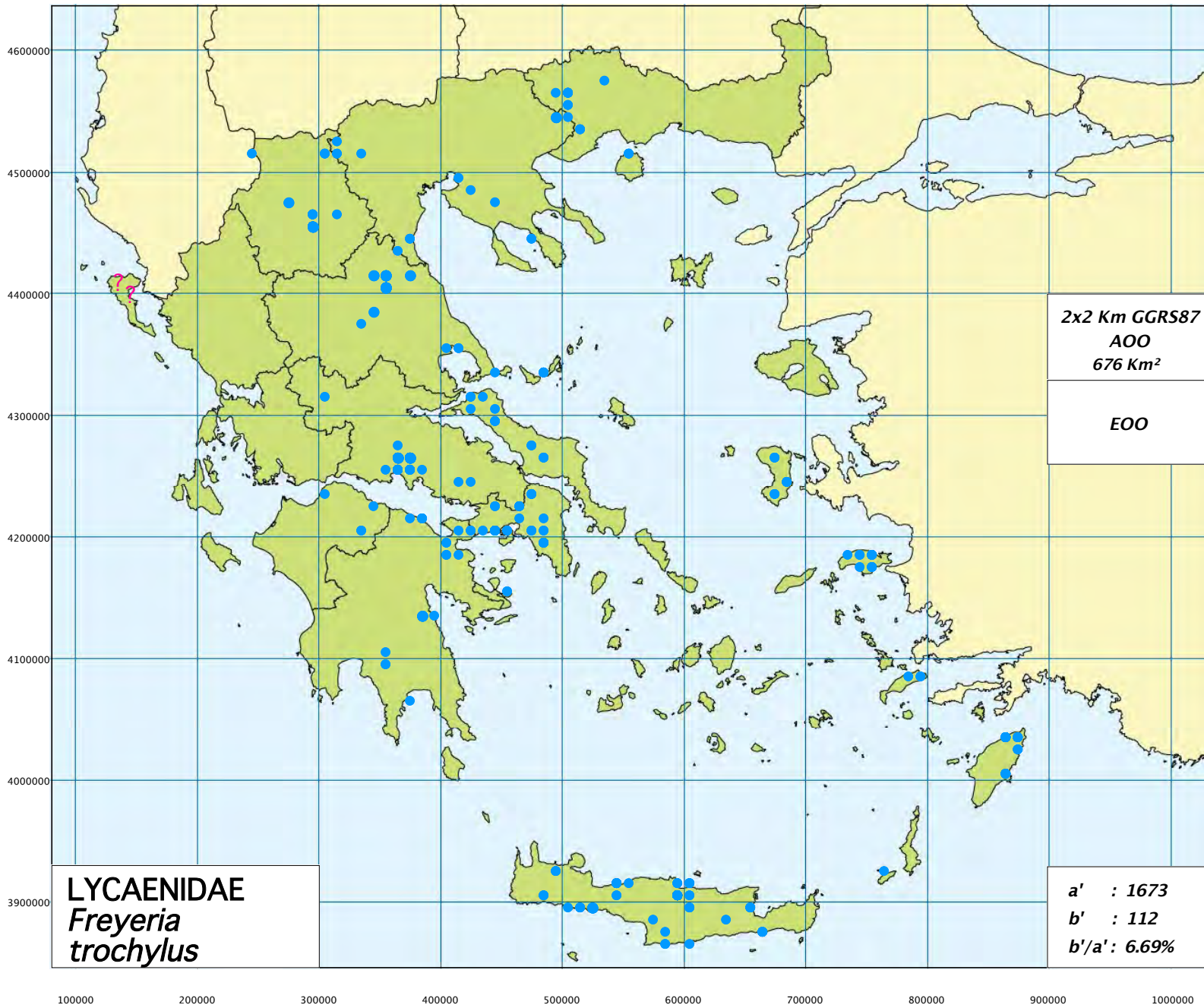












**LYCAENIDAE**  
*Freyeria trochylus*

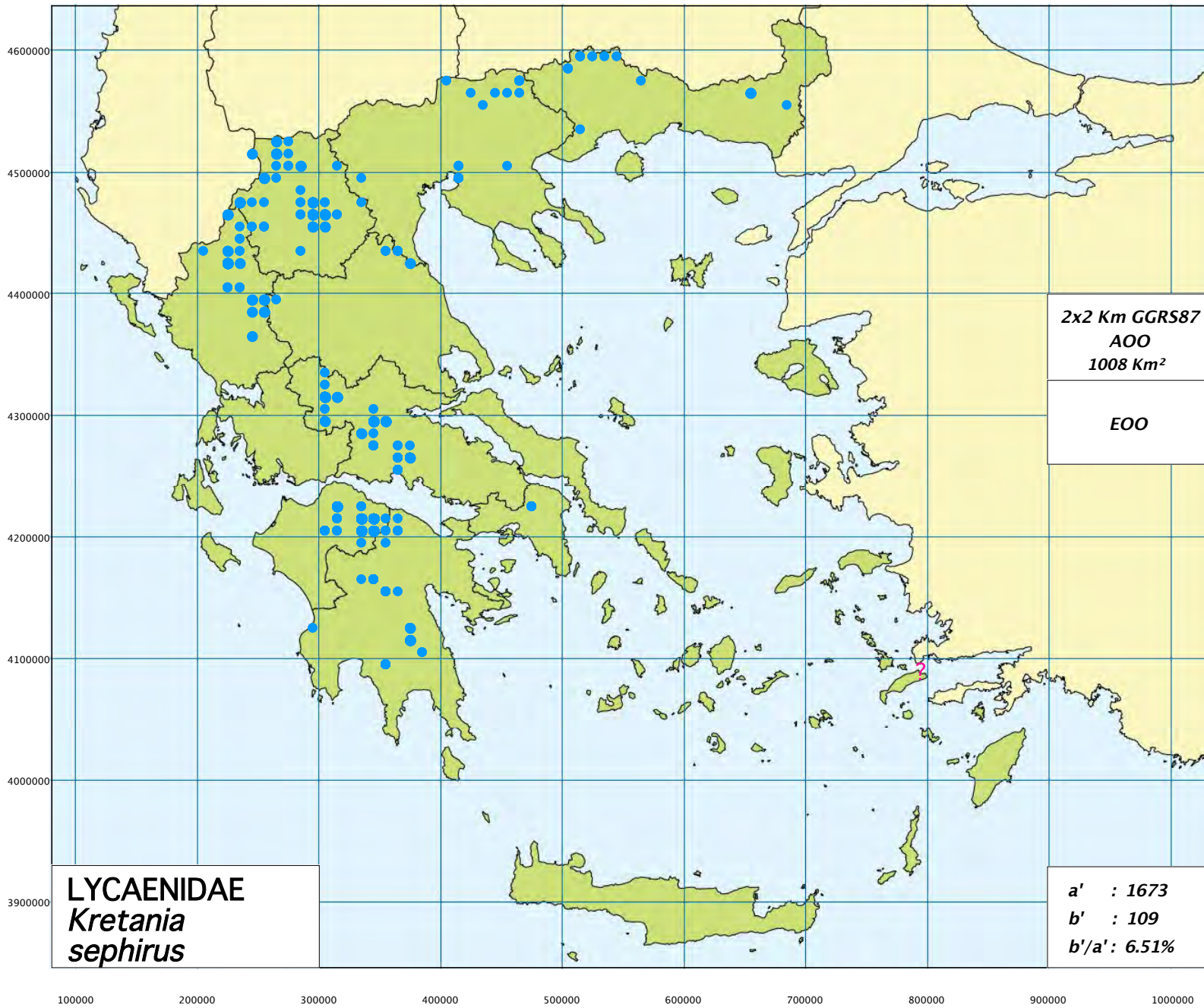
2x2 Km GGRS87  
 AOO  
 676 Km<sup>2</sup>

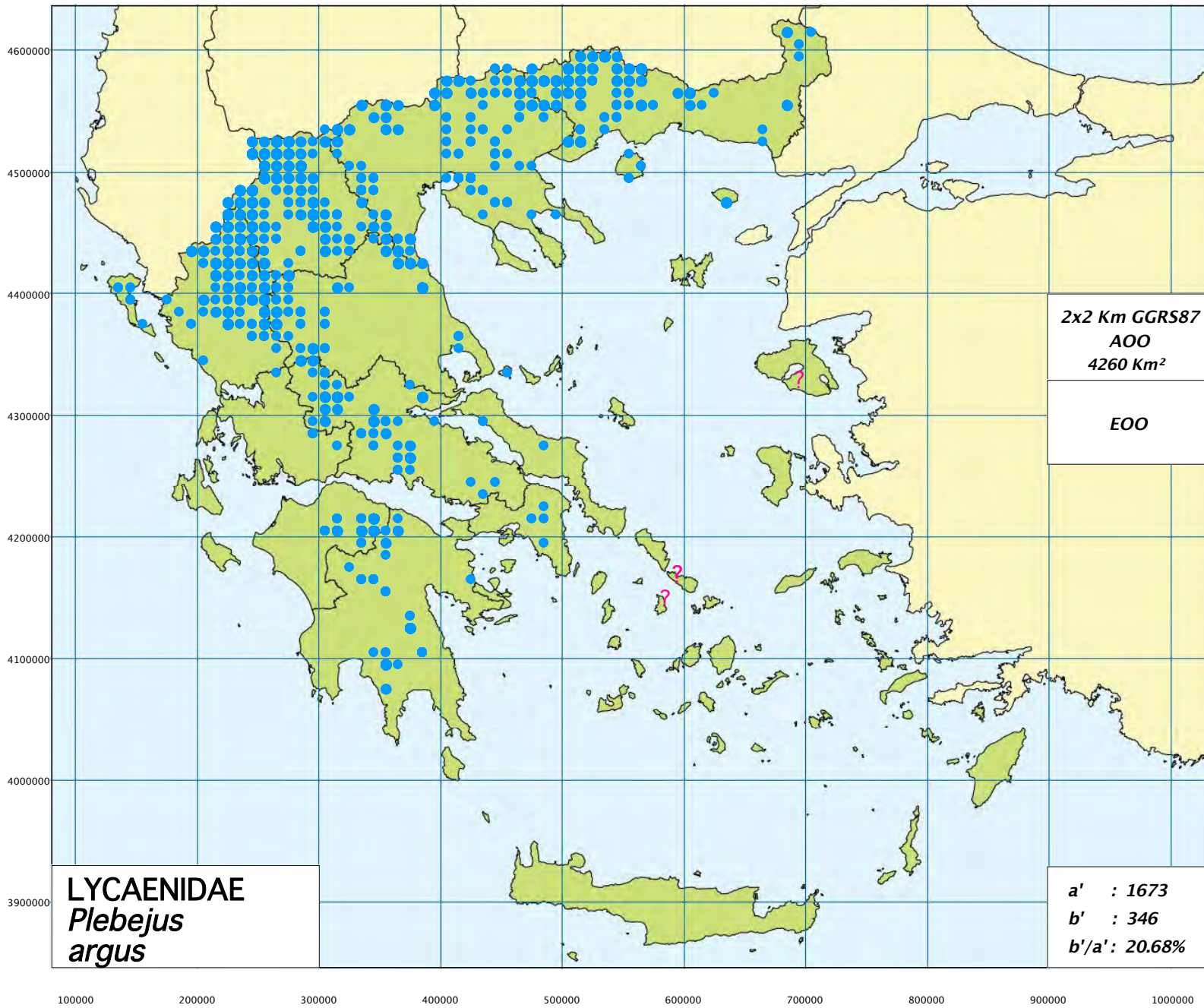
EOO

a' : 1673  
 b' : 112  
 b'/a' : 6.69%

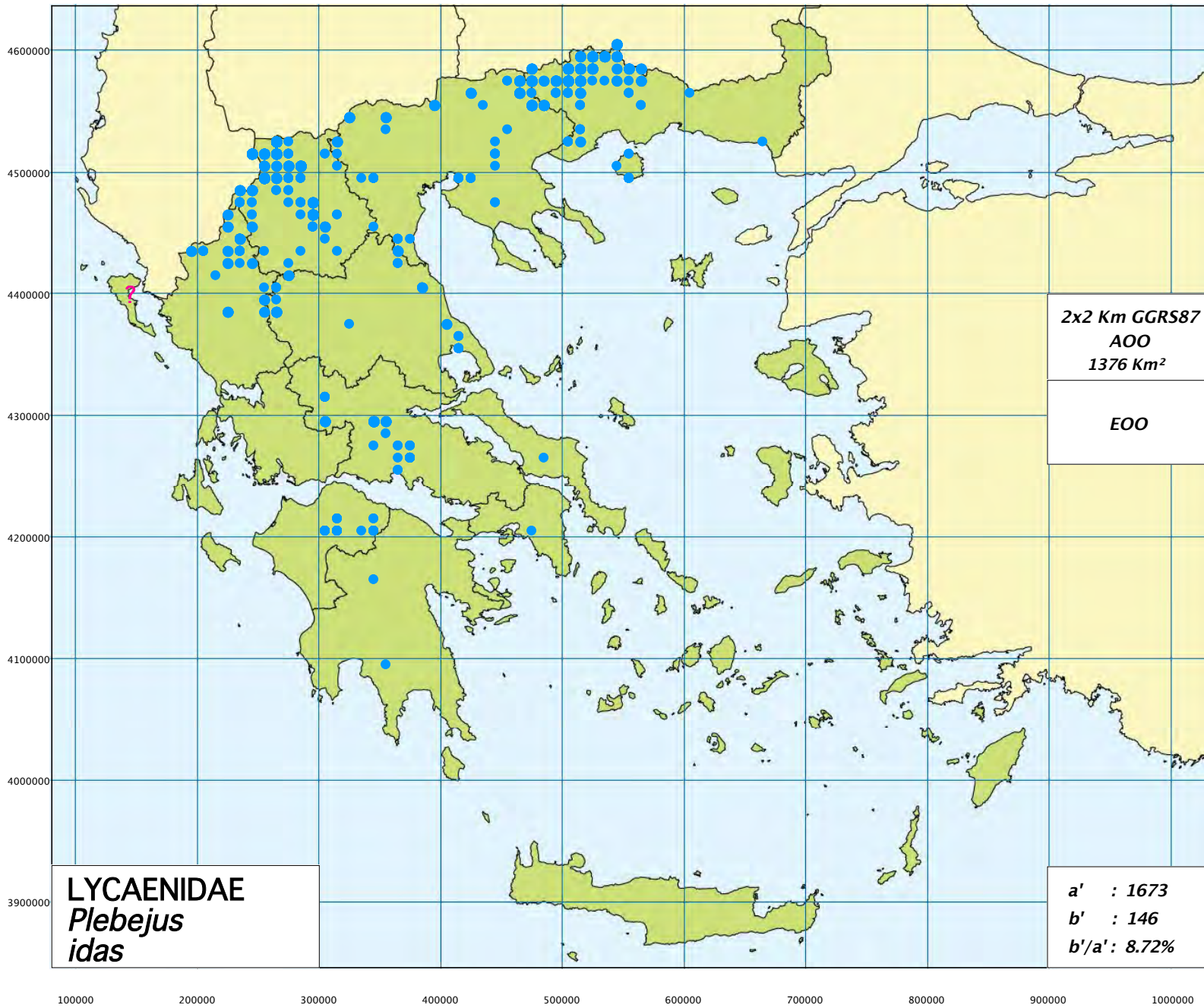
100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000

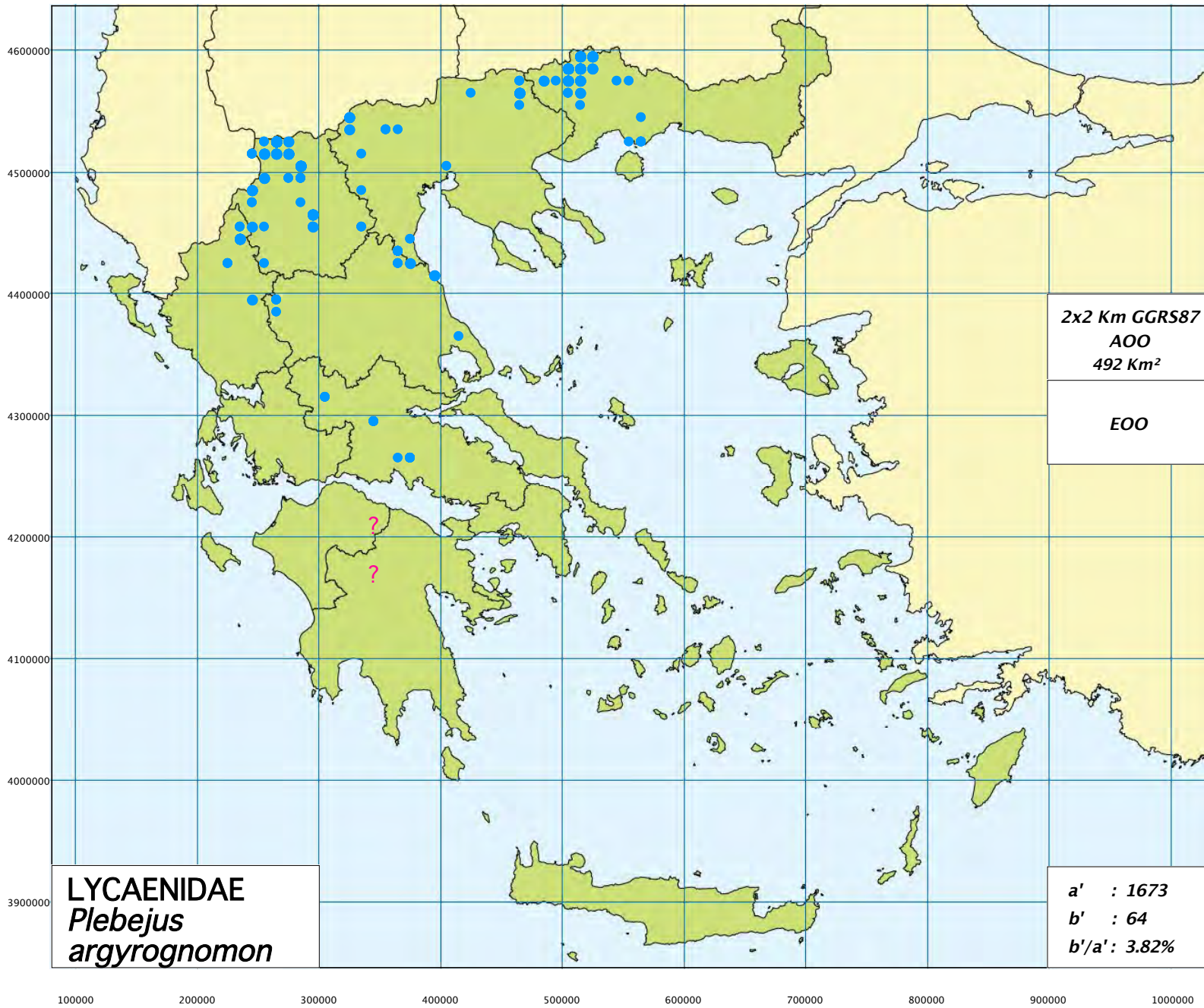




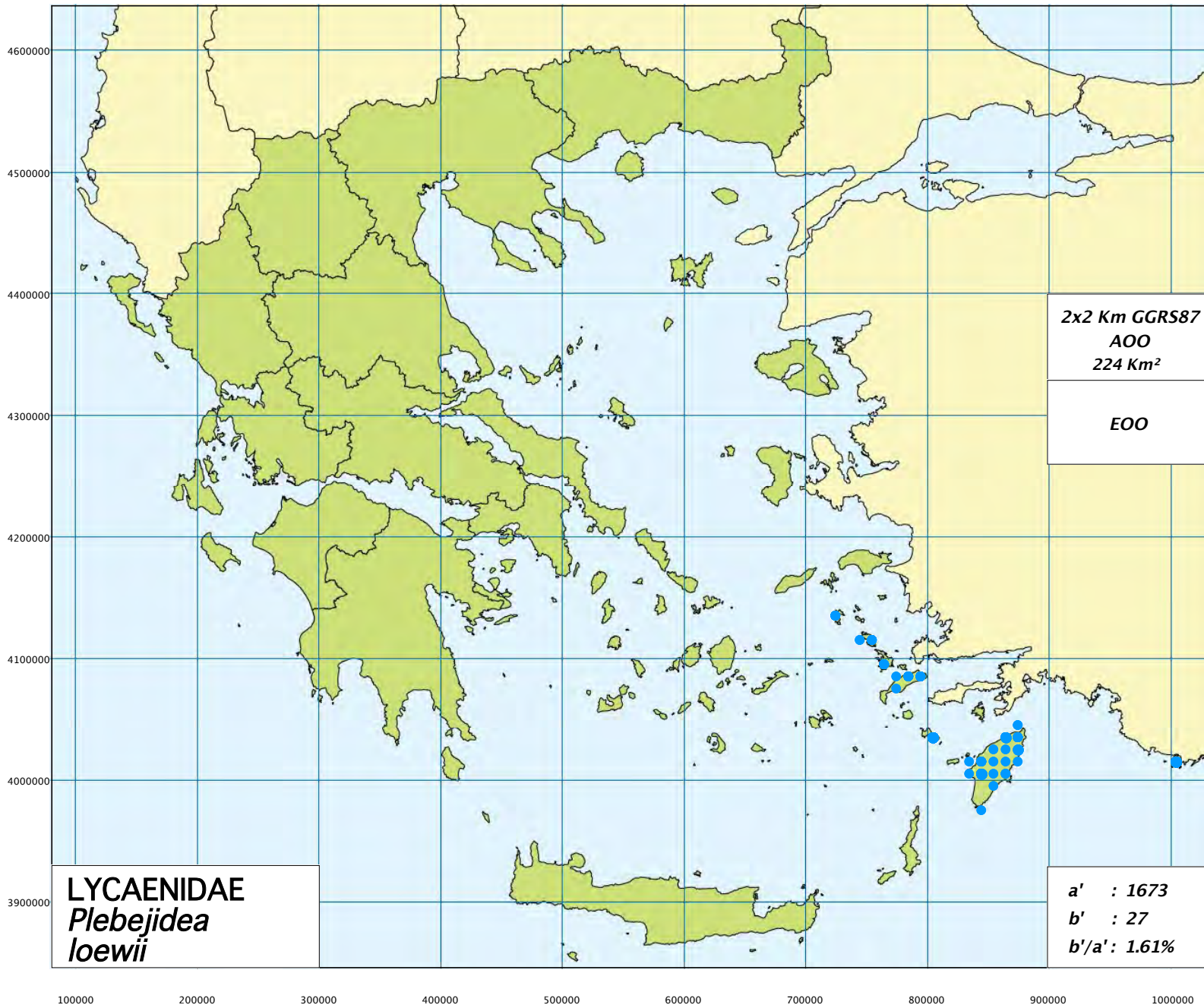


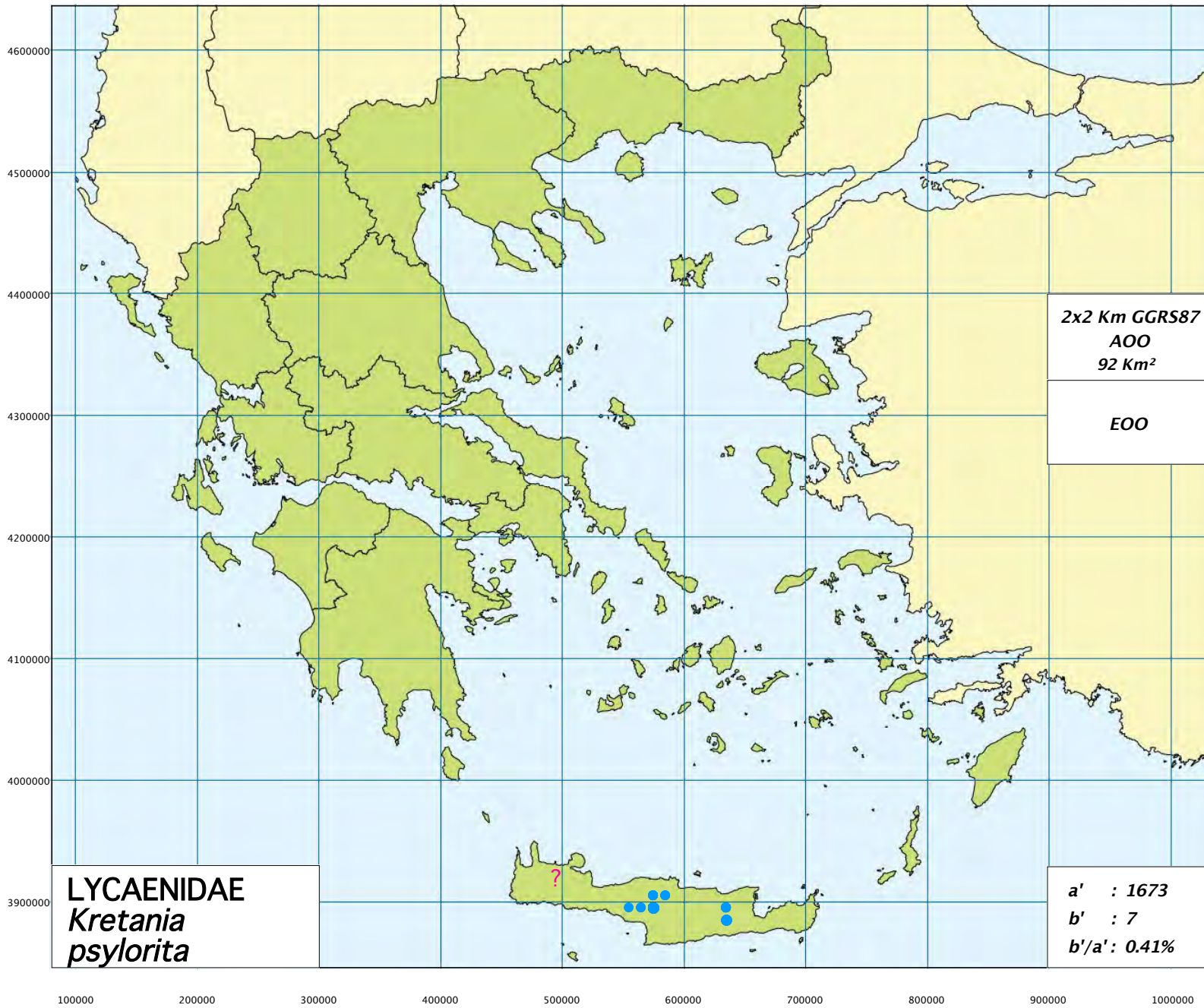




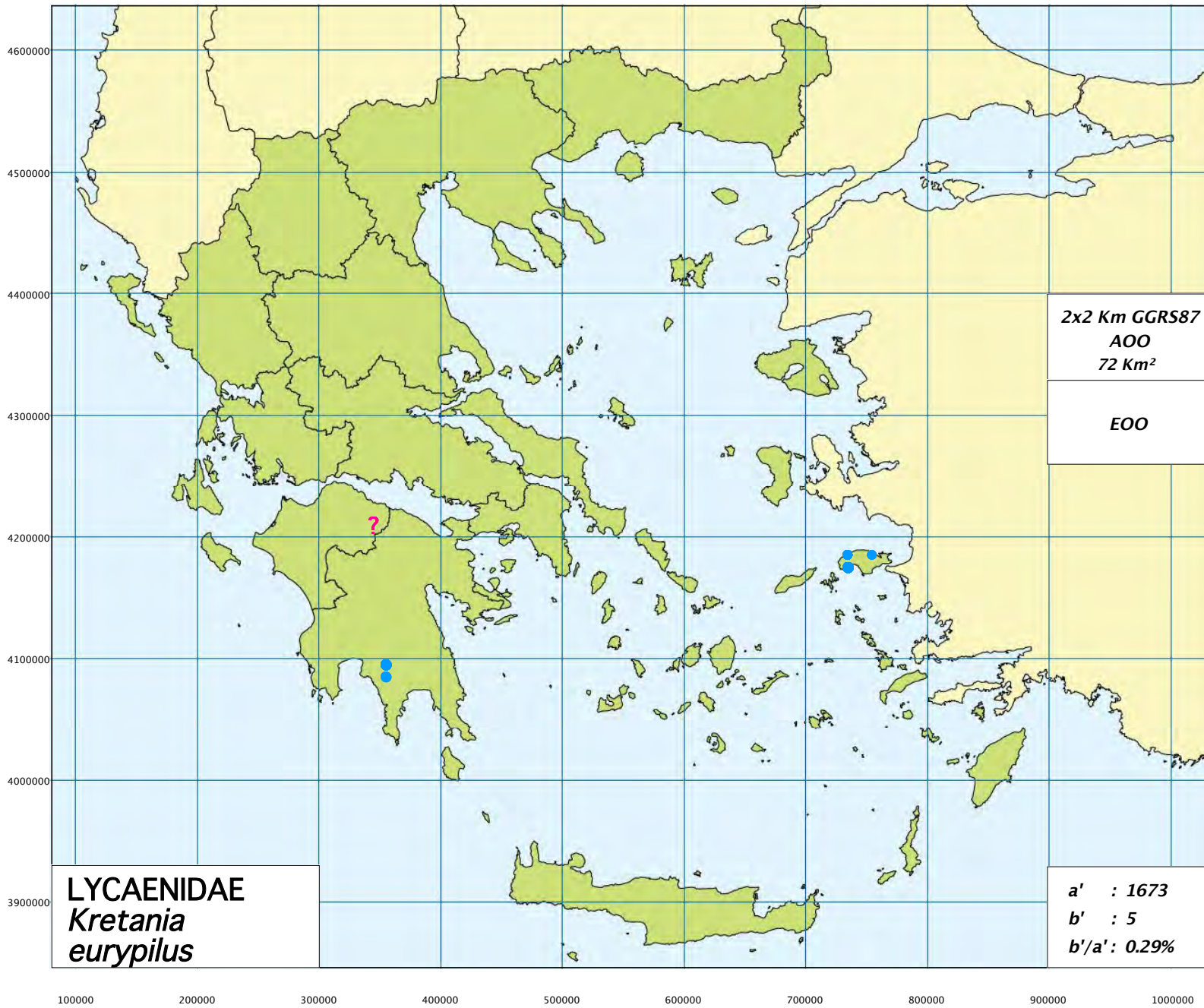








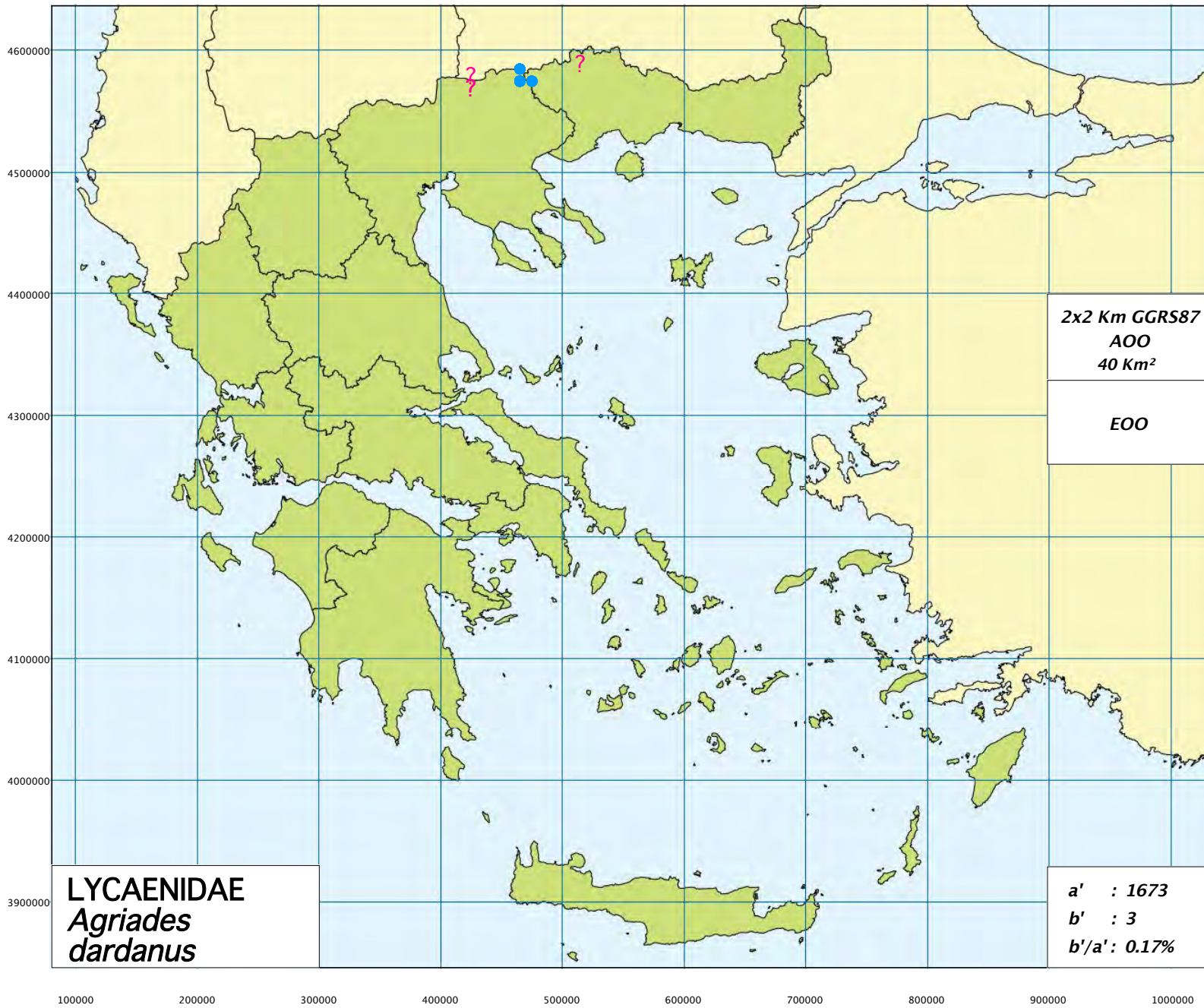




**LYCAENIDAE**  
*Kretania*  
*eurypilus*

*a'* : 1673  
*b'* : 5  
*b'/a'* : 0.29%

2x2 Km GGRS87  
 AOO  
 72 Km<sup>2</sup>  
 EOO



**LYCAENIDAE**  
*Agriades*  
*dardanus*

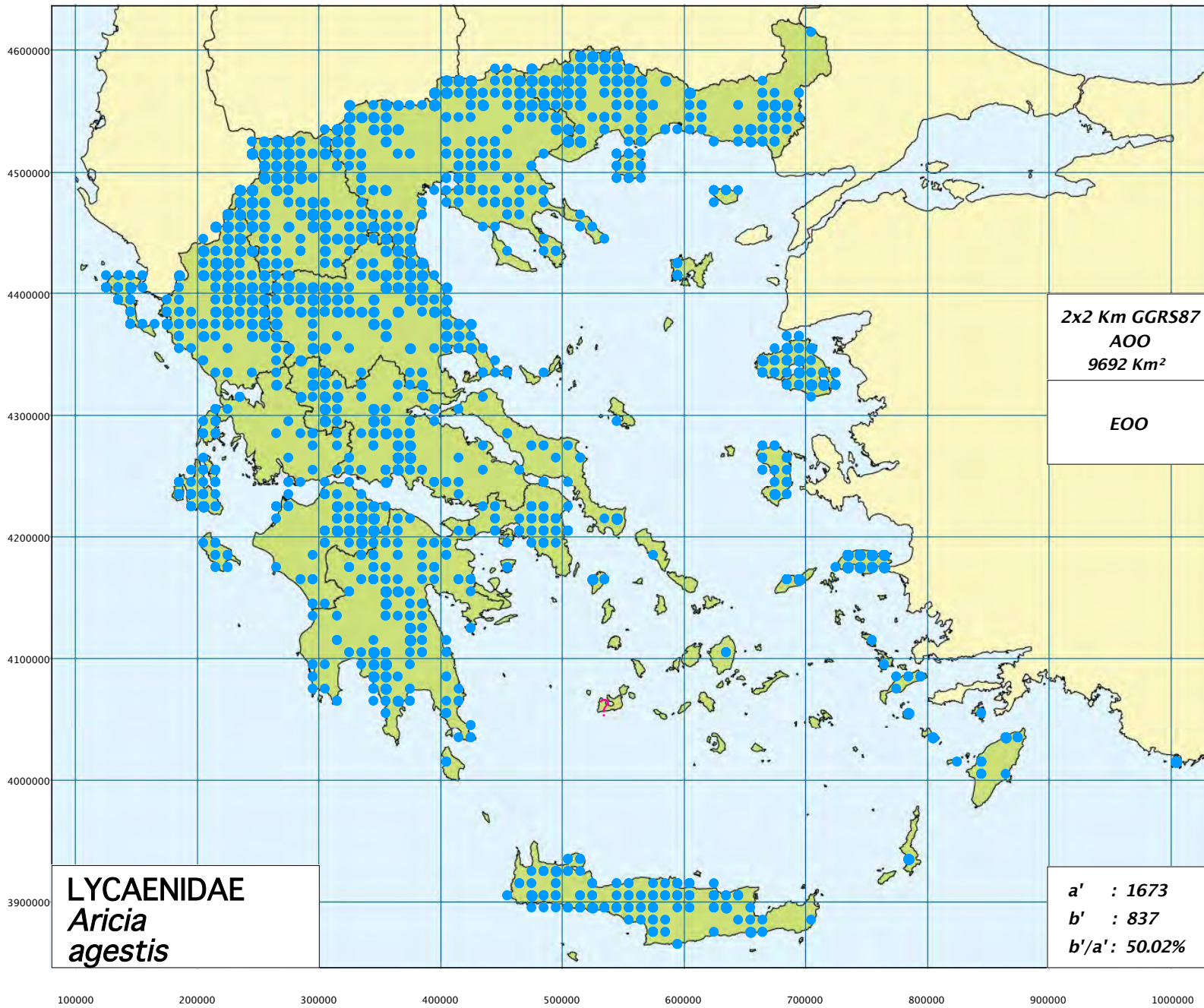
**2x2 Km GGRS87**  
**AOO**  
**40 Km<sup>2</sup>**

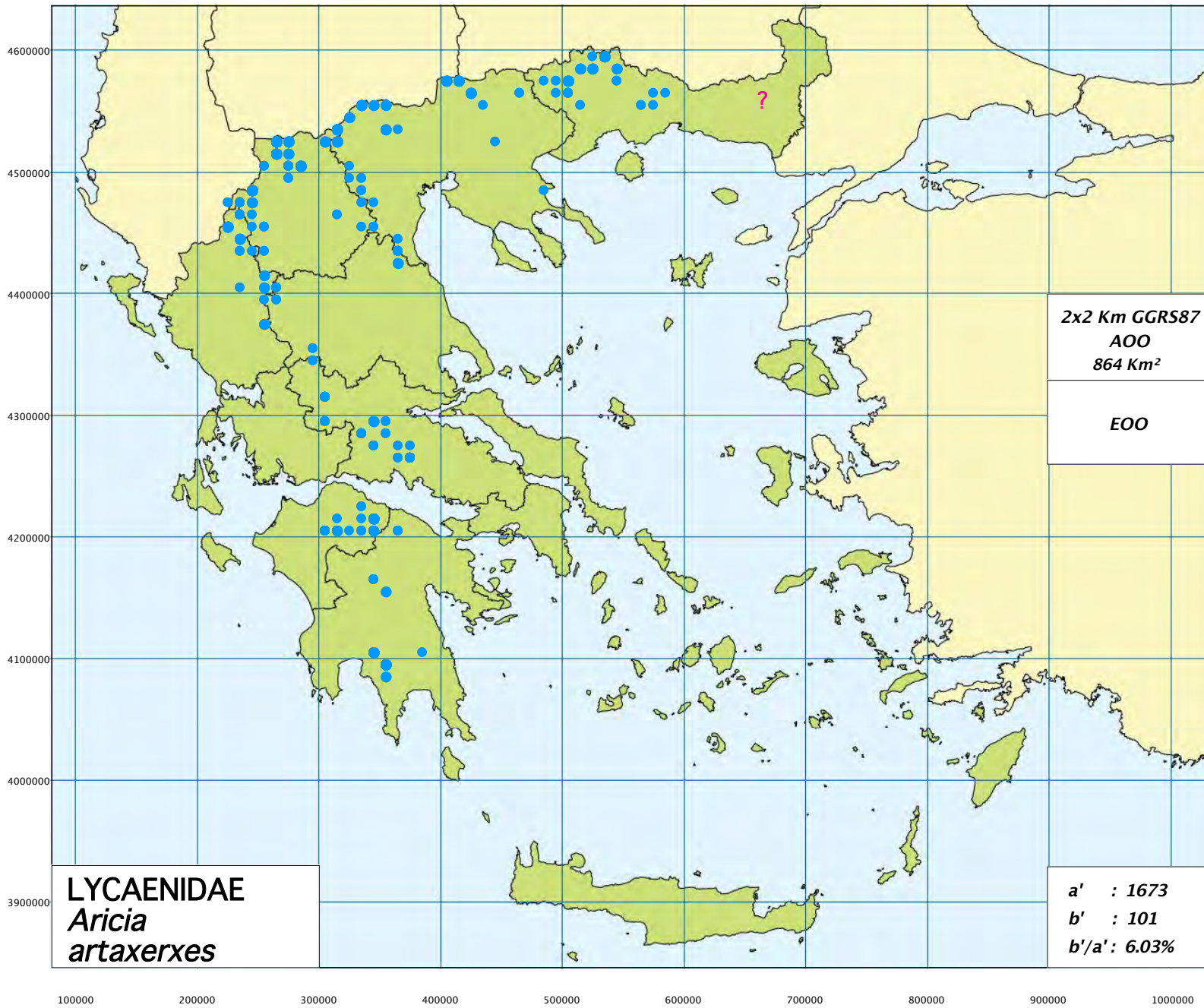
**EOO**

**a' : 1673**  
**b' : 3**  
**b'/a' : 0.17%**

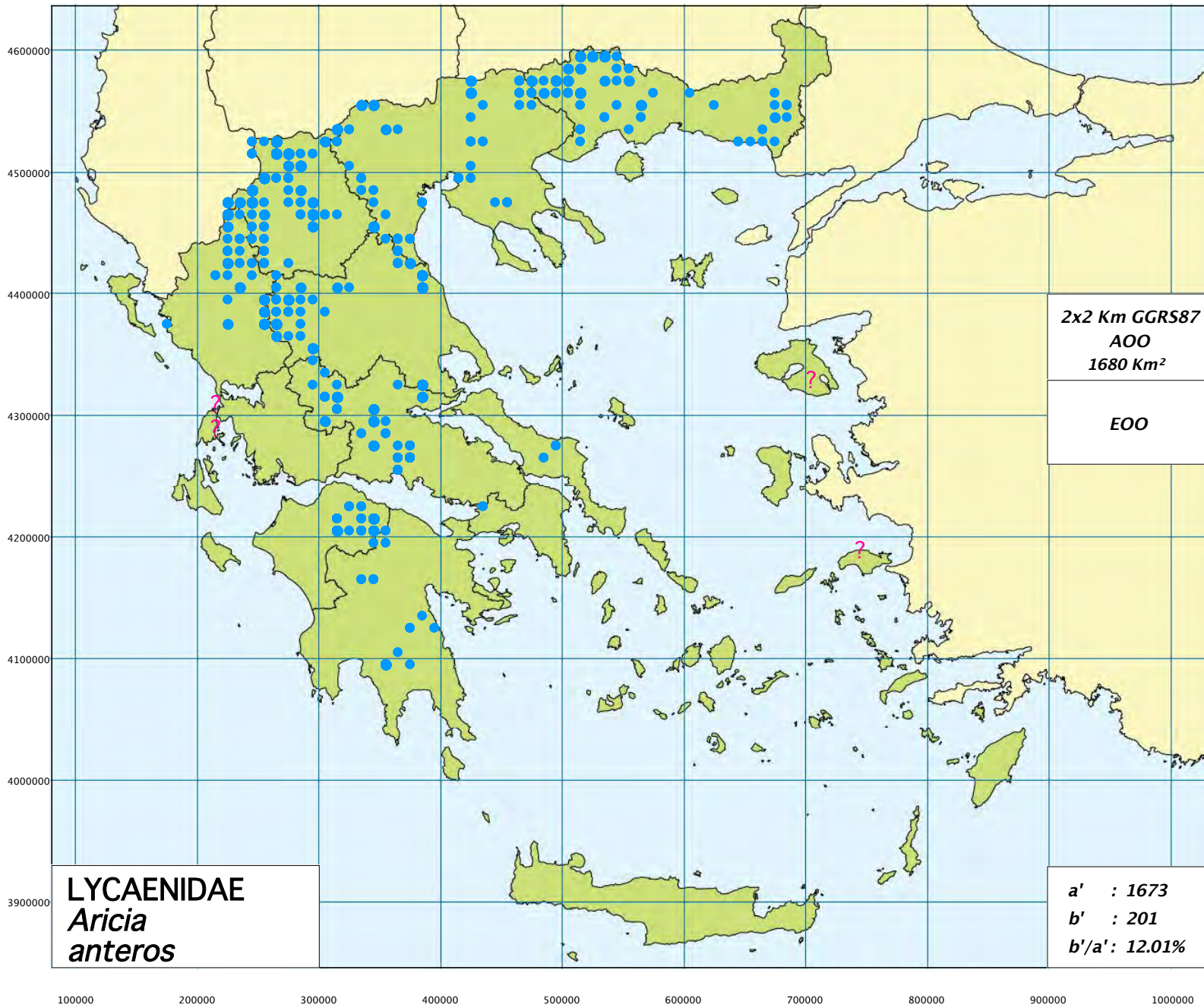
100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000

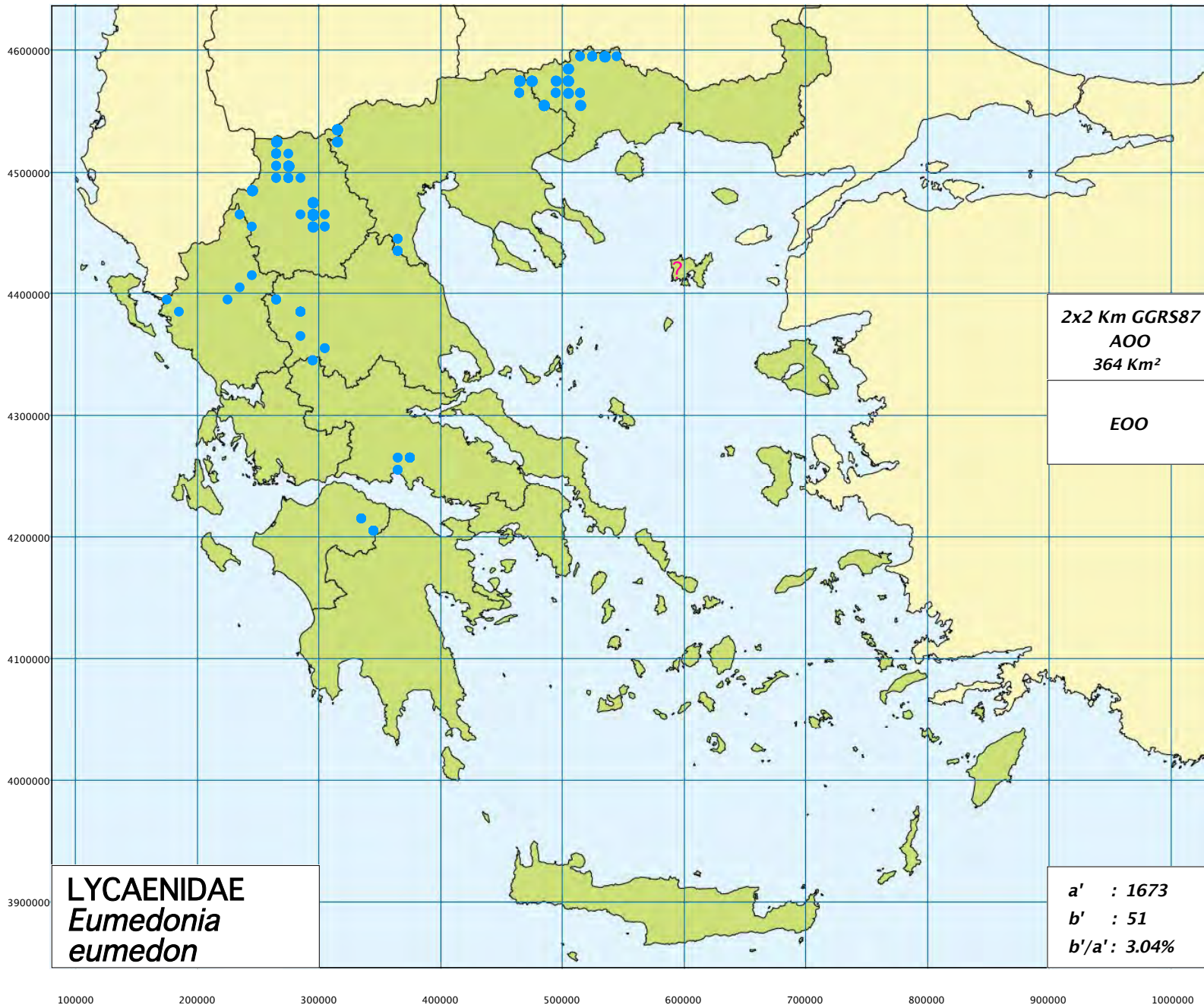




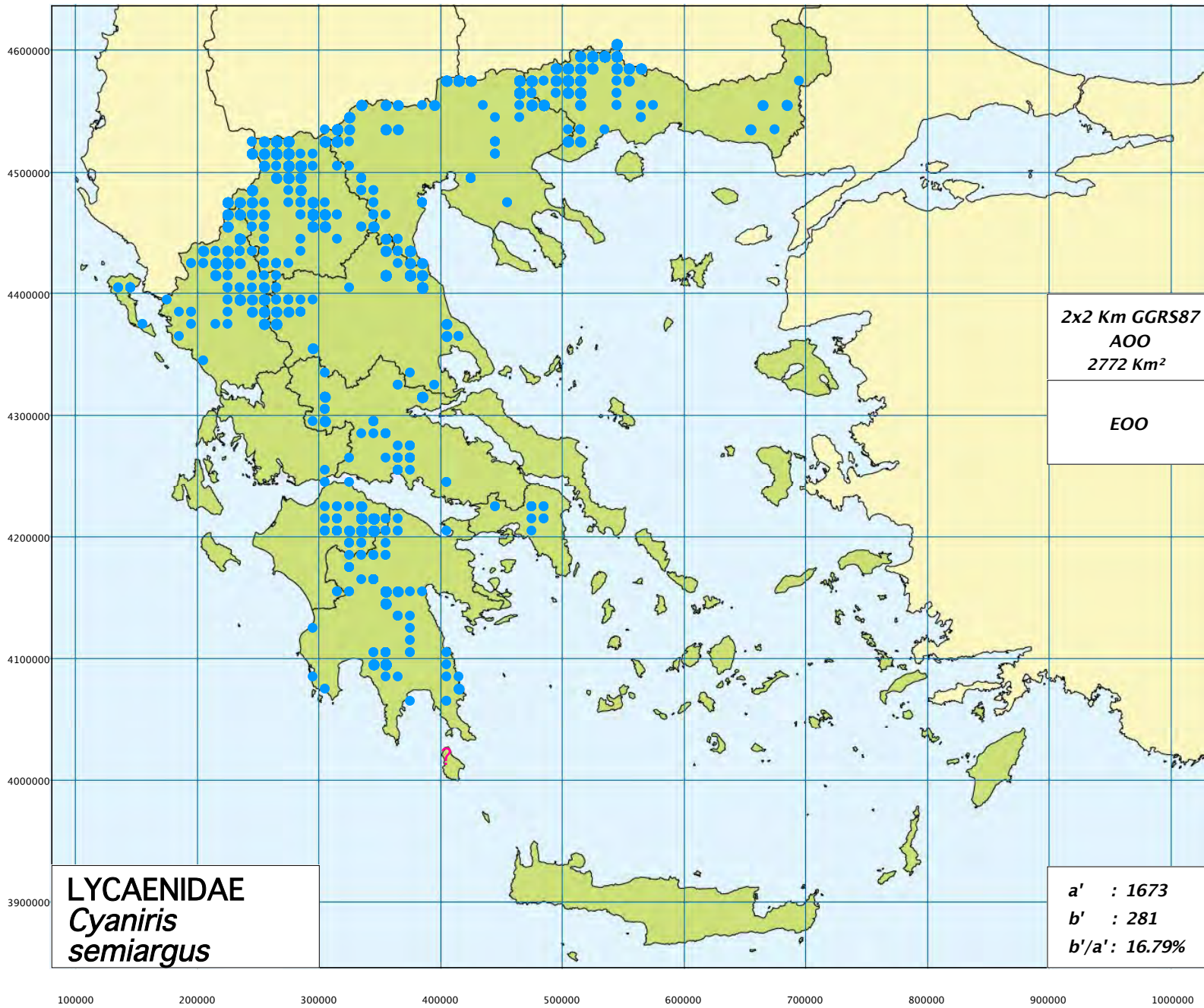


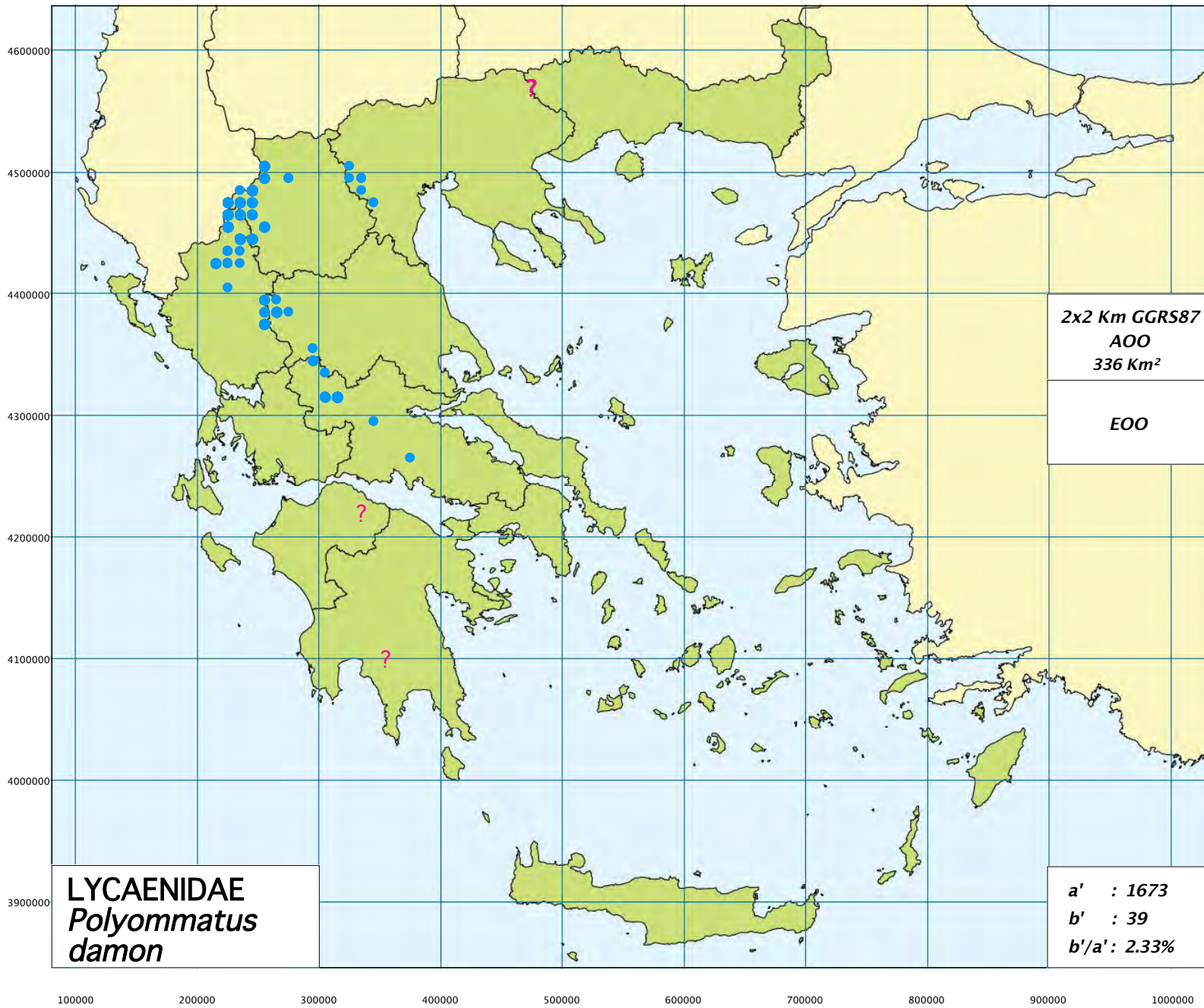




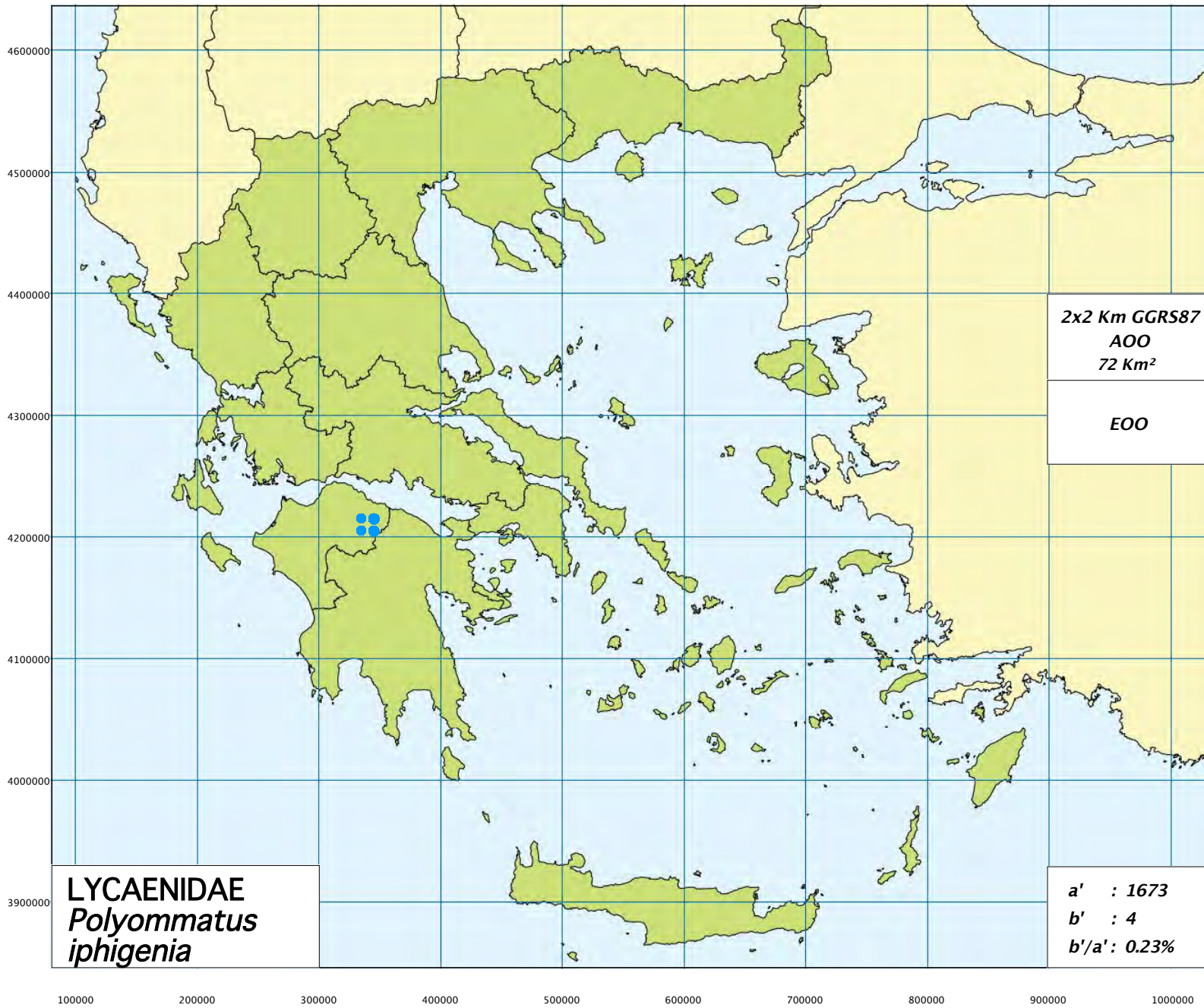










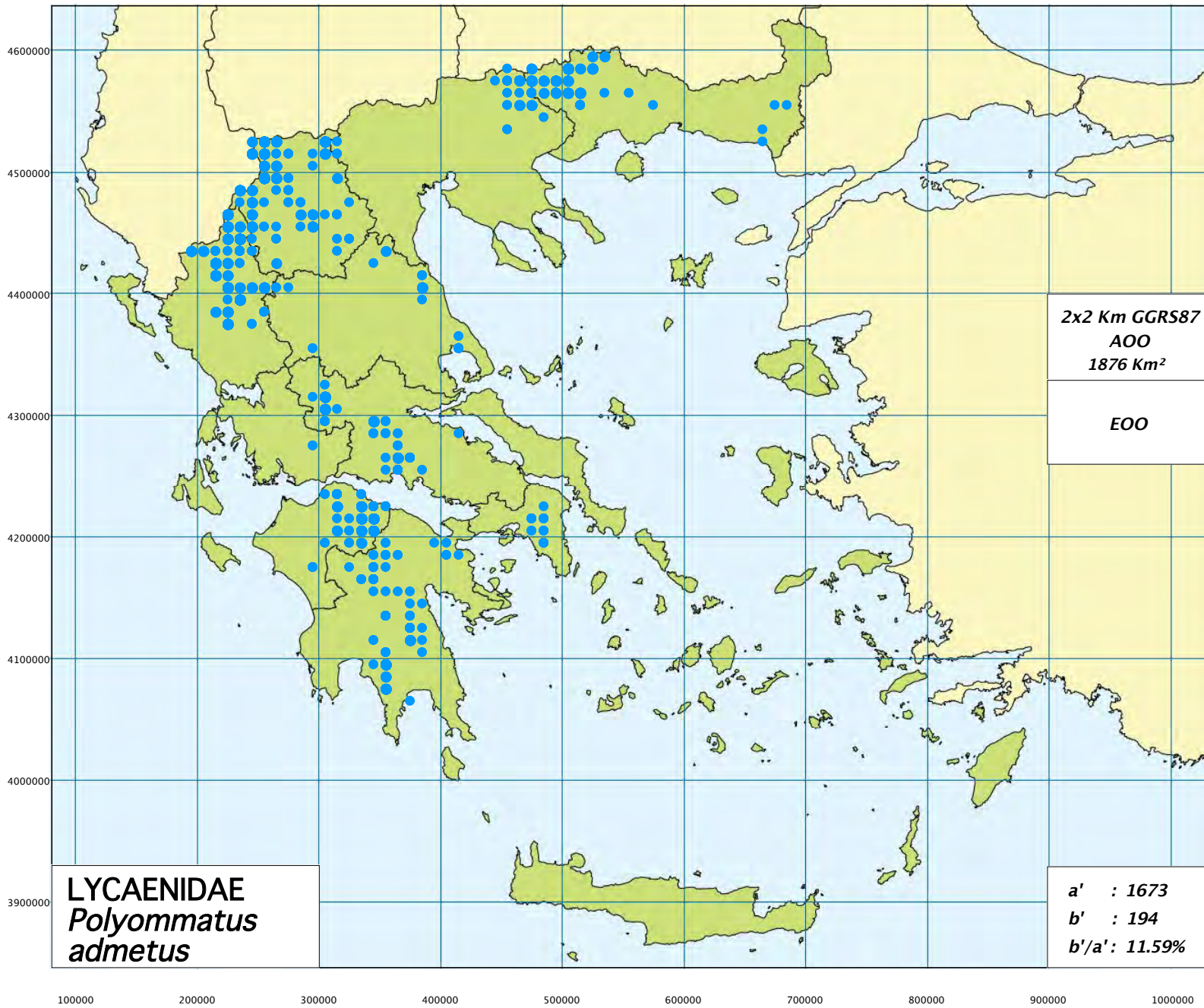


2x2 Km GGRS87  
 AOO  
 72 Km<sup>2</sup>

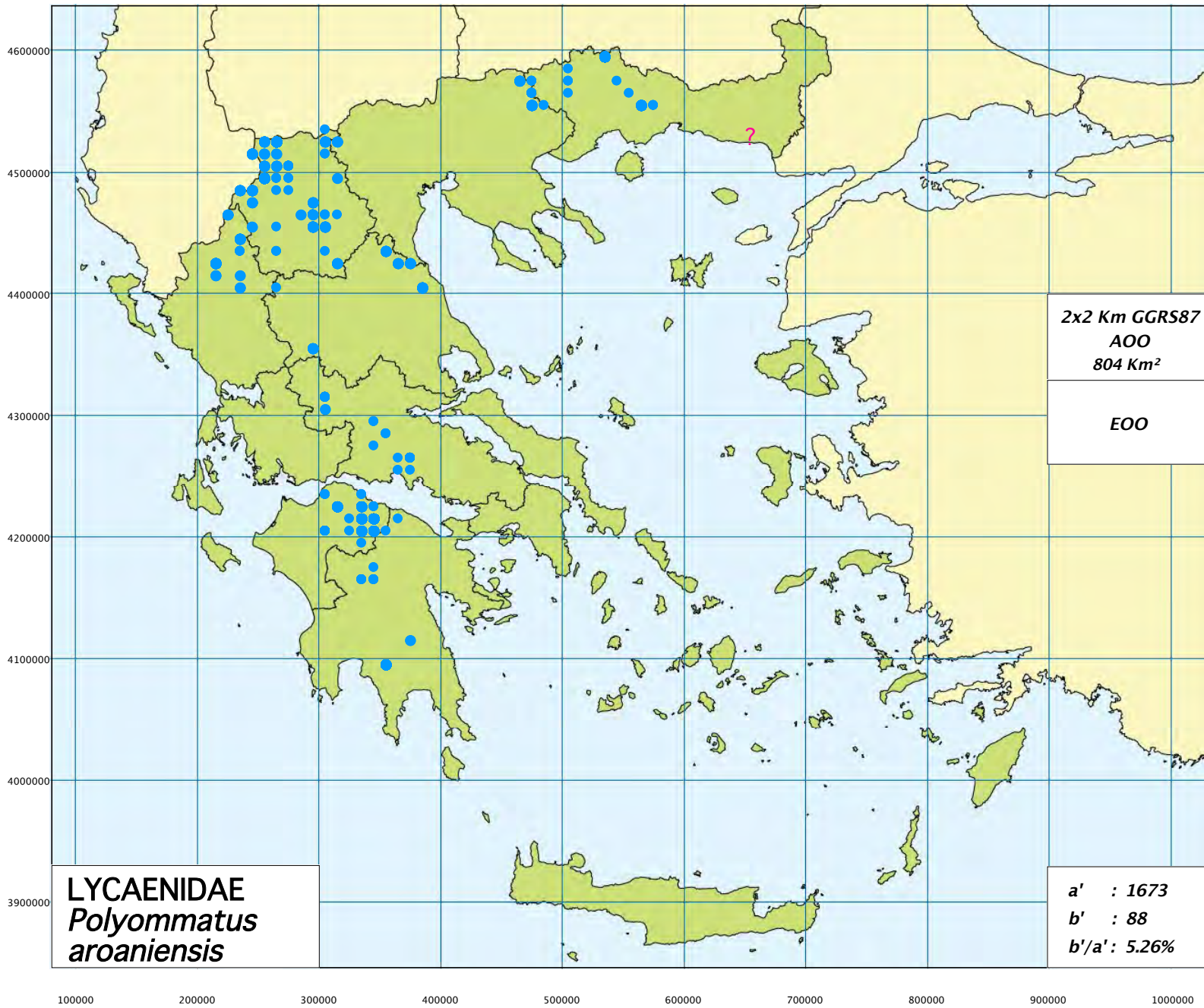
EOO

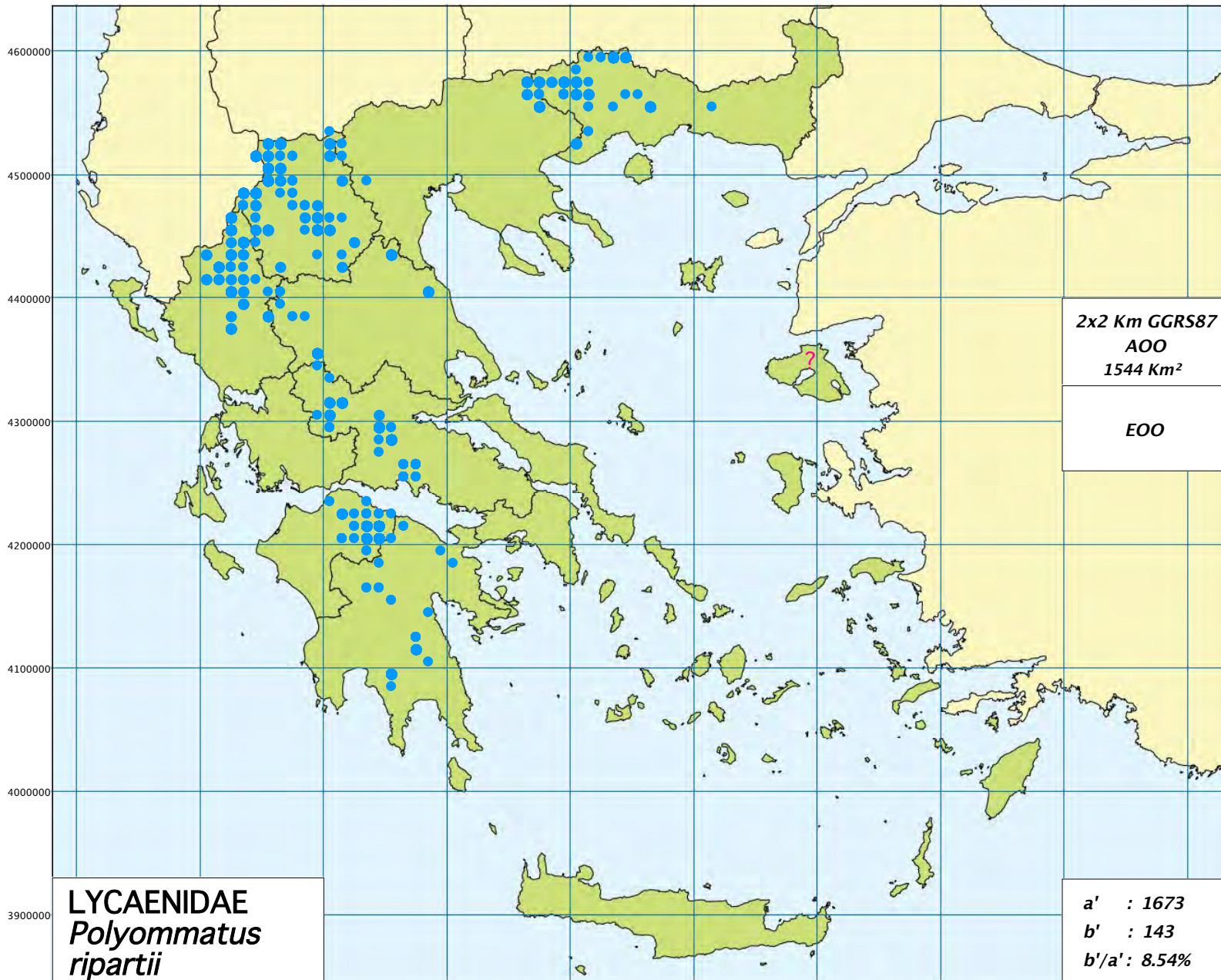
*a'* : 1673  
*b'* : 4  
*b'/a'* : 0.23%

LYCAENIDAE  
*Polyommatus*  
*iphigenia*

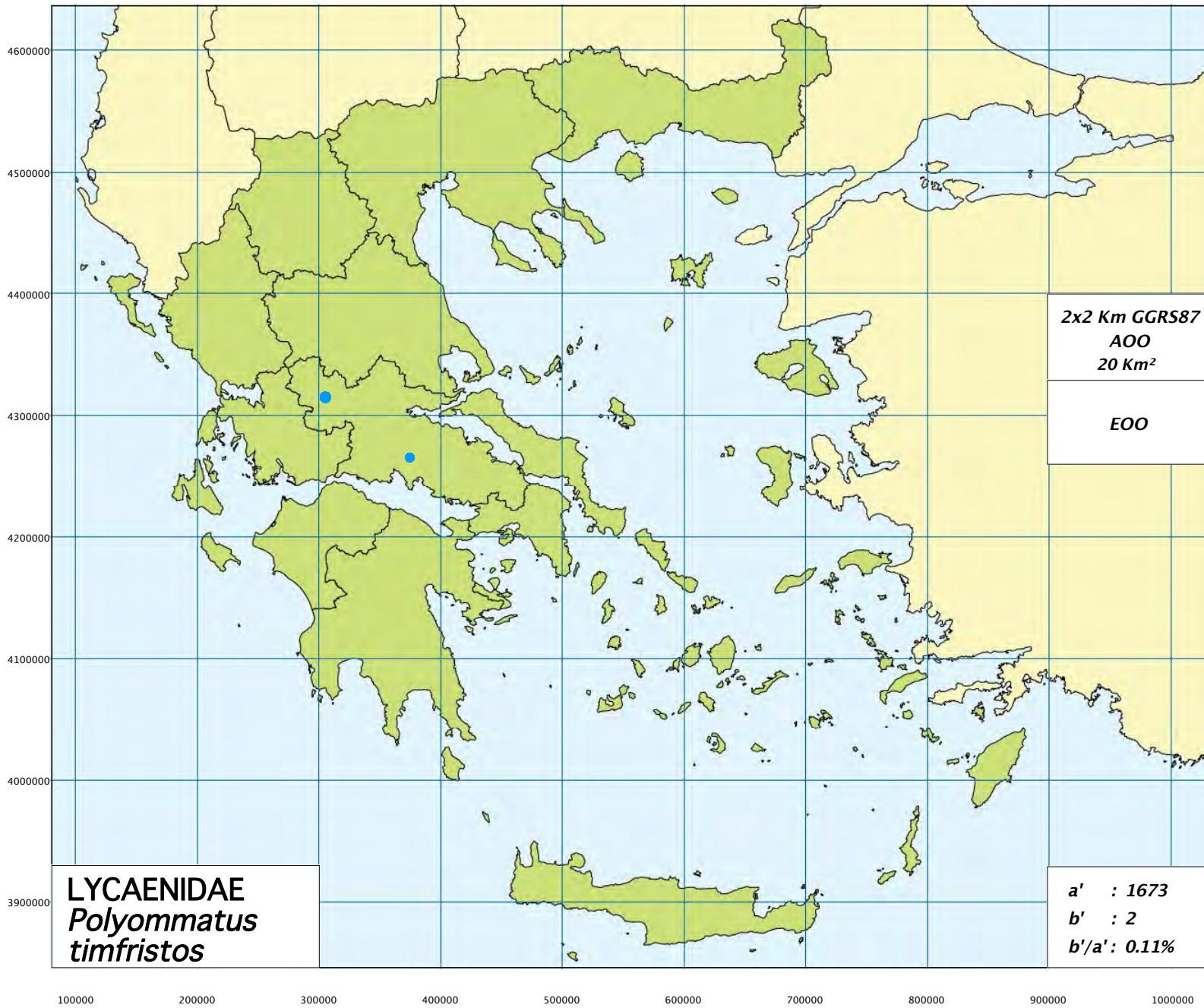


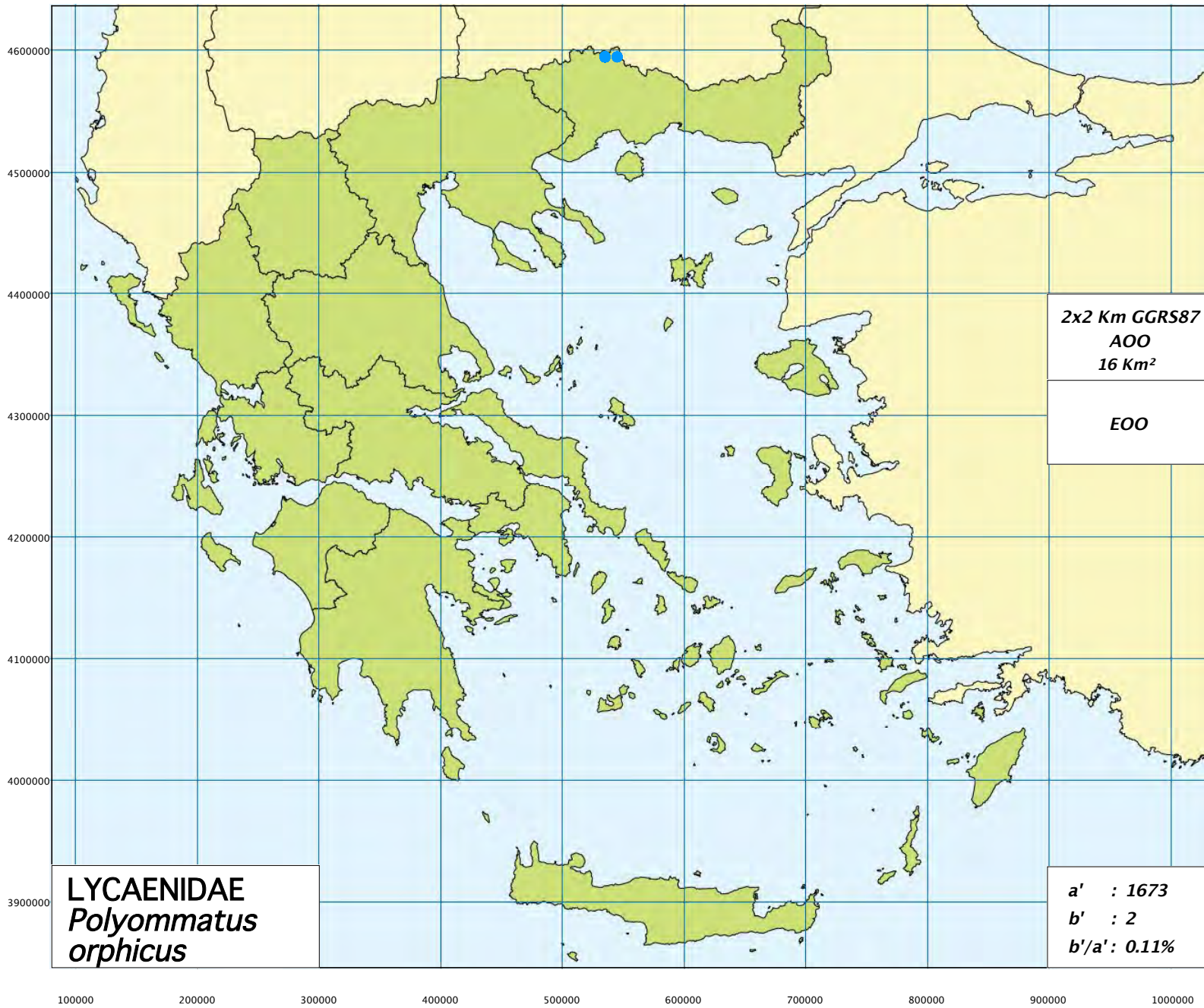




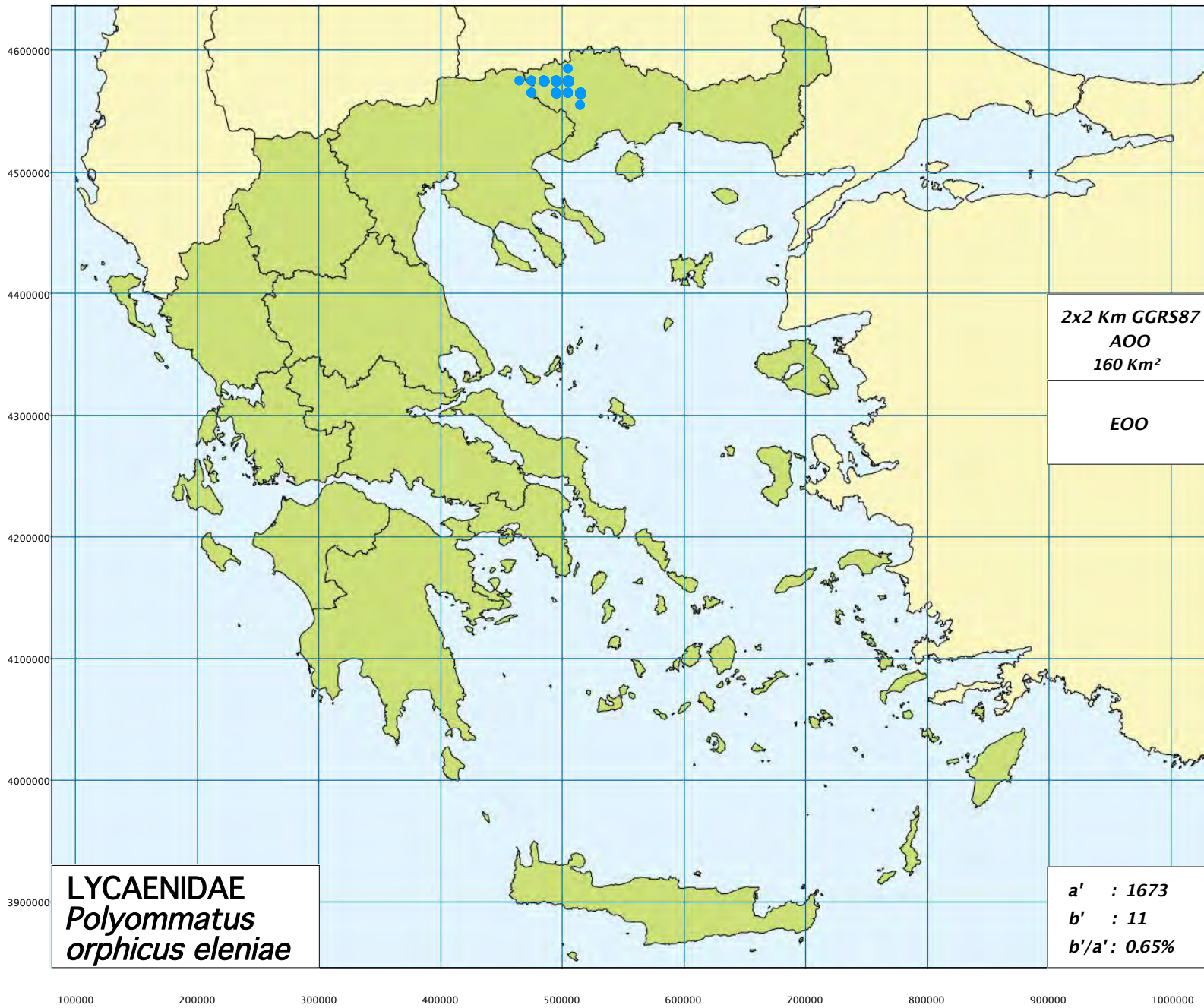


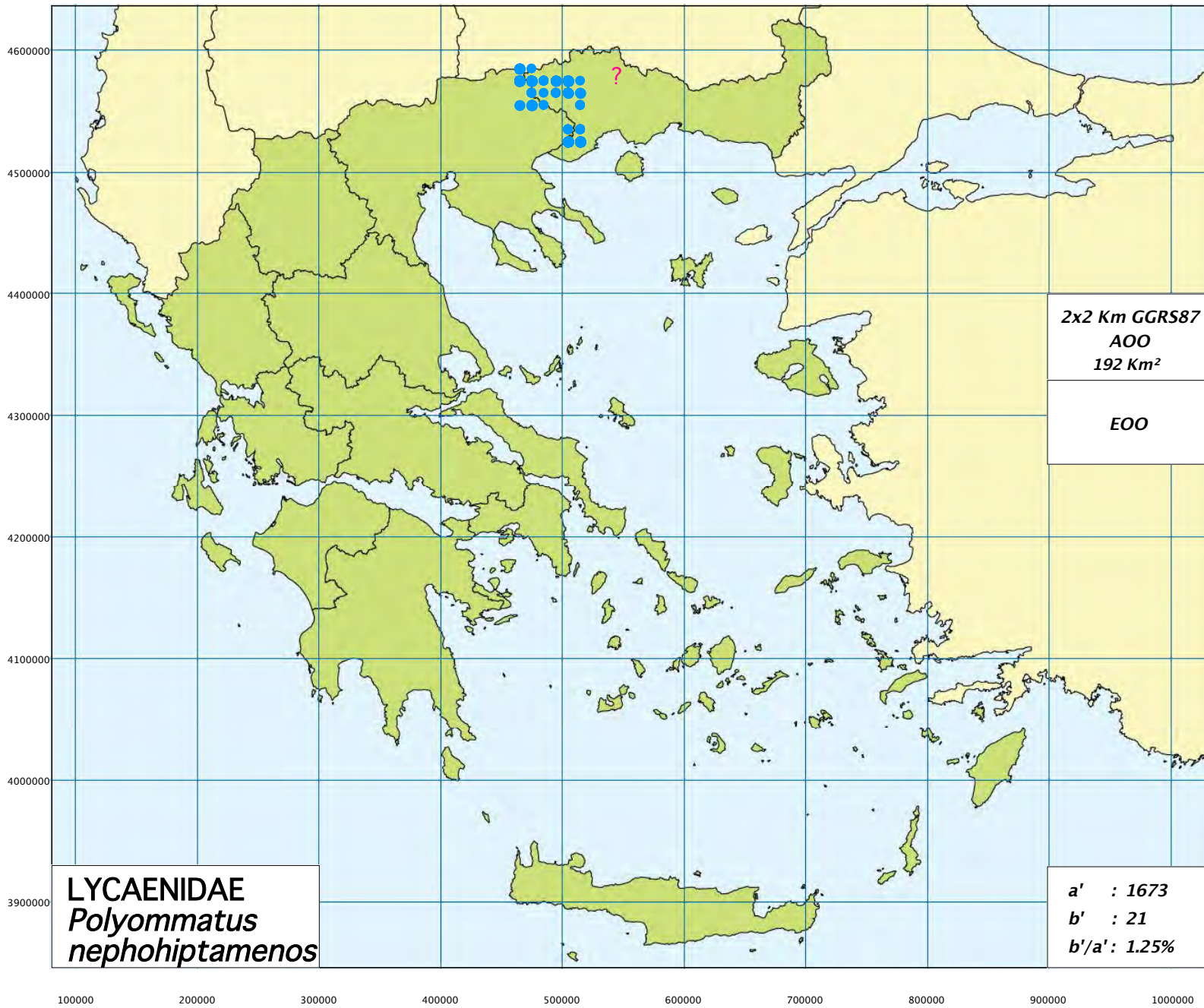




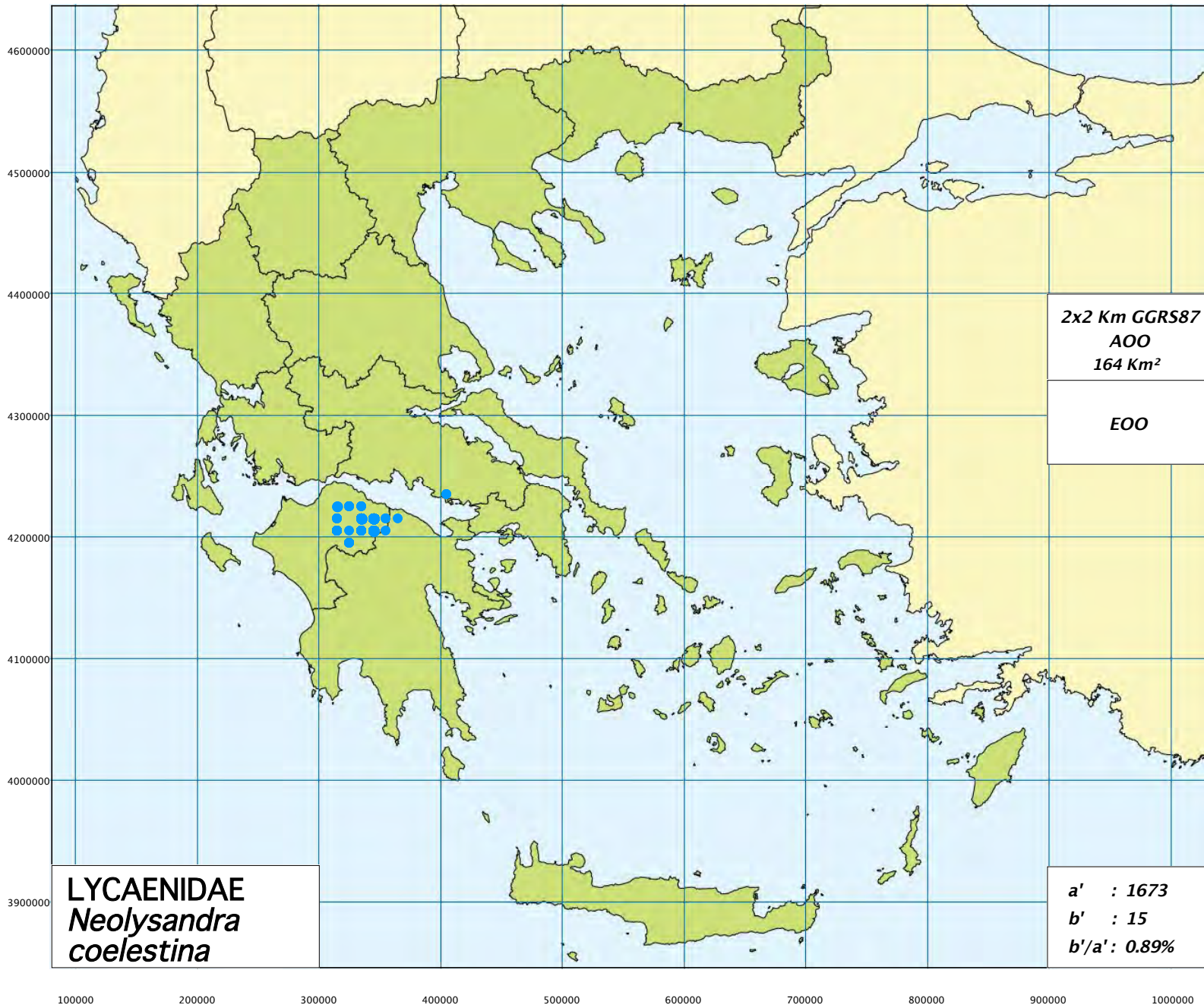












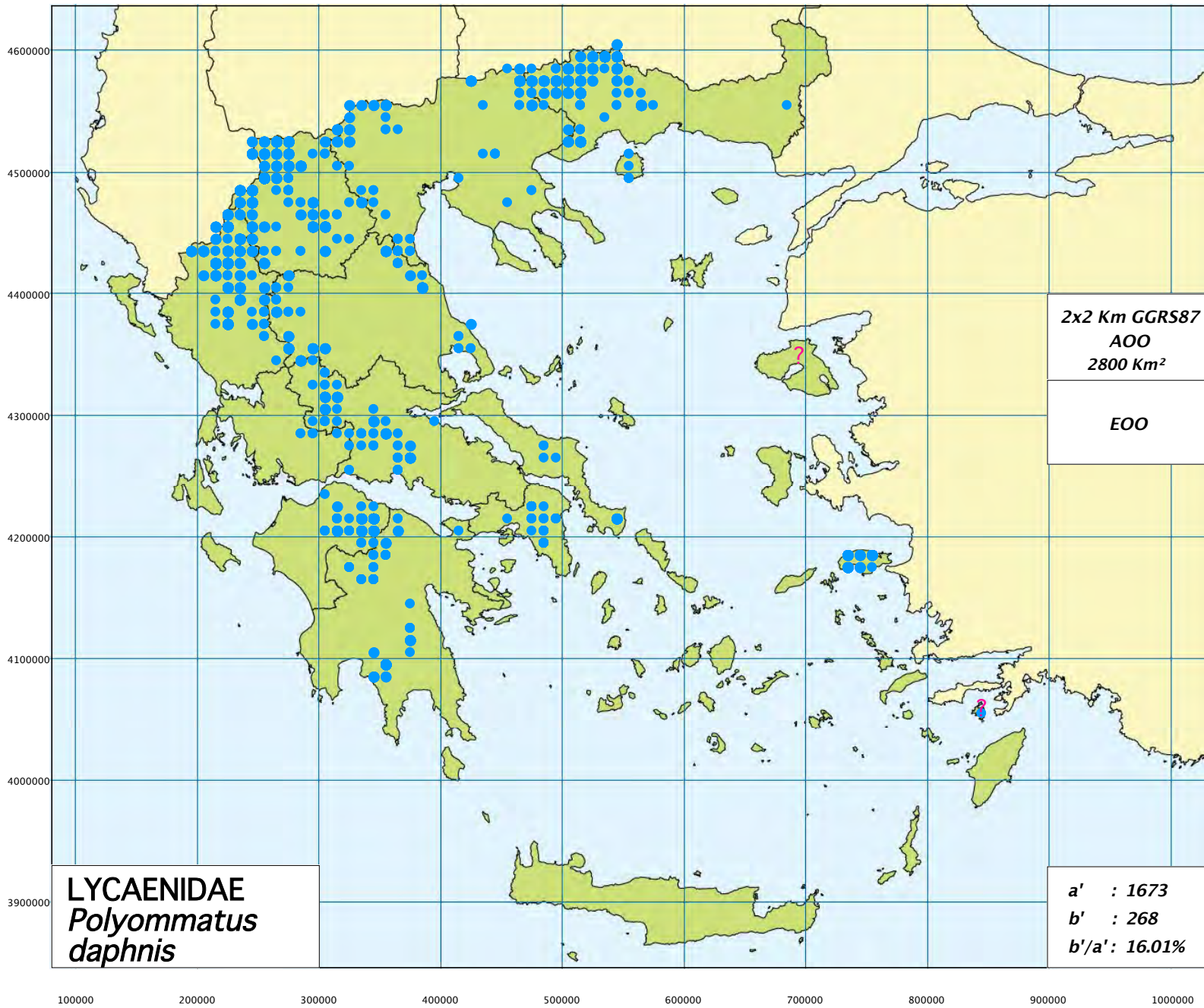
**LYCAENIDAE**  
*Neolysandra*  
*coelestina*

**2x2 Km GGRS87**  
**AOO**  
**164 Km<sup>2</sup>**

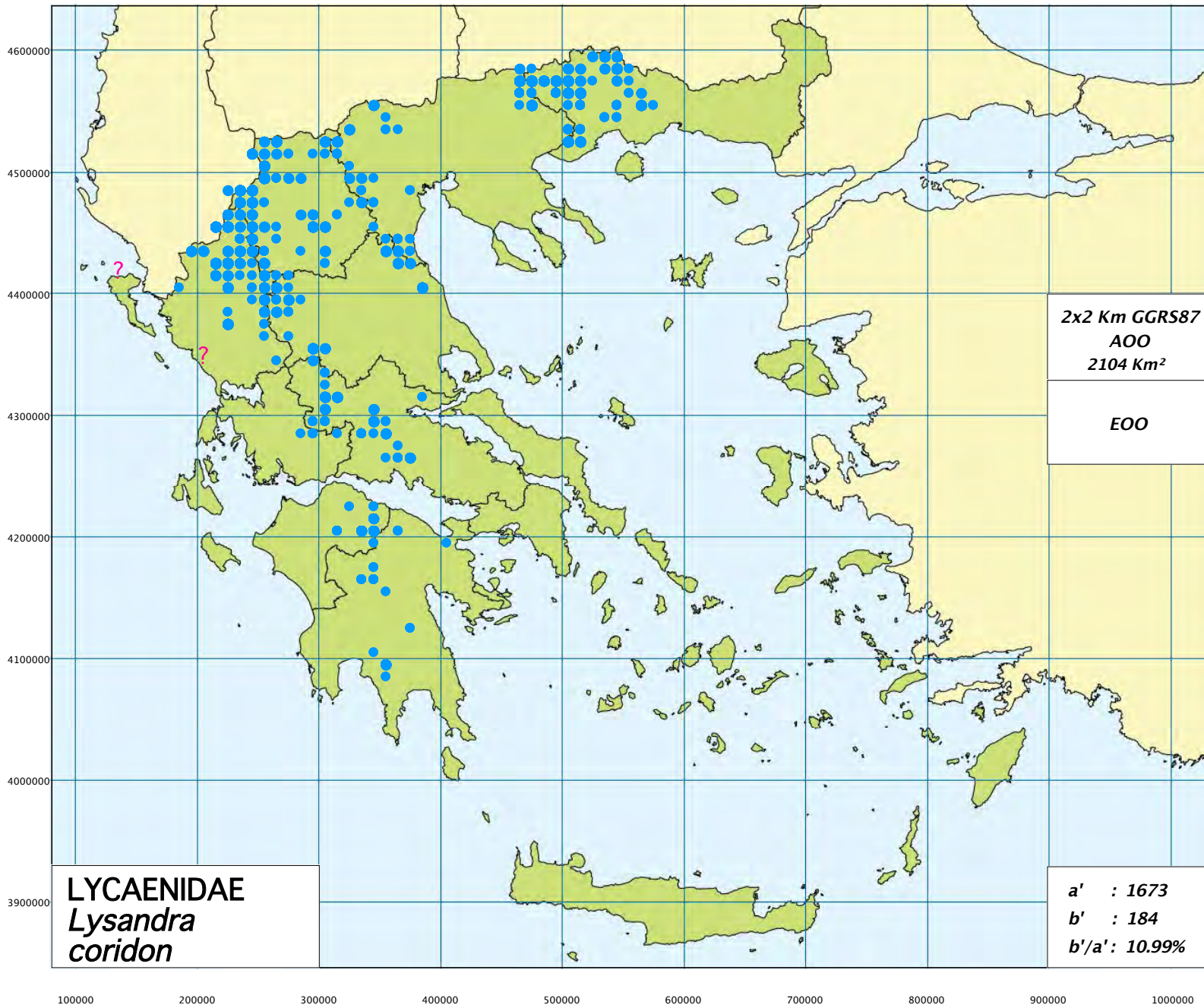
**EOO**

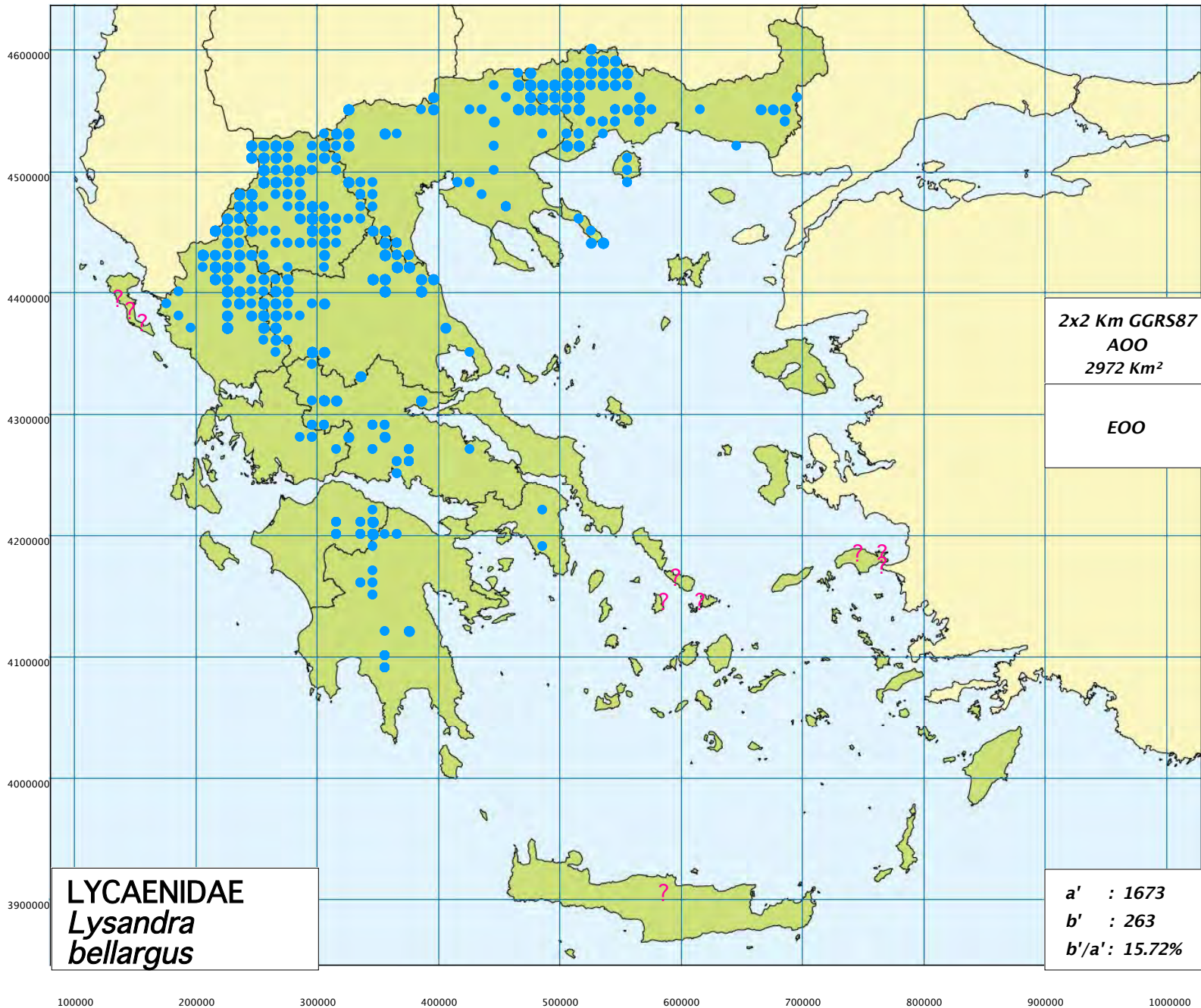
**a' : 1673**  
**b' : 15**  
**b'/a' : 0.89%**

100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000

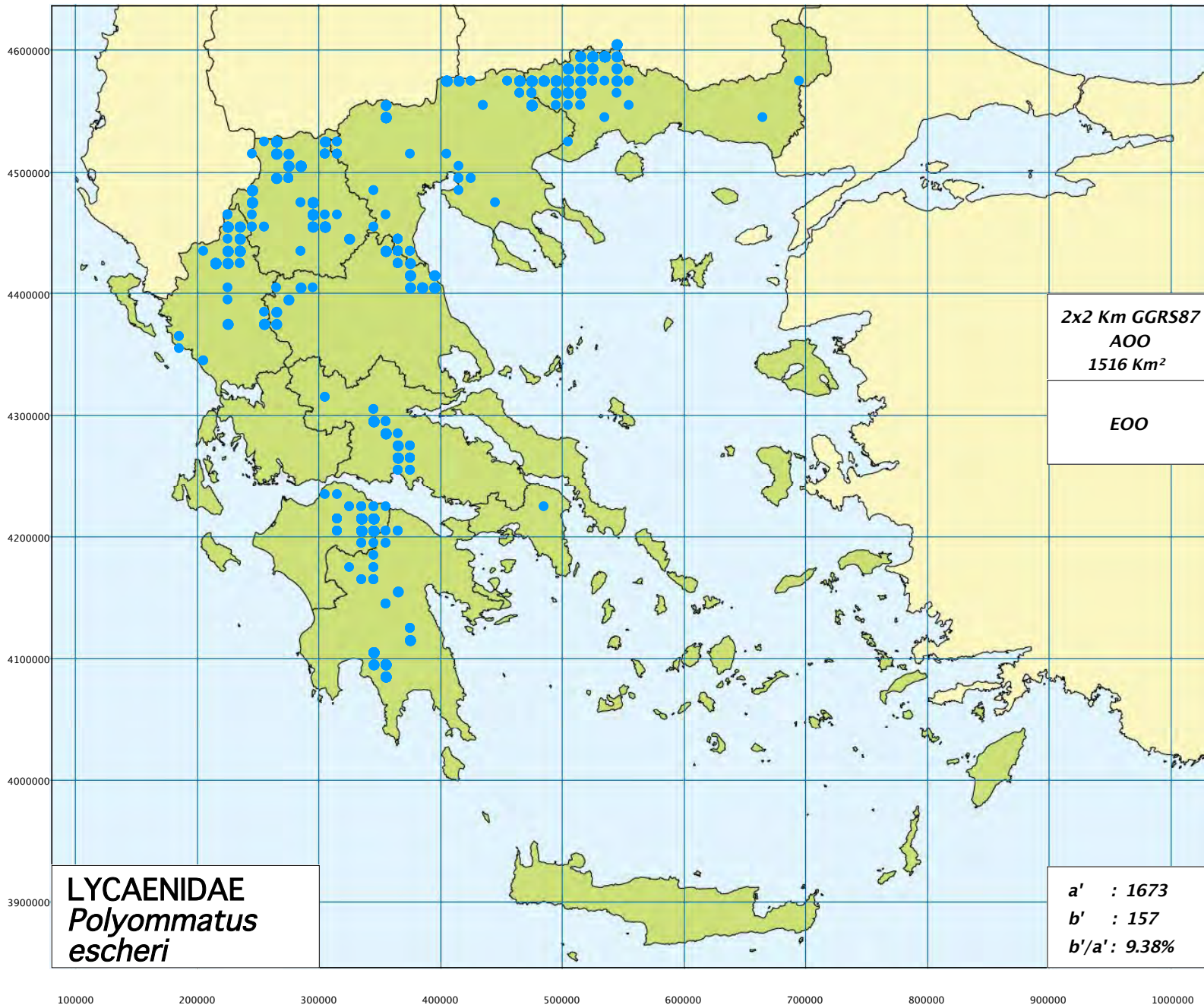


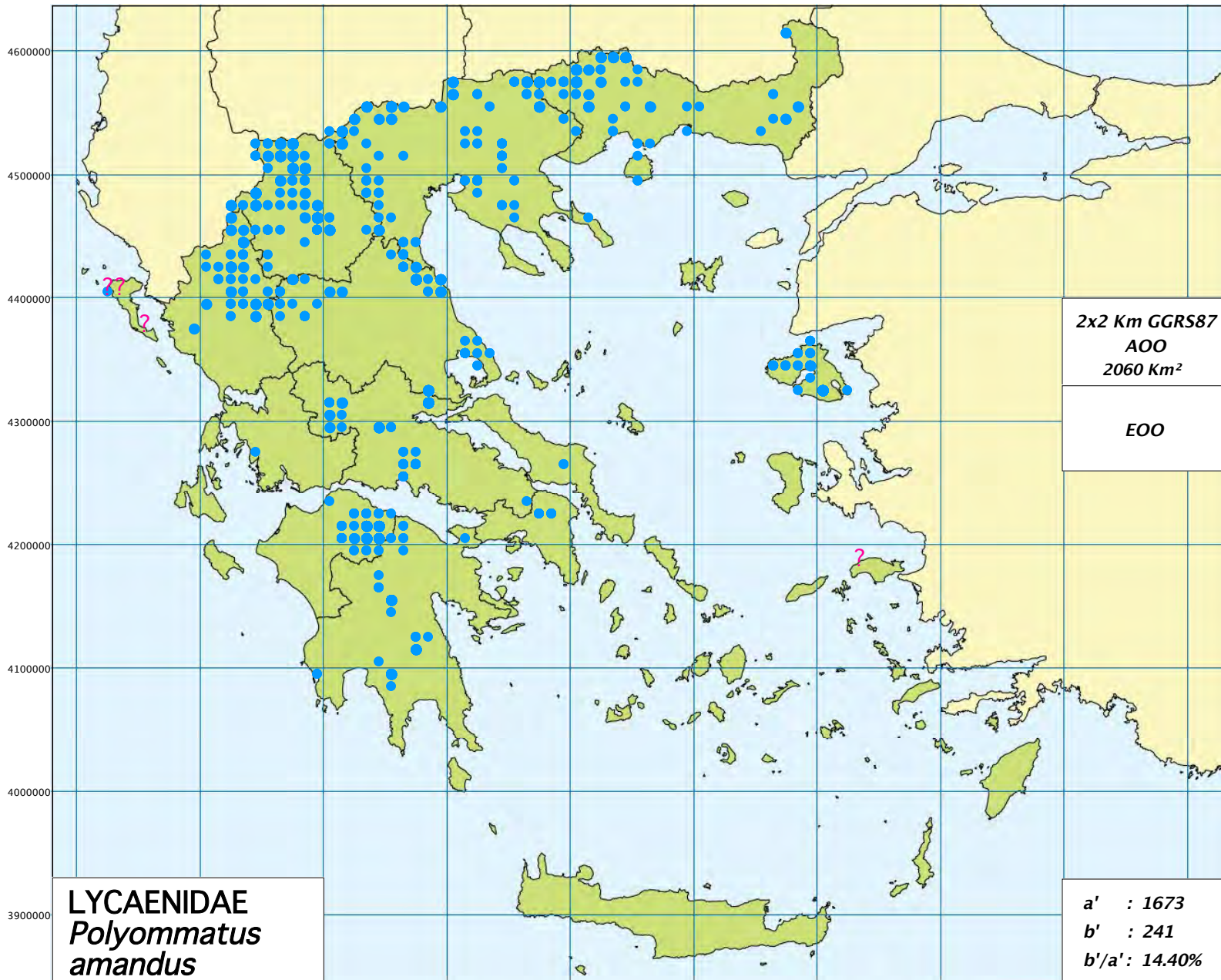




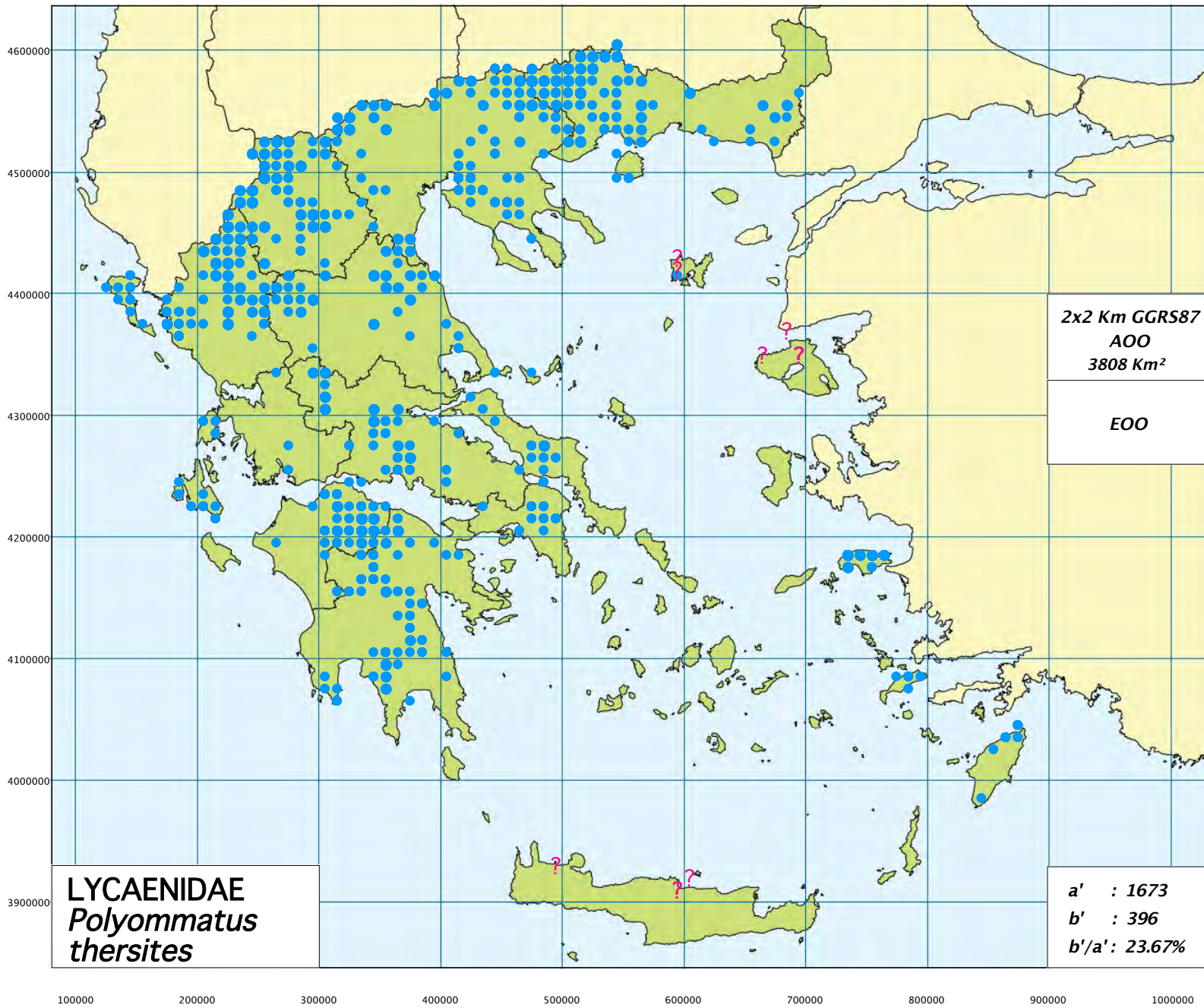


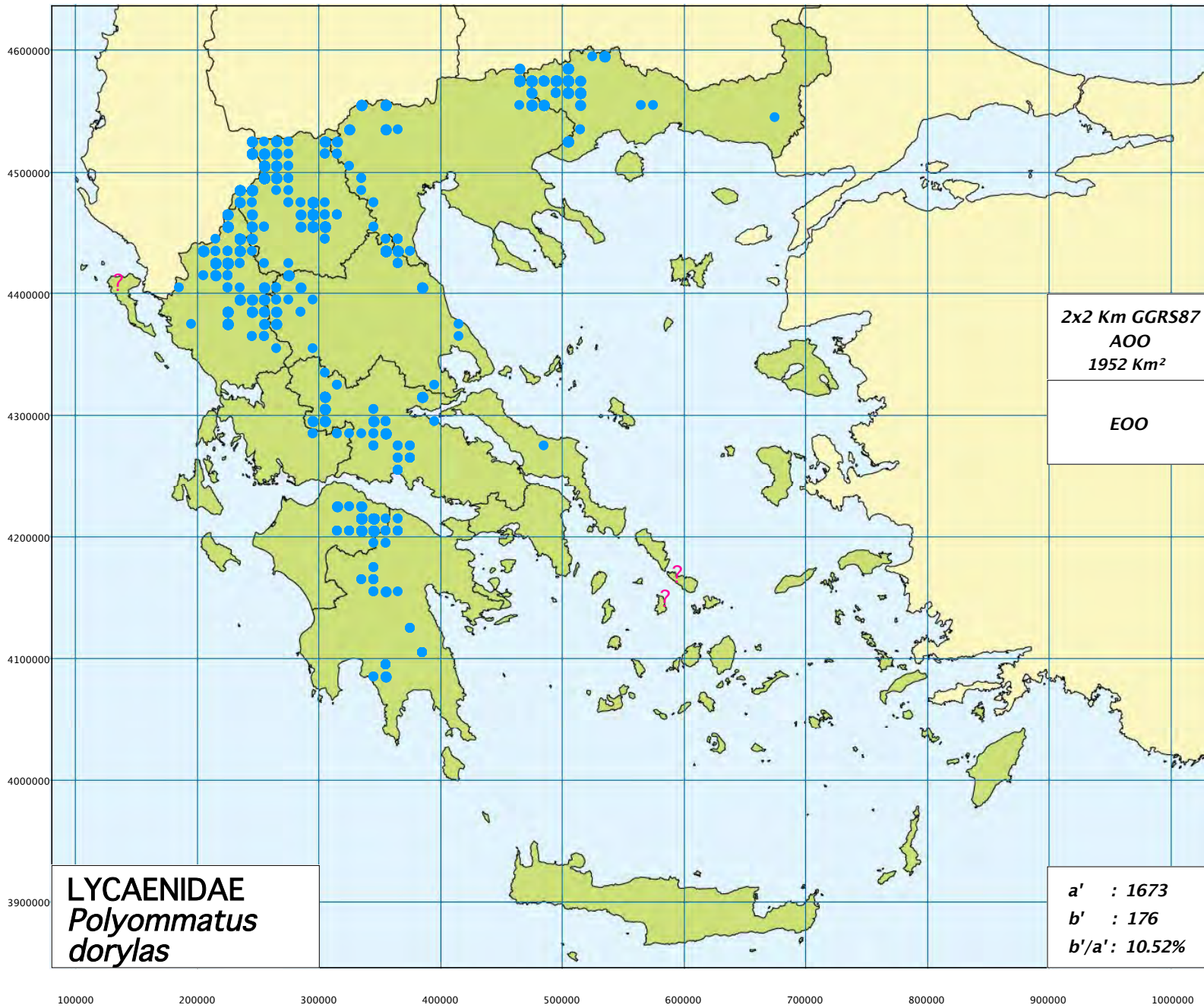




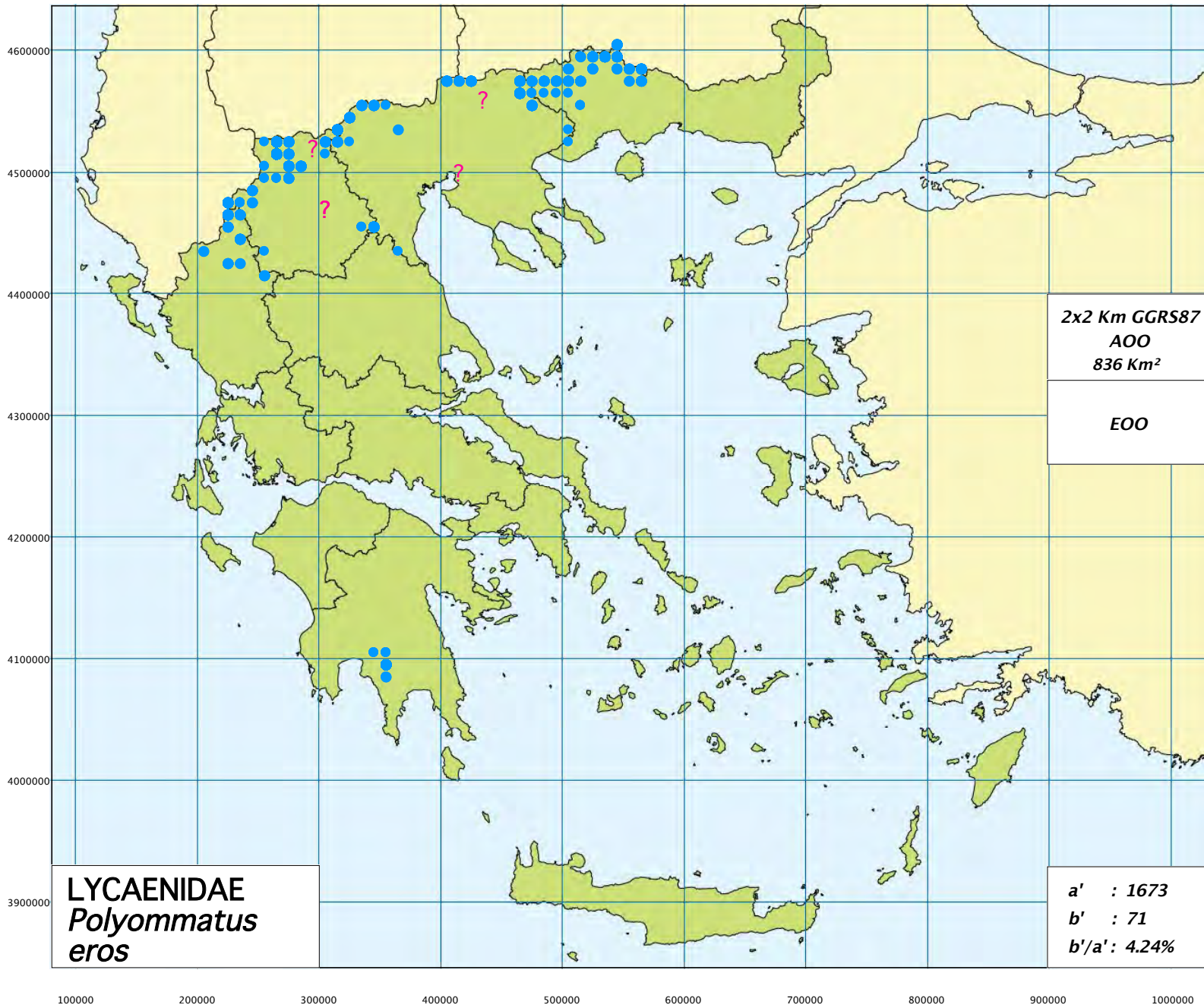


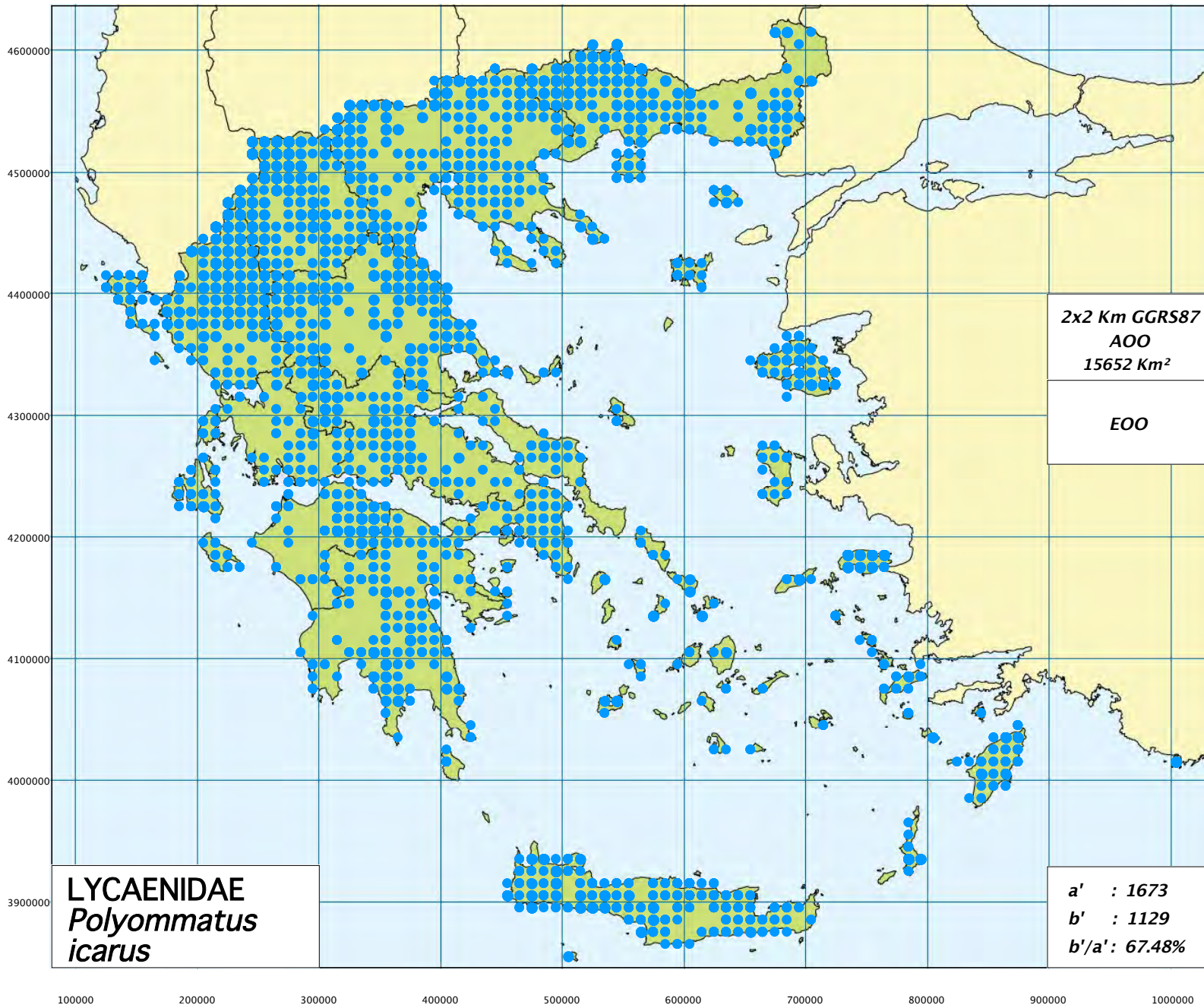




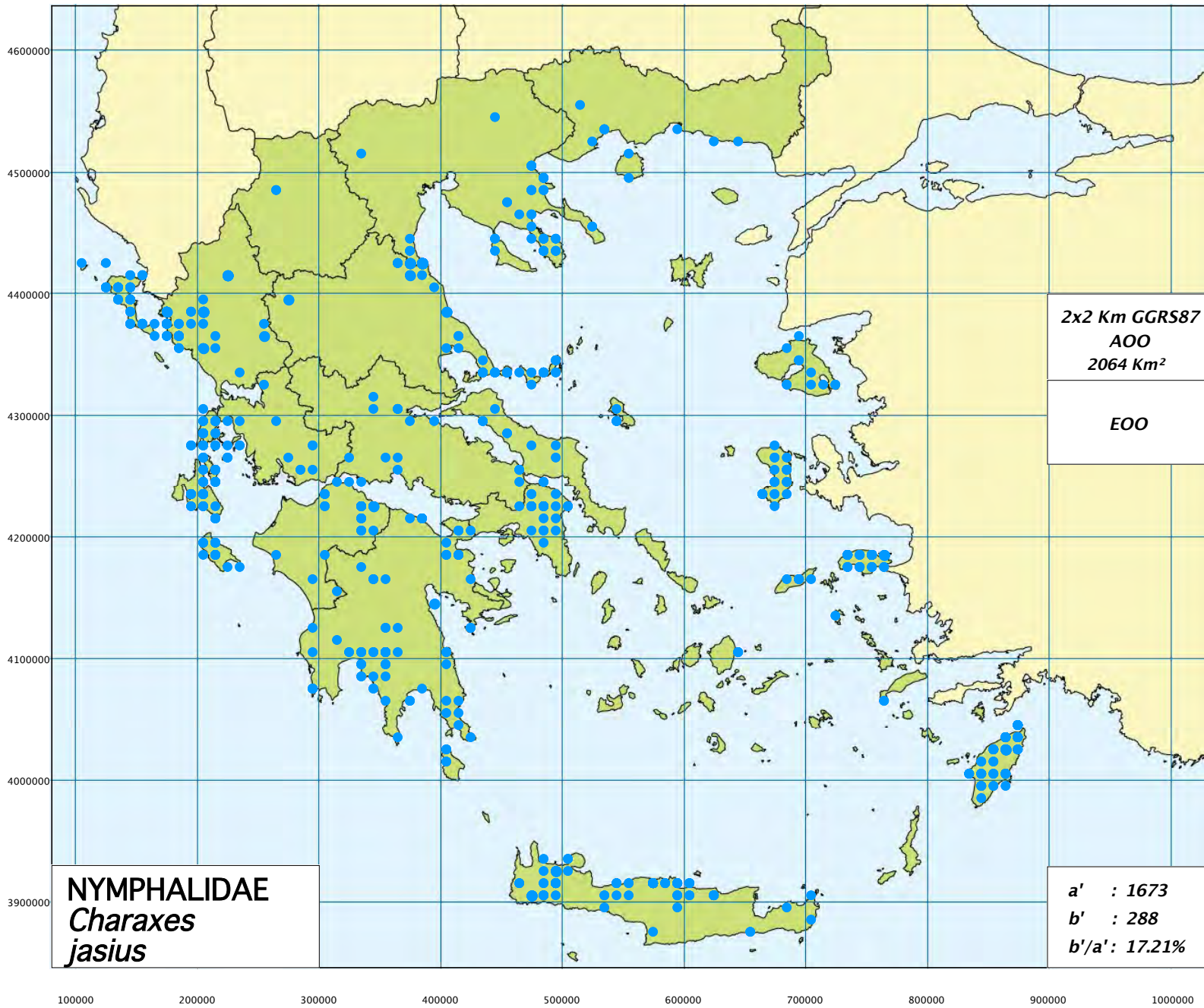


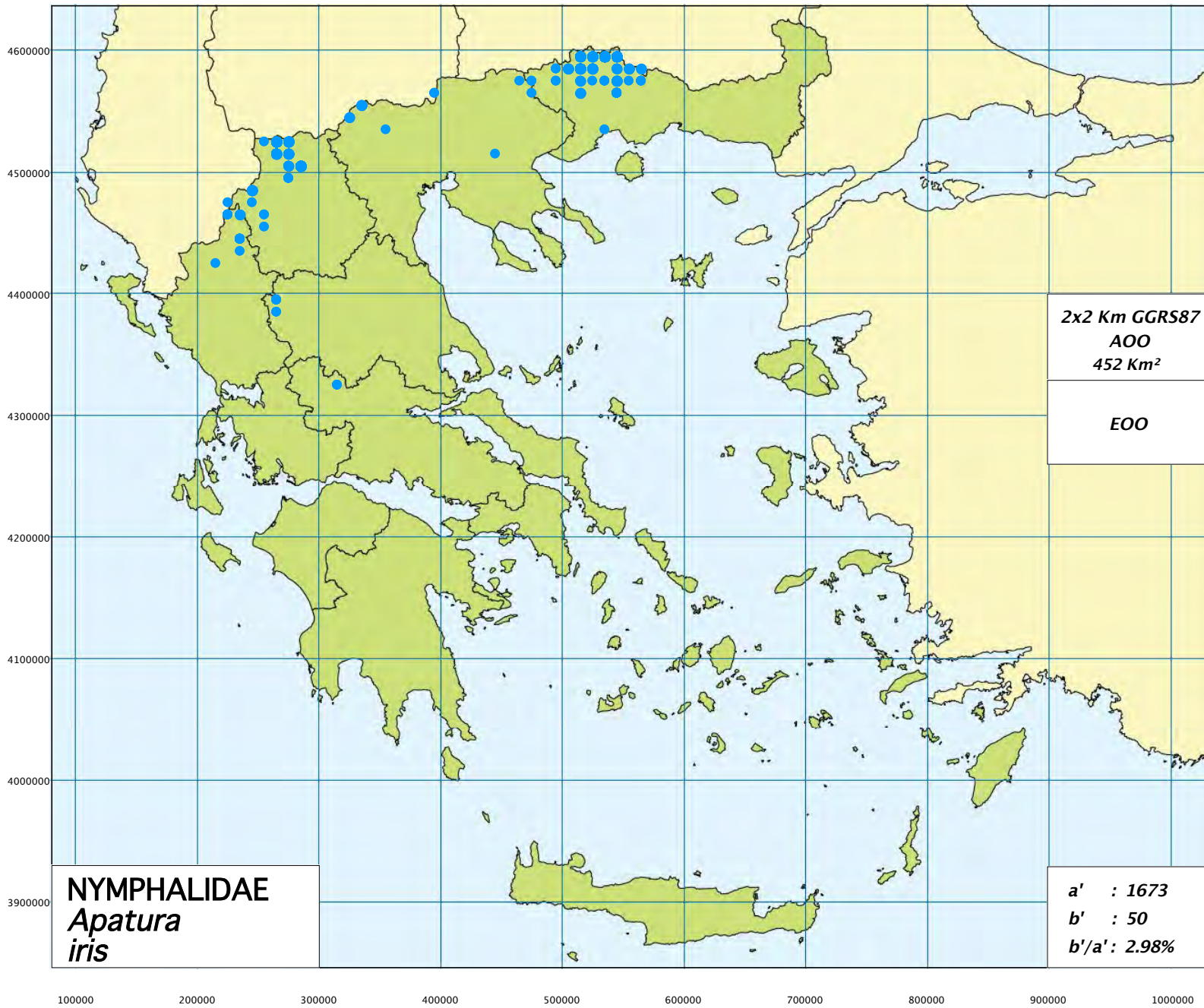




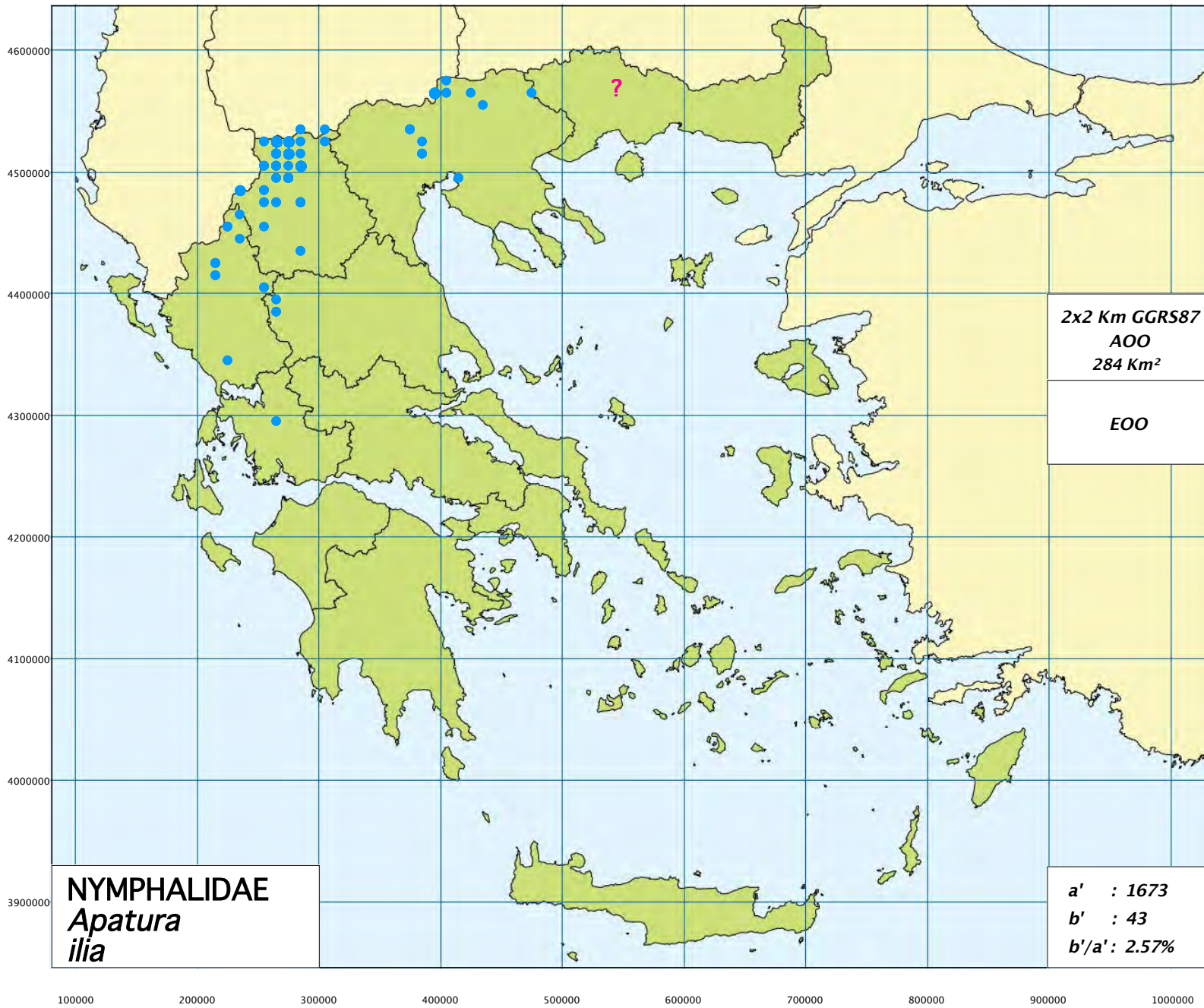


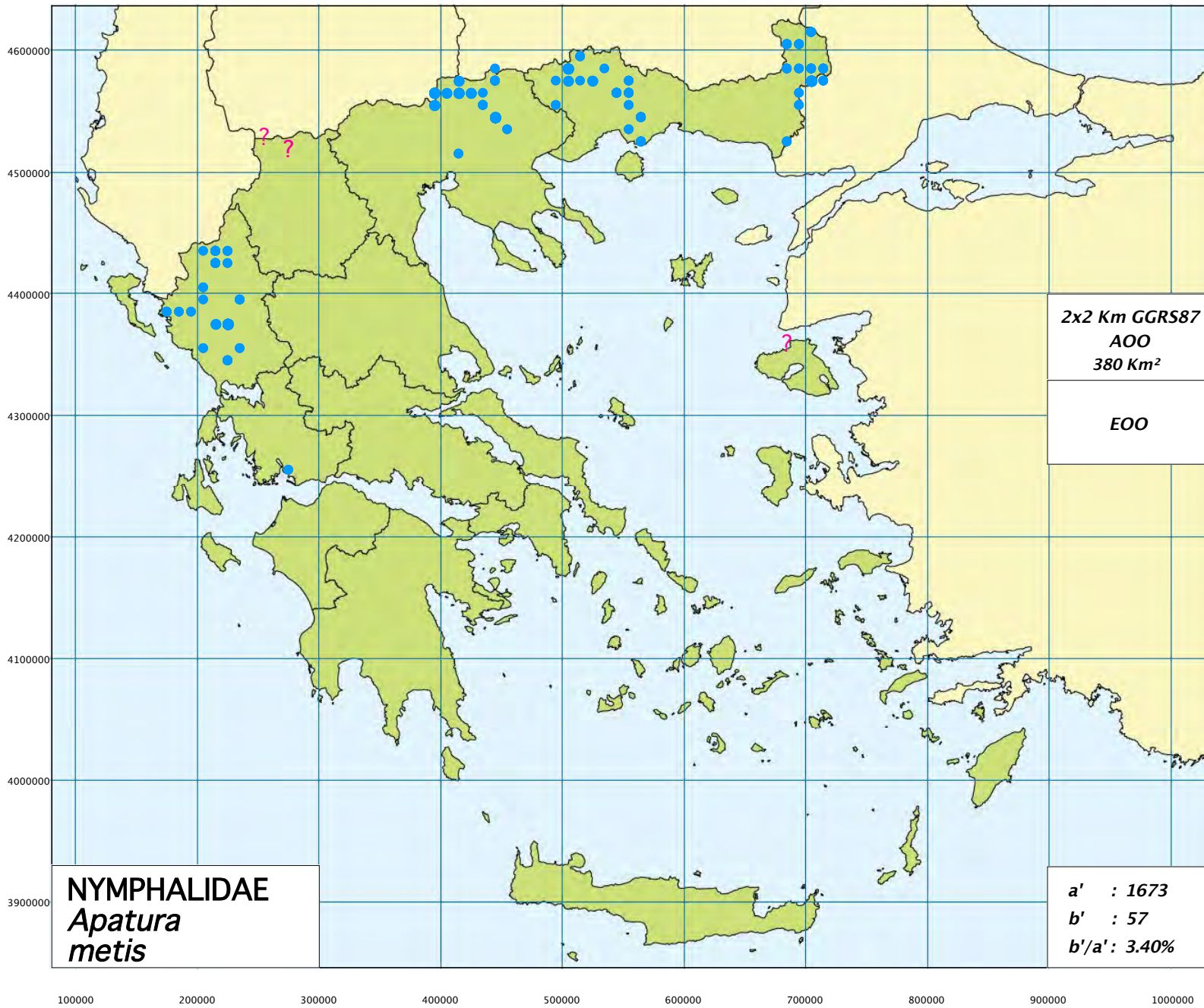




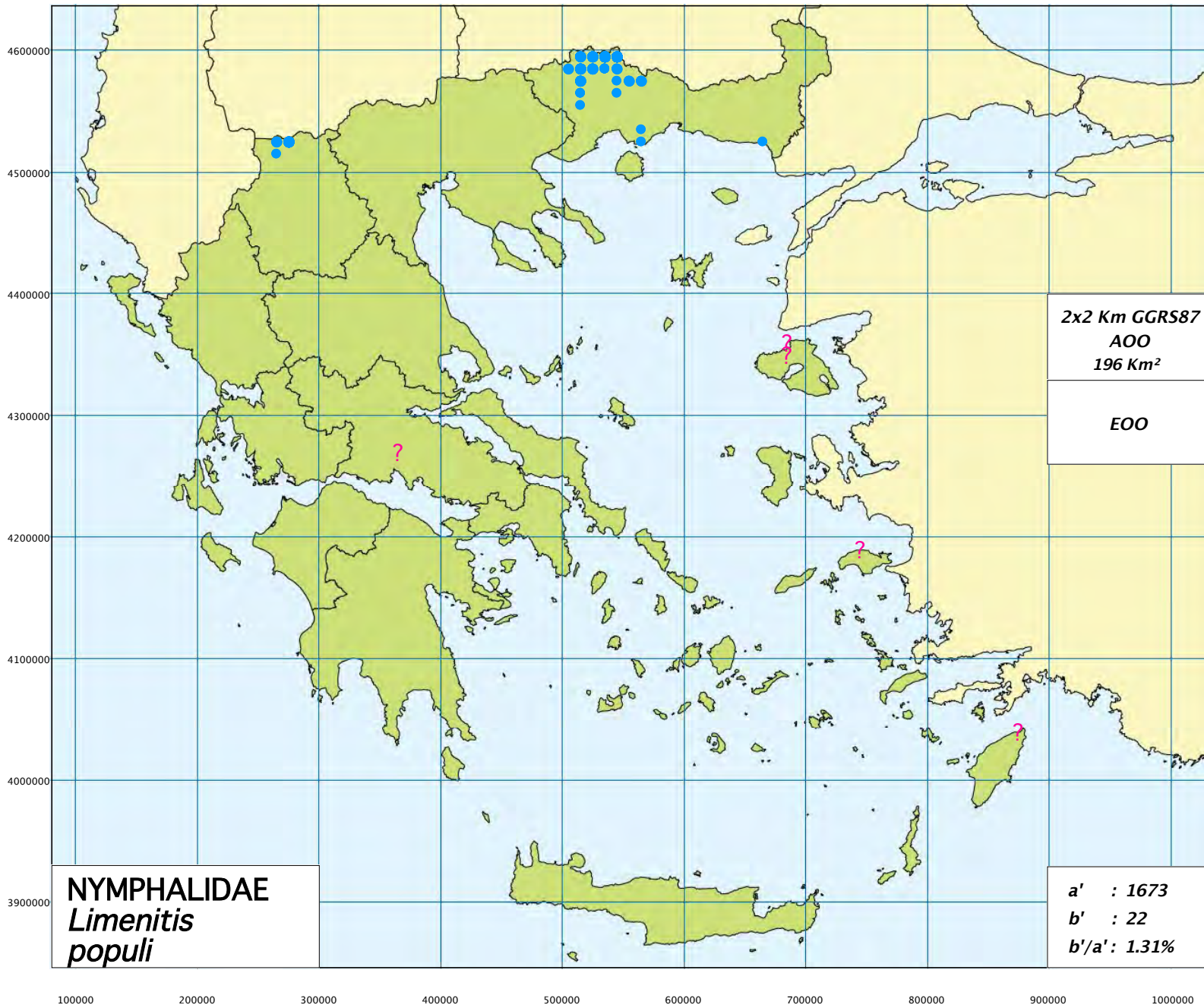


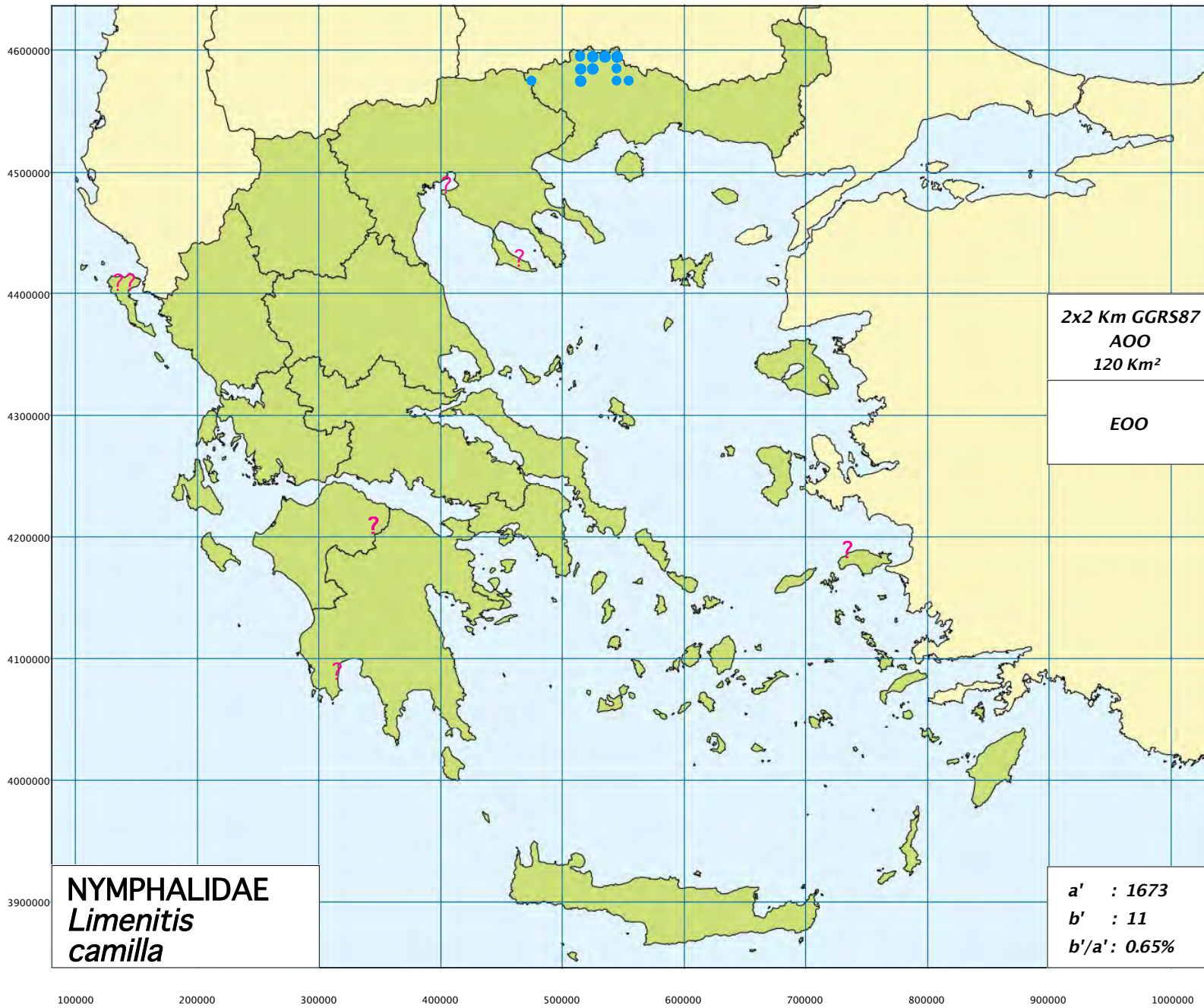












**NYMPHALIDAE**  
*Limenitis*  
*camilla*

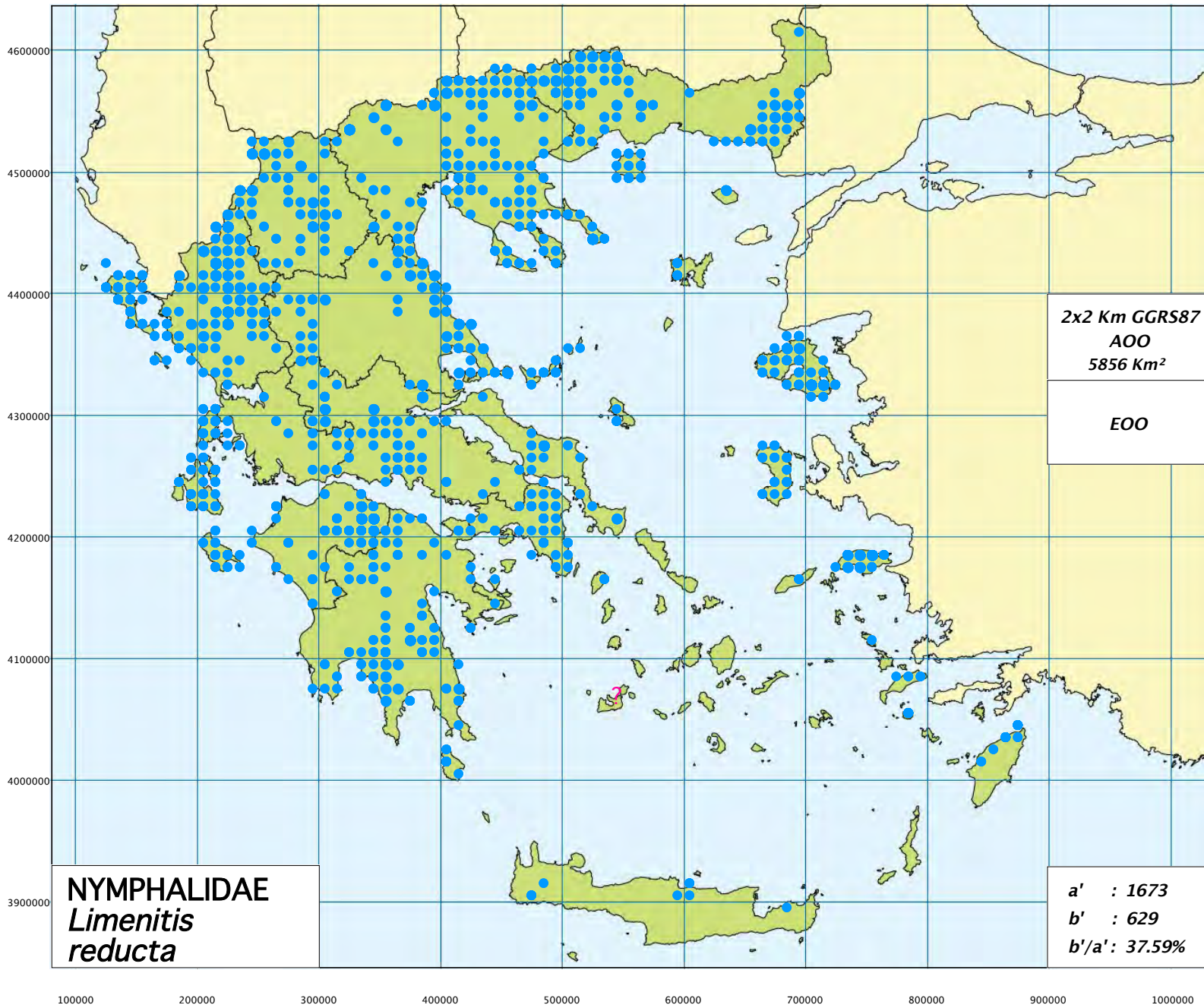
**2x2 Km GGRS87**  
**AOO**  
**120 Km<sup>2</sup>**

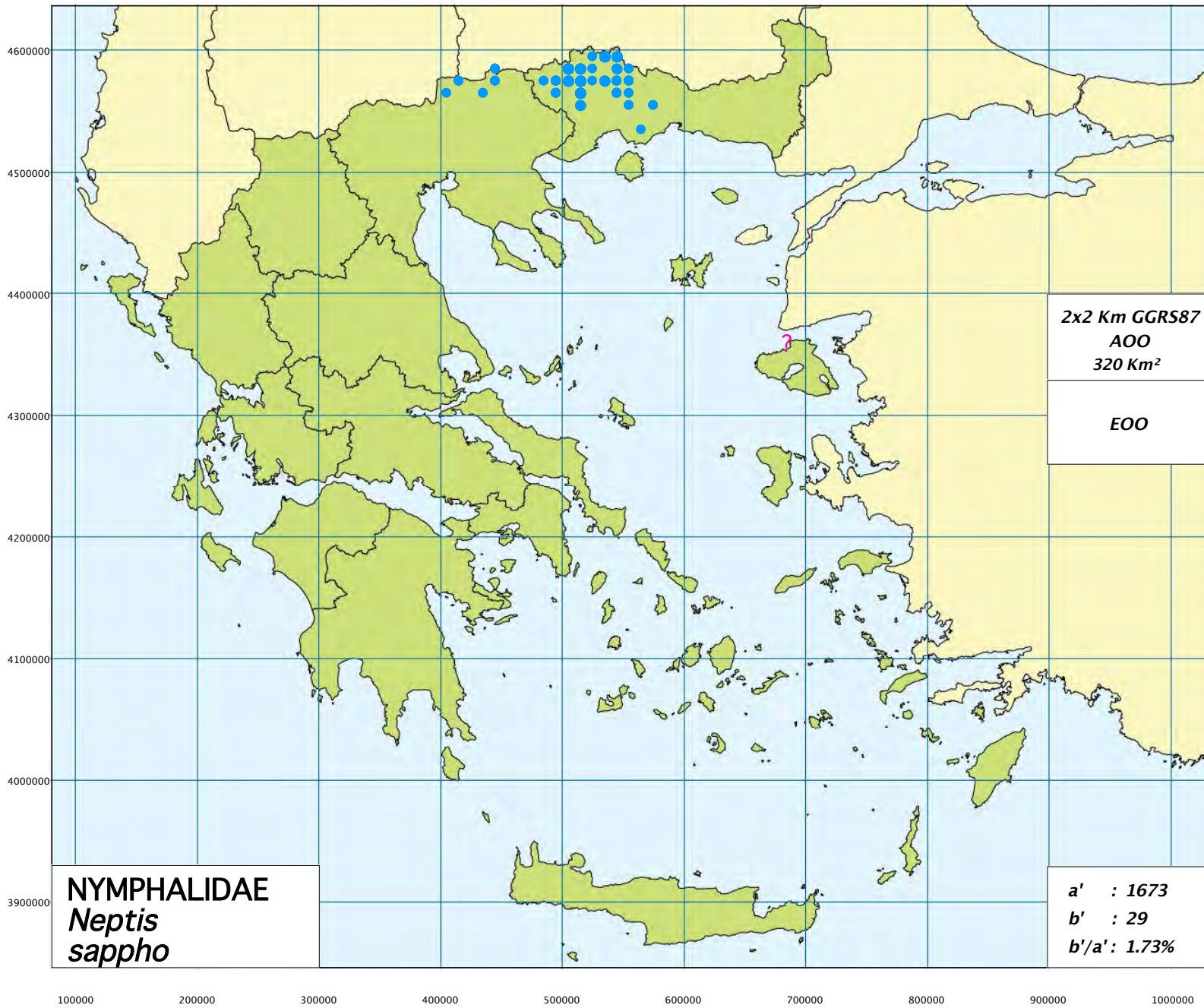
**EOO**

**a' : 1673**  
**b' : 11**  
**b'/a' : 0.65%**

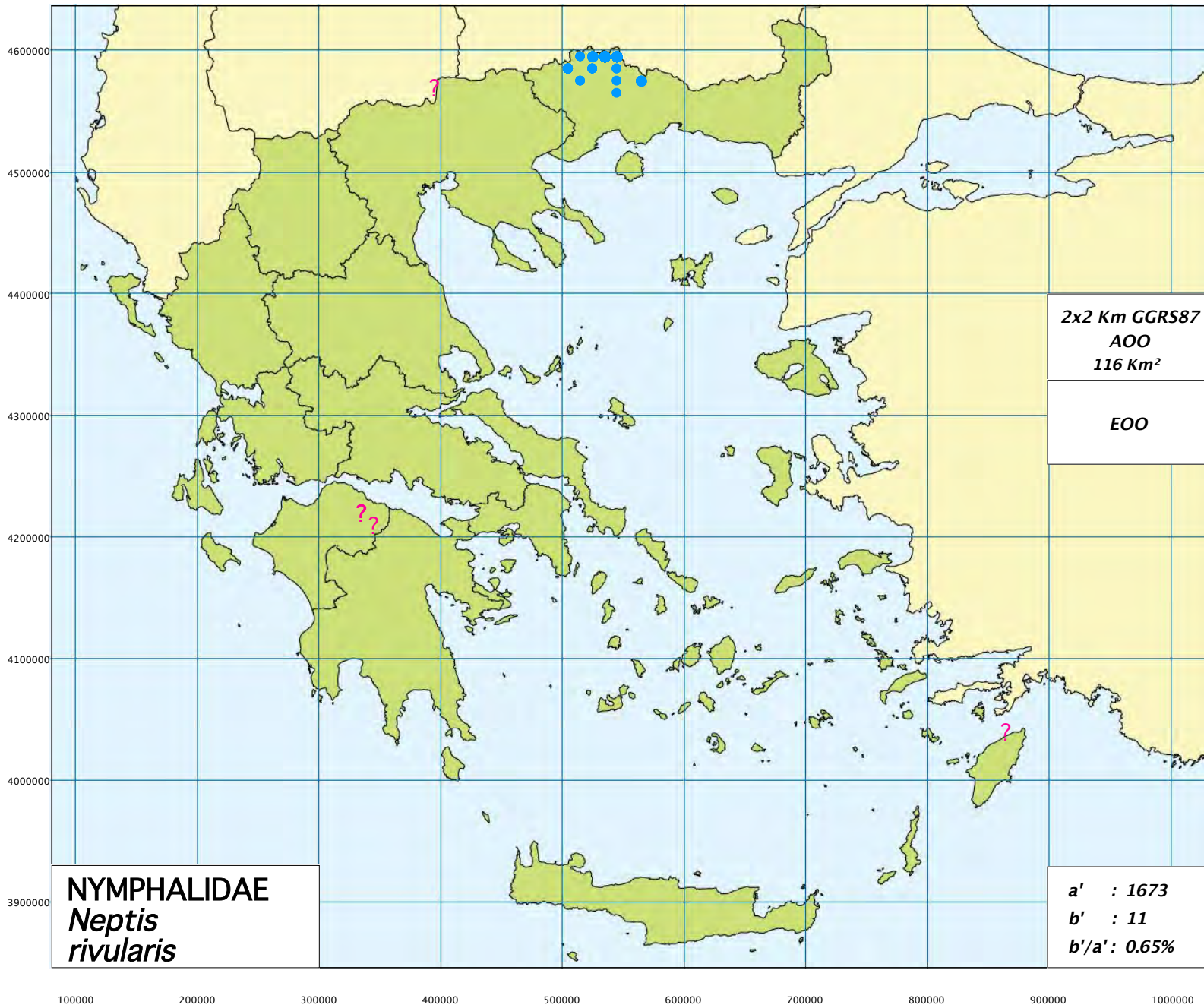
100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000









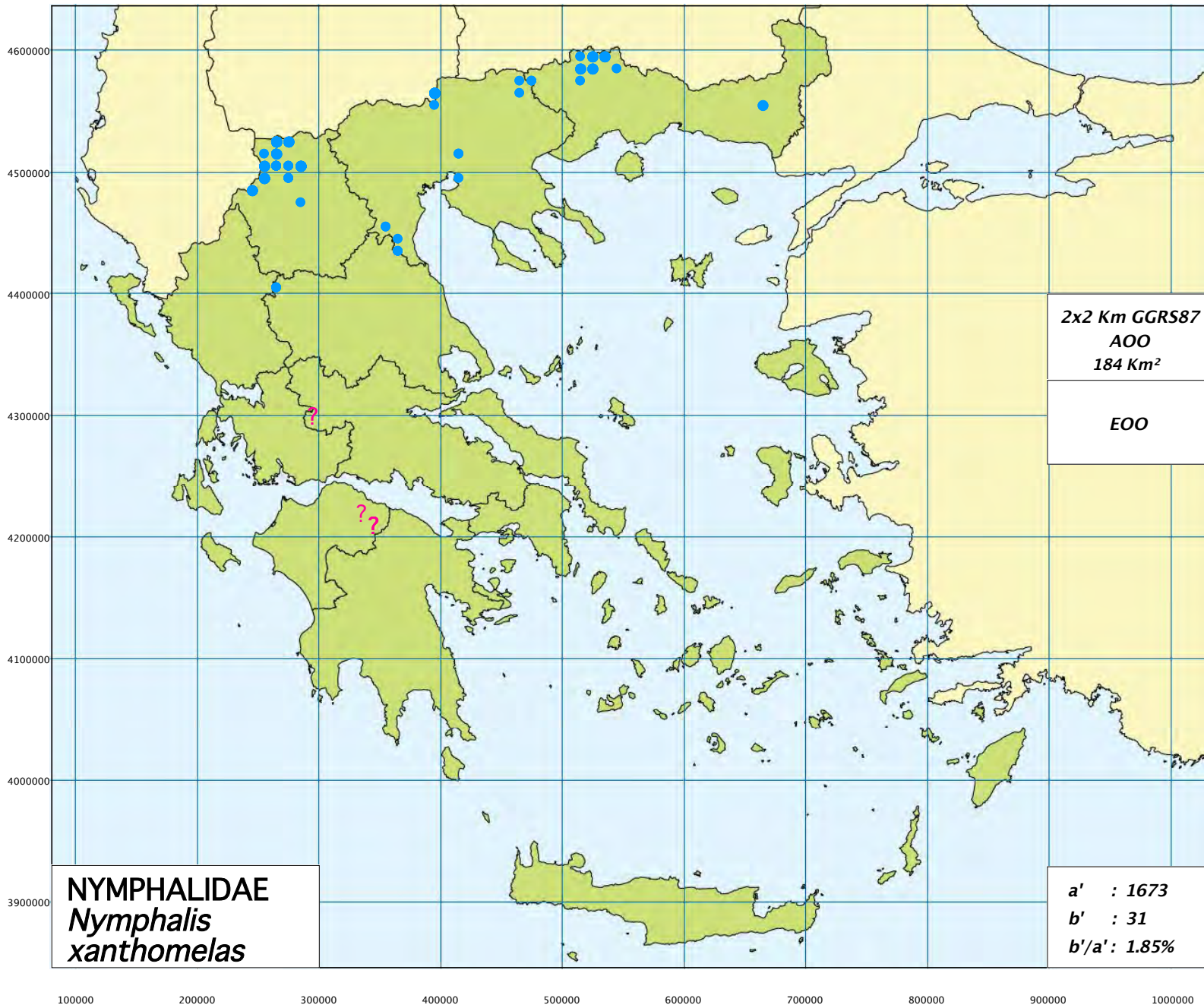


**NYMPHALIDAE**  
*Neptis rivularis*

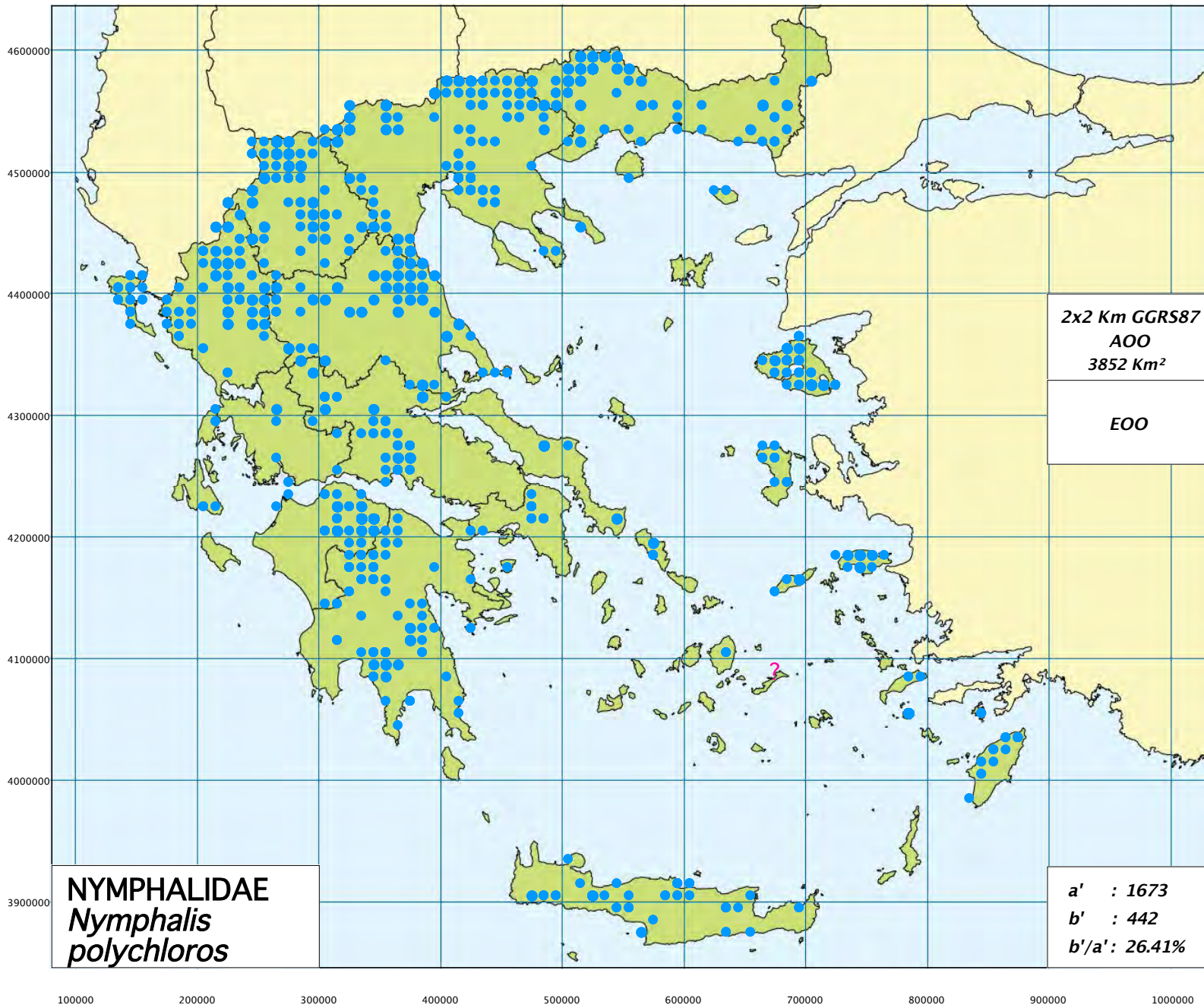
**2x2 Km GGRS87  
 AOO  
 116 Km<sup>2</sup>**

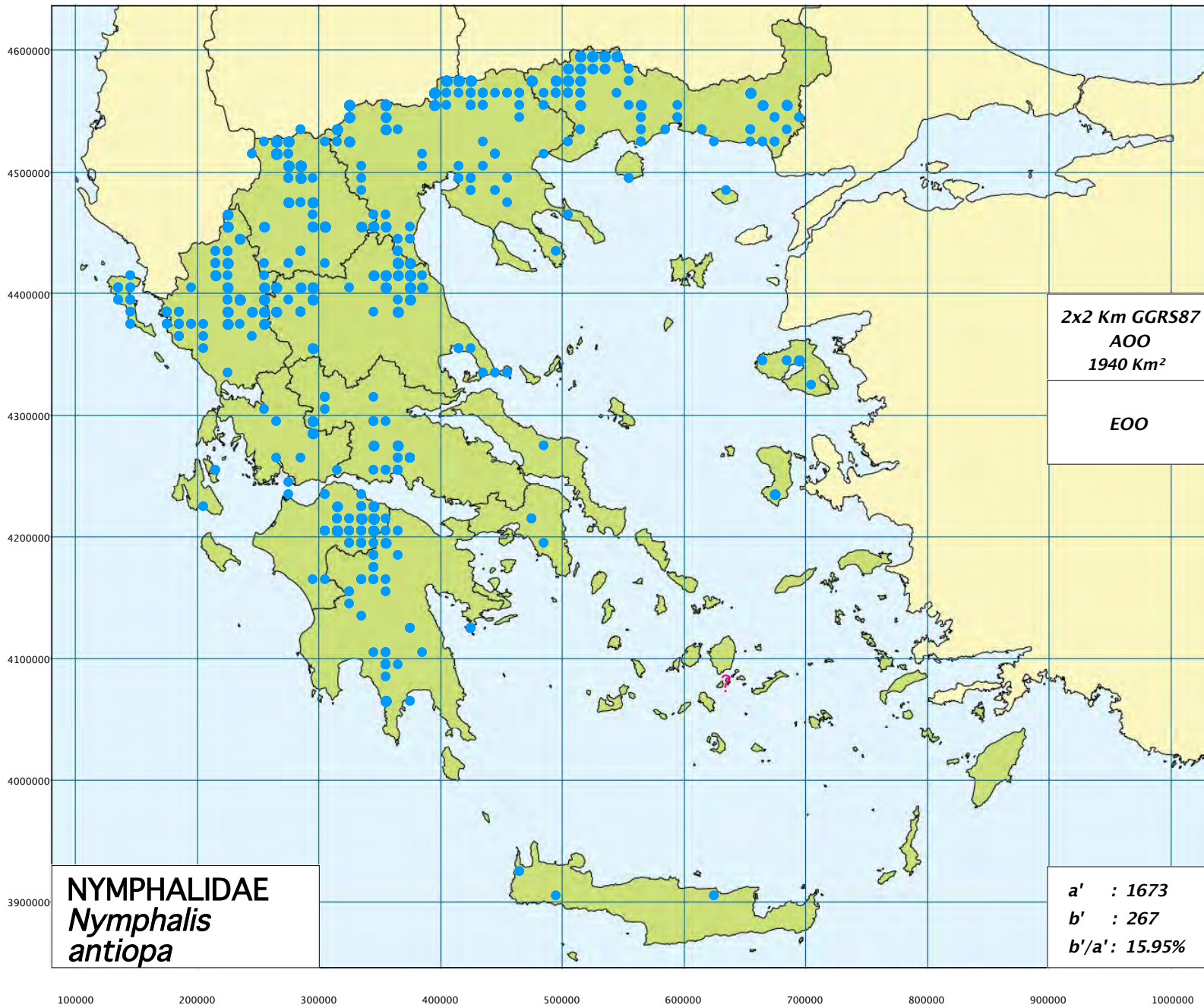
**EOO**

**a' : 1673  
 b' : 11  
 b'/a' : 0.65%**



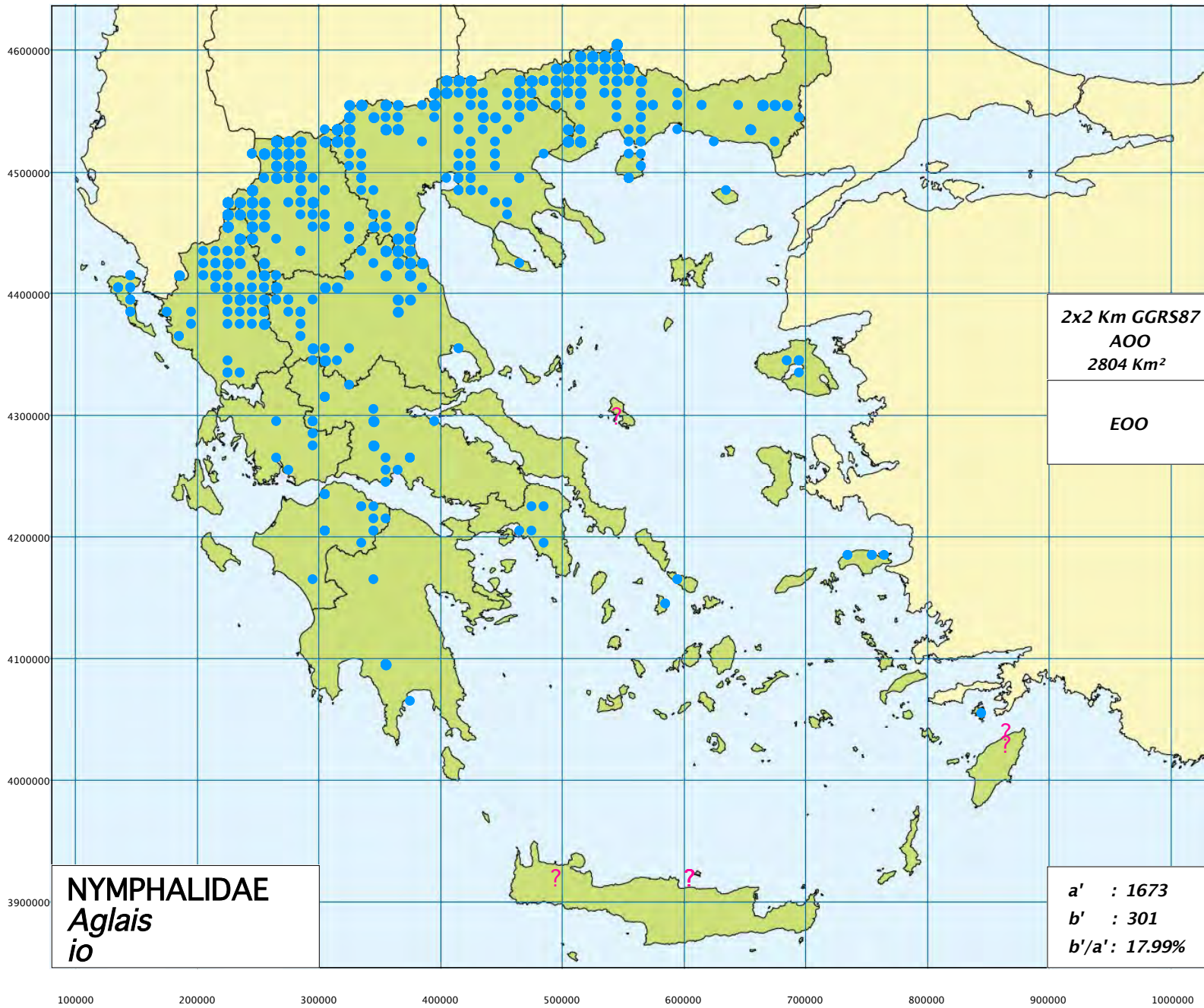


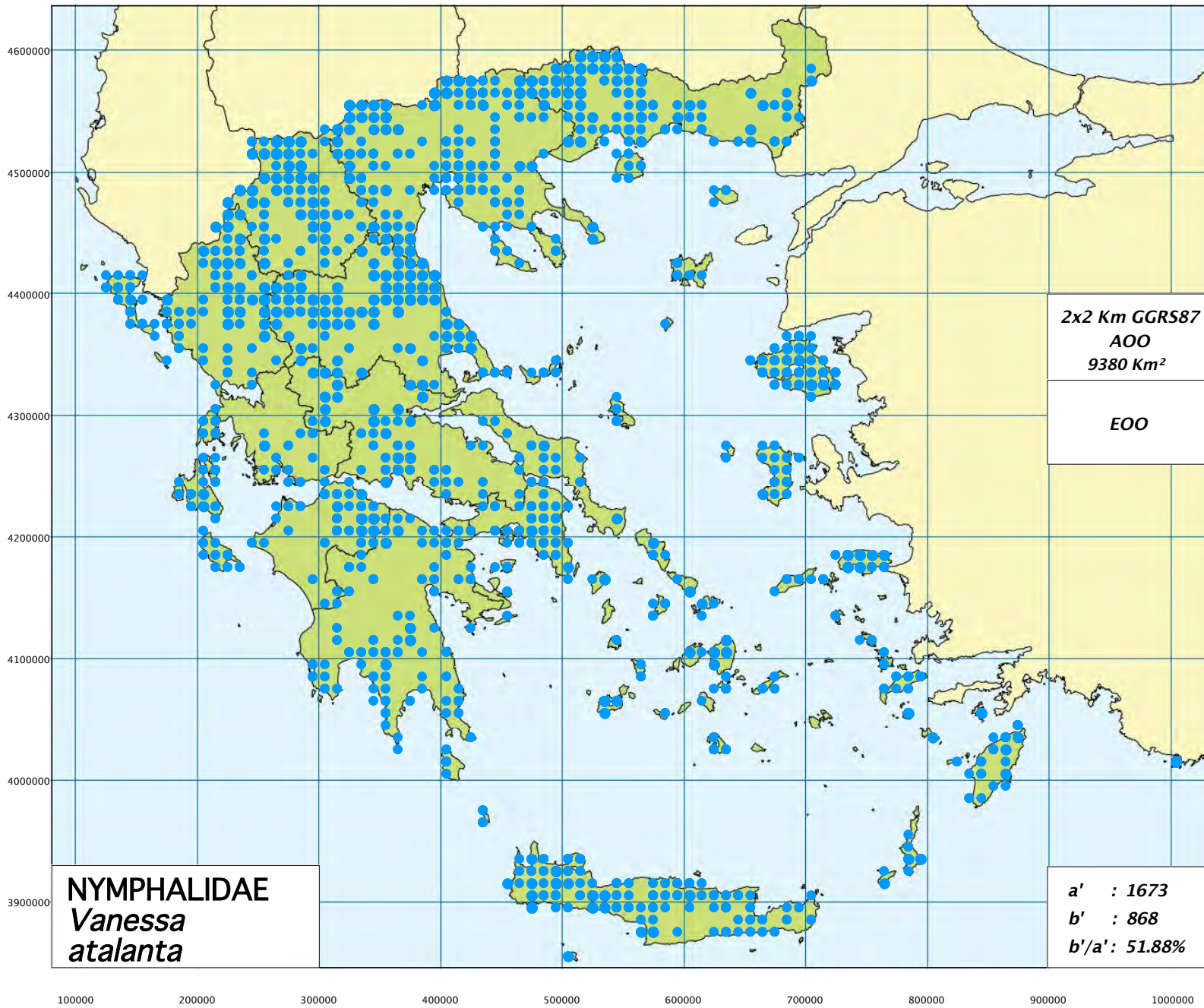




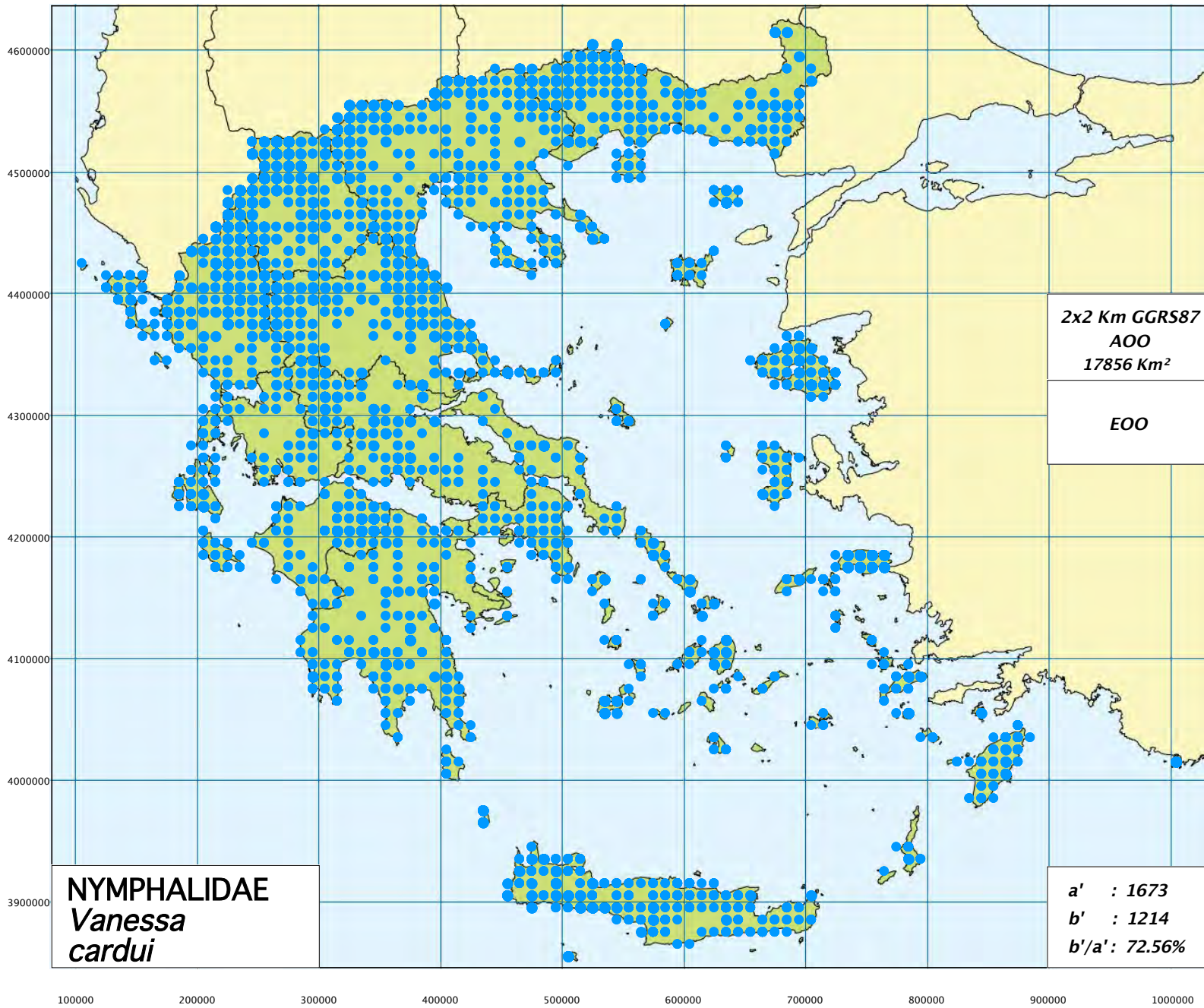
**NYMPHALIDAE**  
*Nymphalis*  
*antiopa*

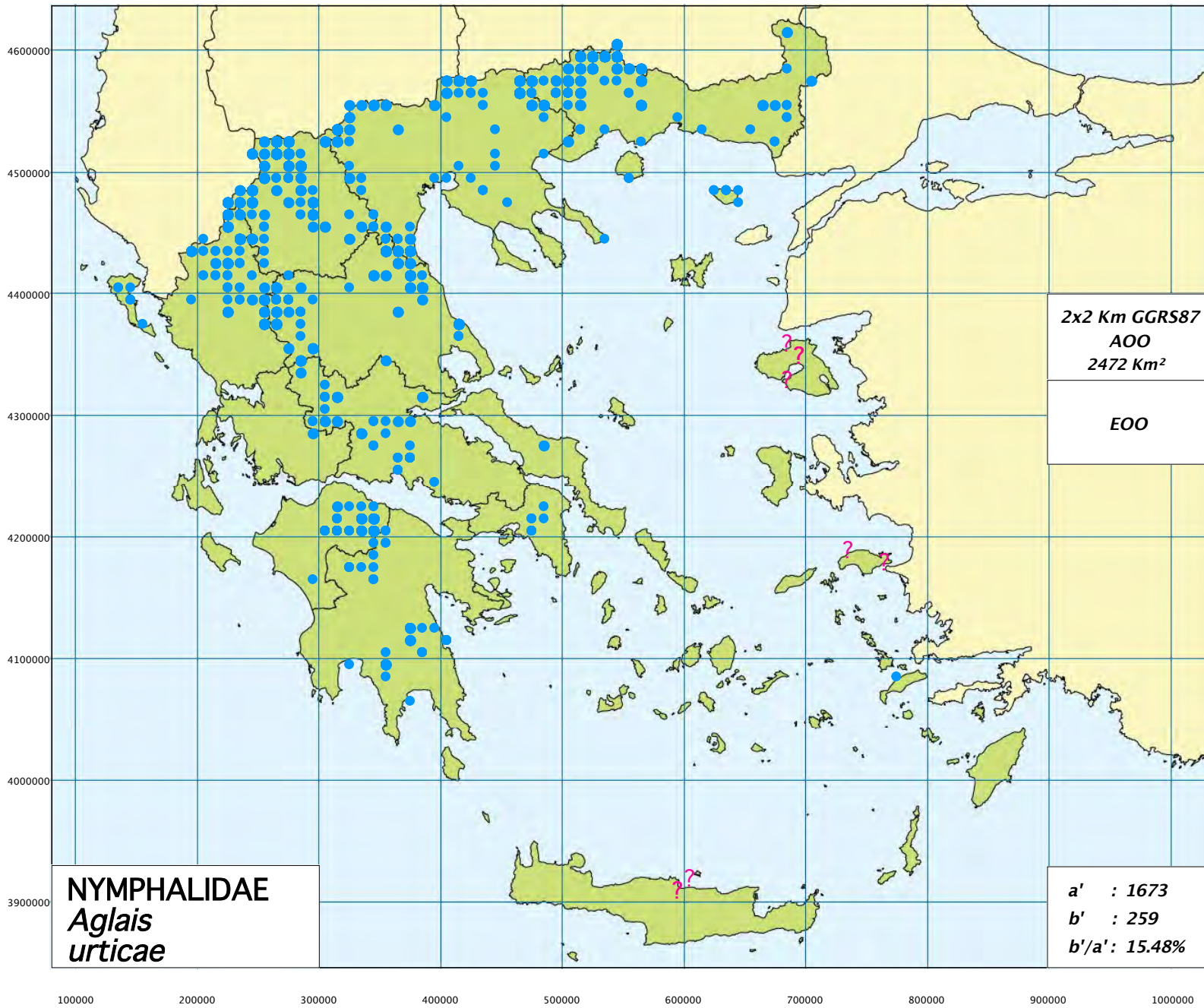




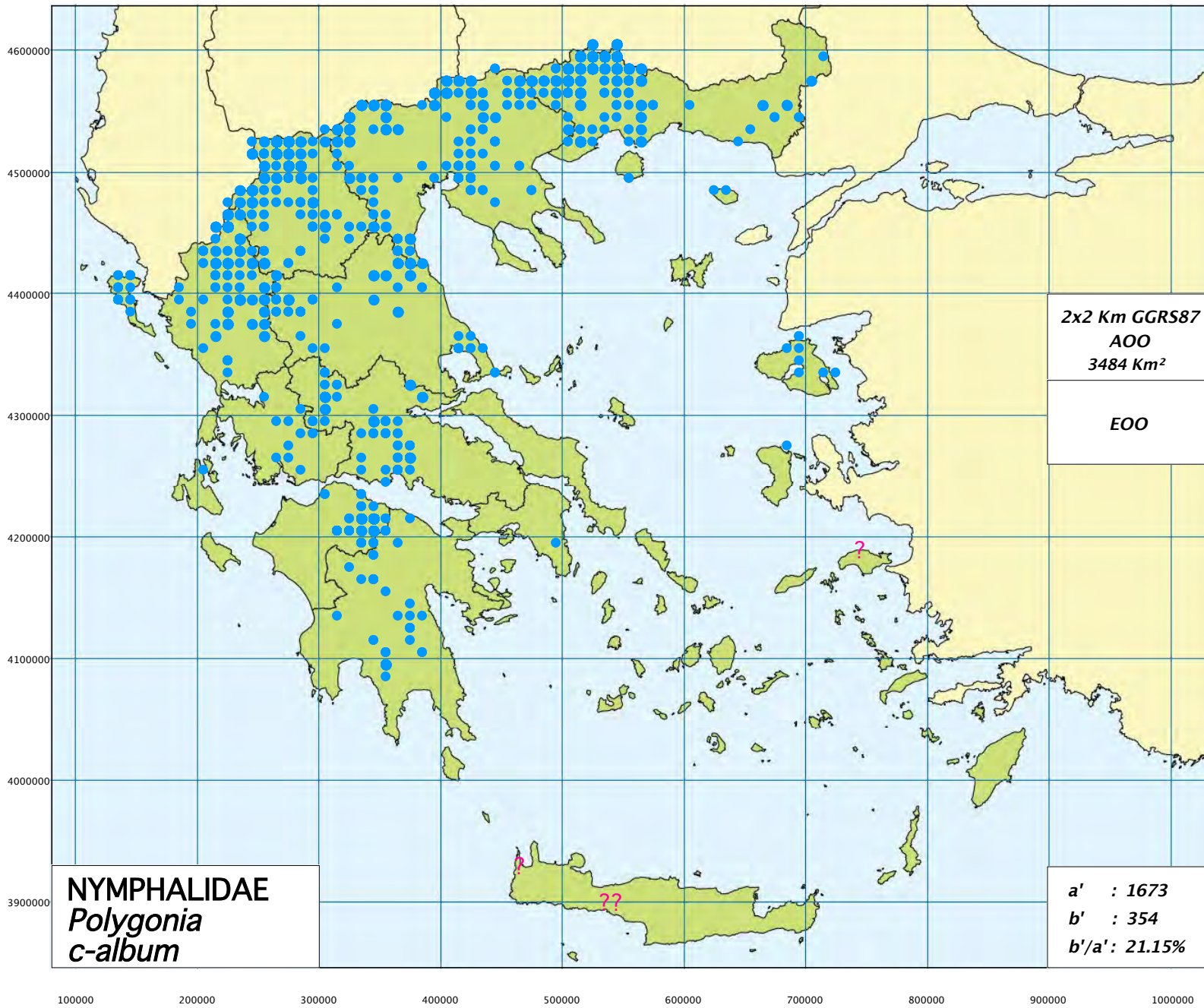




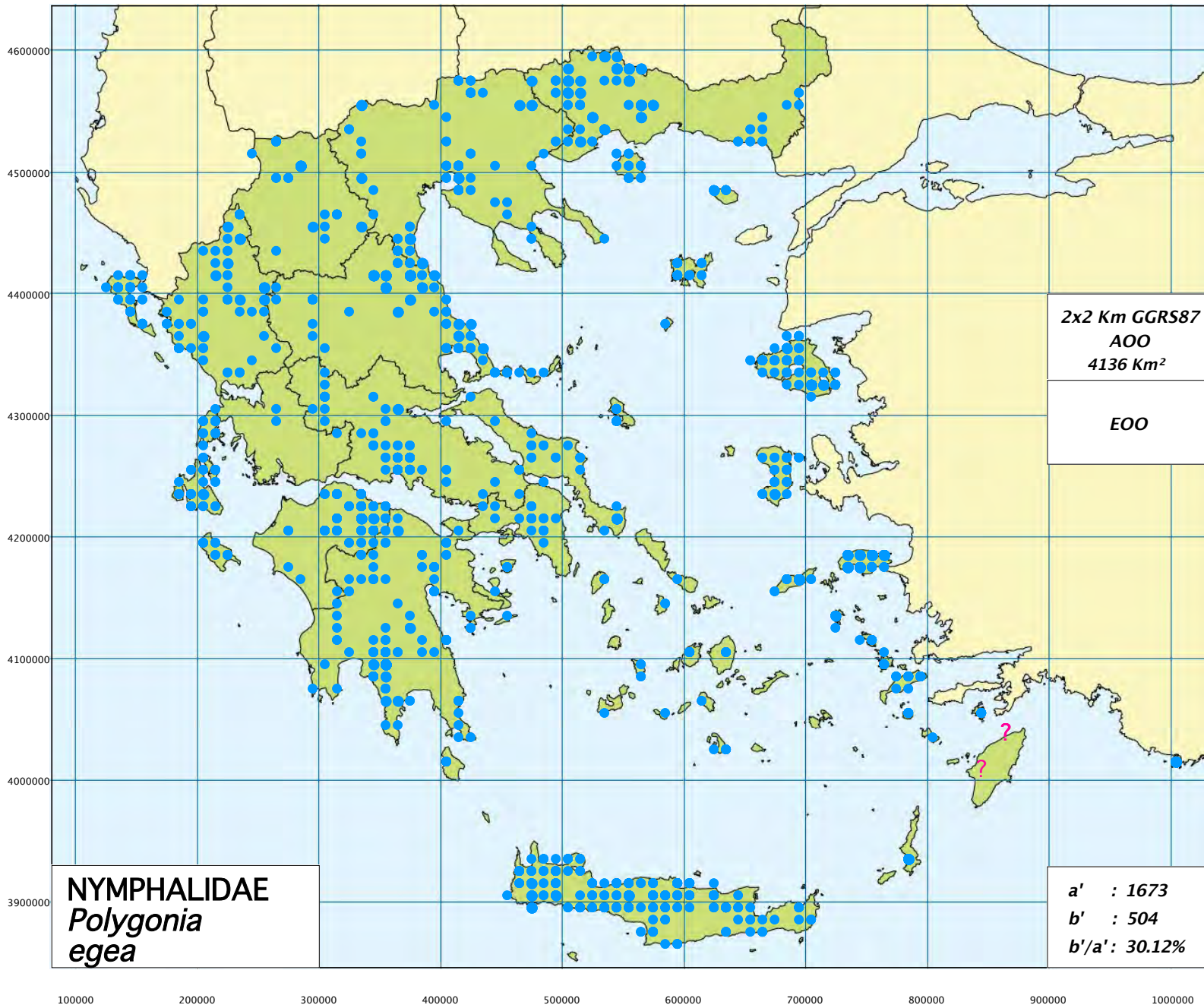






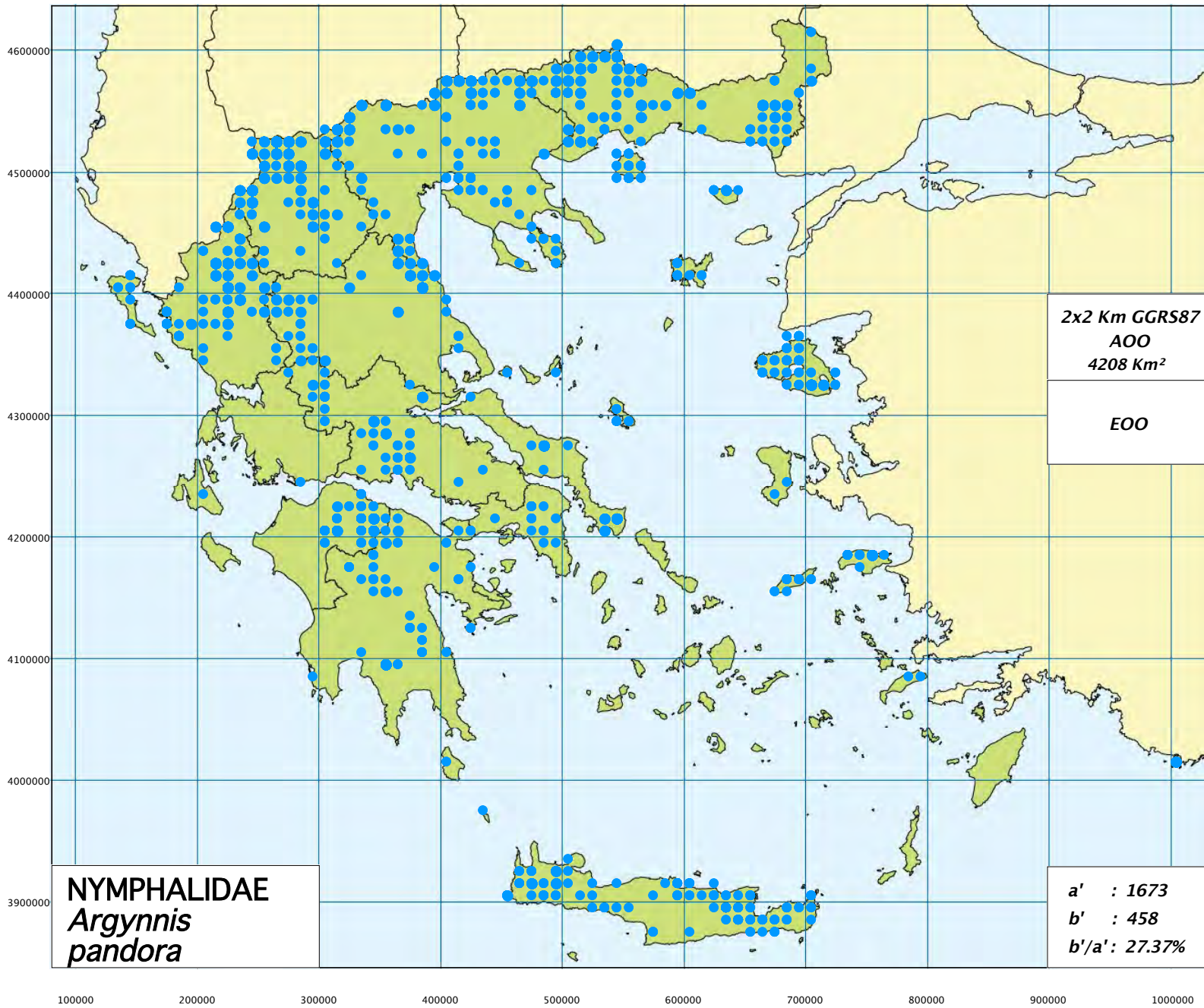


**NYMPHALIDAE**  
*Polygonia*  
*c-album*

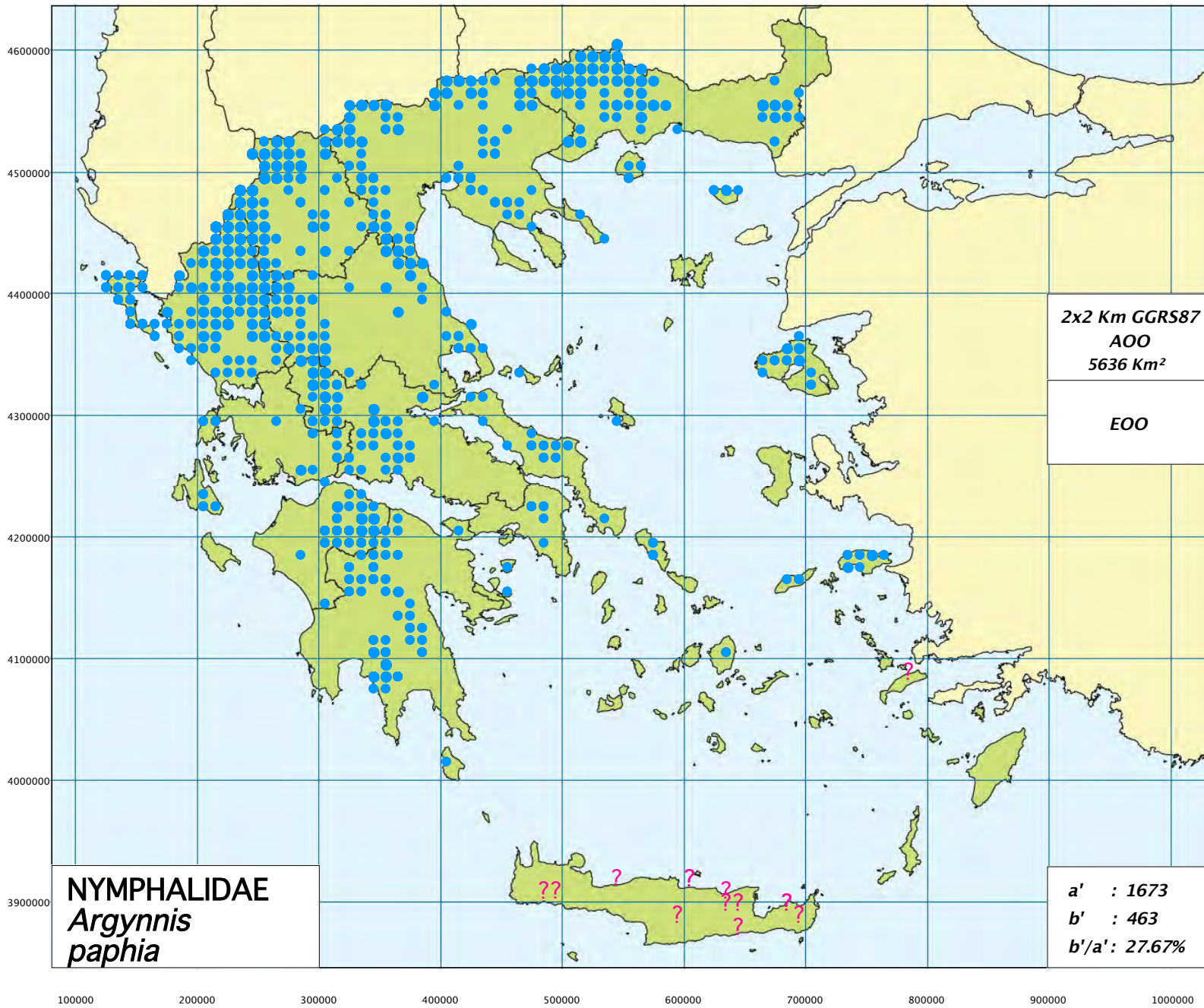


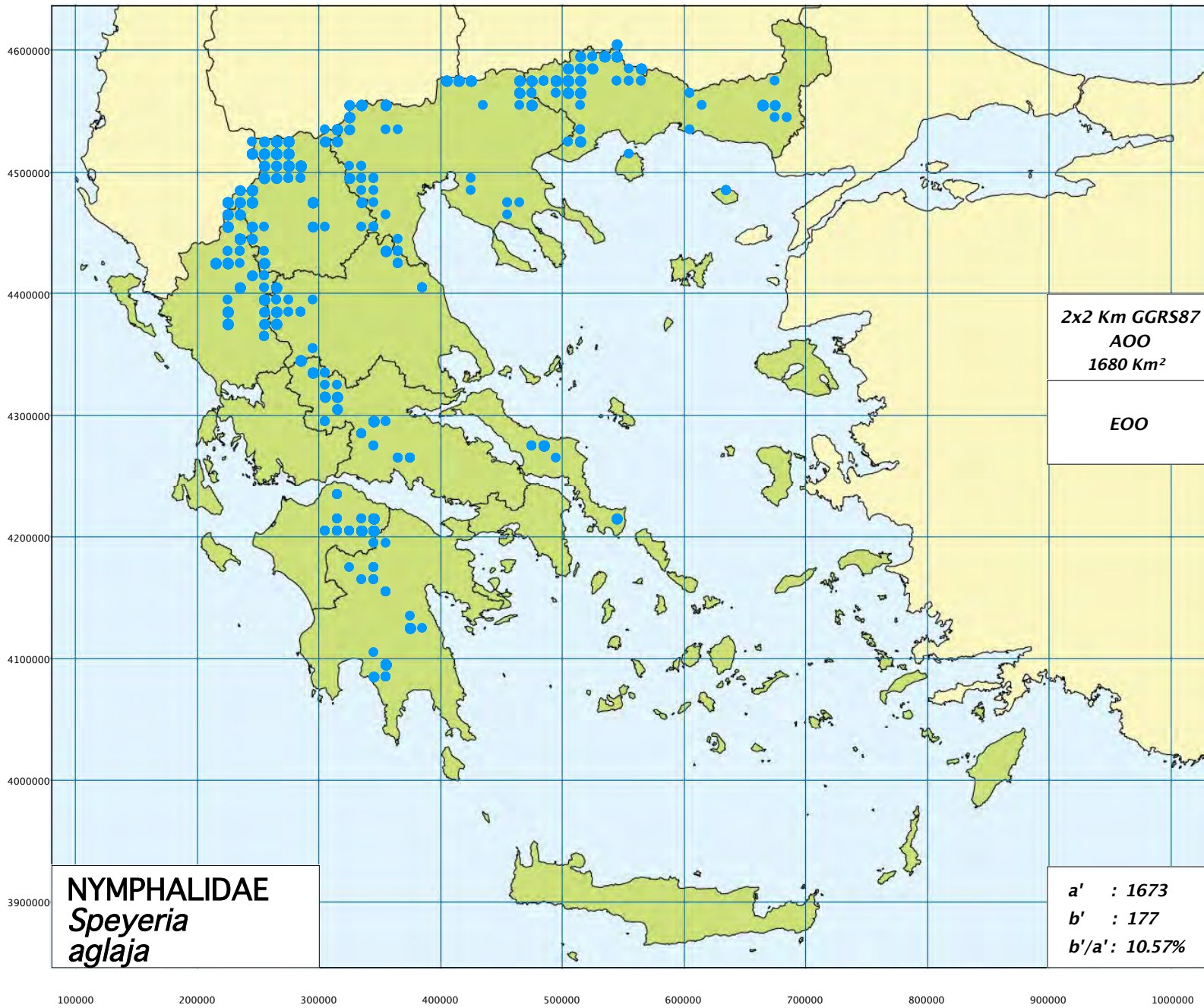




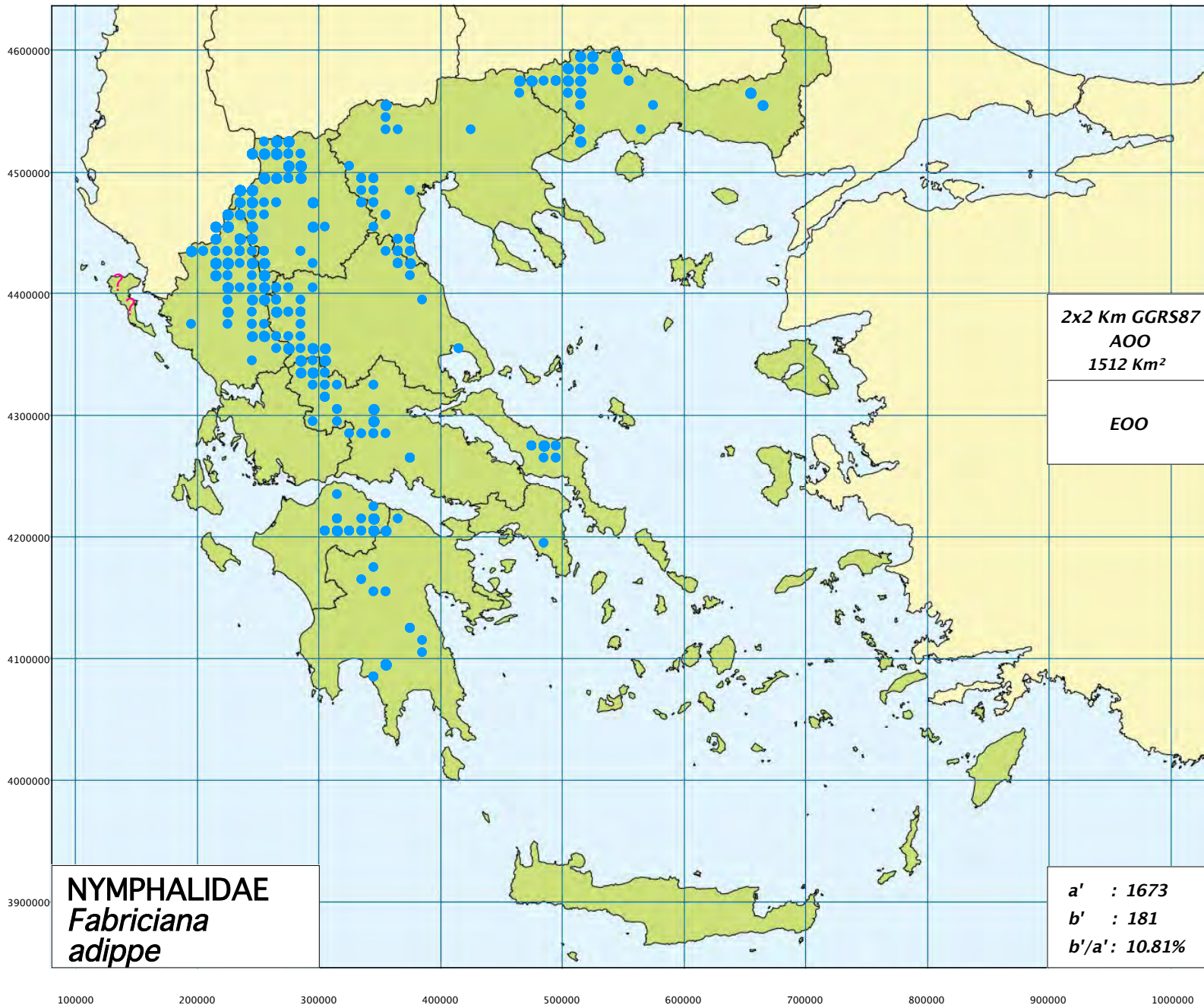


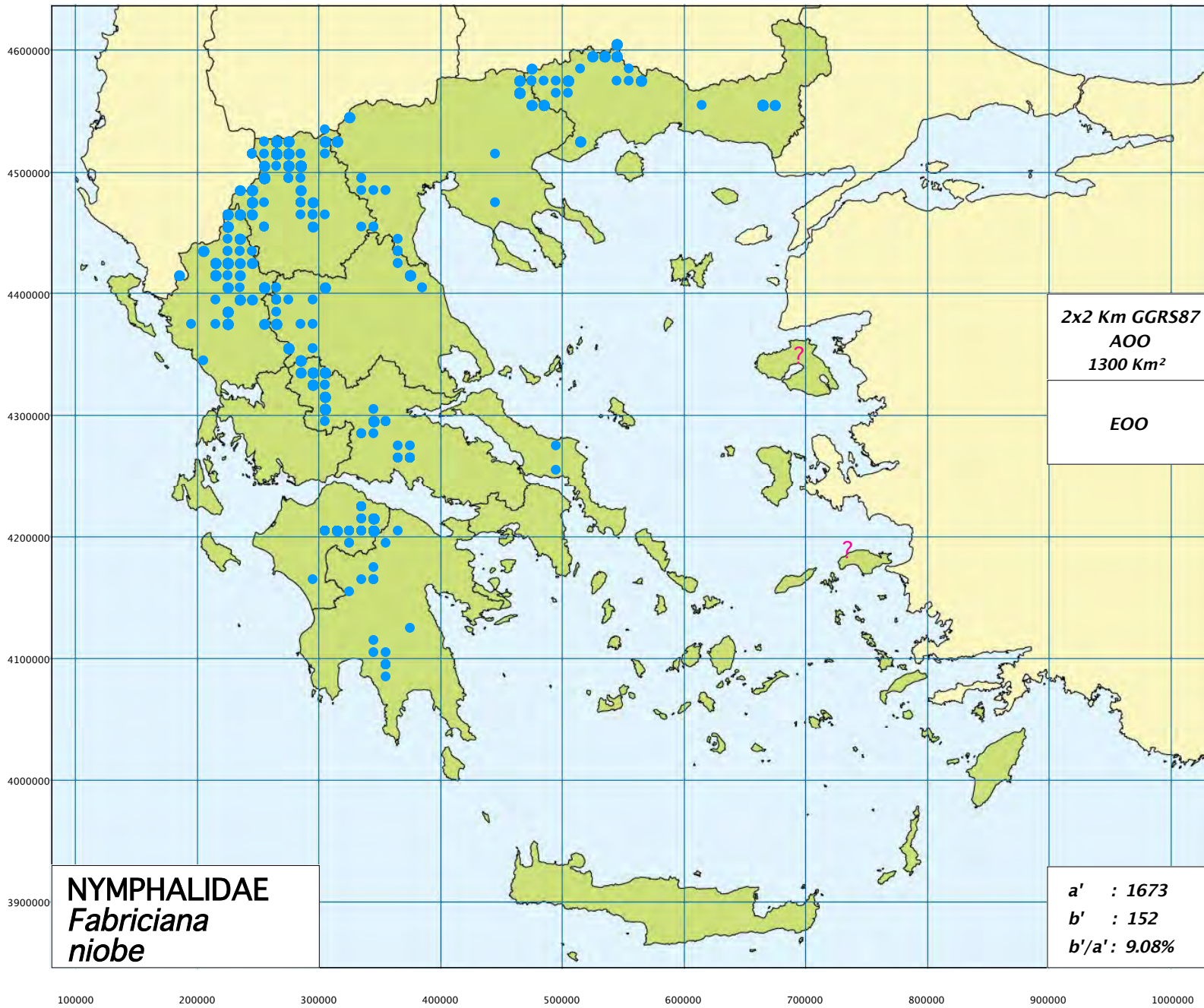




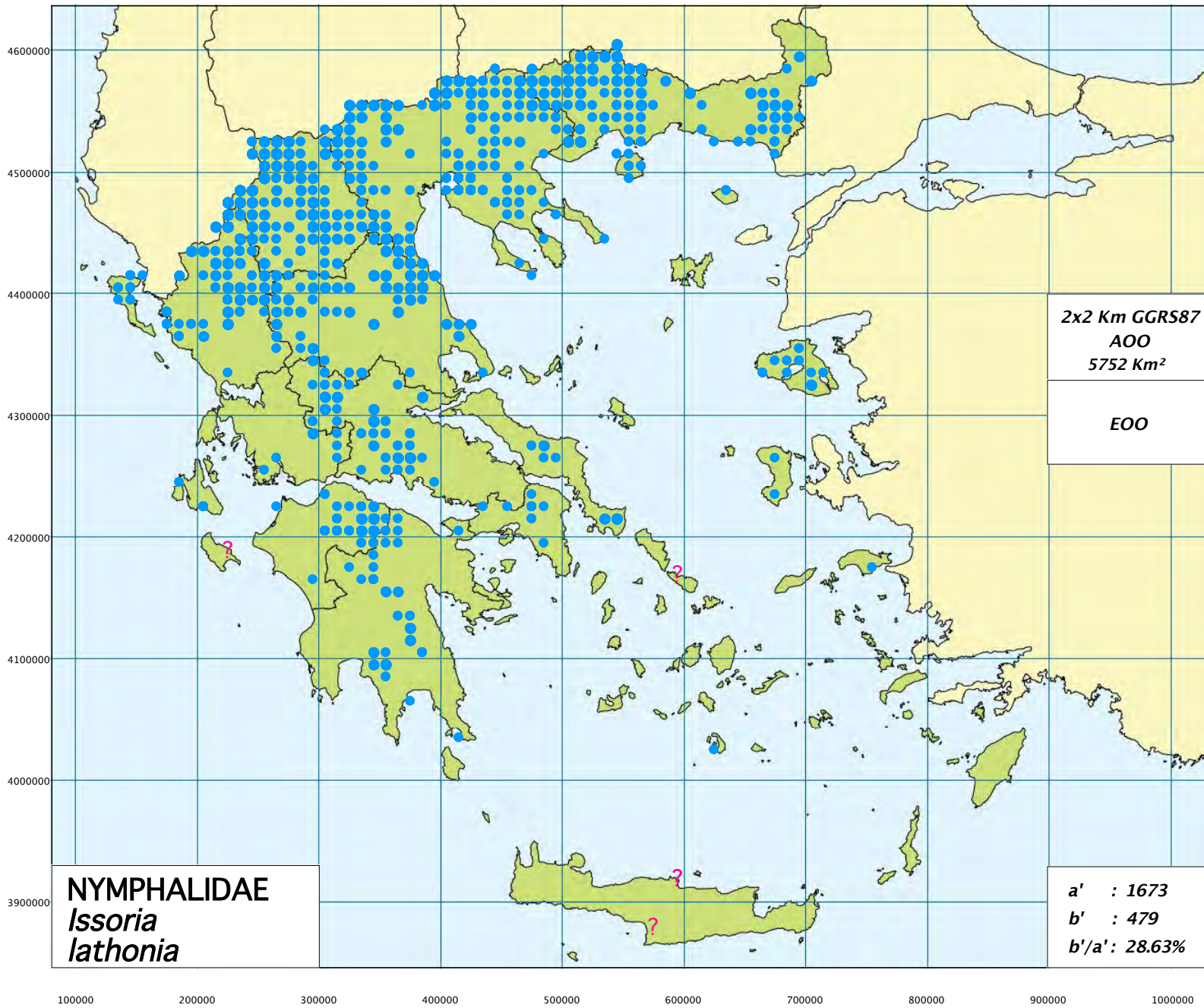


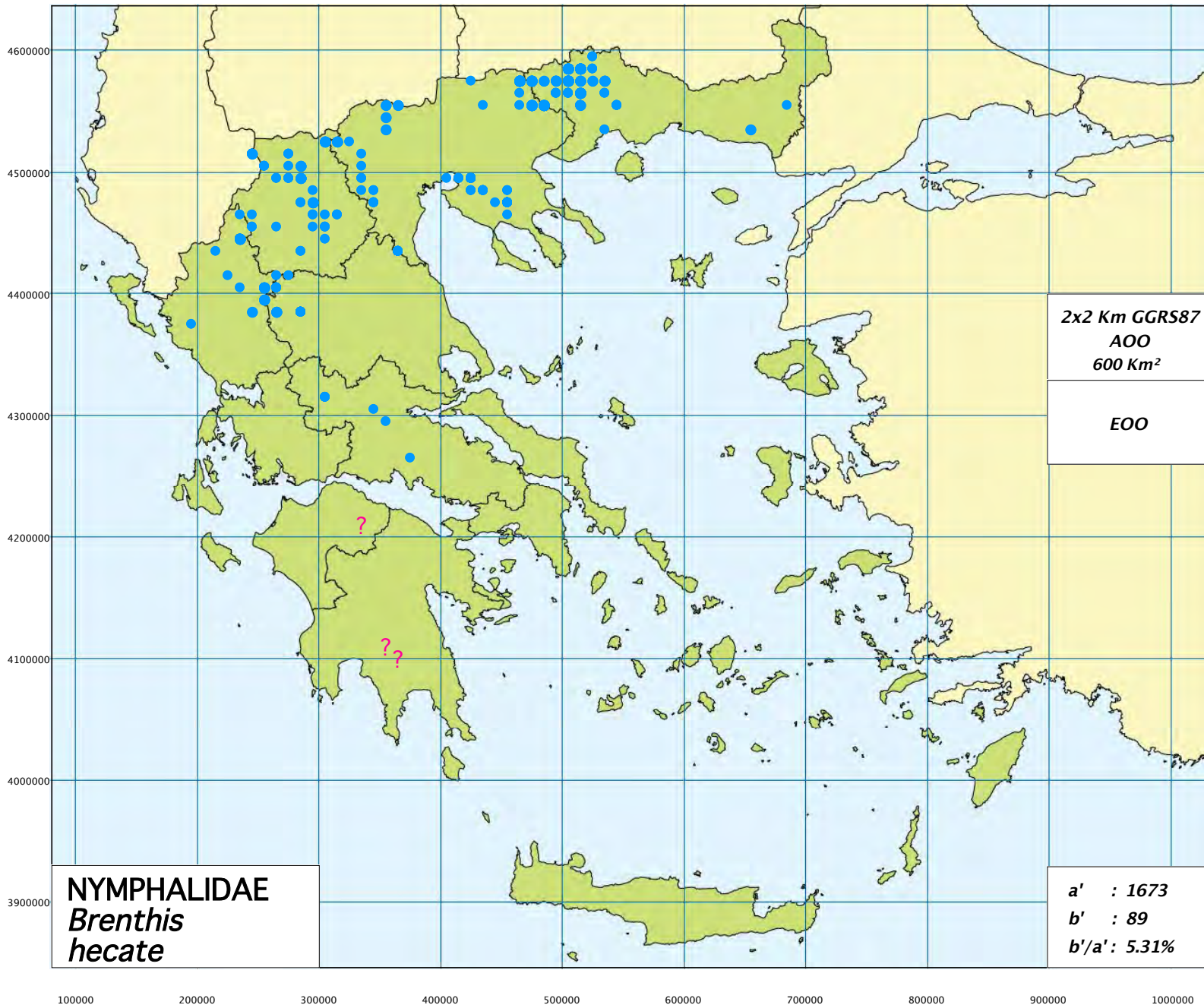




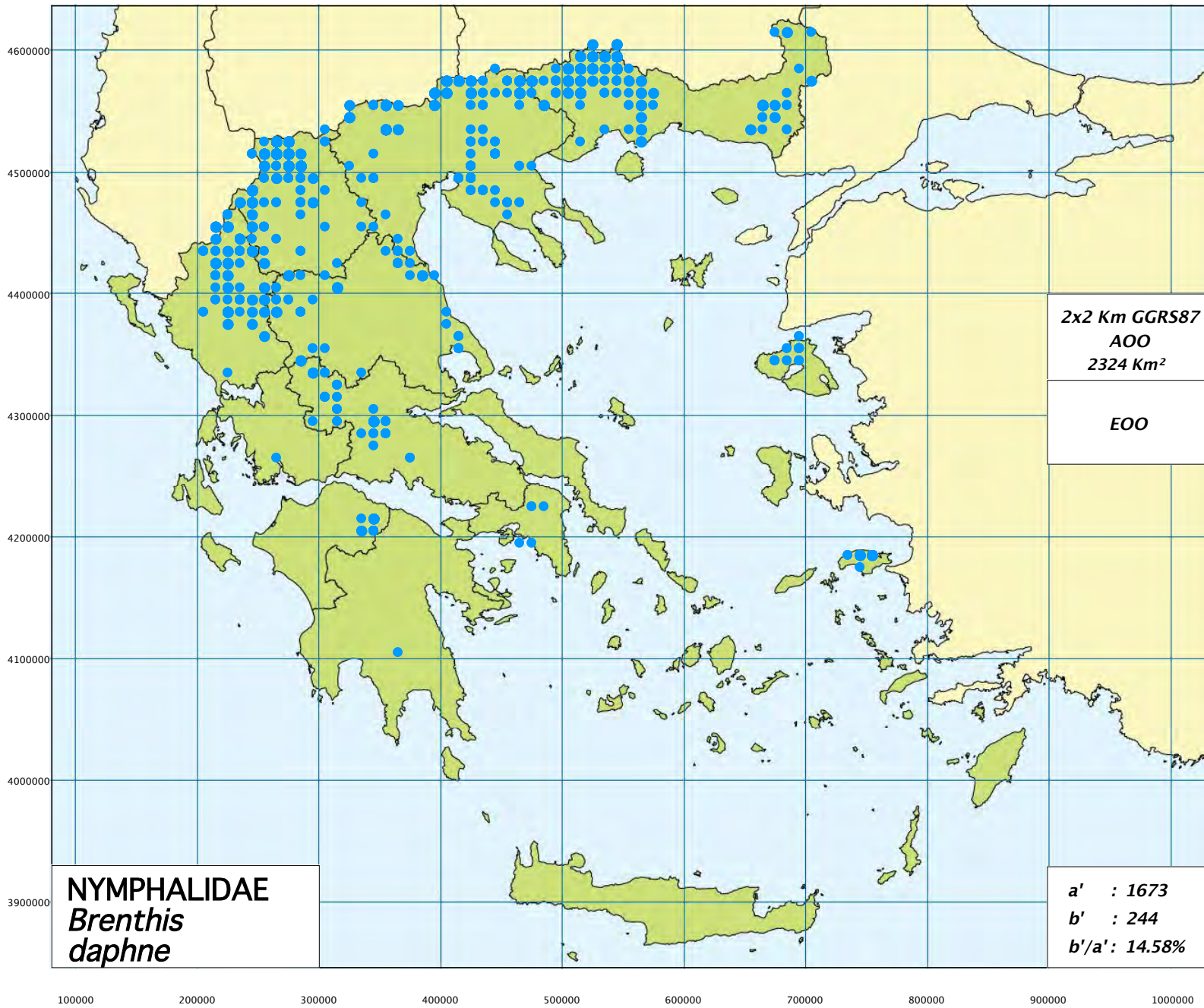


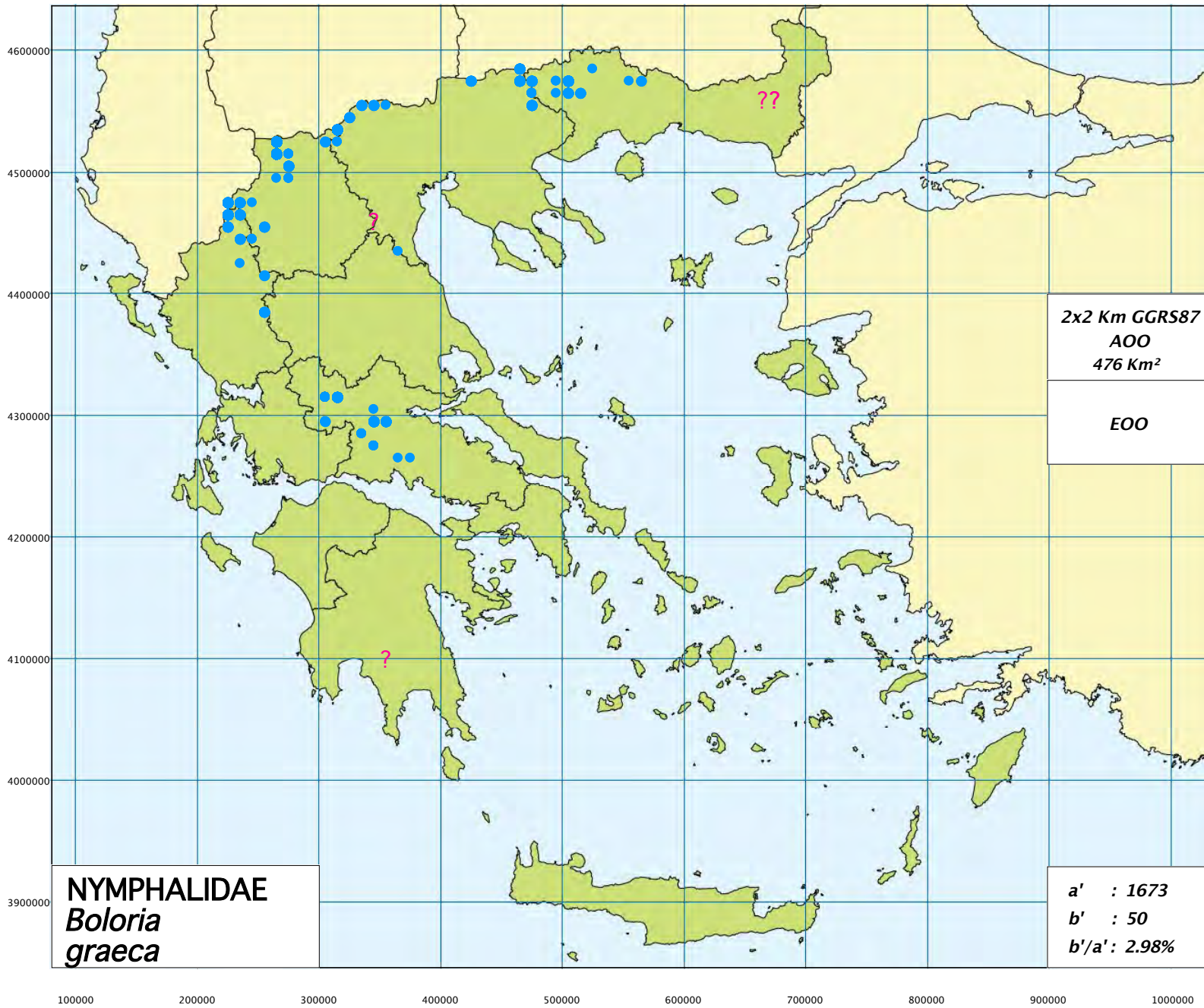




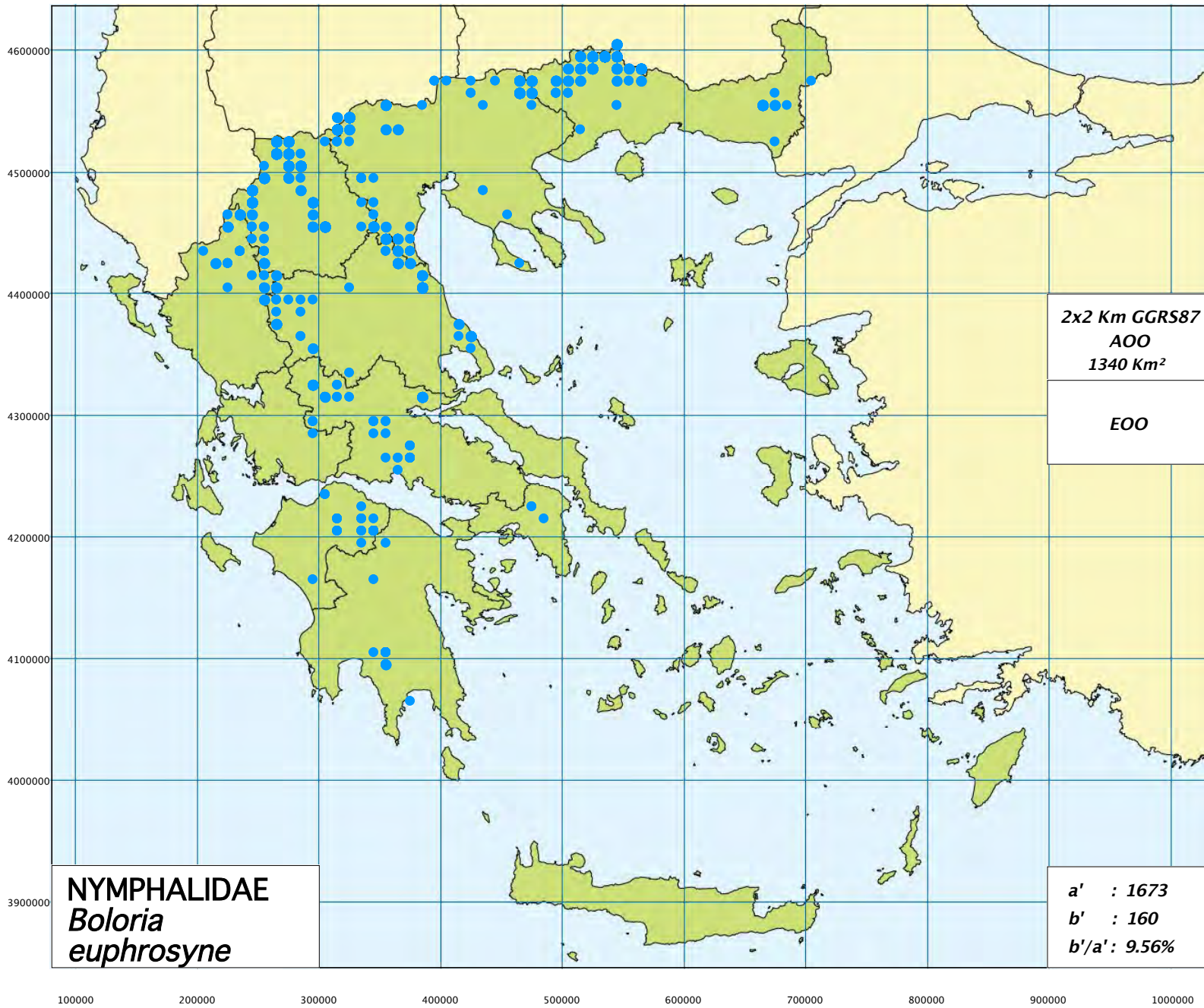


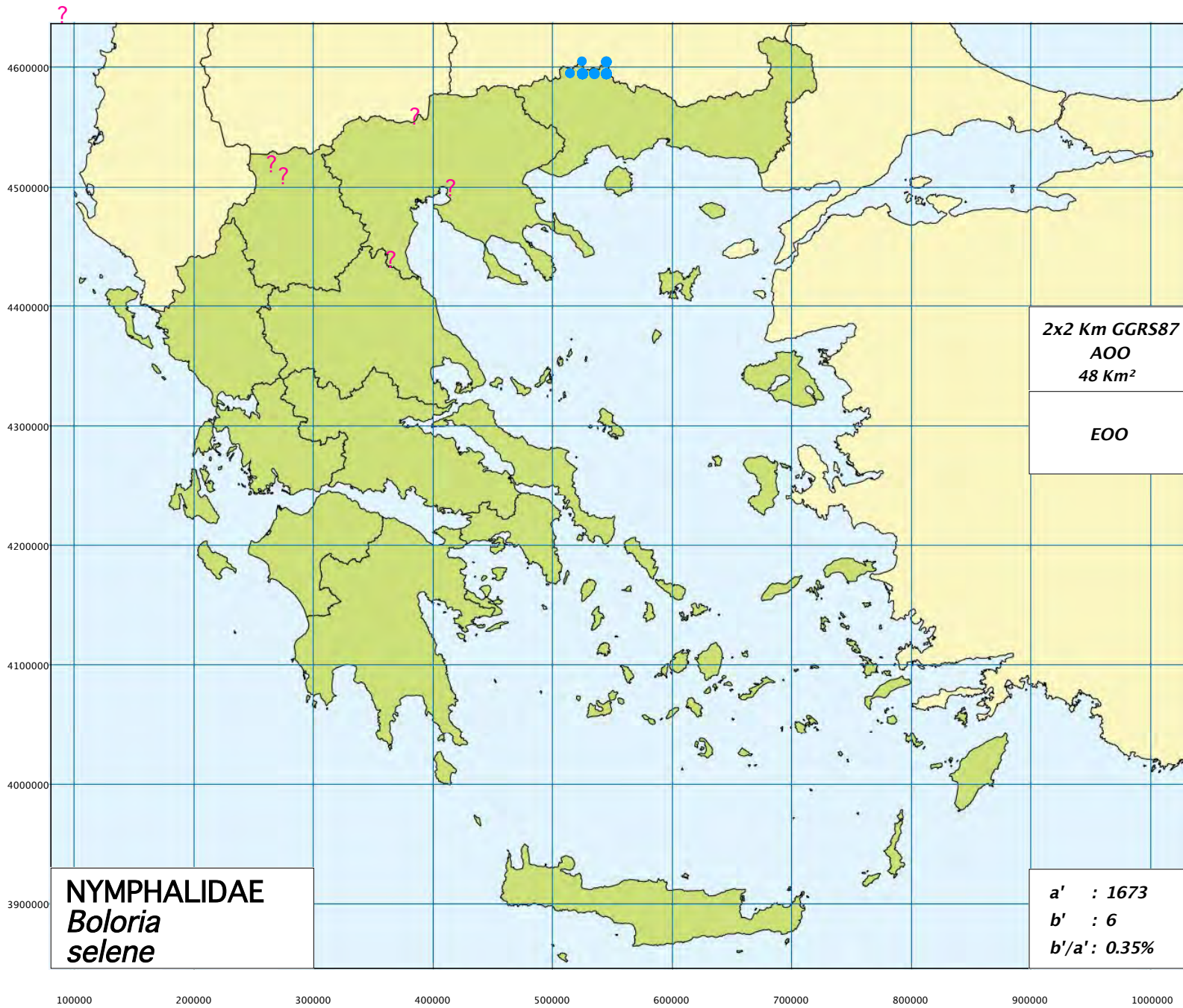




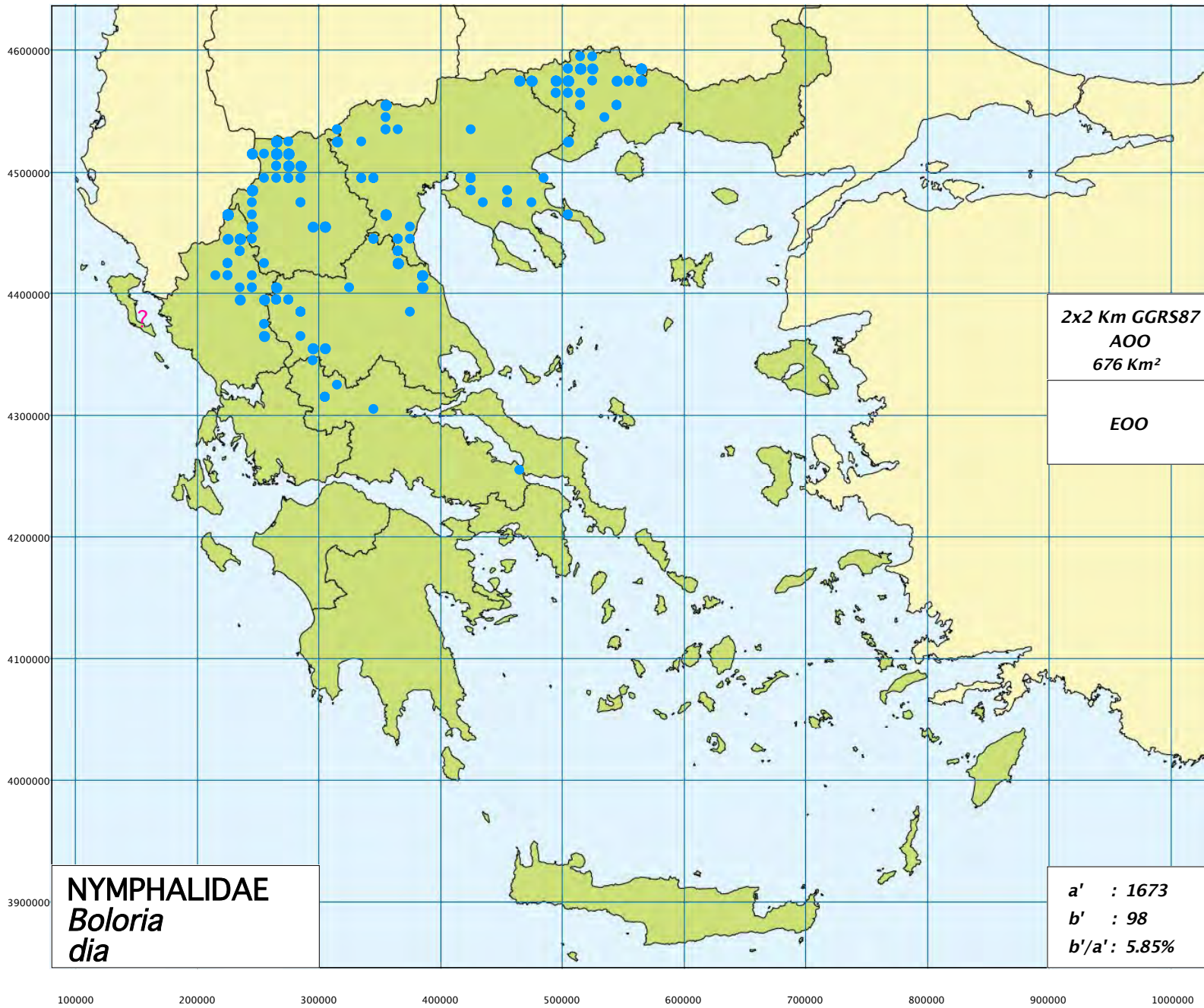


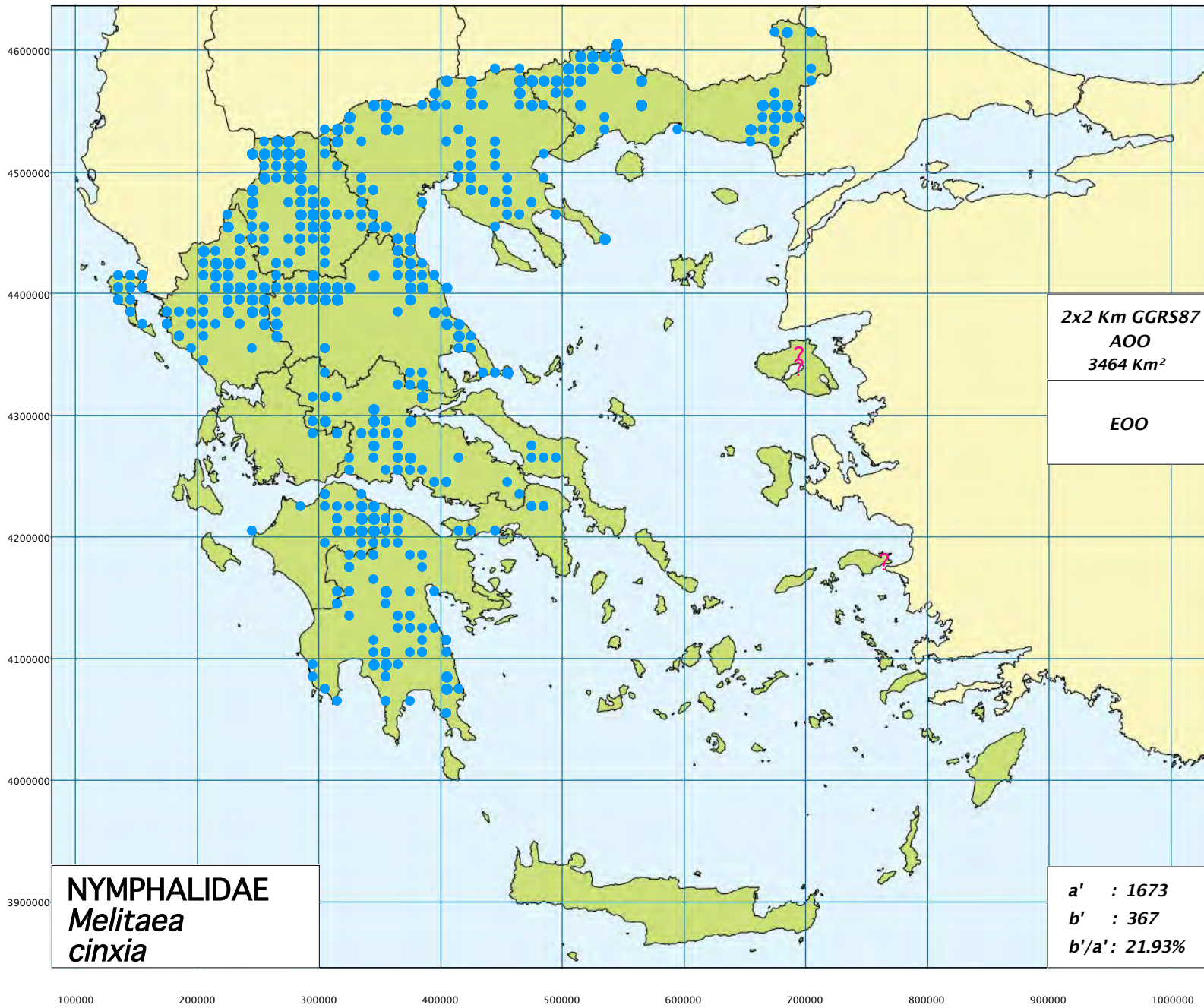














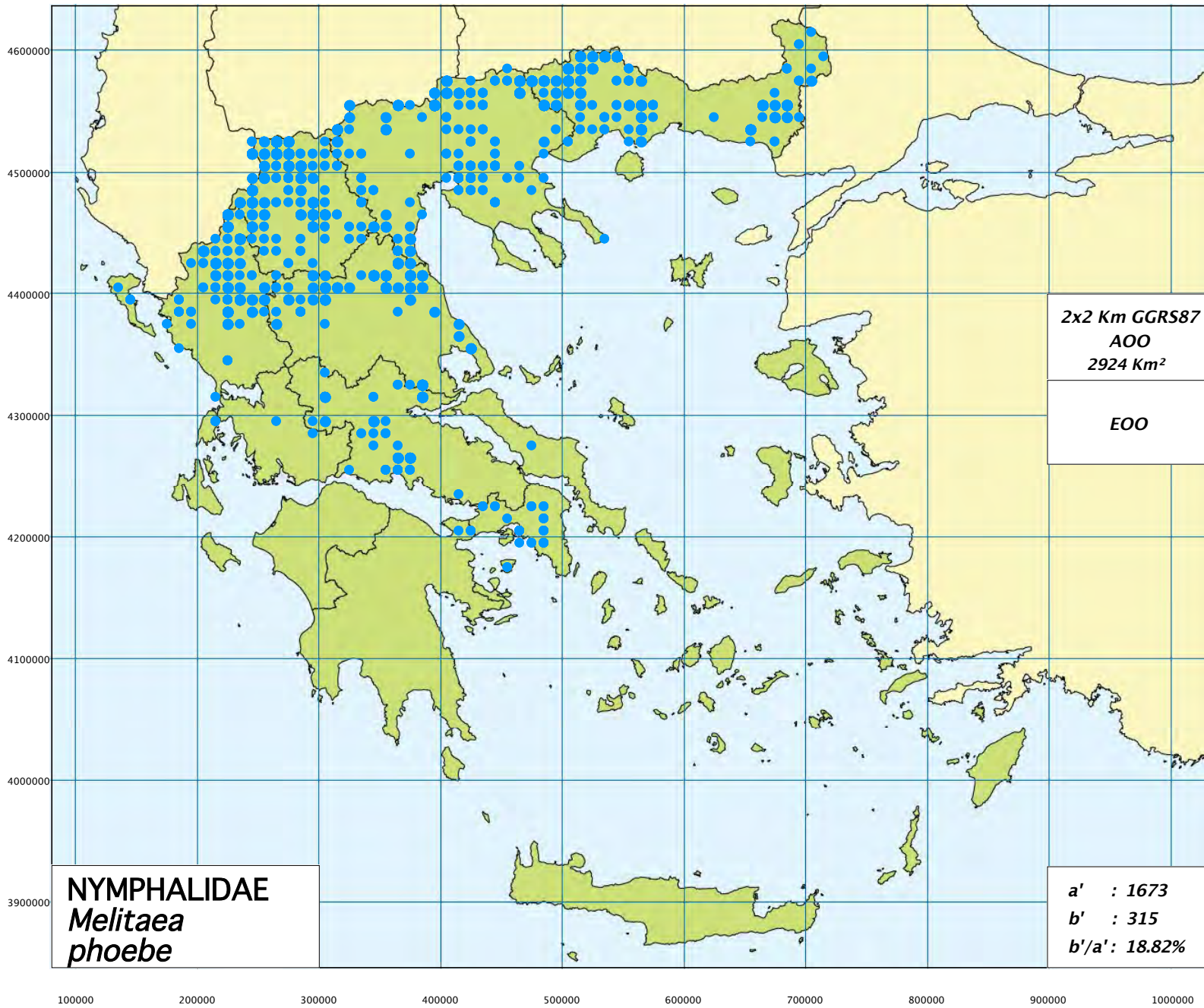


**NYMPHALIDAE**  
*Melitaea*  
*arduinna*

**2x2 Km GGRS87**  
**AOO**  
**356 Km<sup>2</sup>**

**EOO**

**a' : 1673**  
**b' : 31**  
**b'/a' : 1.85%**



**NYMPHALIDAE**  
*Melitaea*  
*phoebe*

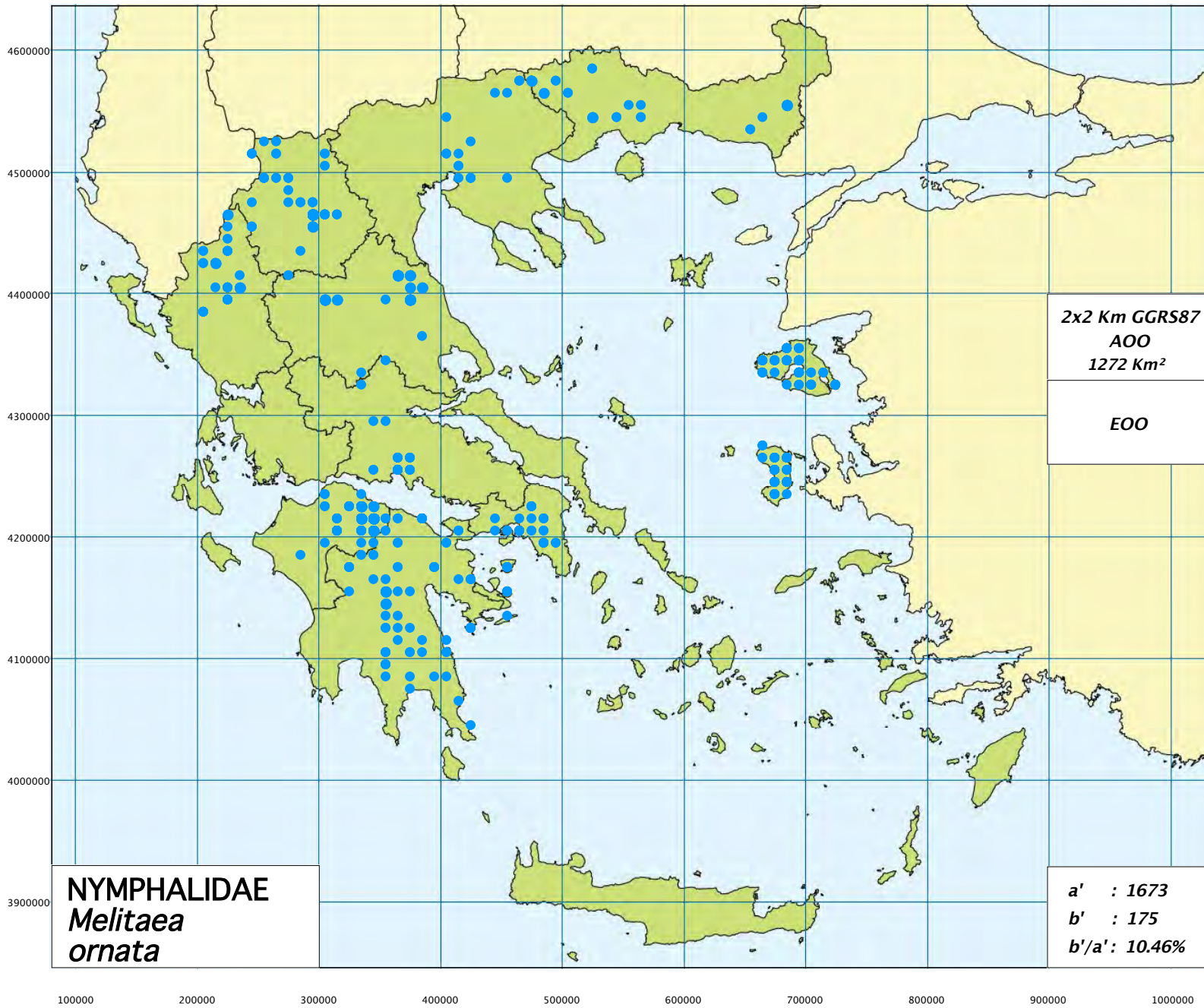
2x2 Km GGRS87  
 AOO  
 2924 Km<sup>2</sup>

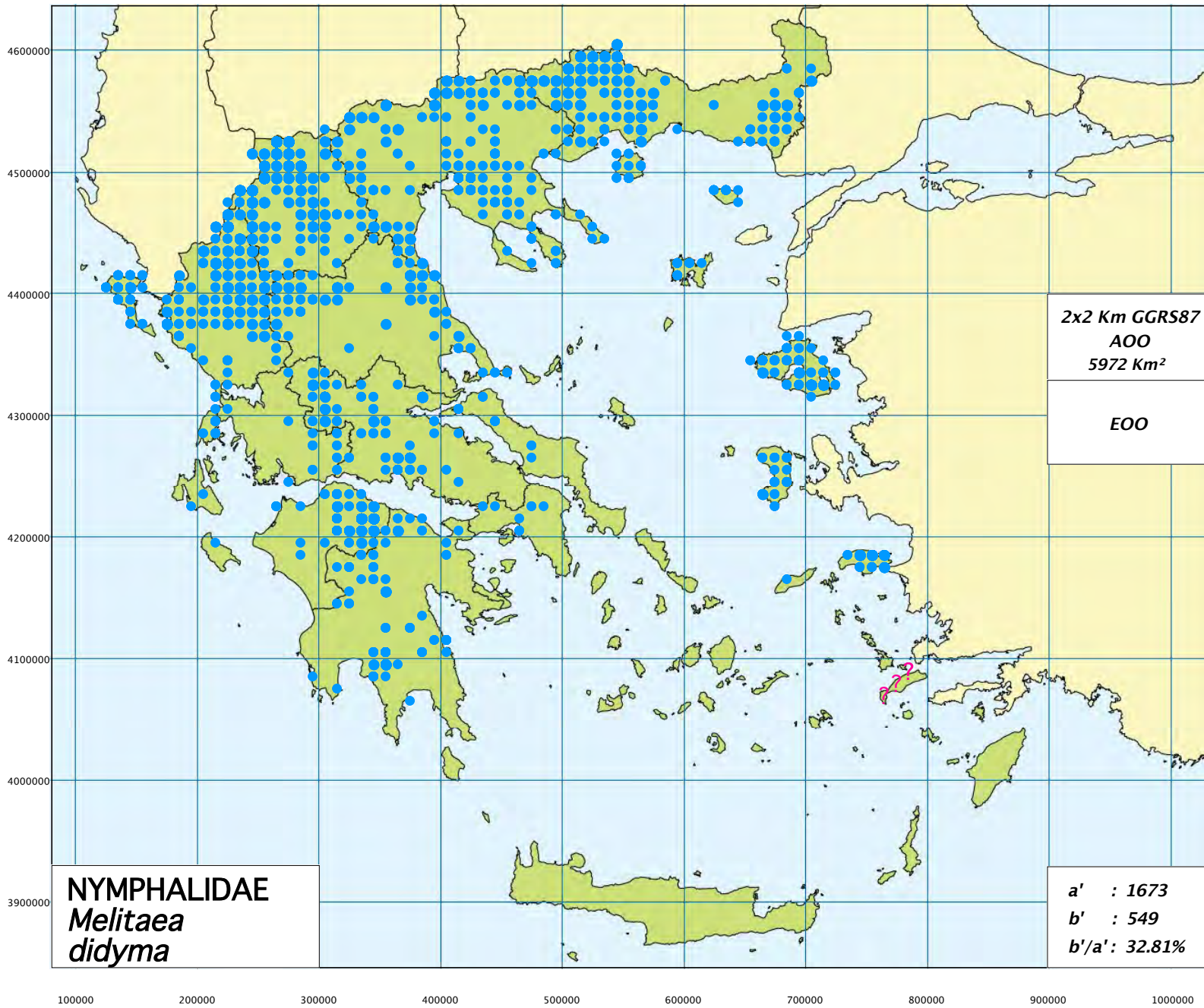
EOO

*a'* : 1673  
*b'* : 315  
*b'/a'* : 18.82%

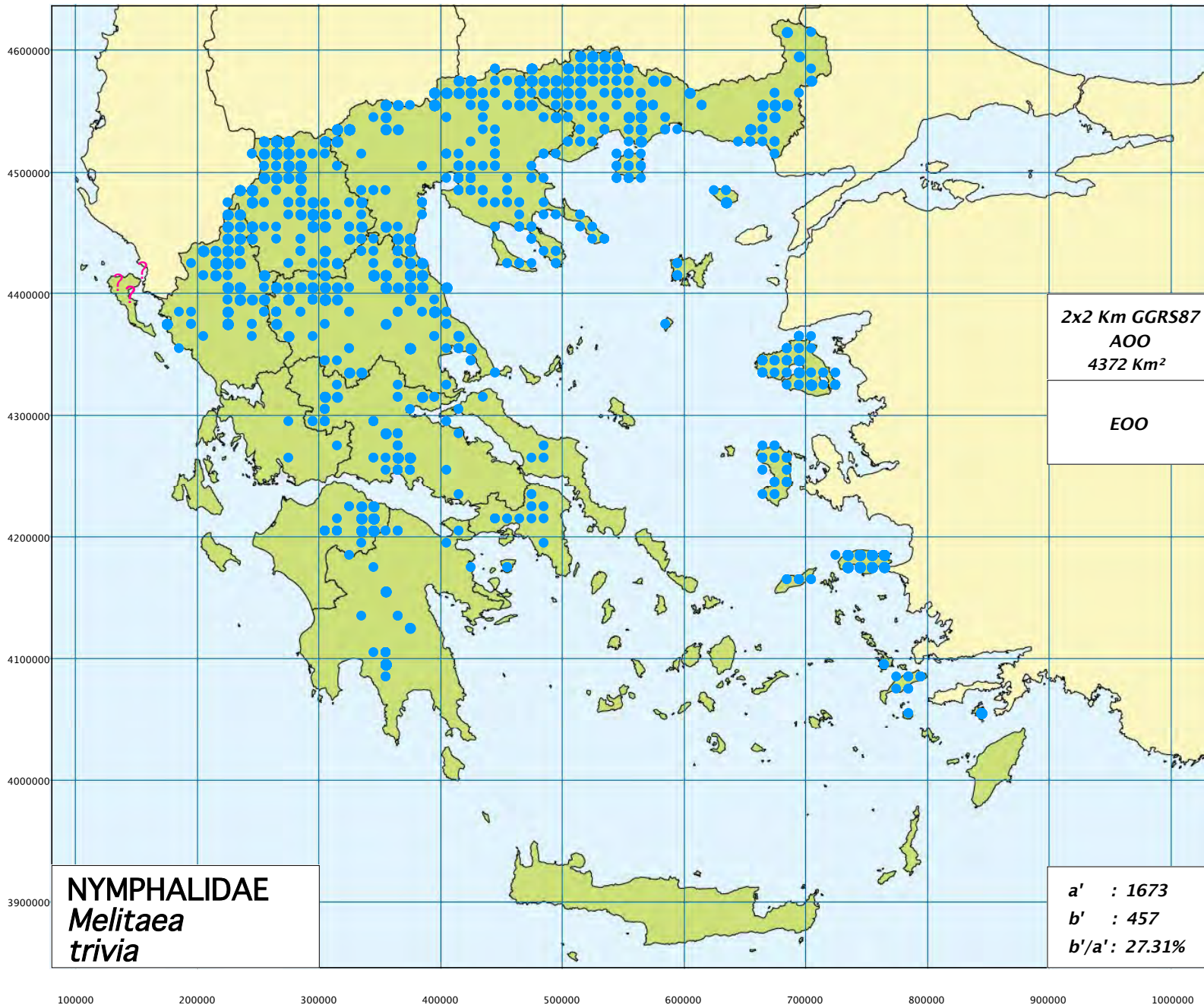
100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000









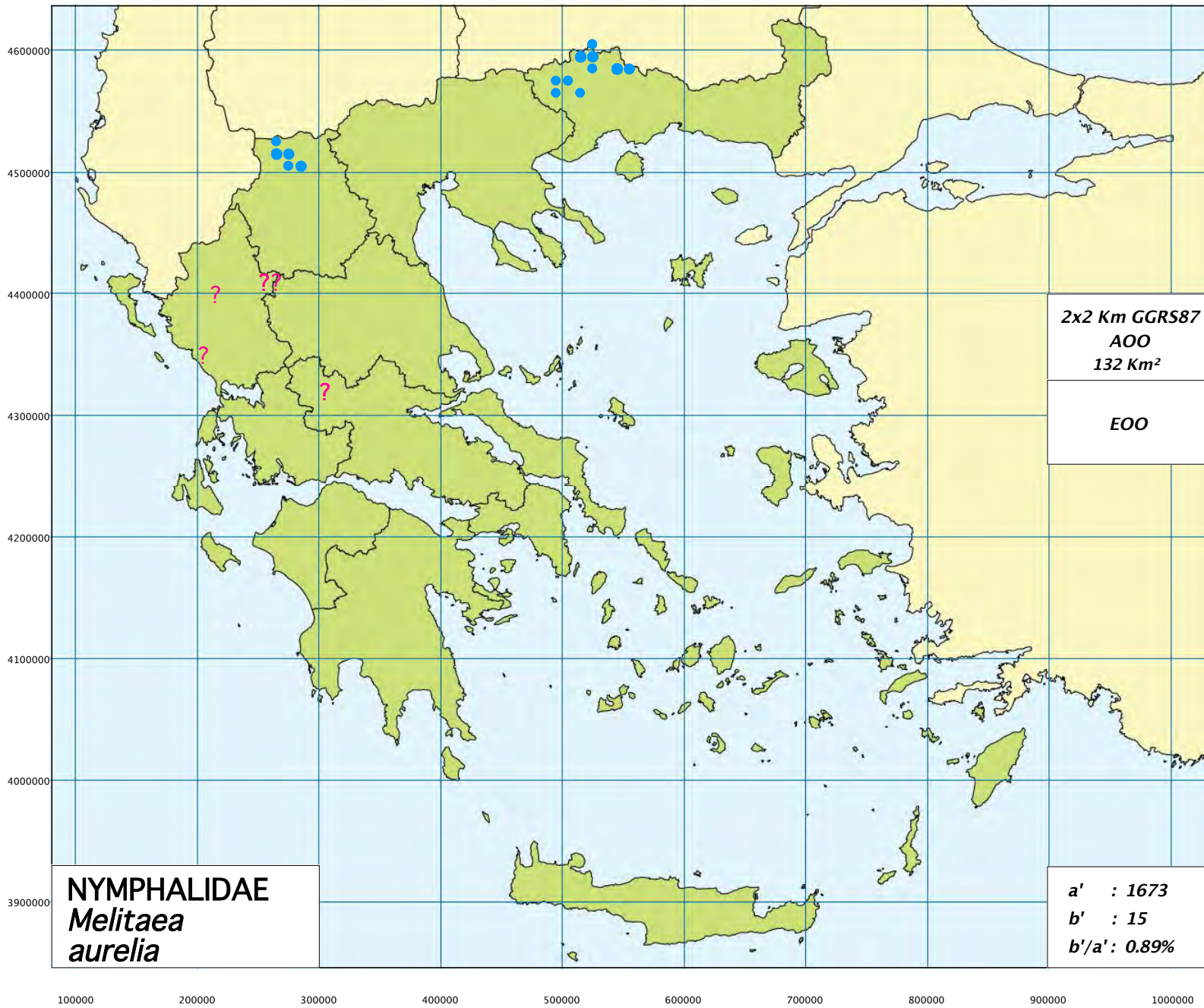


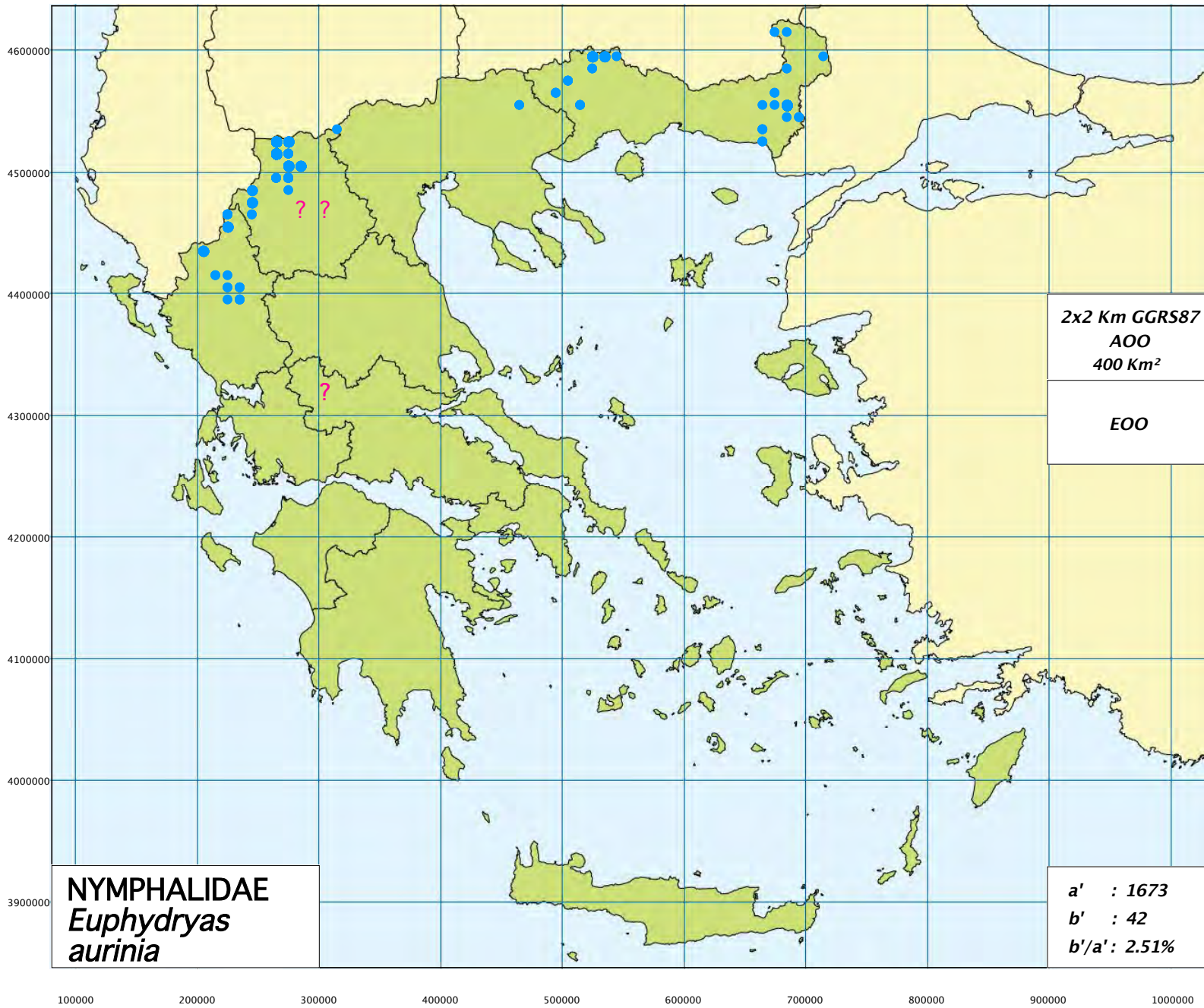
**NYMPHALIDAE**  
*Melitaea*  
*trivia*

100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000

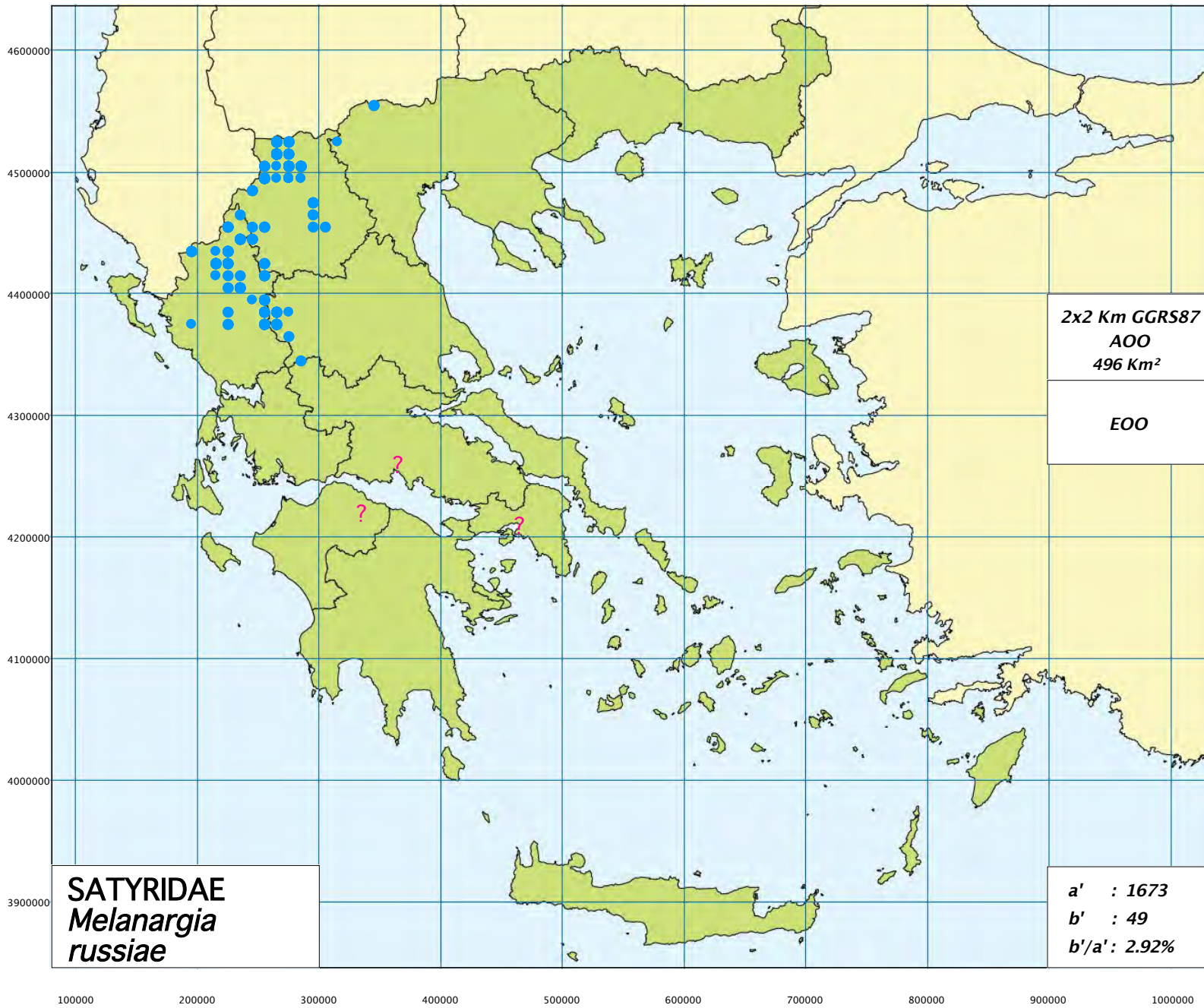


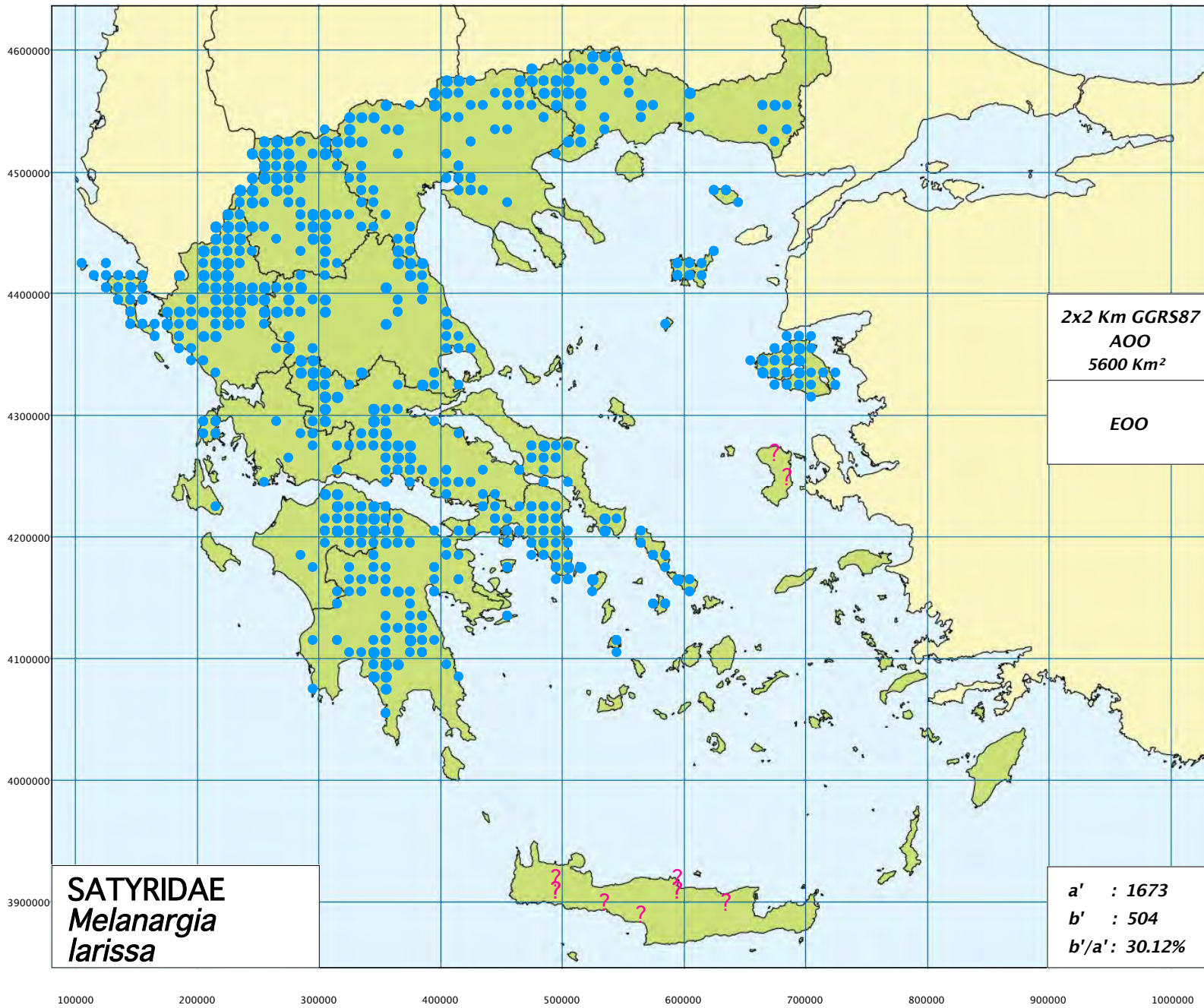




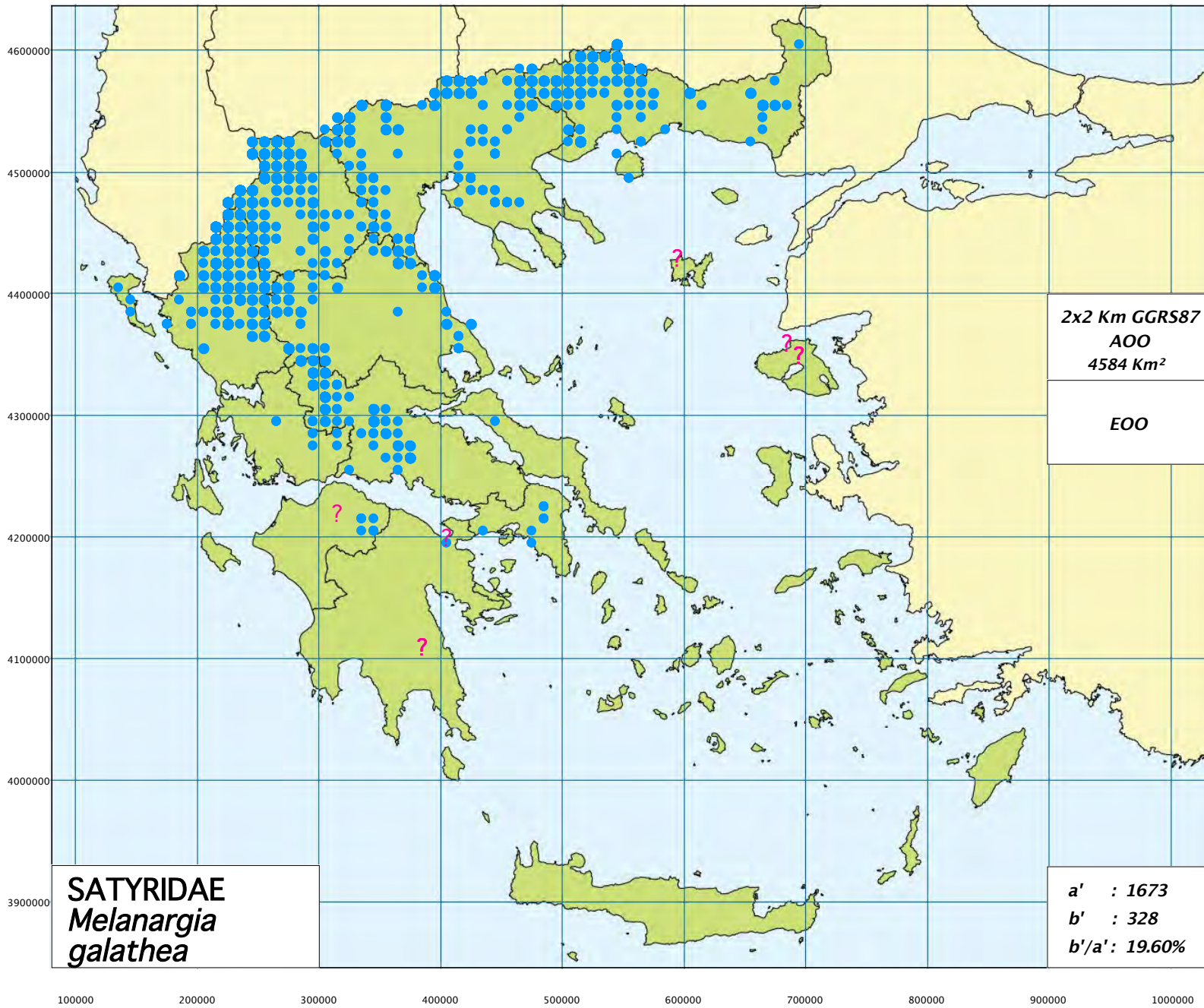


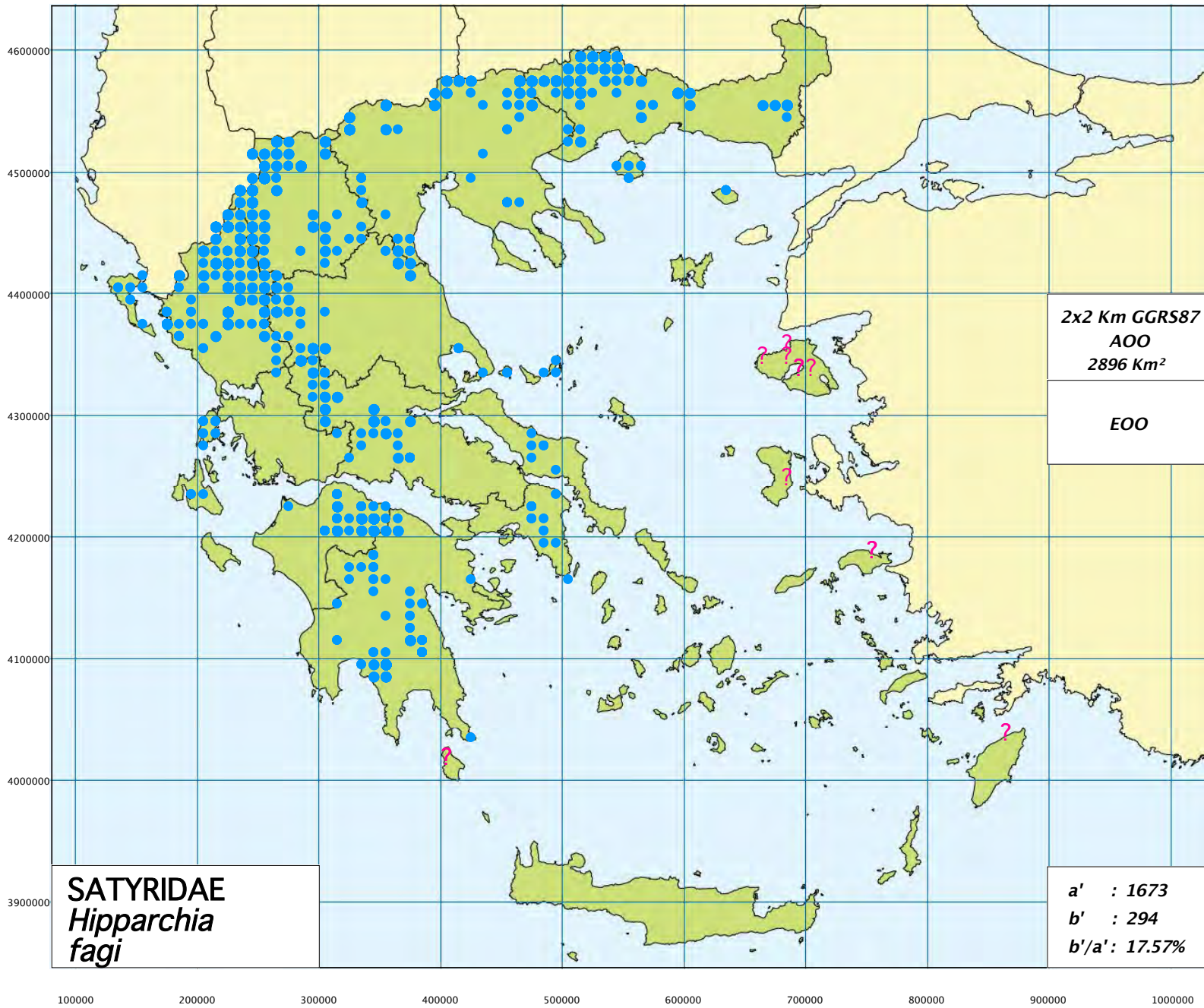




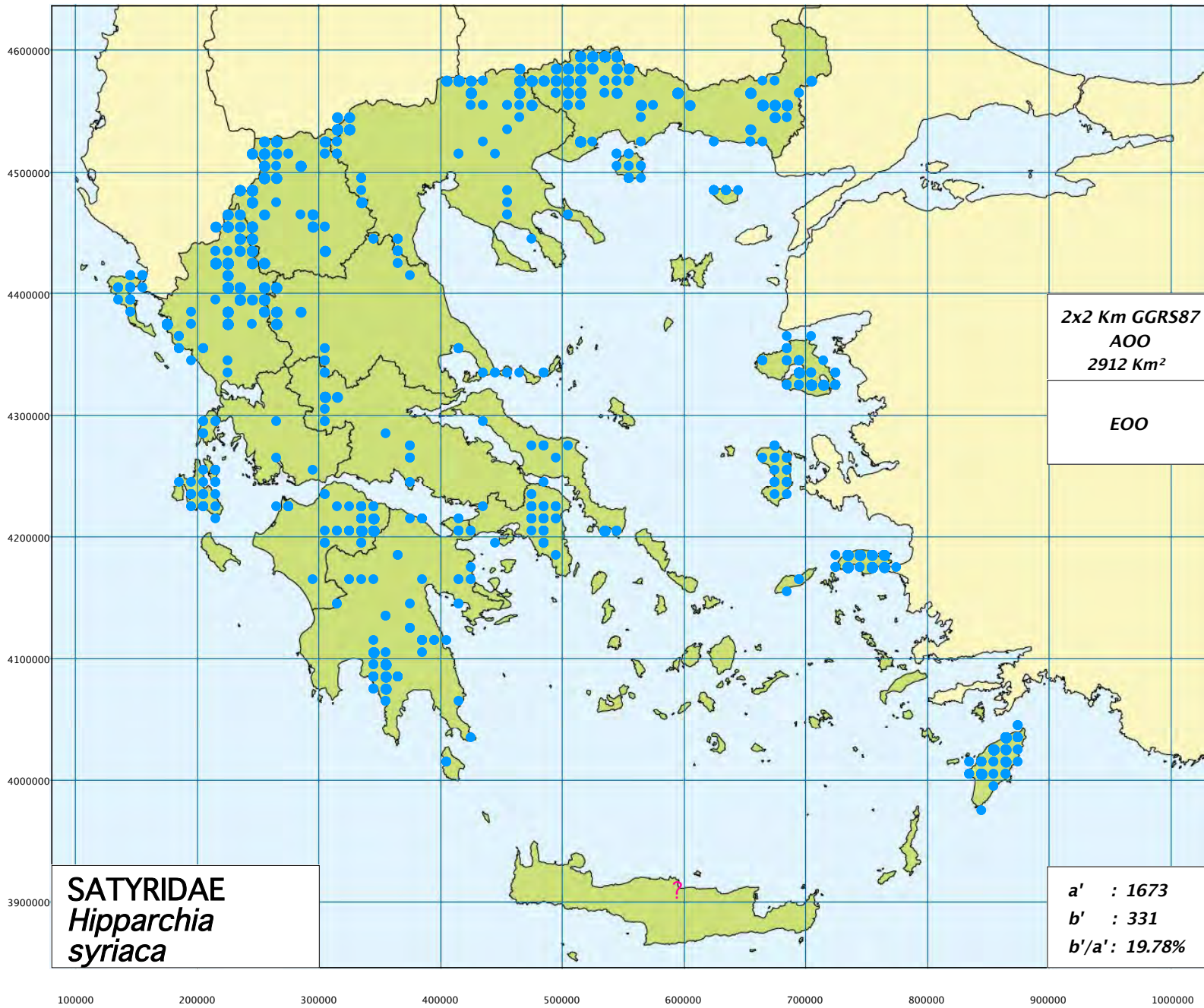


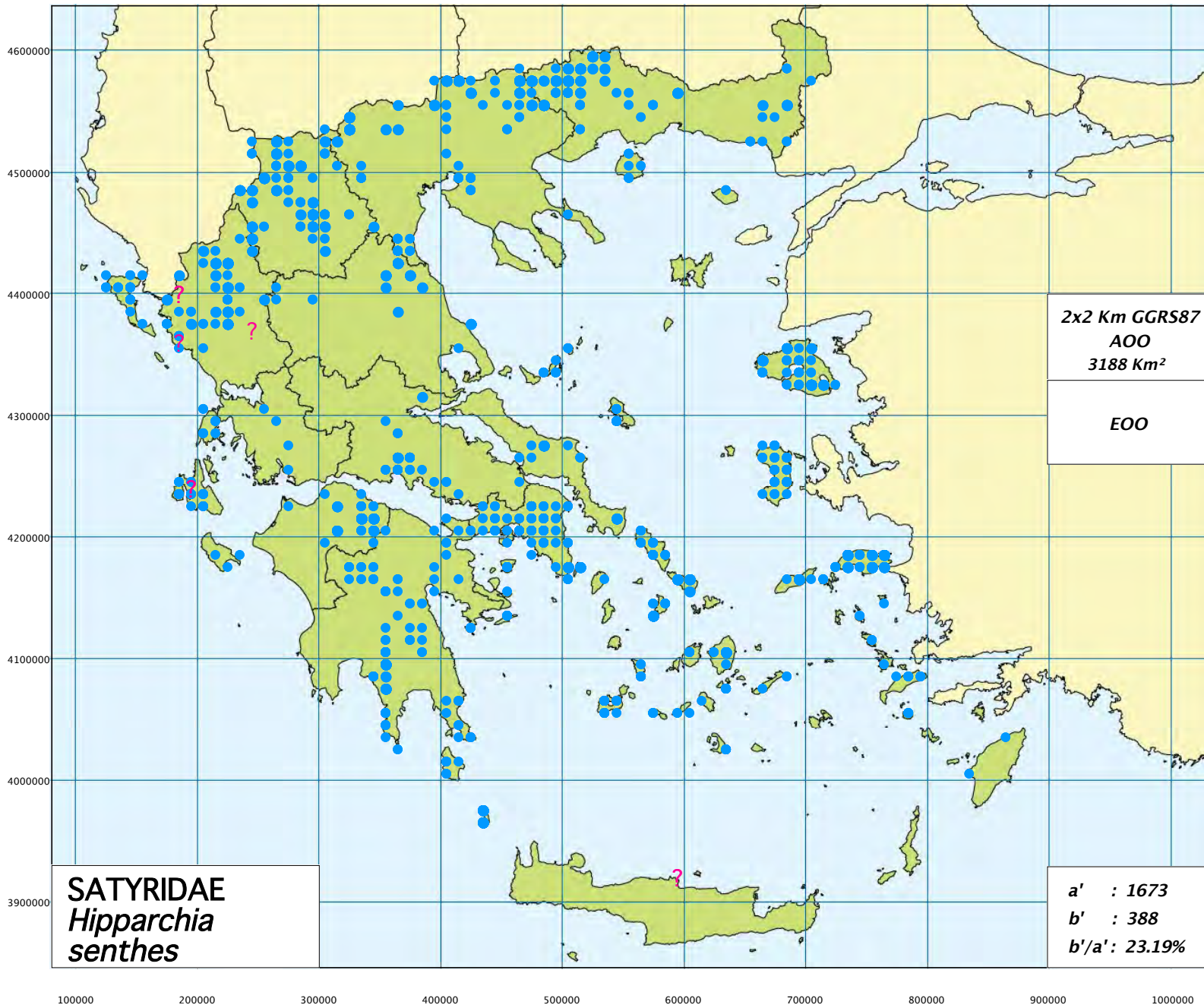




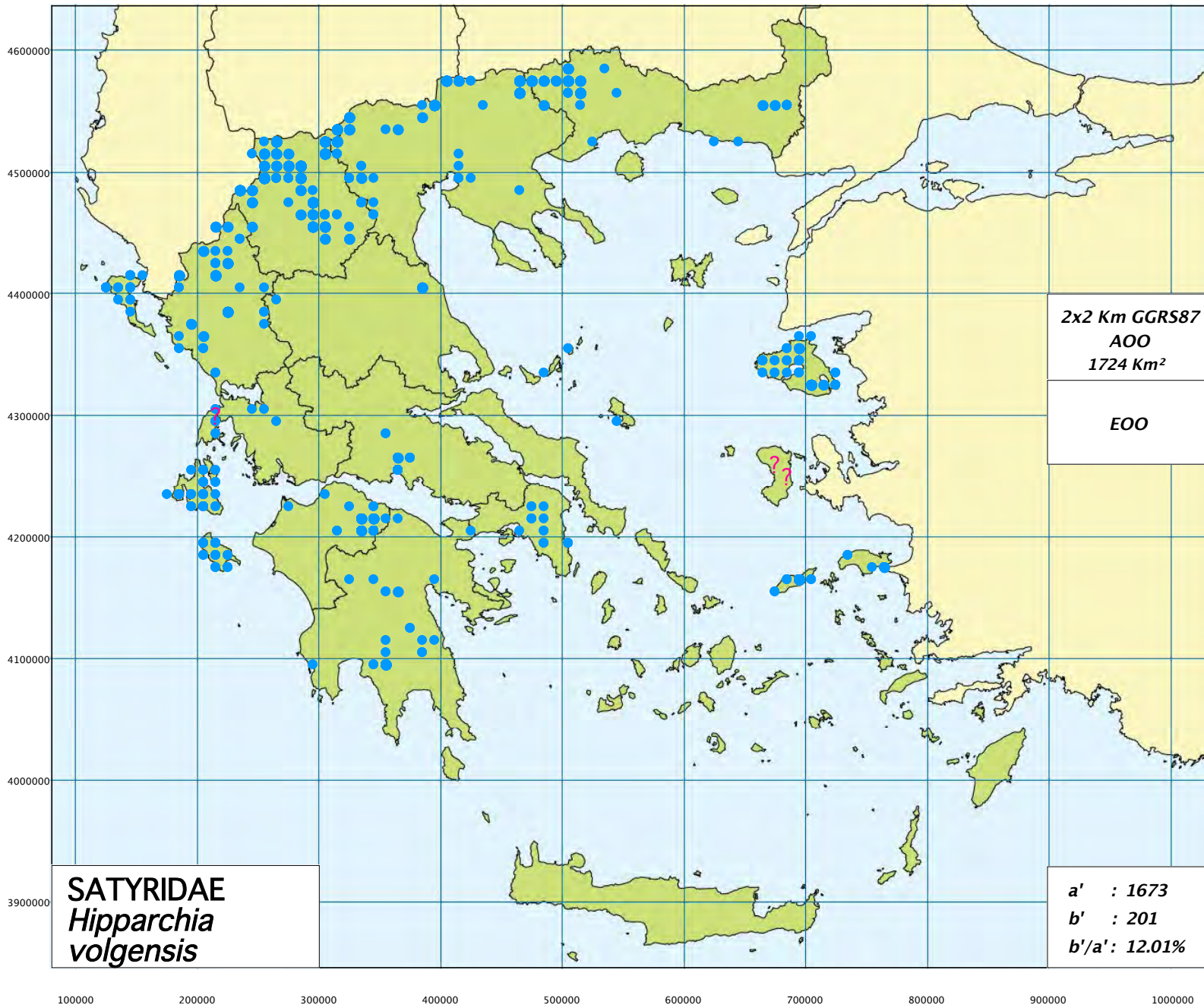






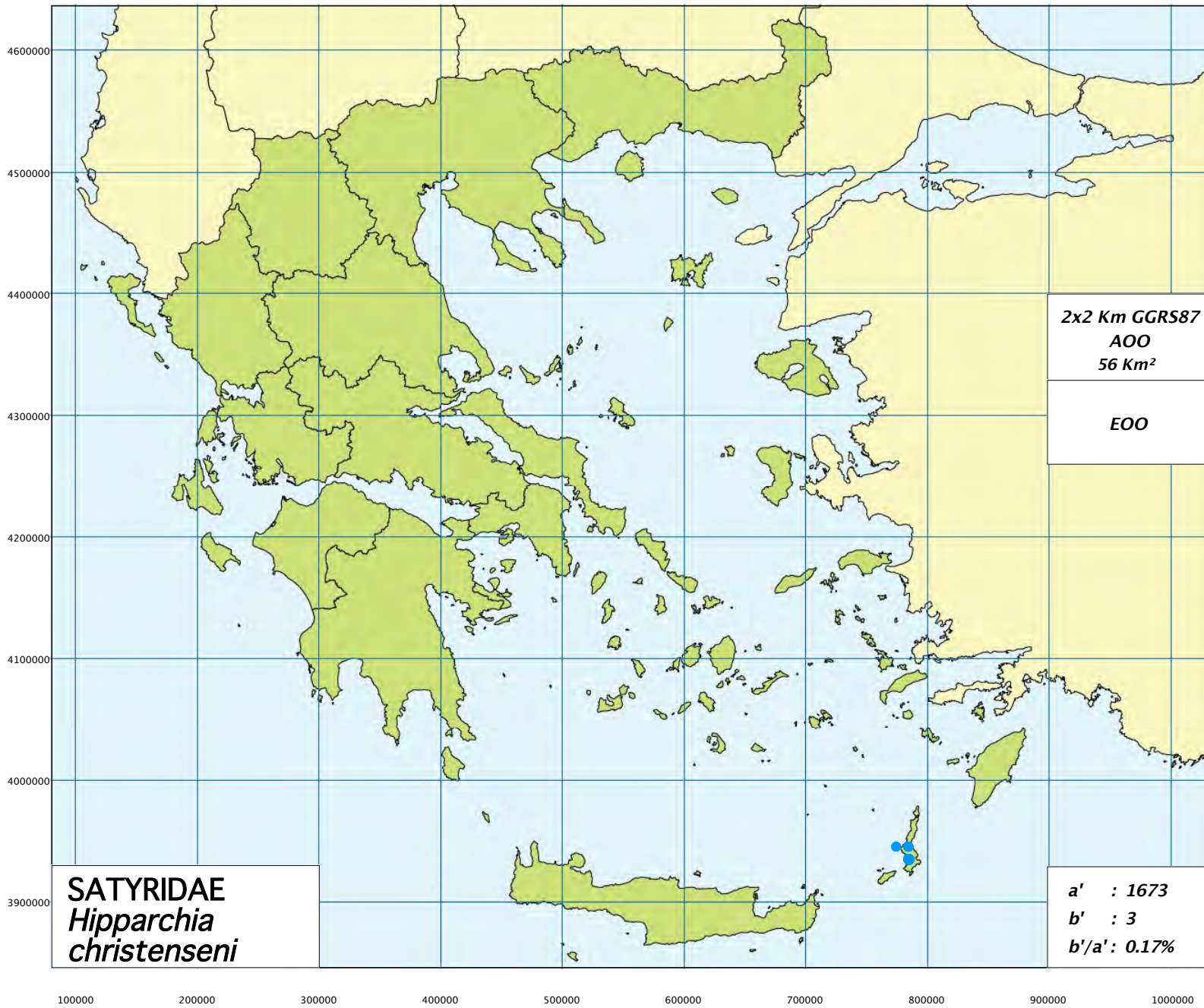


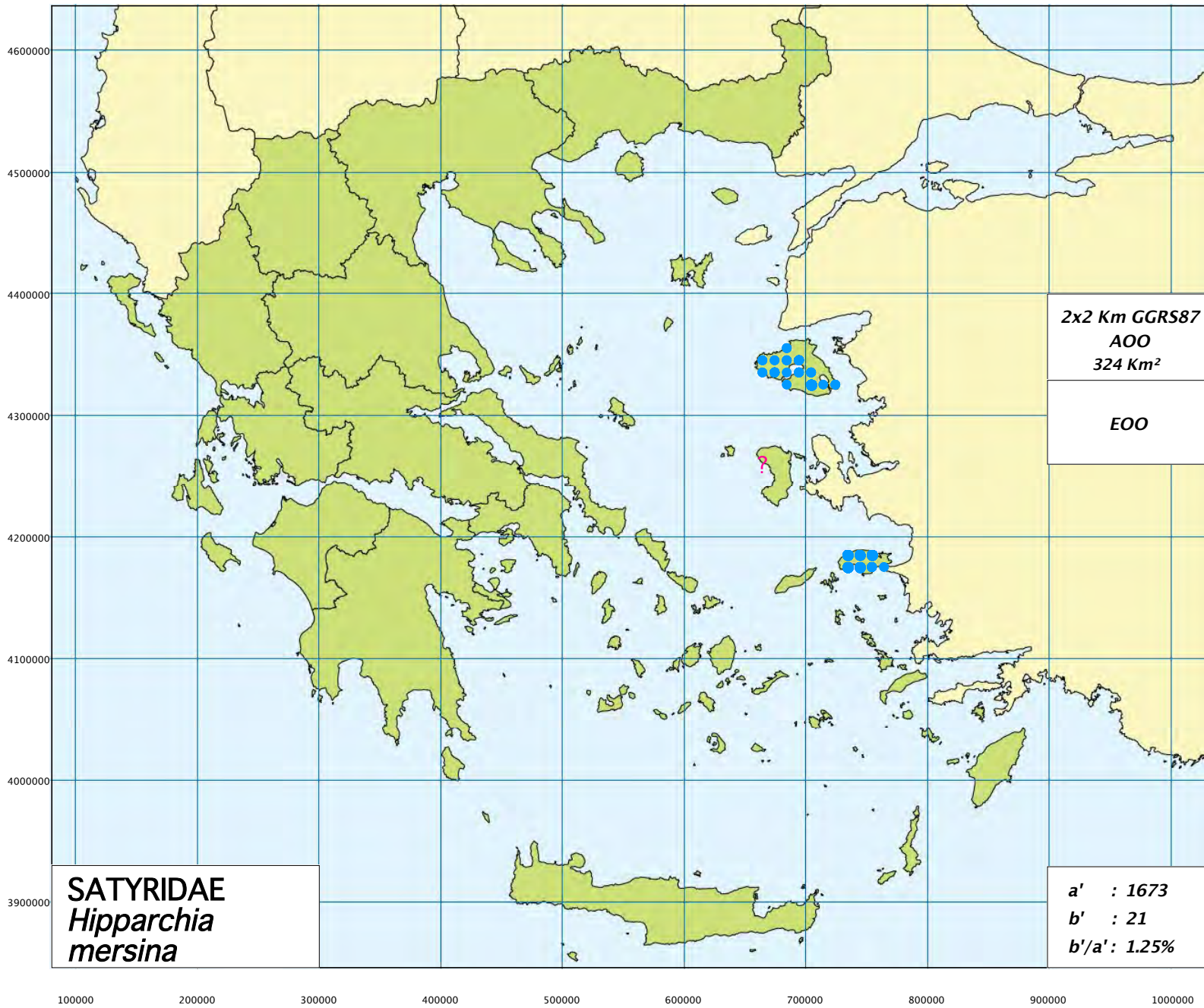












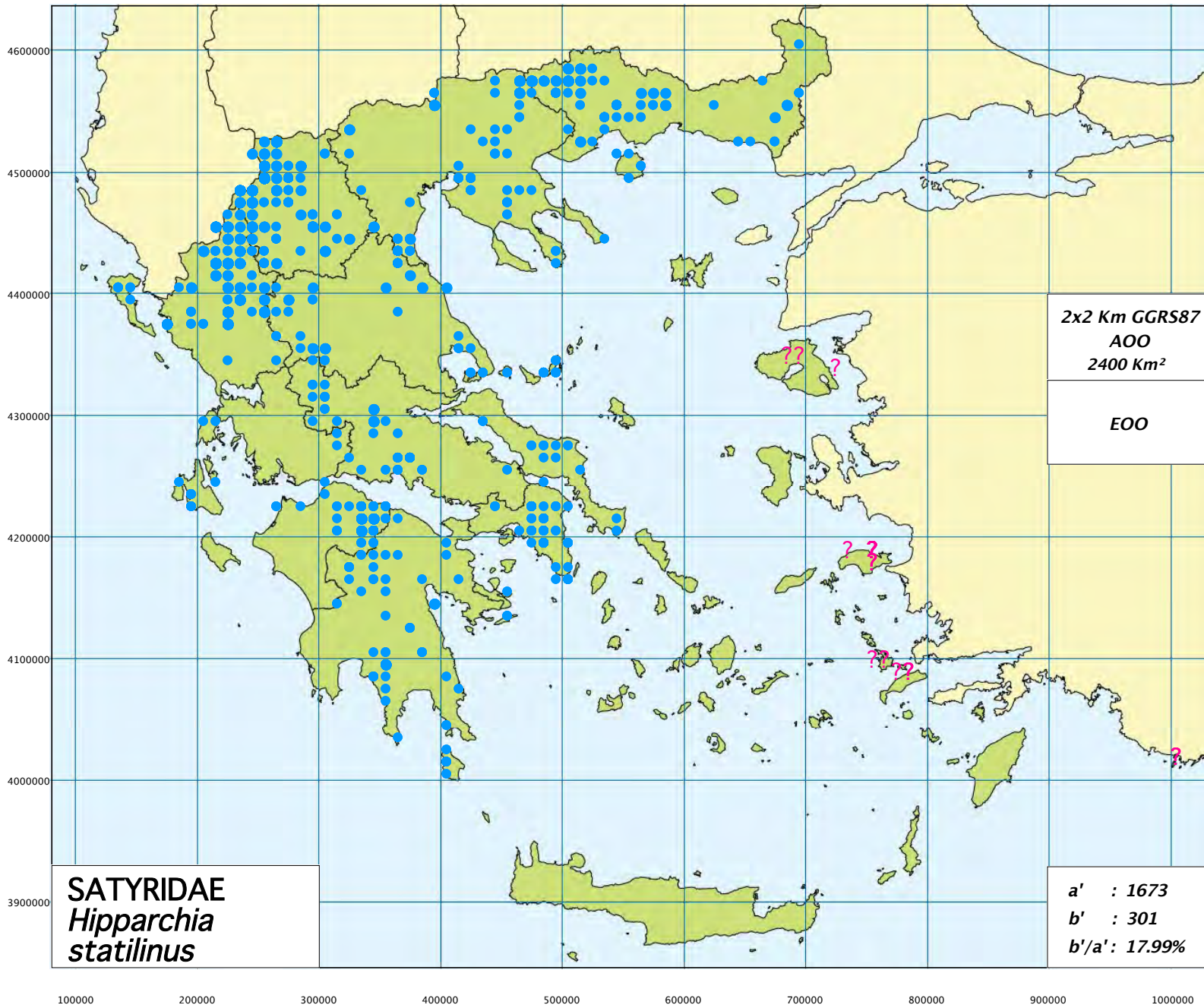
2x2 Km GGRS87  
 AOO  
 324 Km<sup>2</sup>

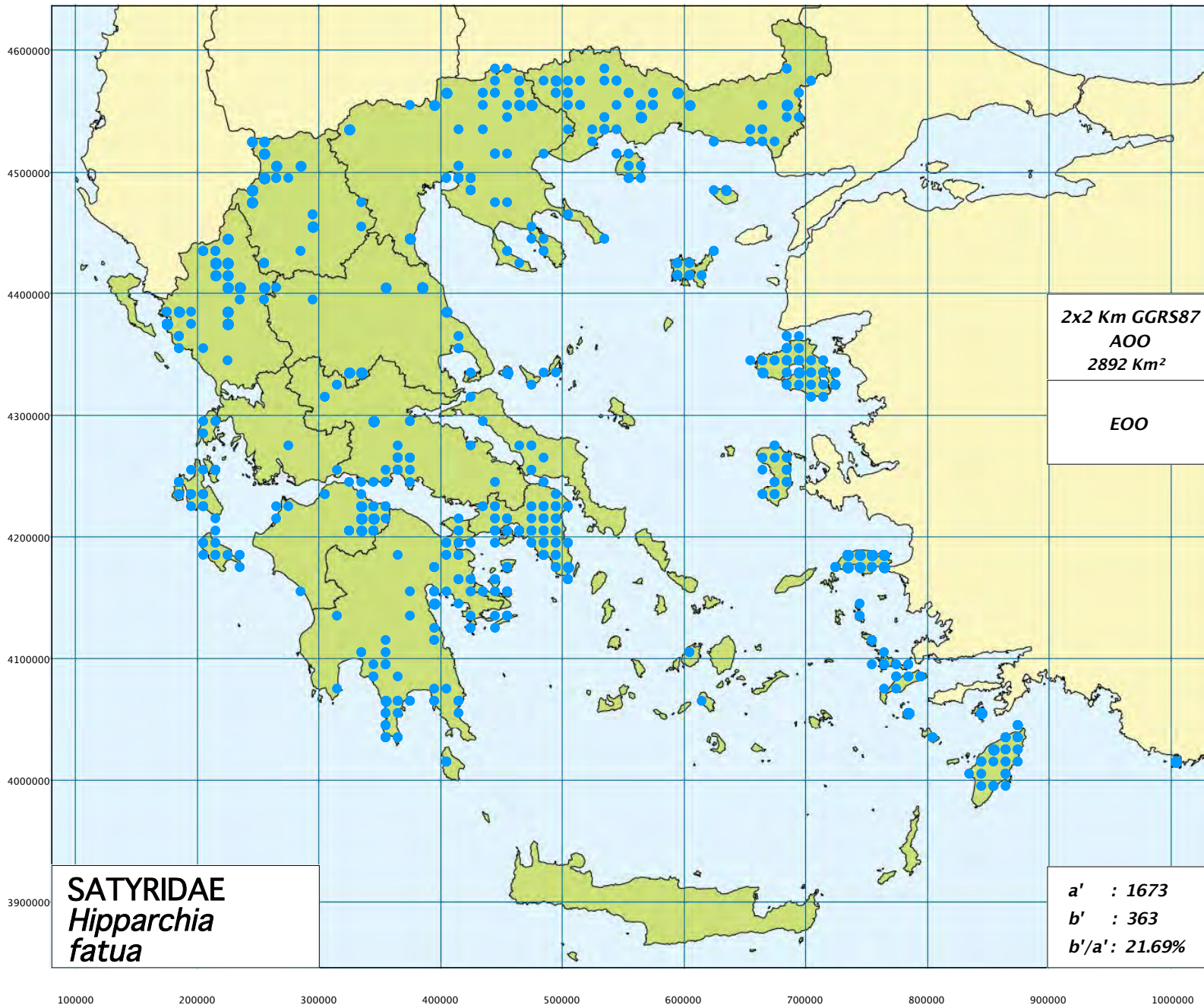
EOO

*a'* : 1673  
*b'* : 21  
*b'/a'* : 1.25%

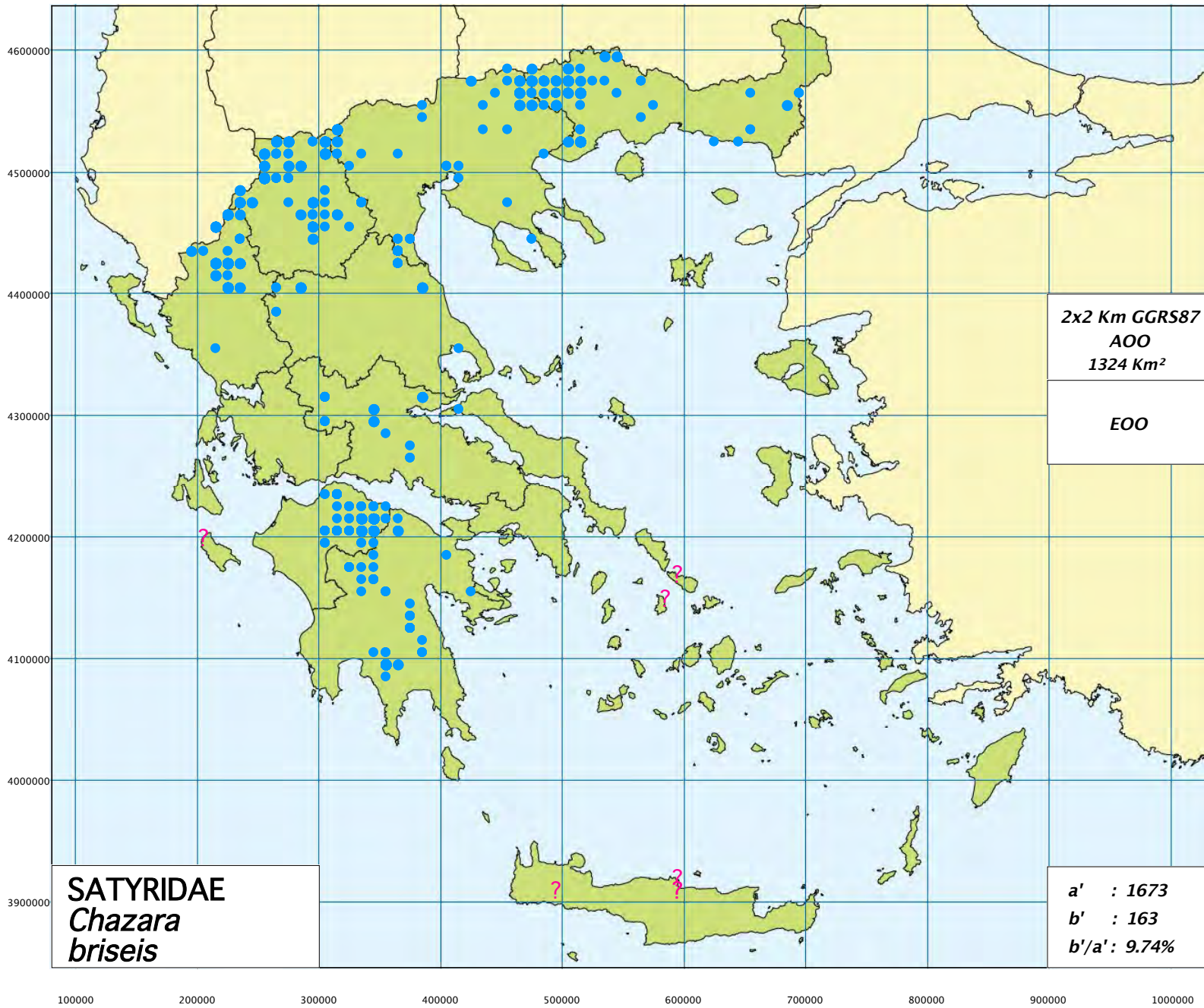
**SATYRIDAE**  
*Hipparchia*  
*mersina*

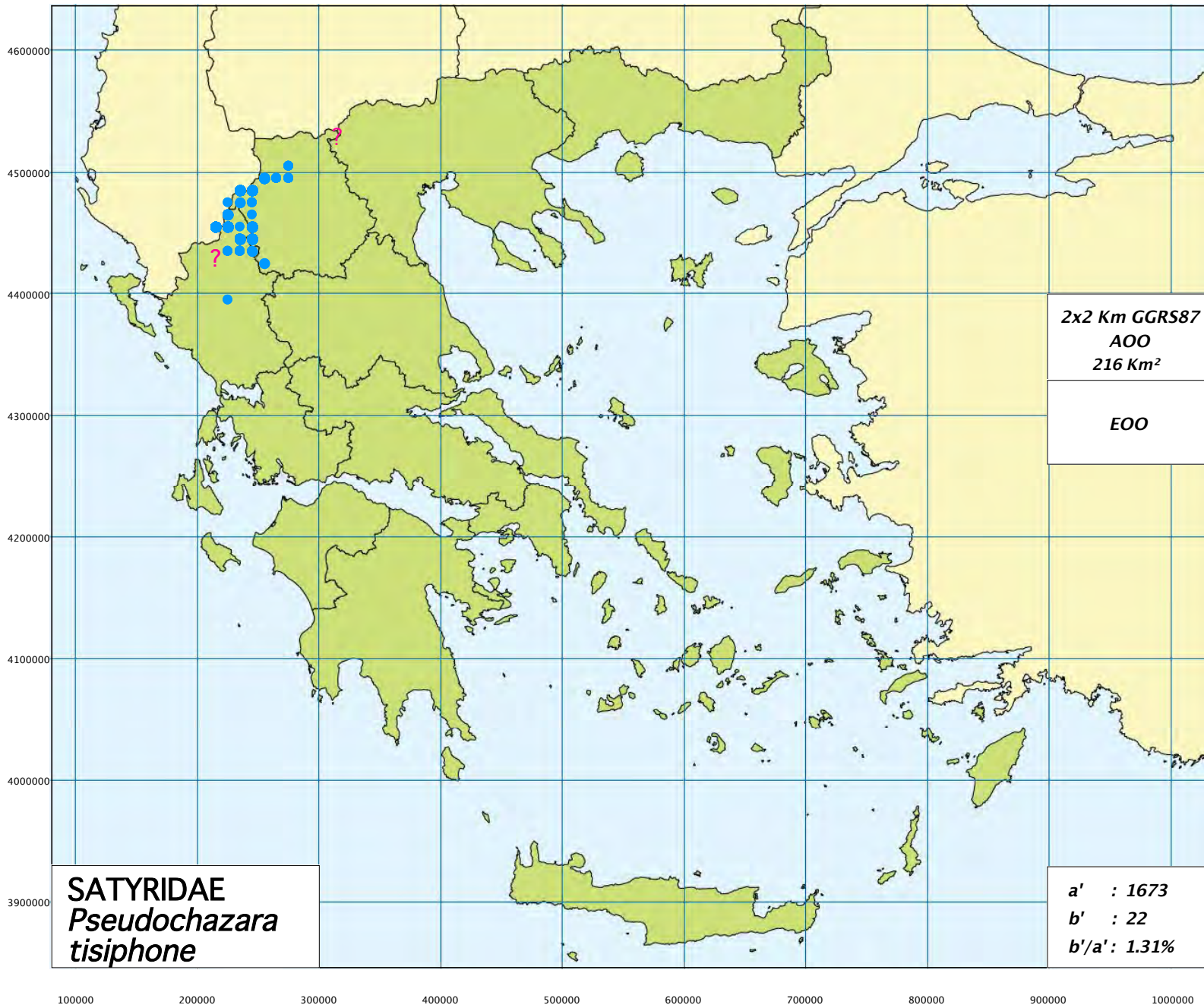




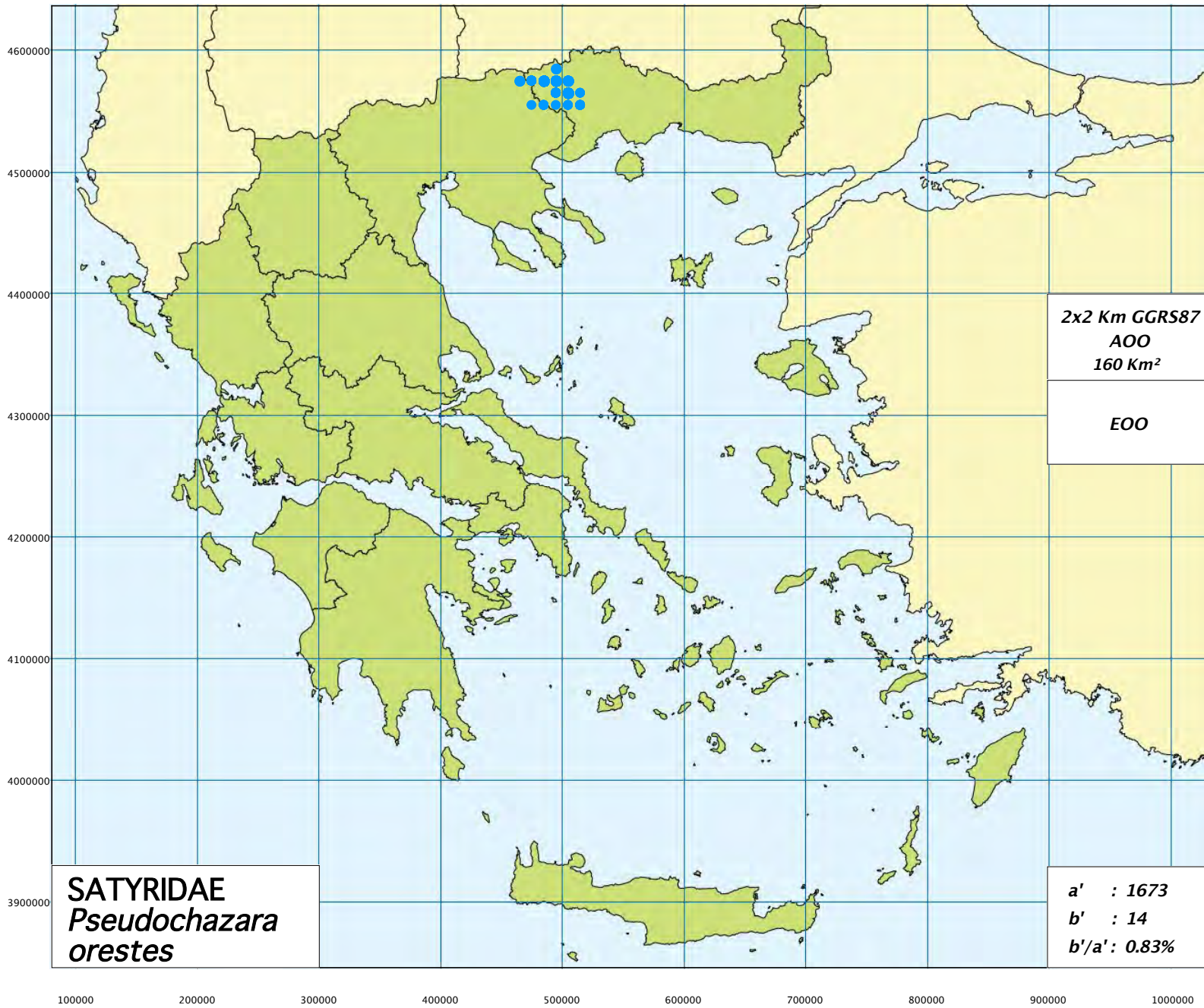


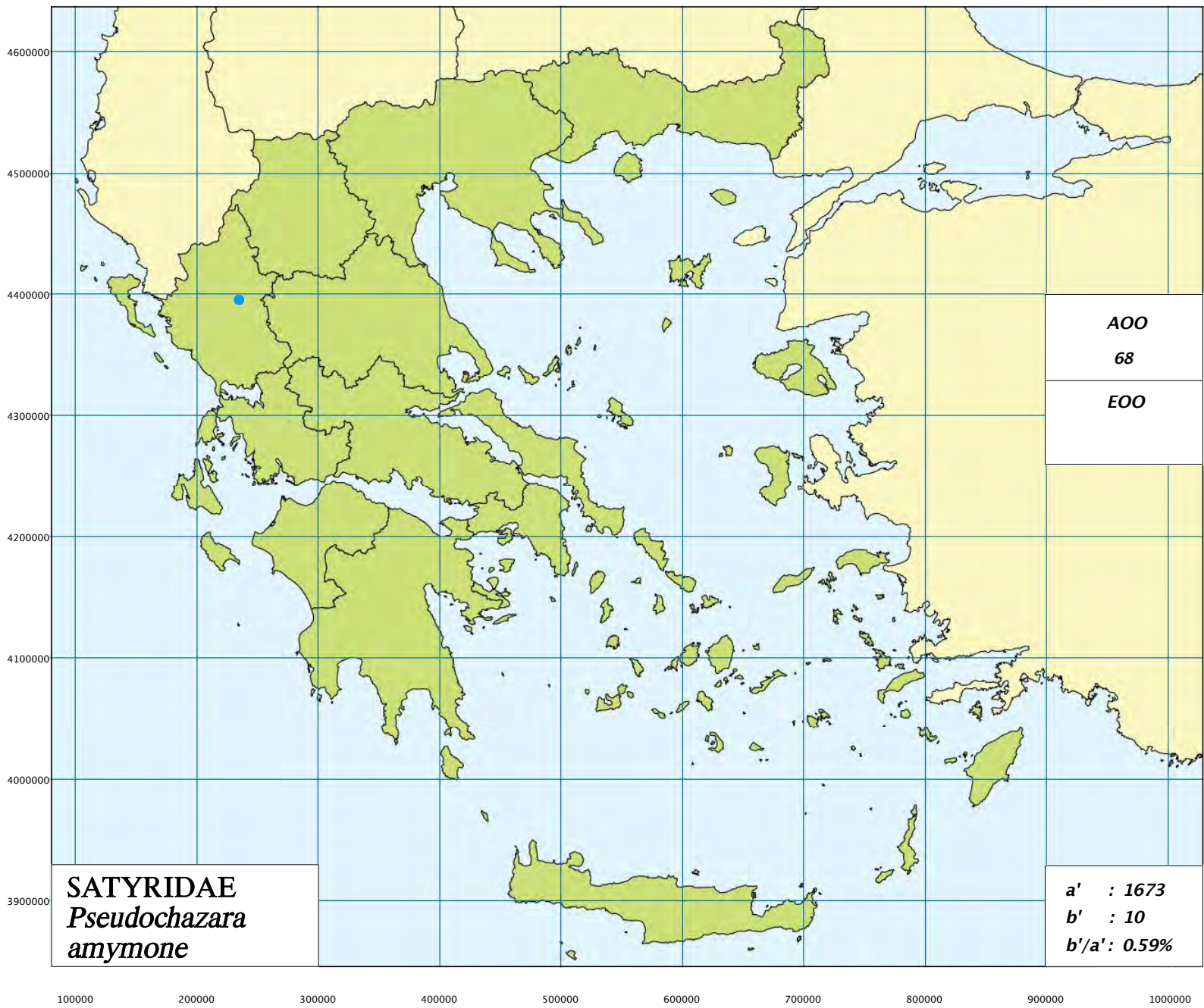




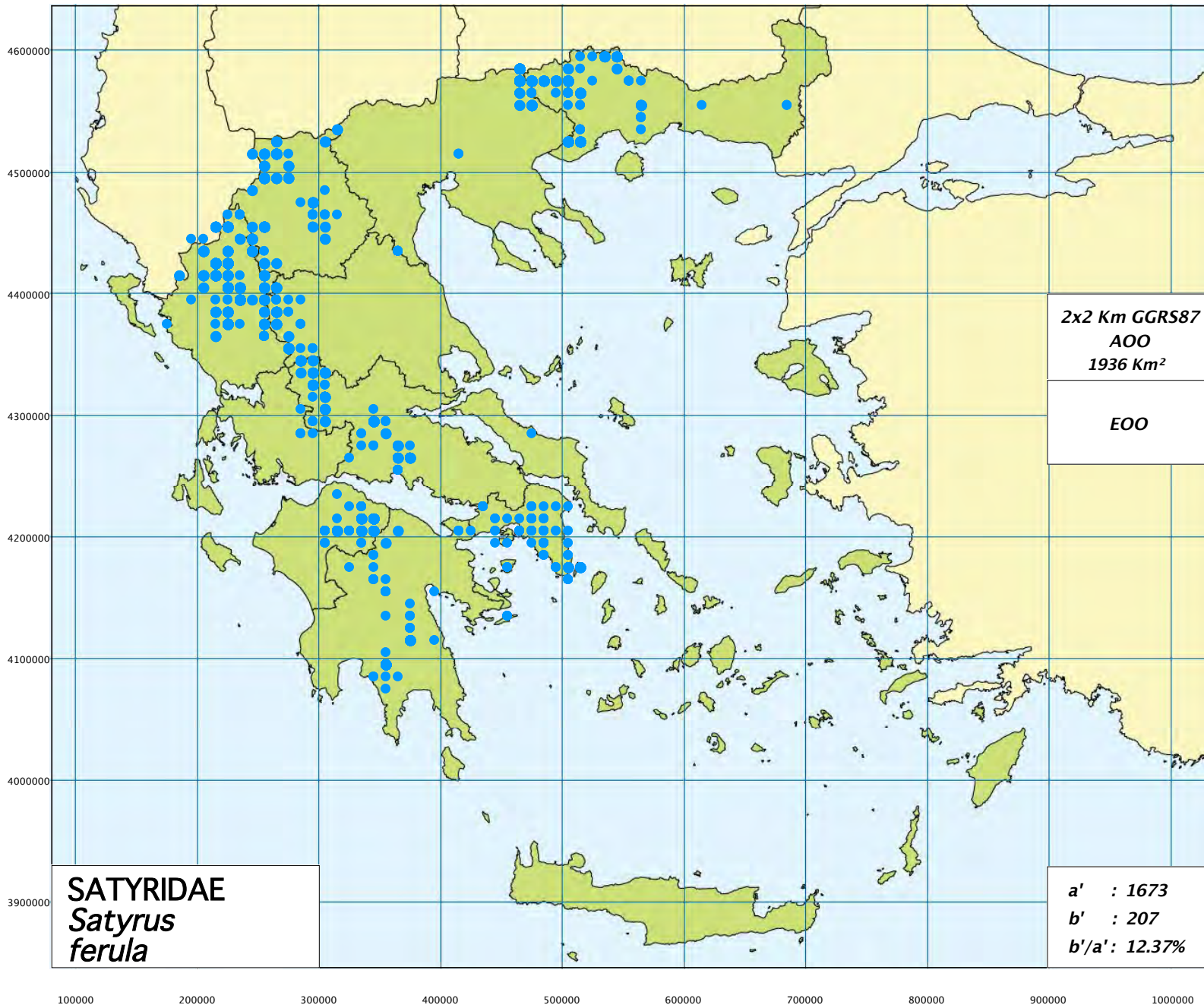


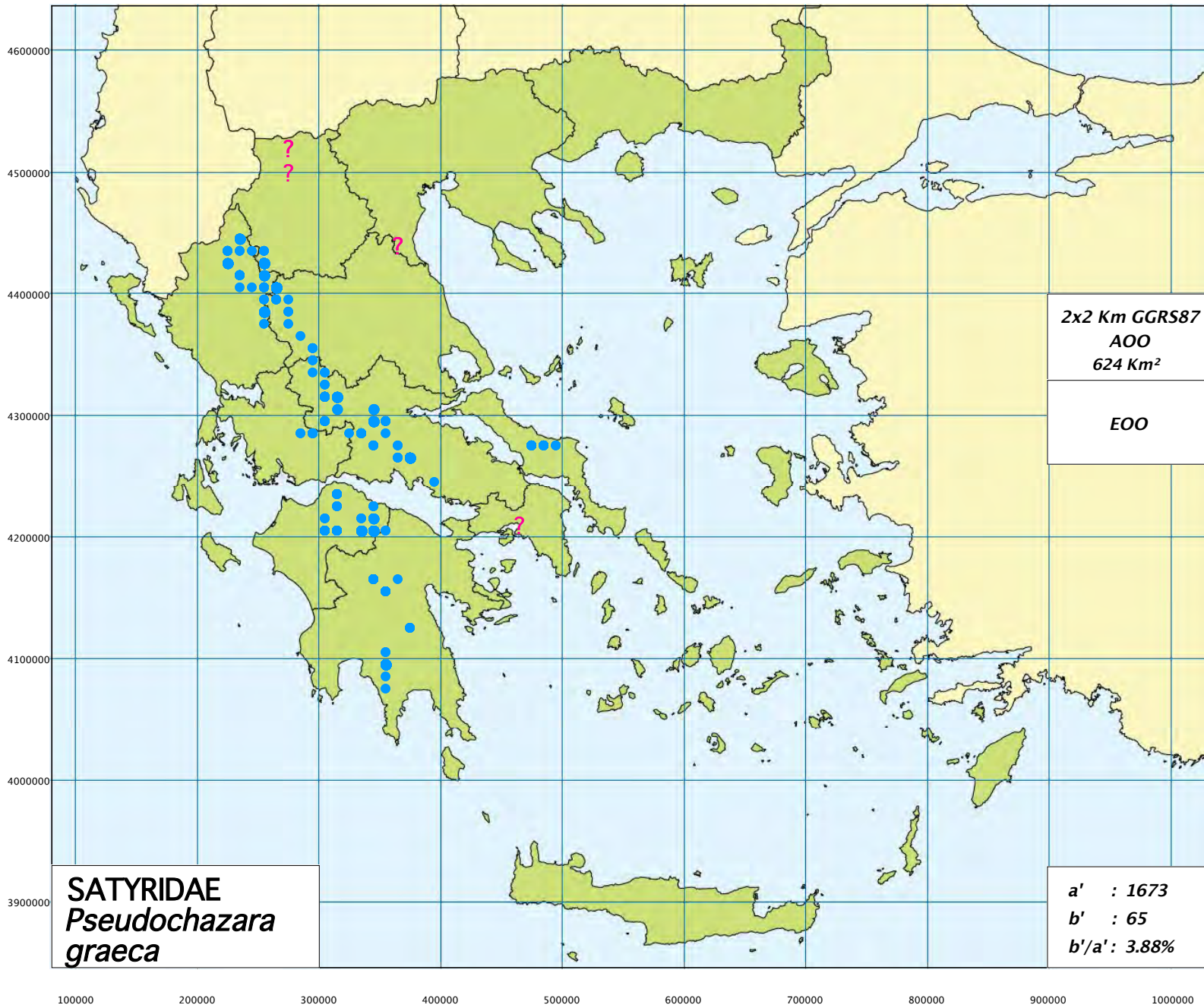




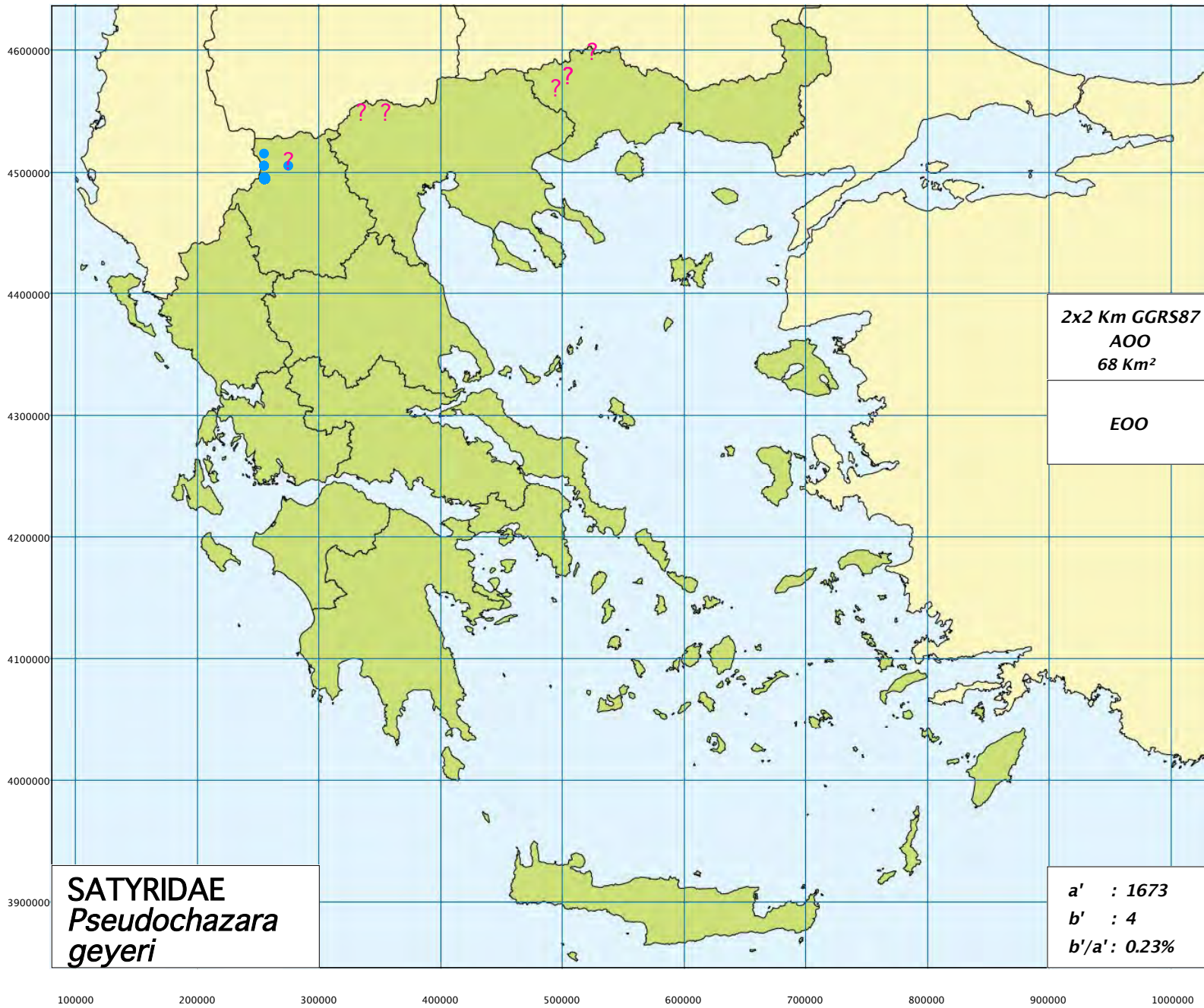


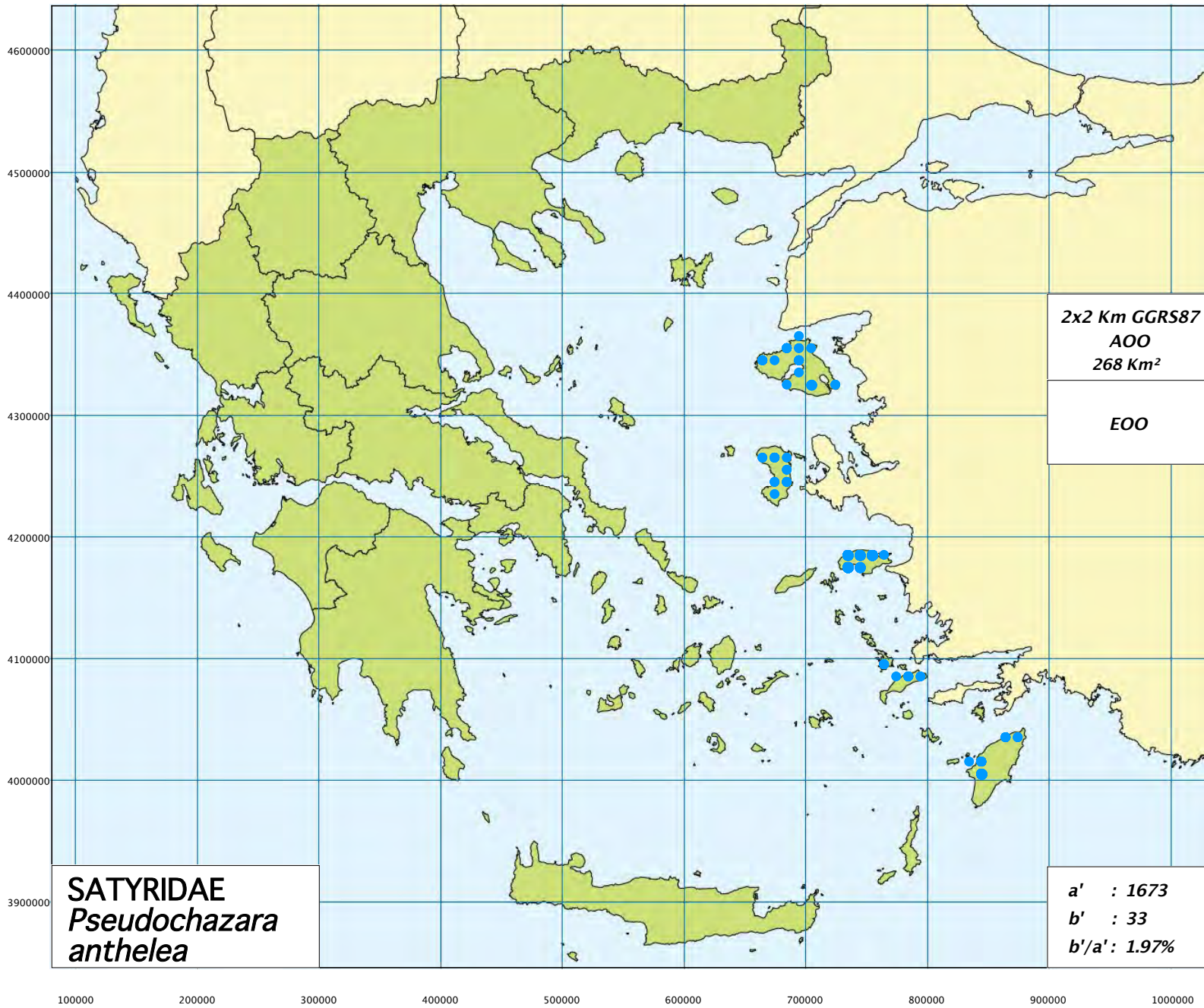




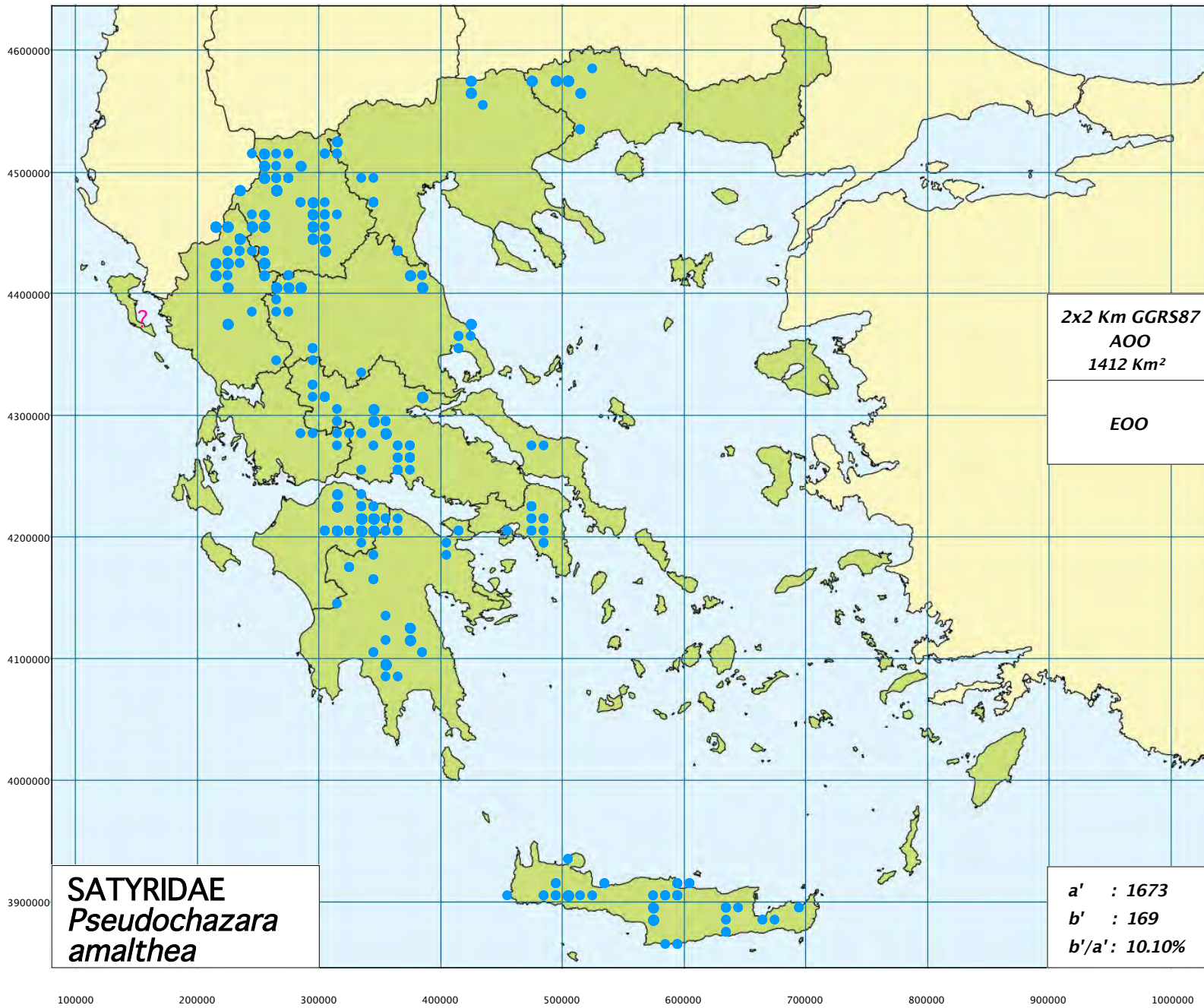


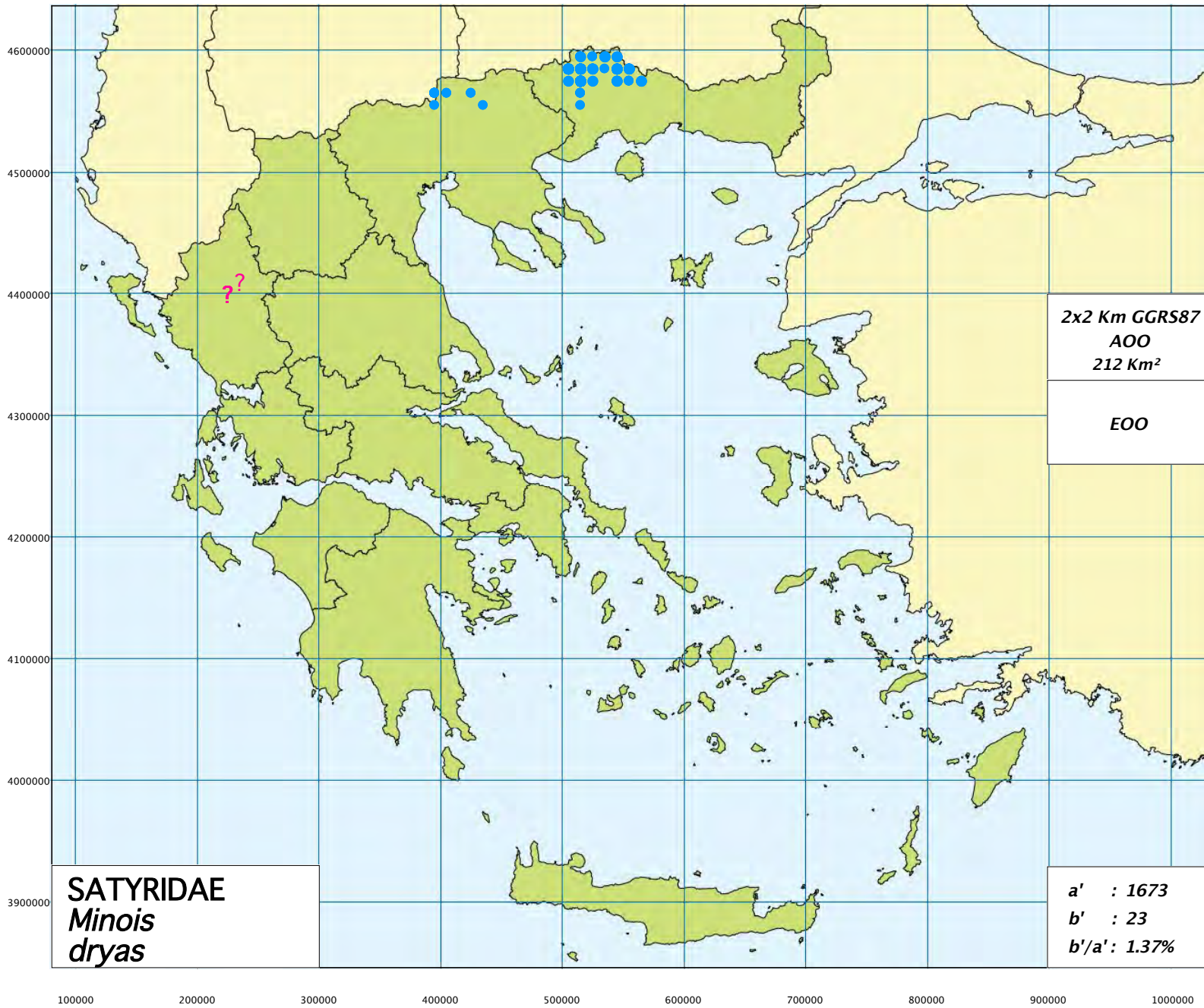




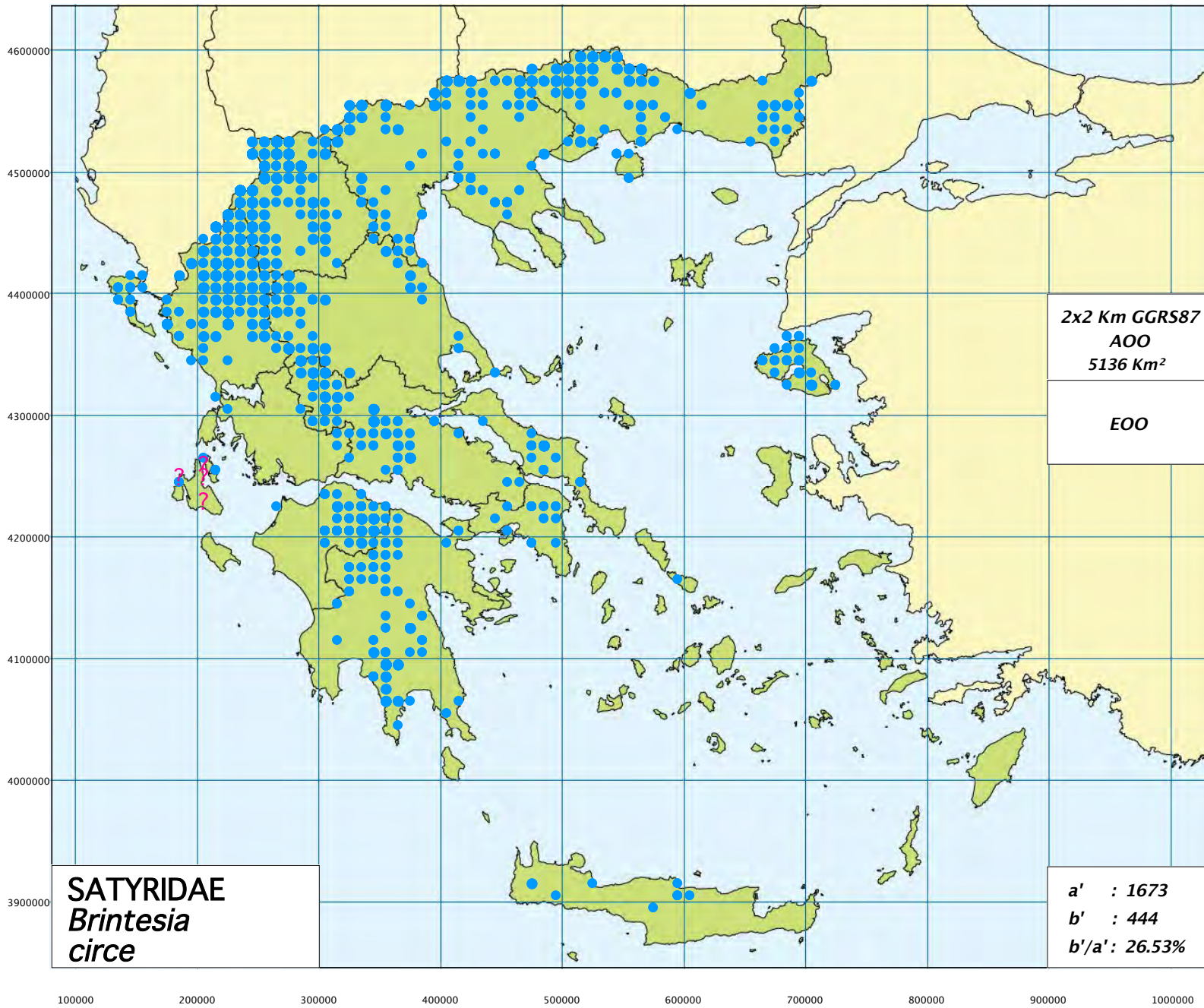










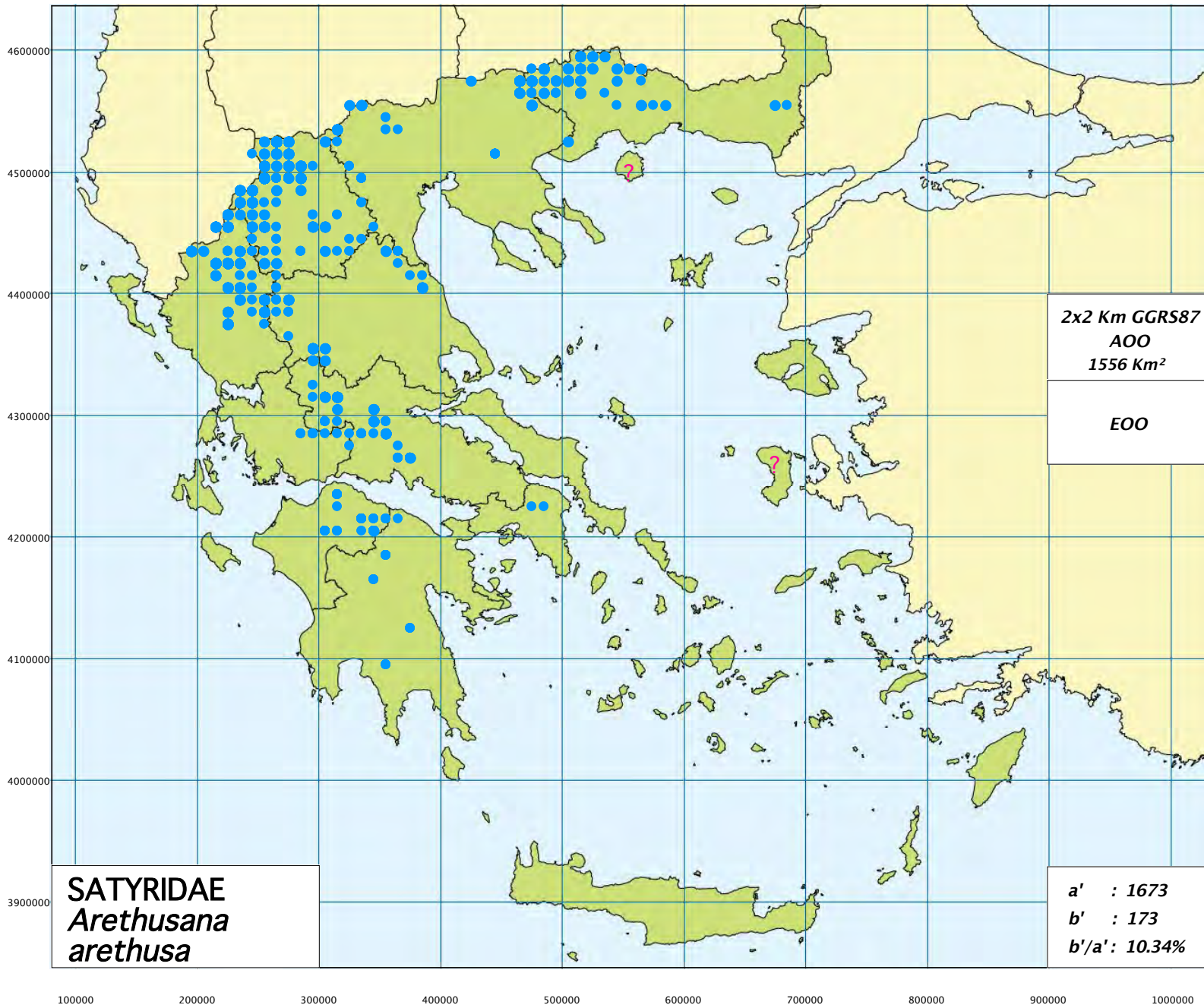


2x2 Km GGRS87  
AOO  
5136 Km<sup>2</sup>

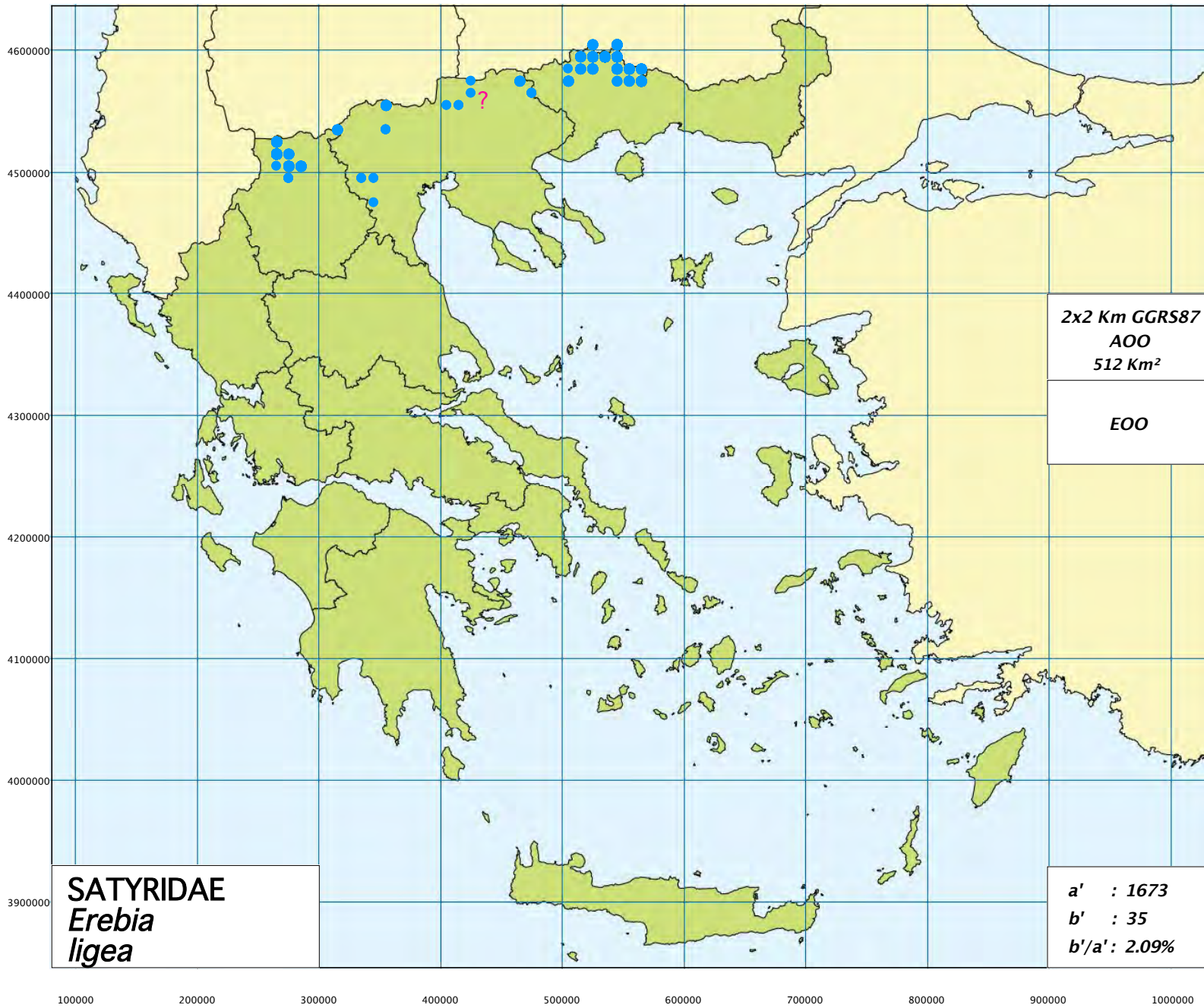
EOO

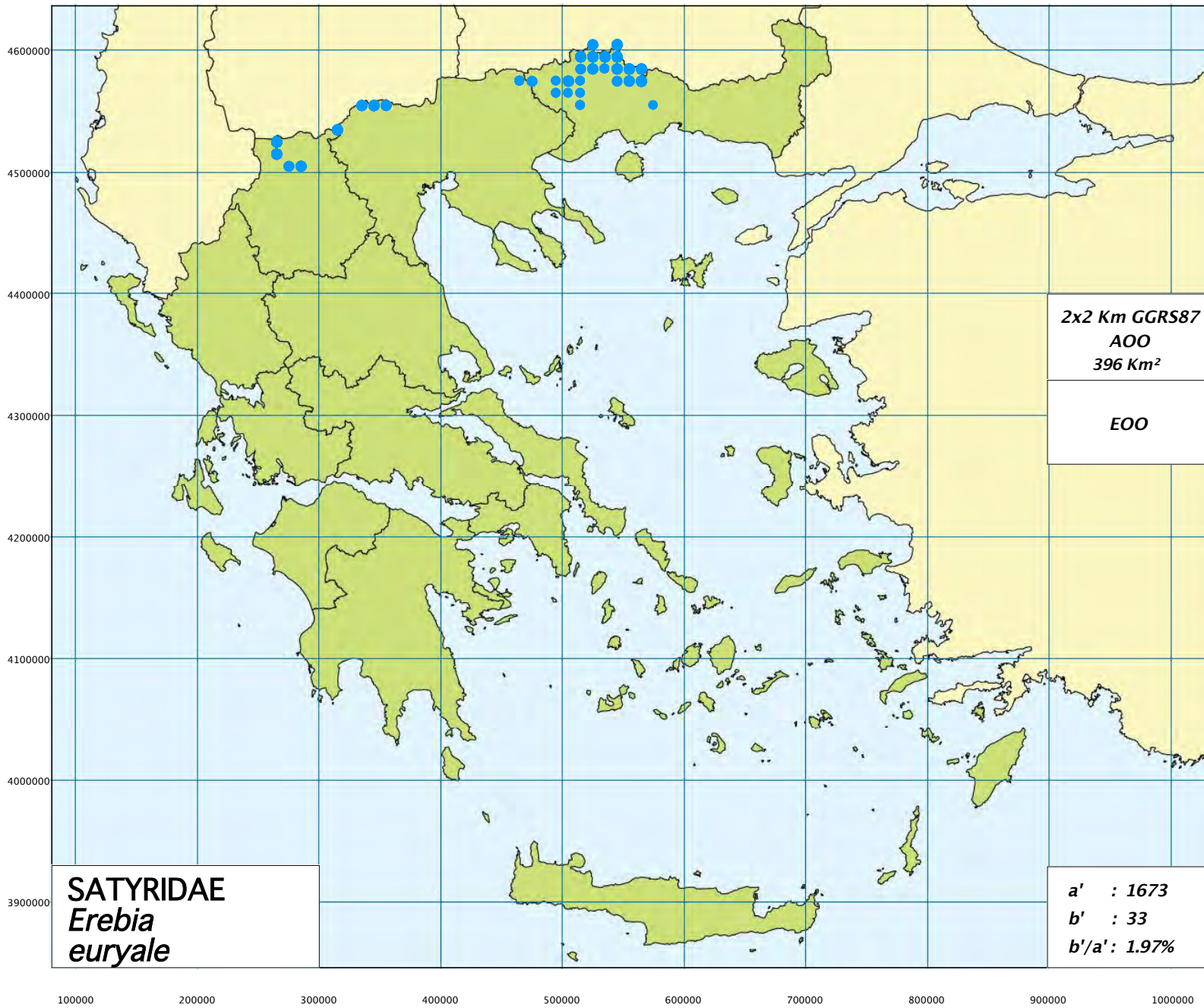
a' : 1673  
b' : 444  
b'/a' : 26.53%

SATYRIDAE  
*Brintesia*  
*circe*

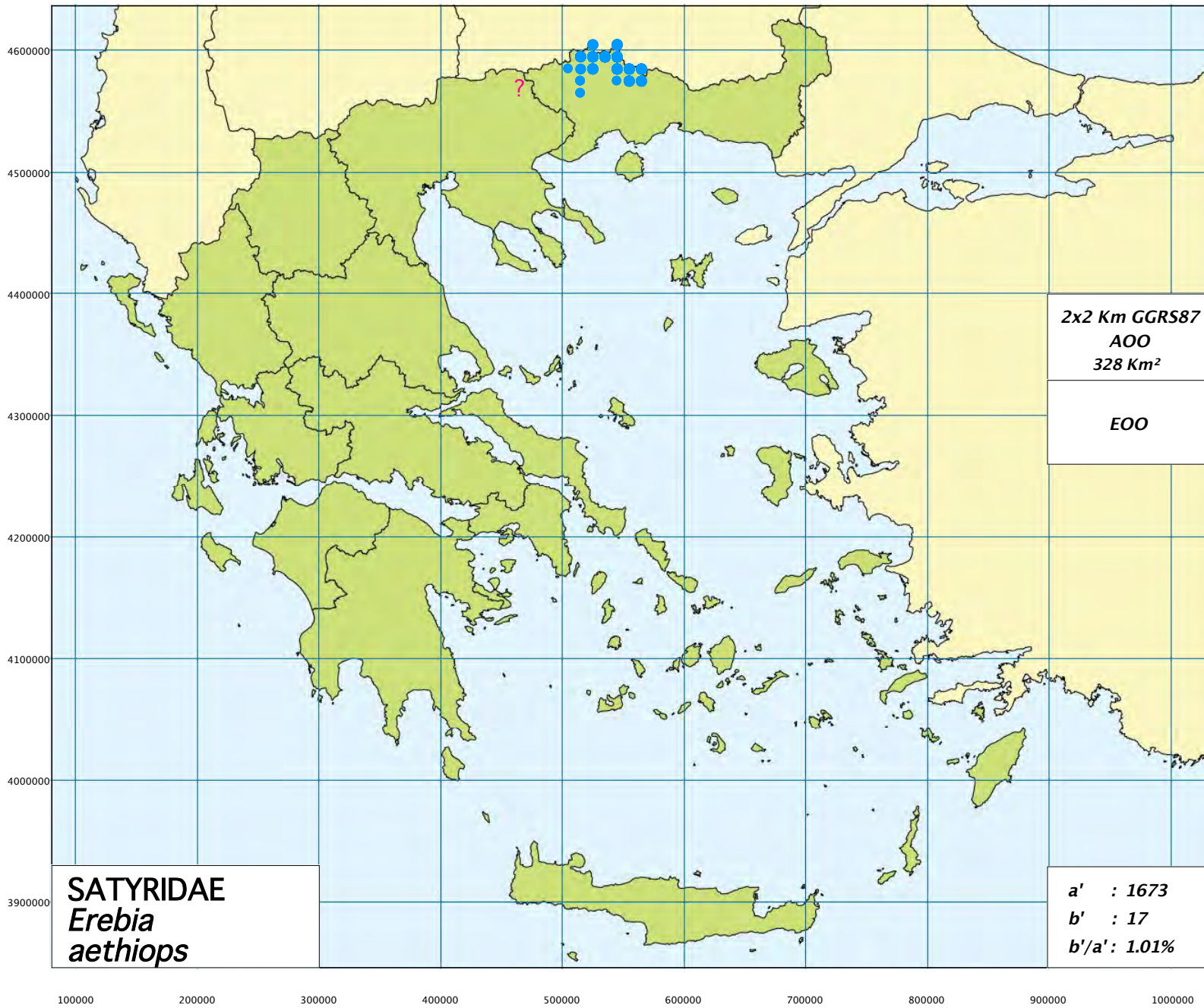


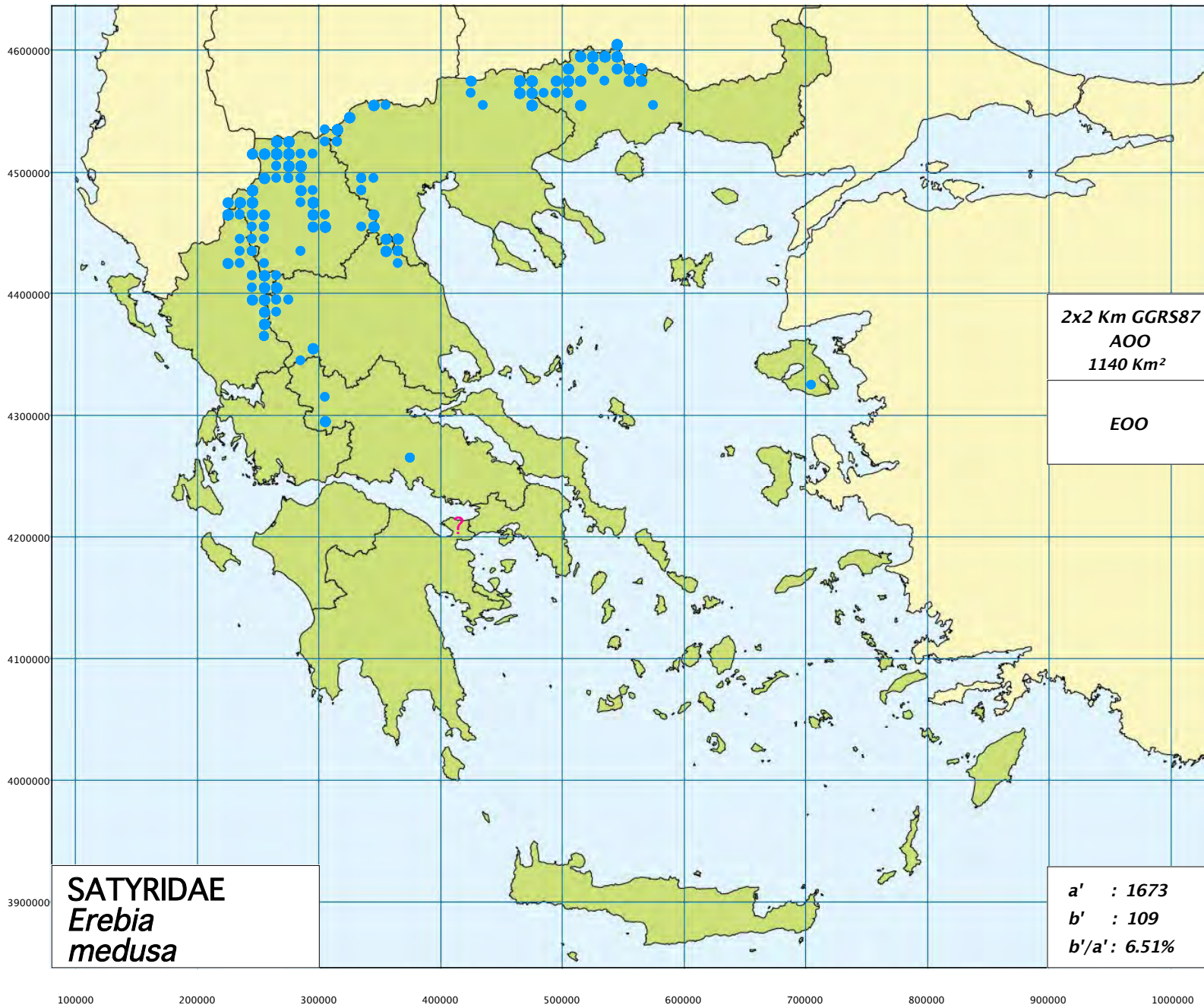




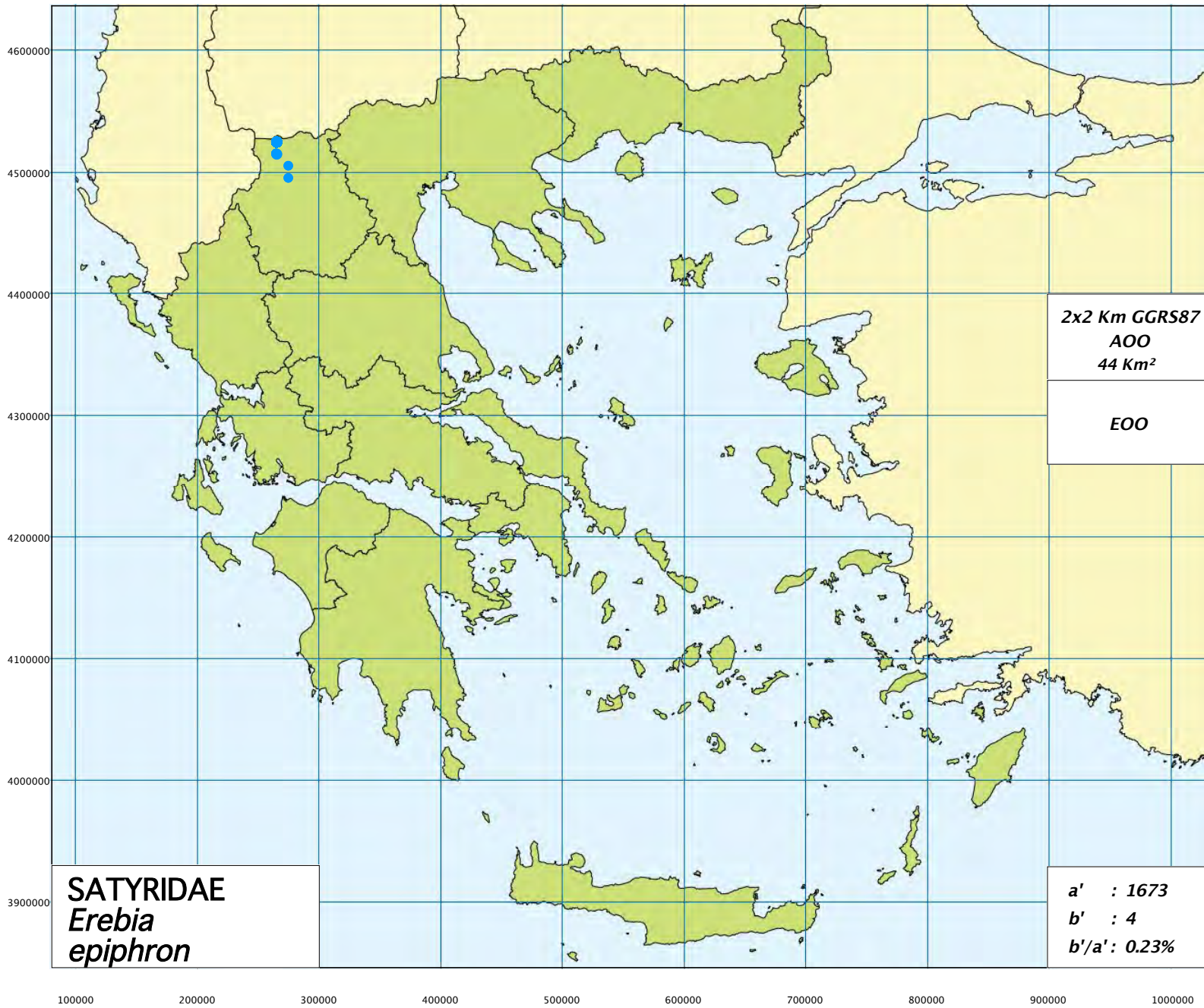


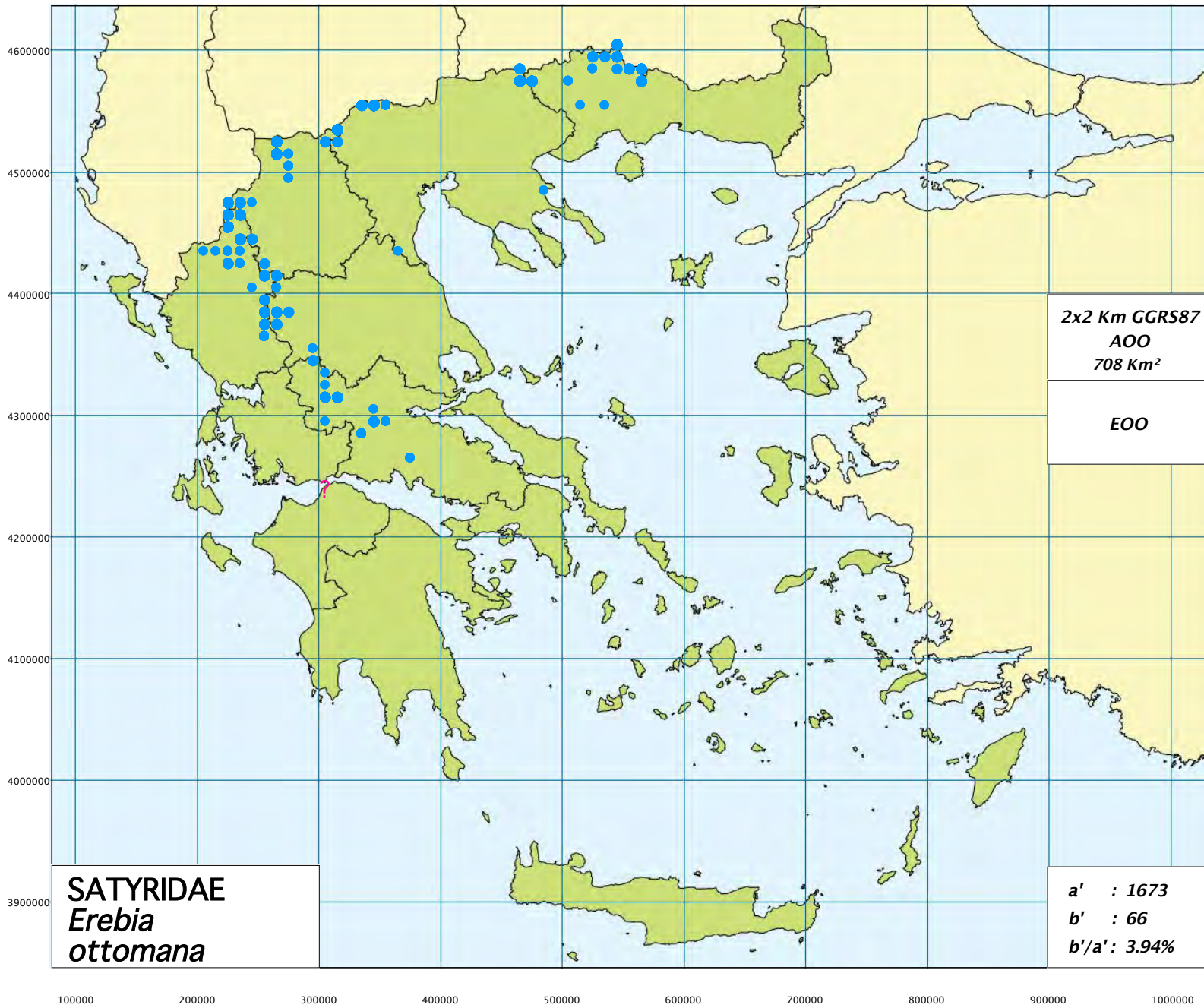




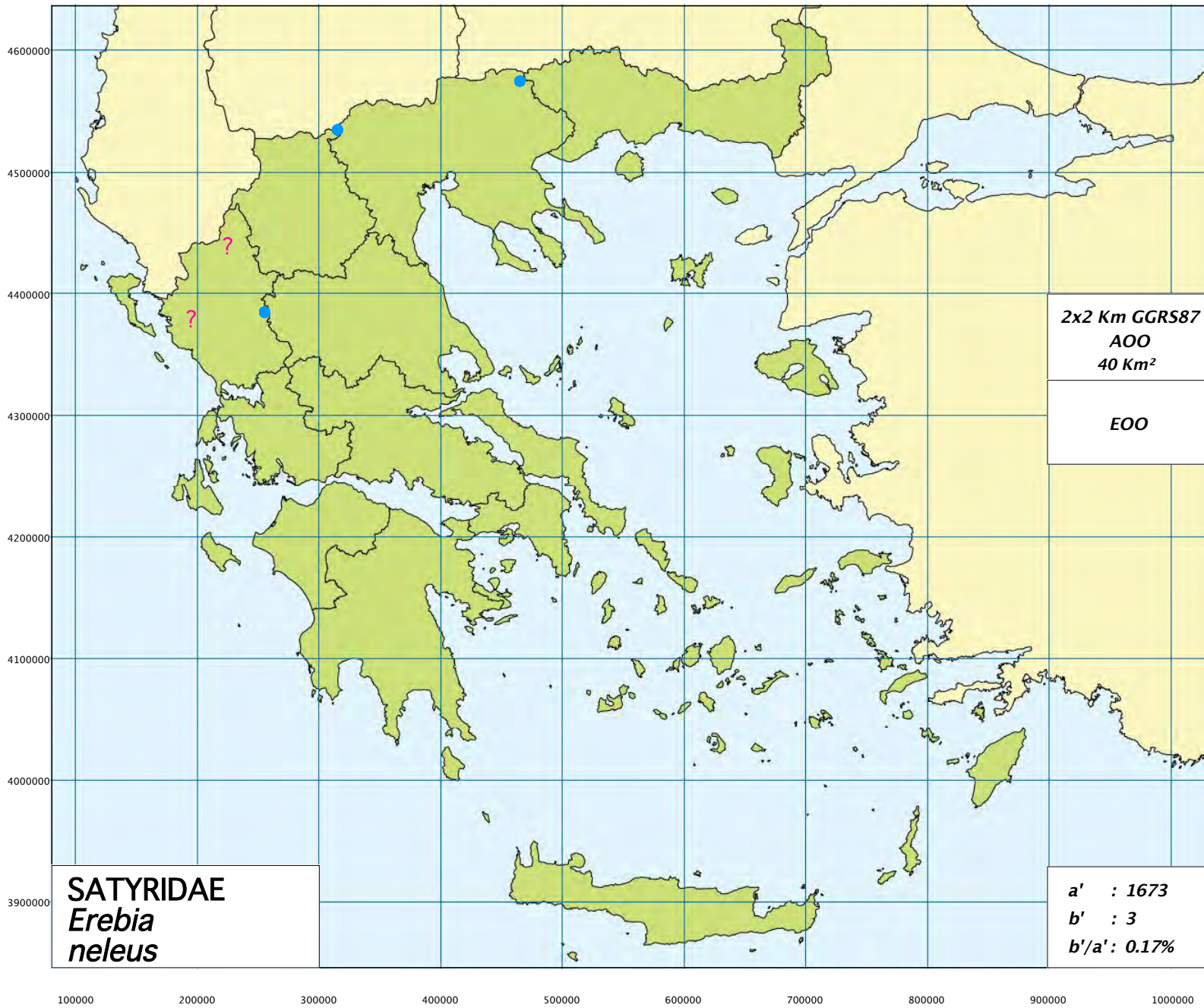












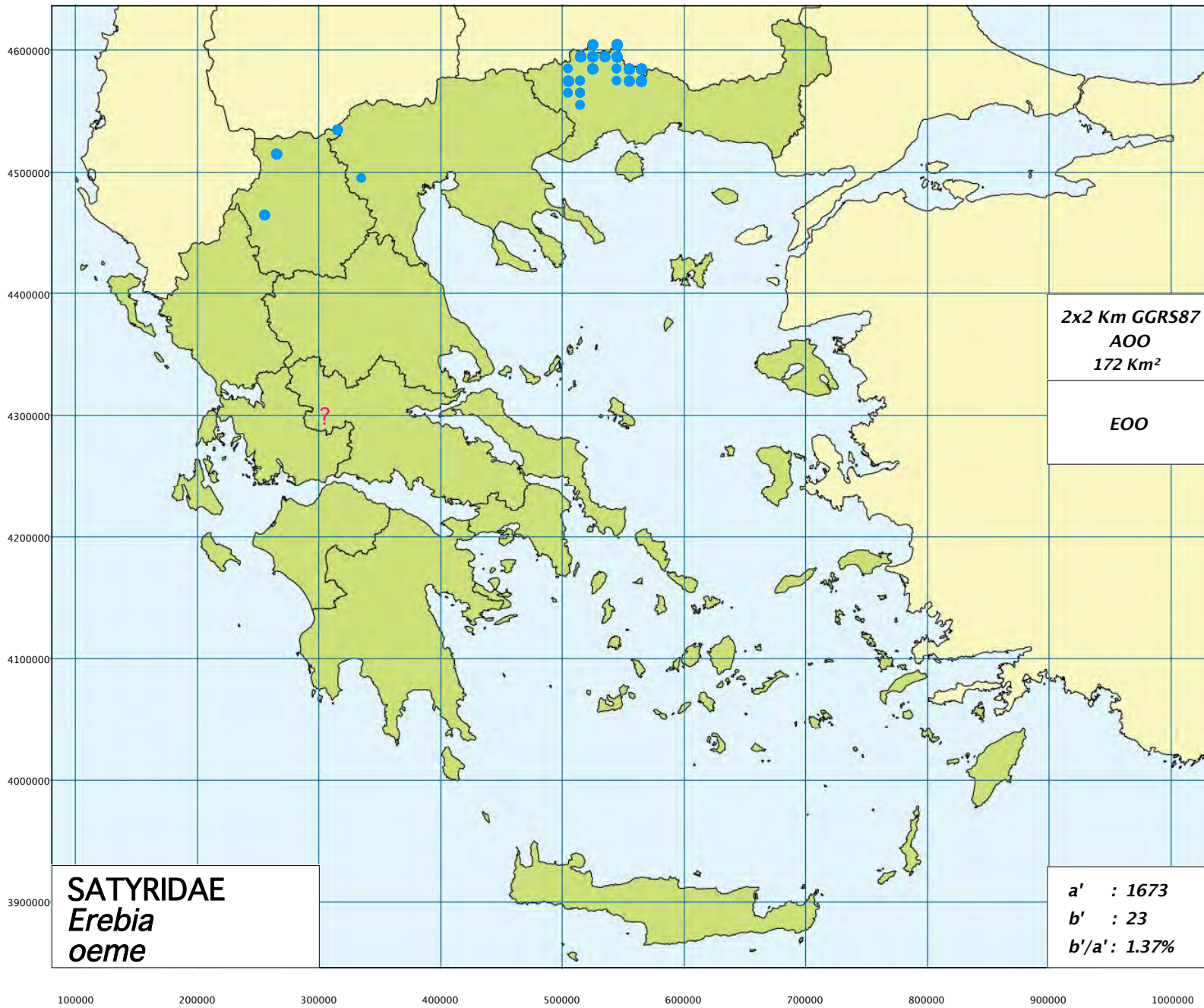
**SATYRIDAE**  
*Erebia*  
*neleus*

**2x2 Km GGRS87**  
**AOO**  
**40 Km<sup>2</sup>**

**EOO**

**a' : 1673**  
**b' : 3**  
**b'/a' : 0.17%**

100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000



2x2 Km GGRS87  
 AOO  
 172 Km<sup>2</sup>

EOO

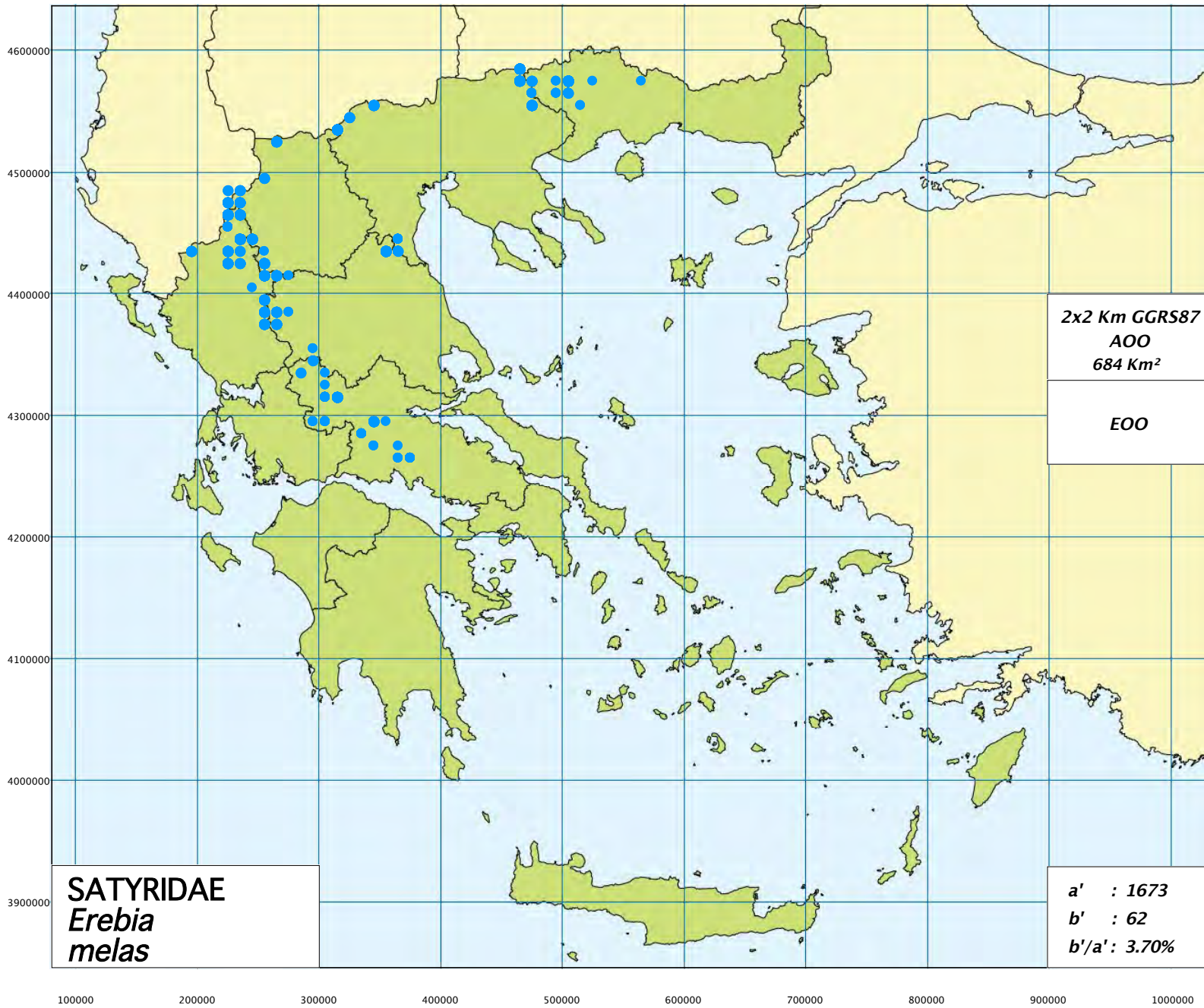
**SATYRIDAE**  
*Erebia*  
*oeme*

*a'* : 1673  
*b'* : 23  
*b'/a'* : 1.37%

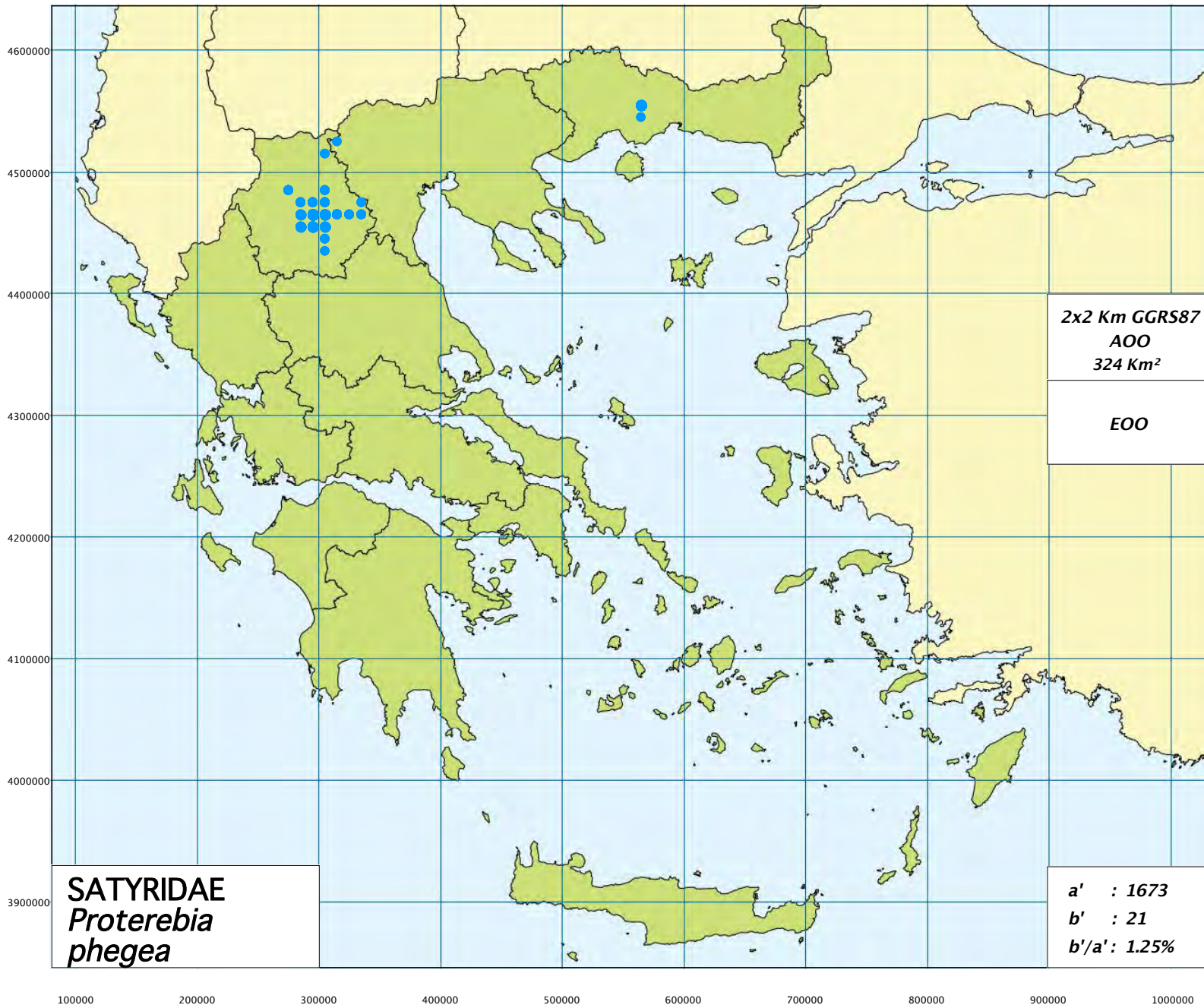
100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000

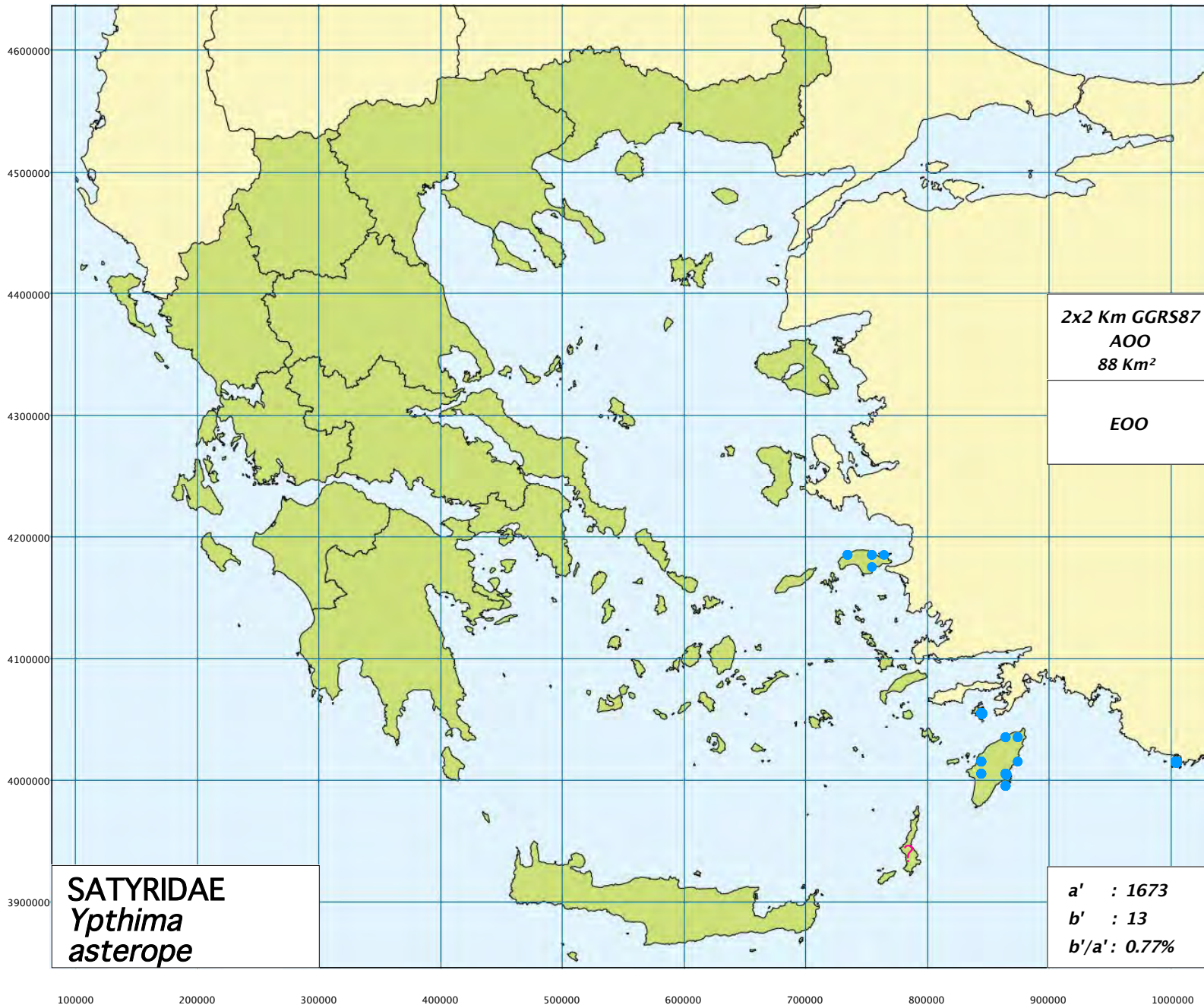




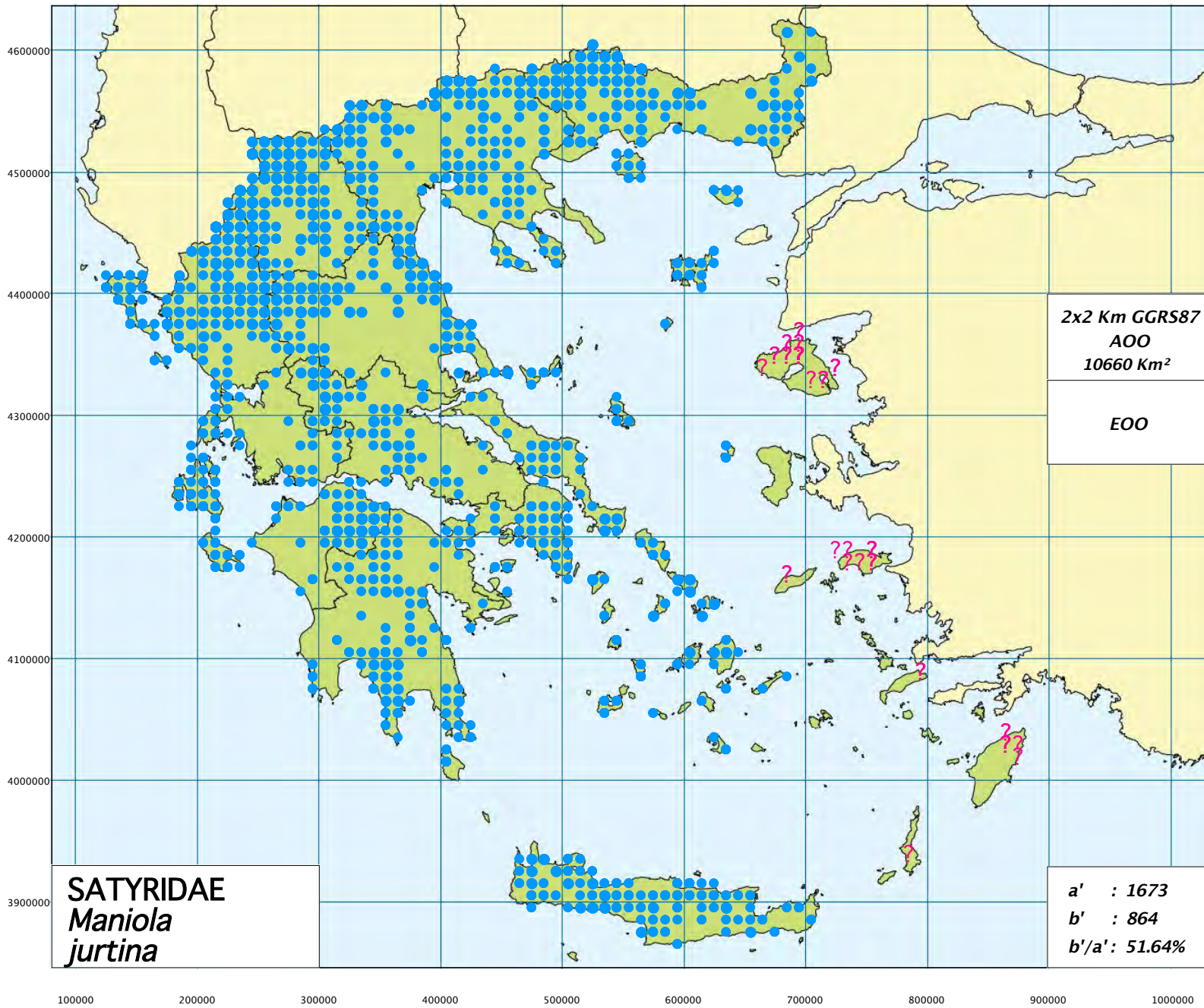


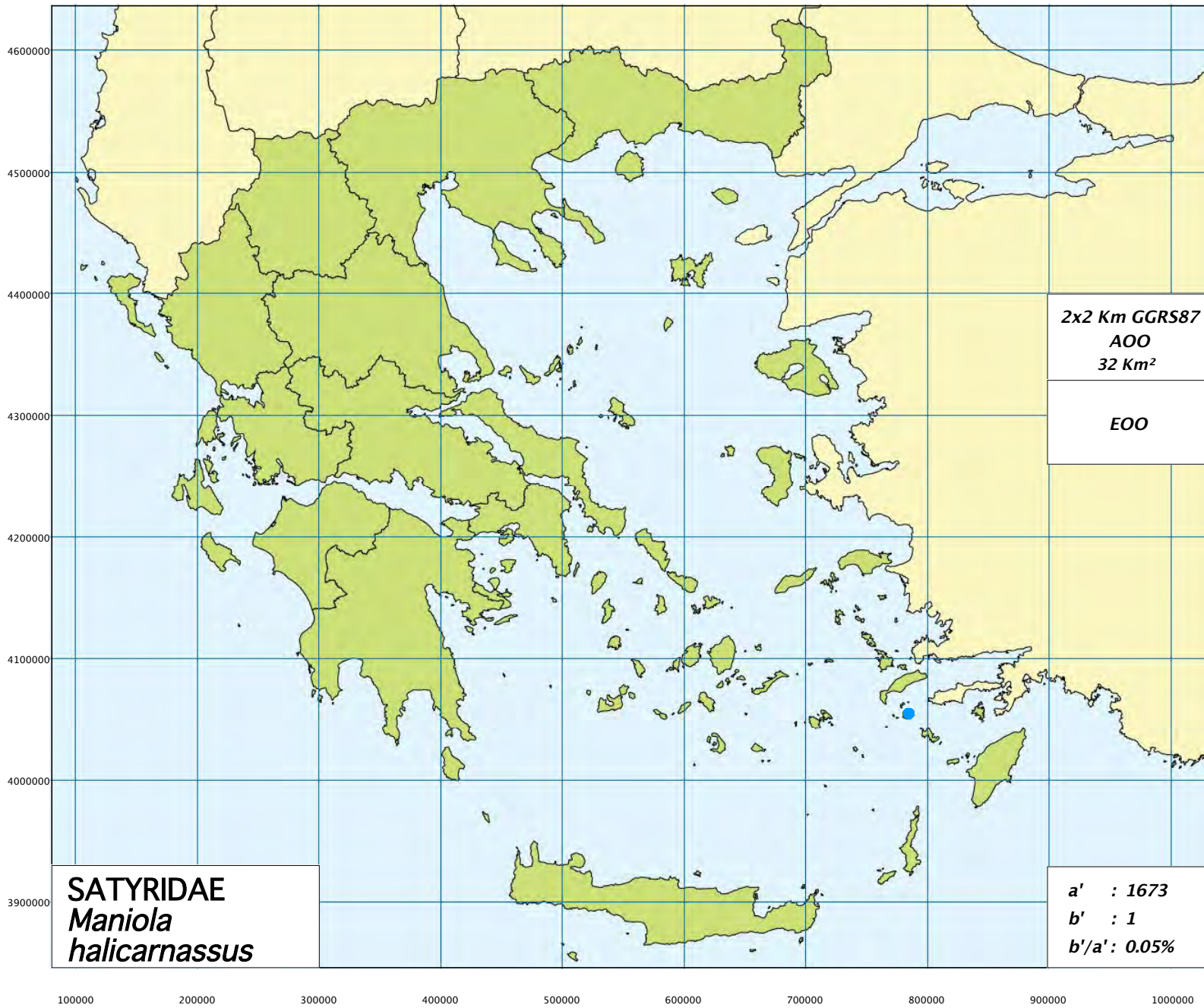




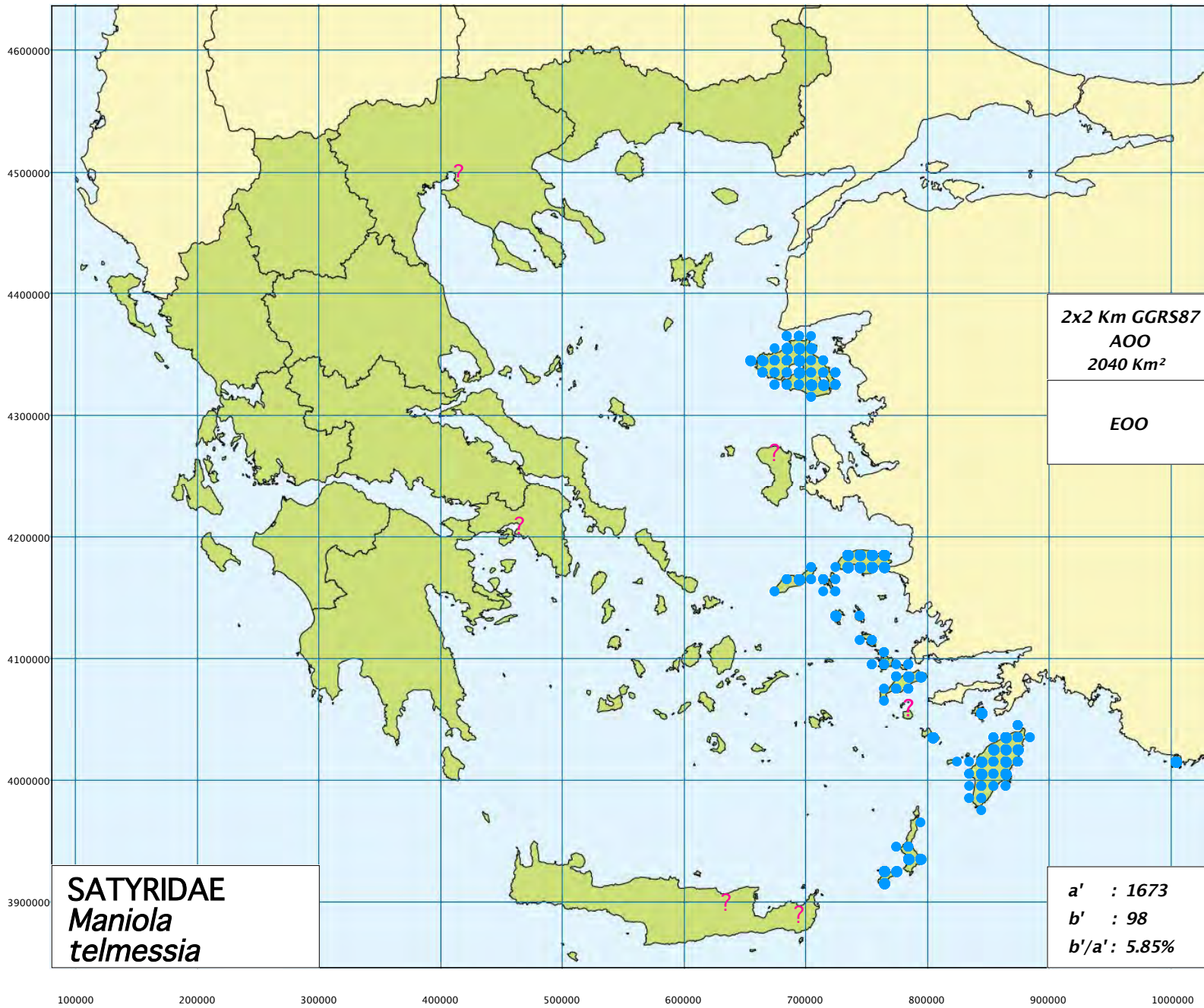


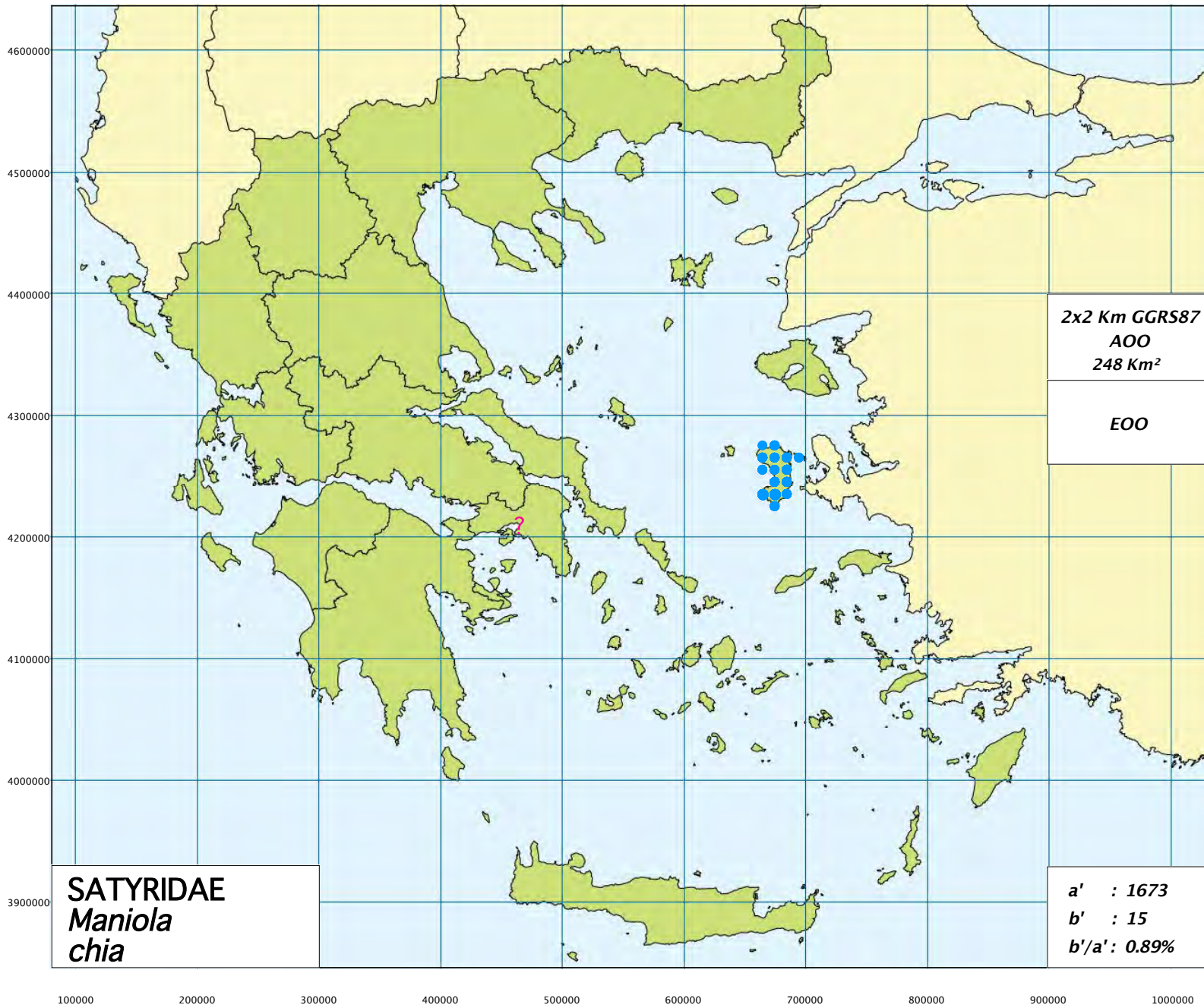




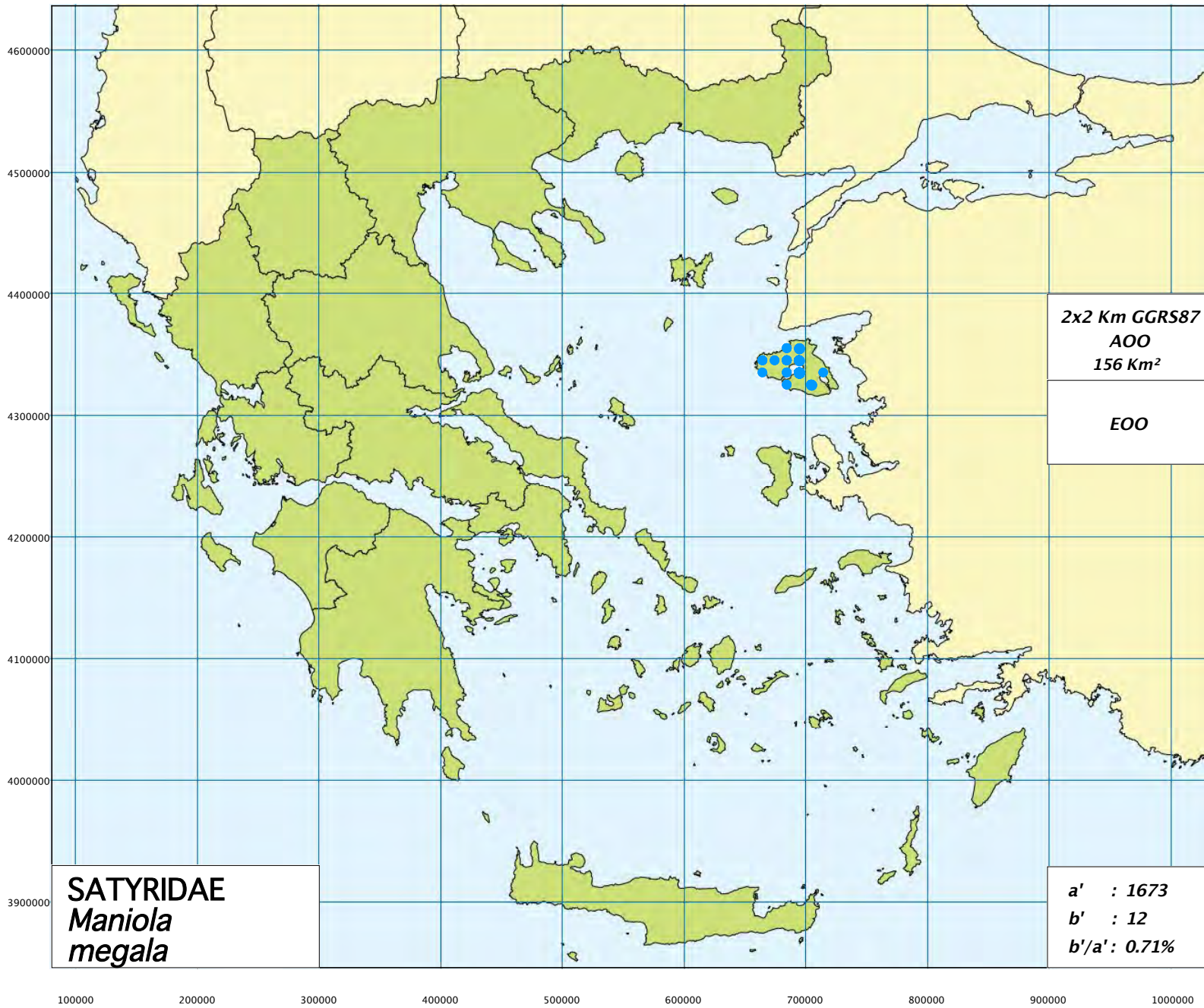


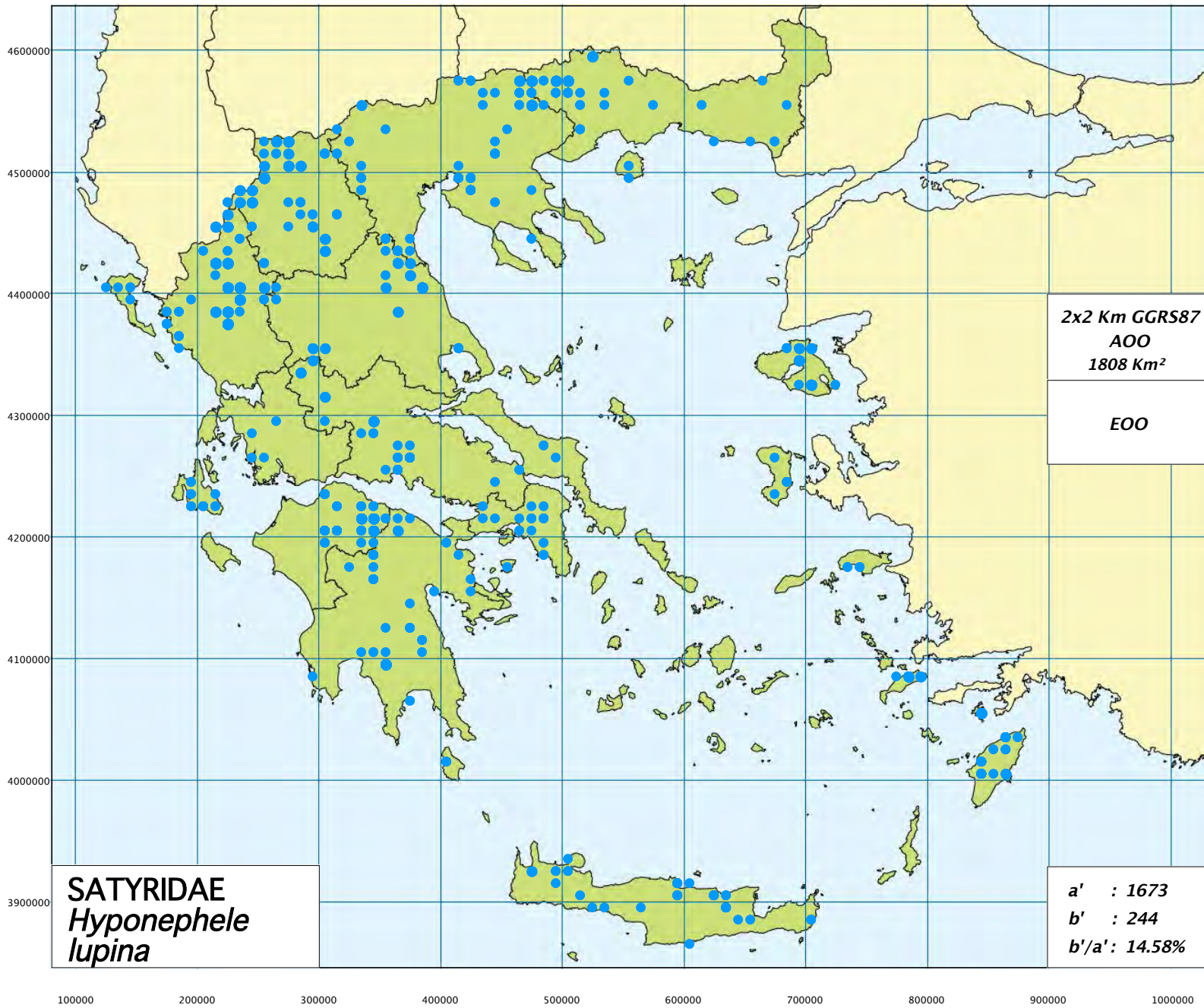




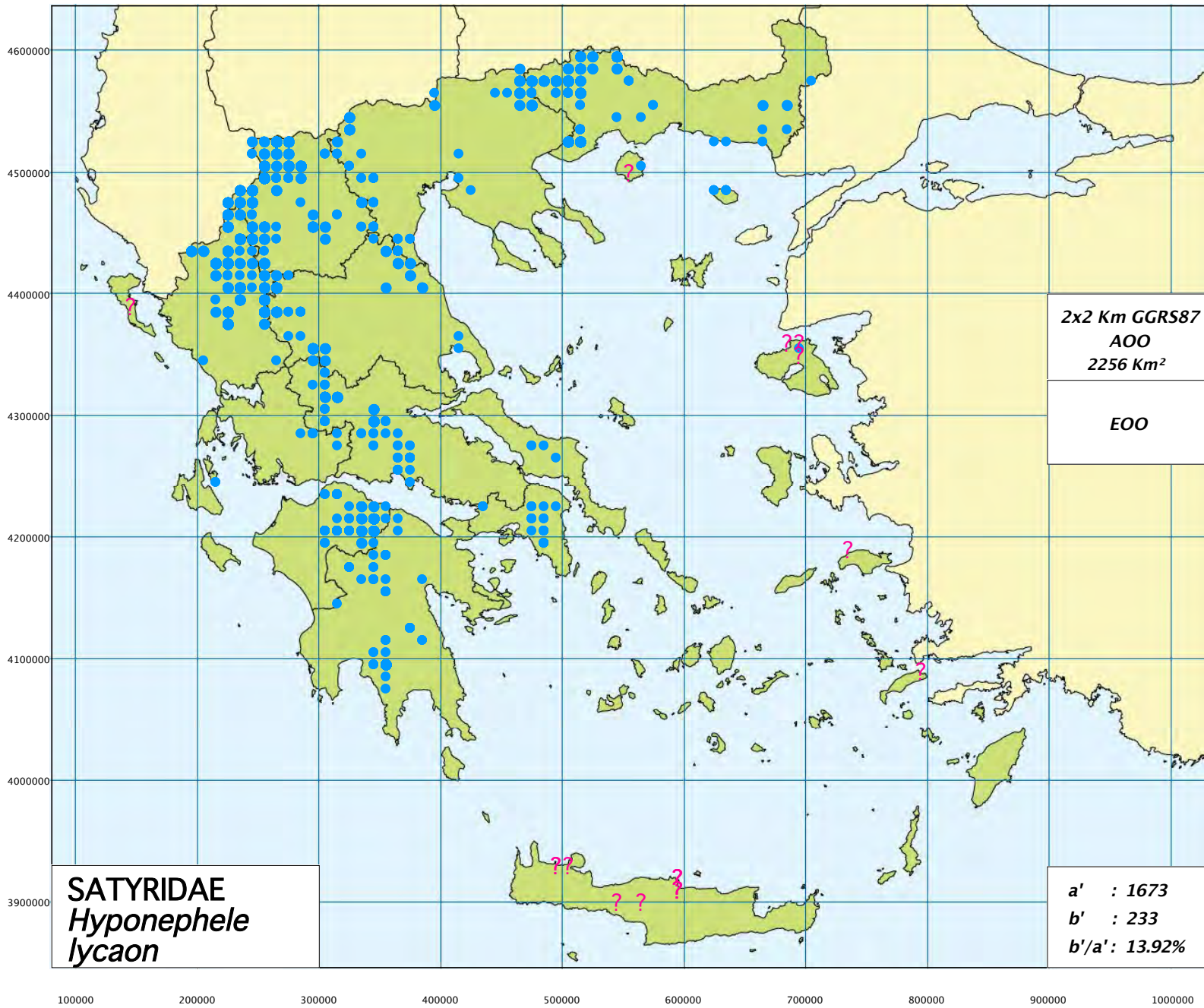


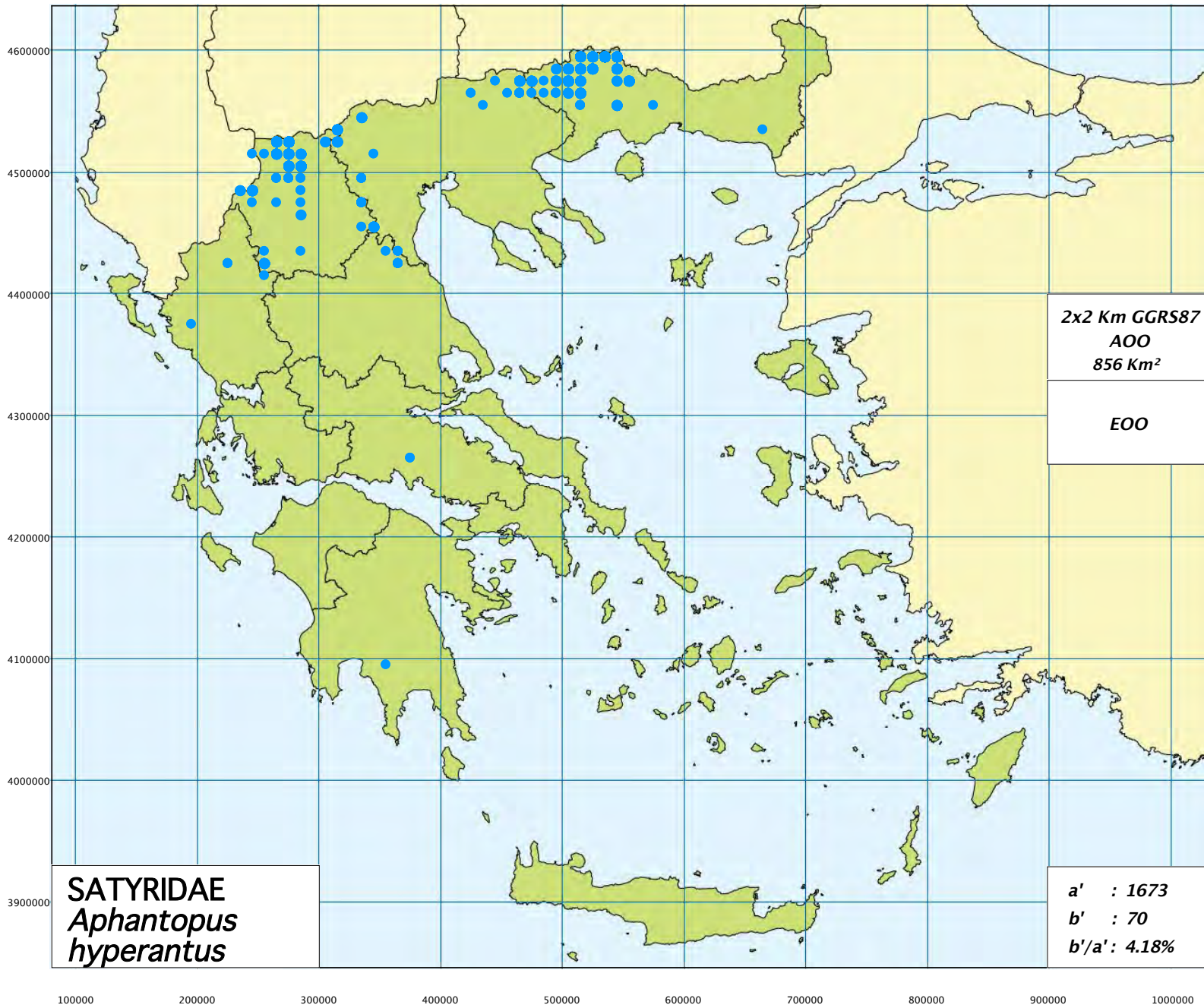




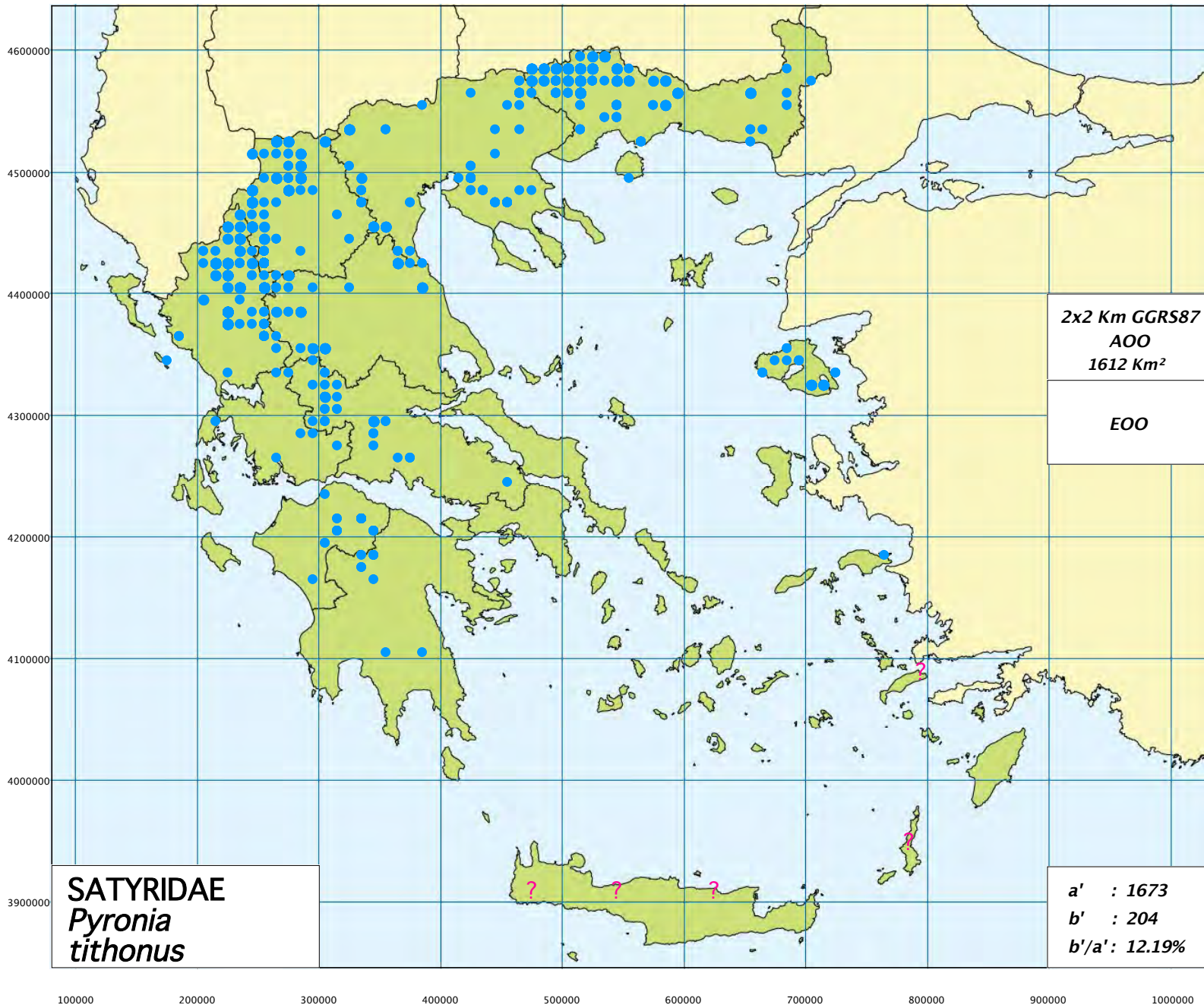












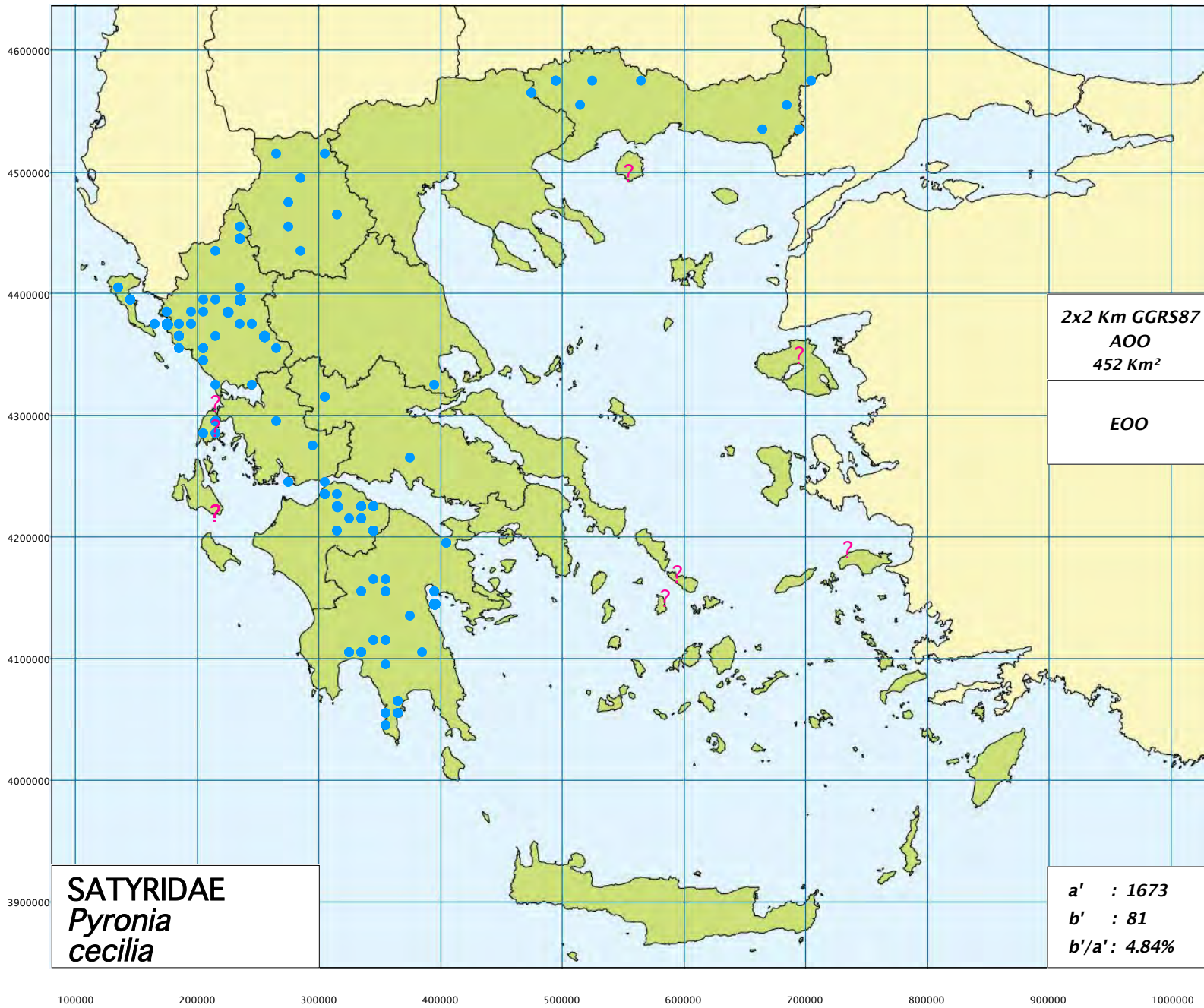
**SATYRIDAE**  
*Pyronia*  
*tithonus*

2x2 Km GGRS87  
 AOO  
 1612 Km<sup>2</sup>

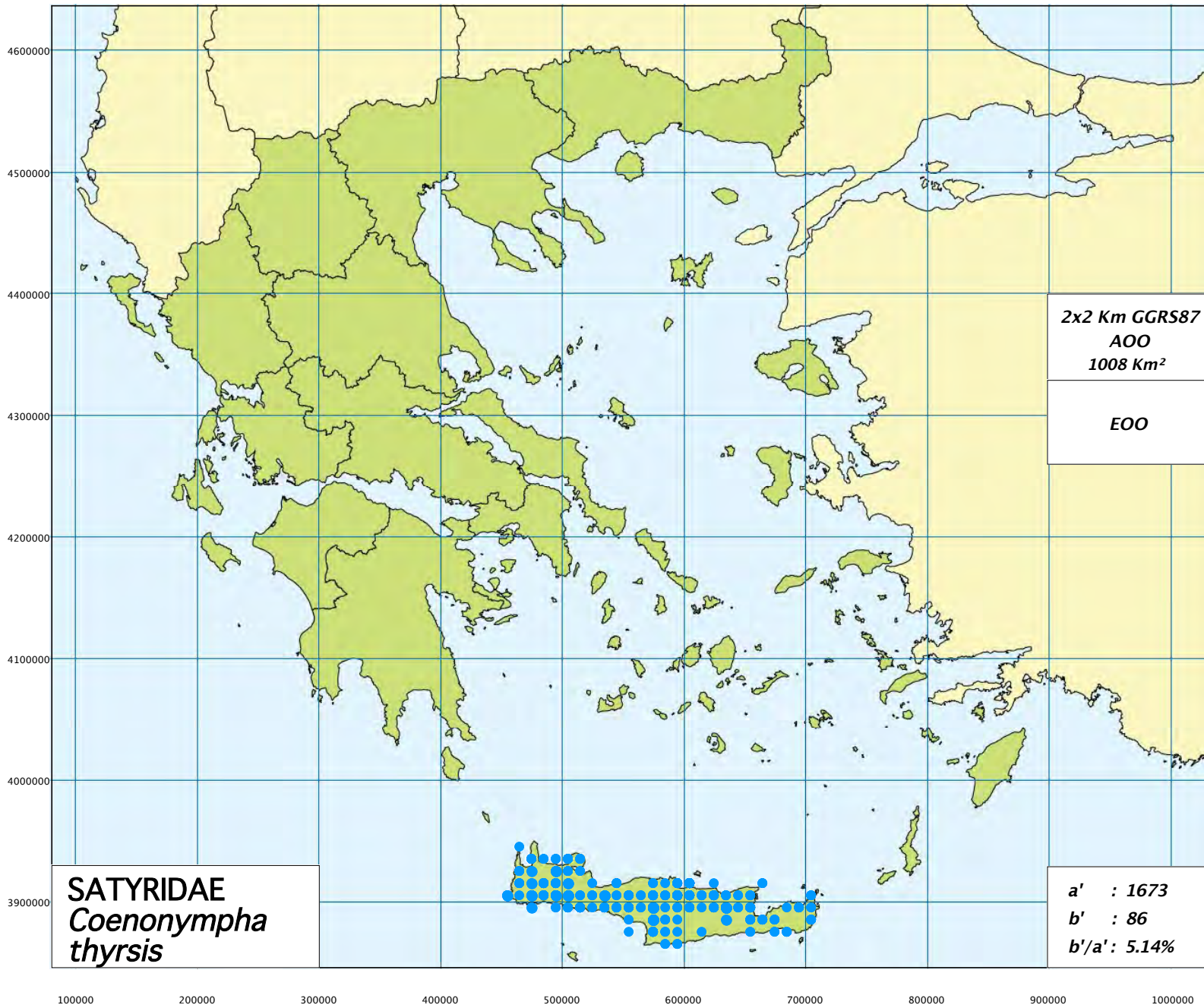
EOO

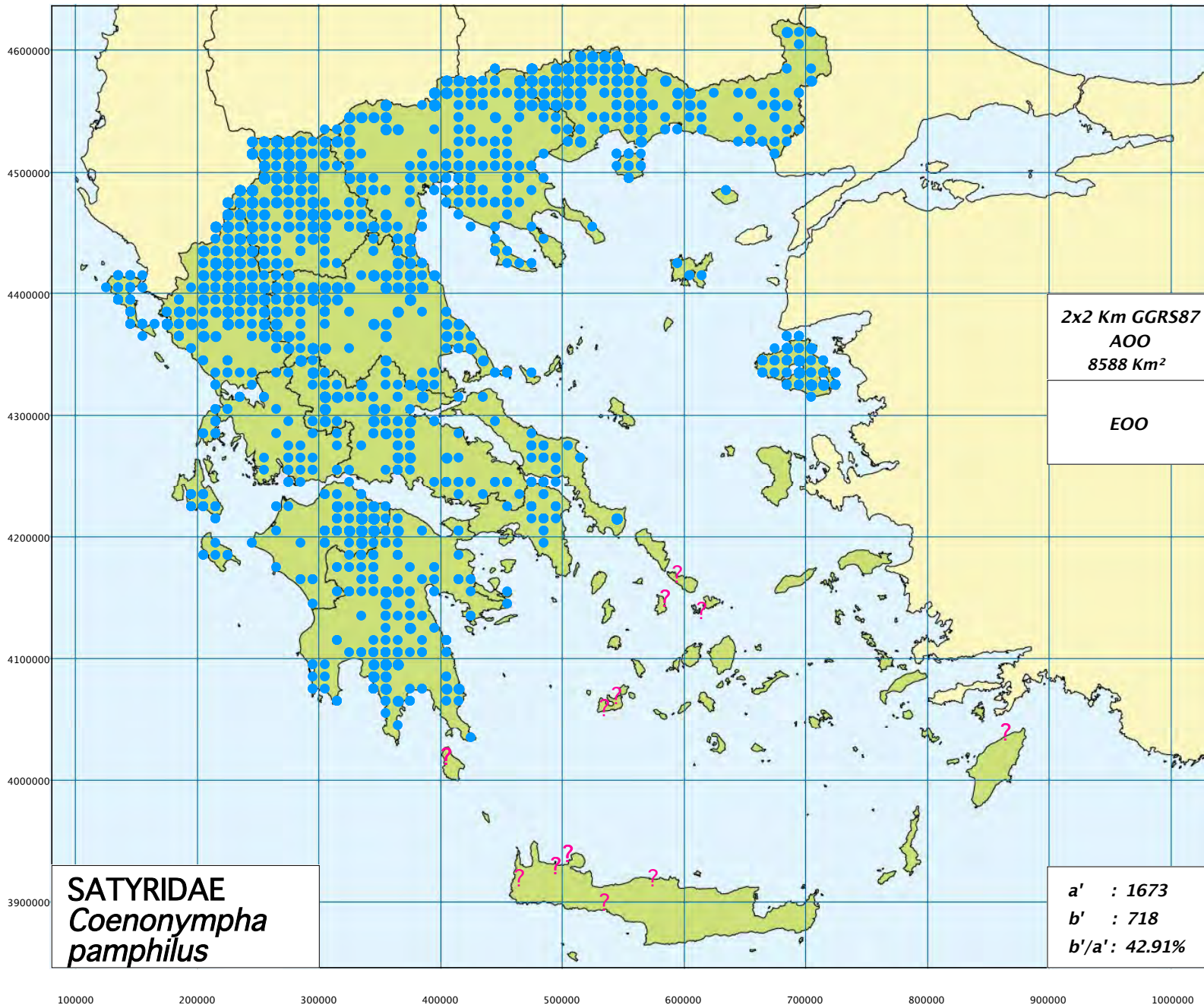
*a'* : 1673  
*b'* : 204  
*b'/a'* : 12.19%

100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000

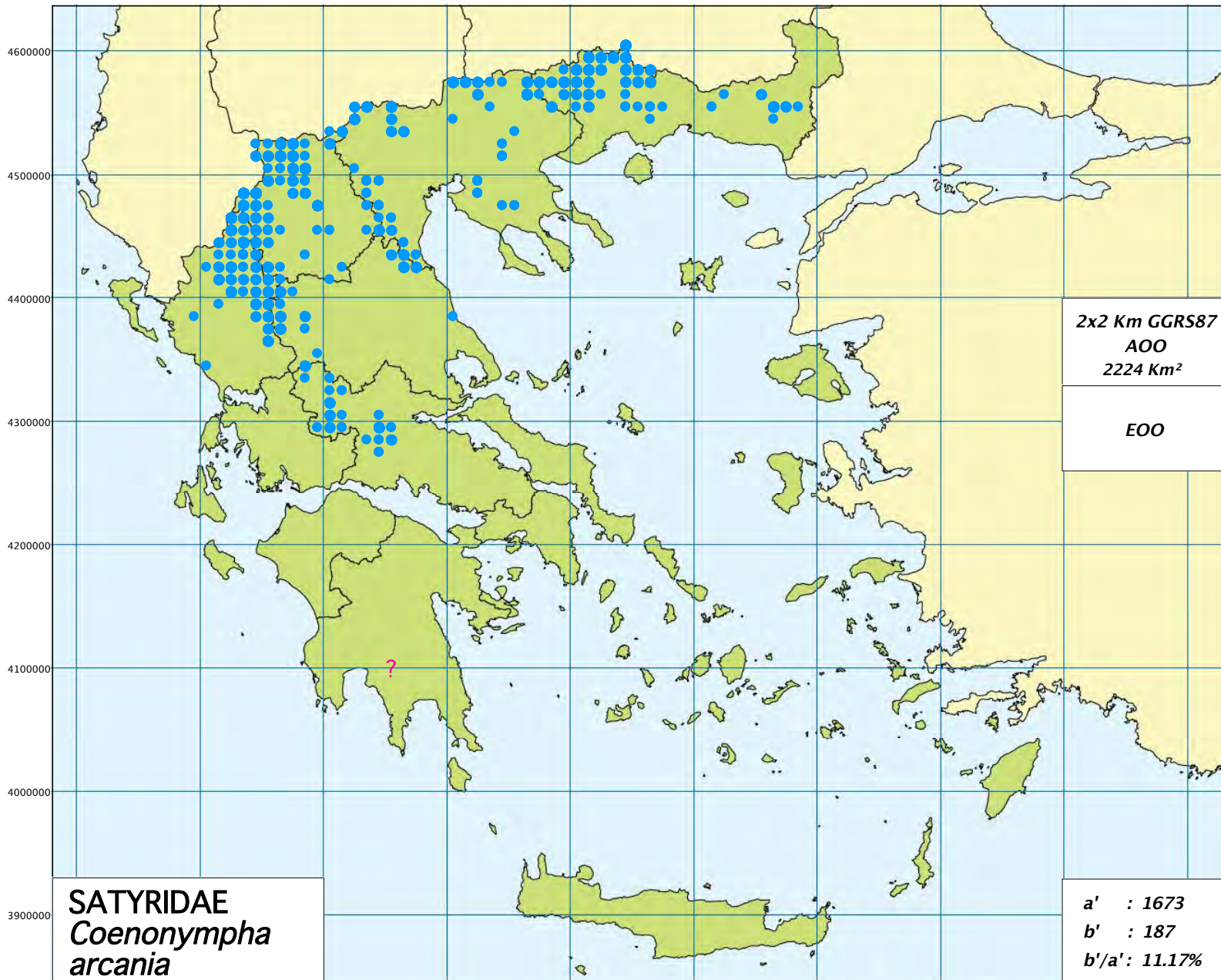


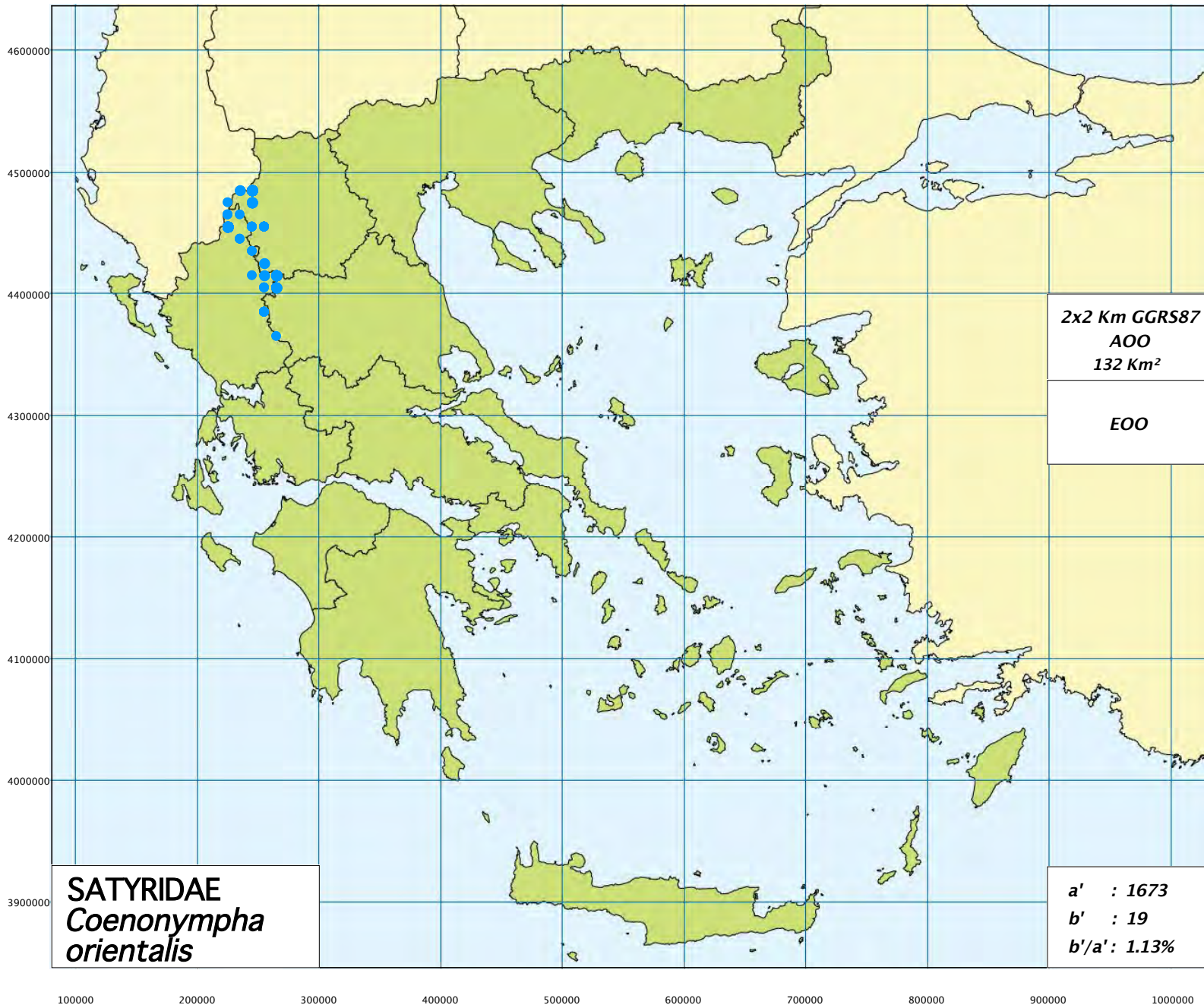




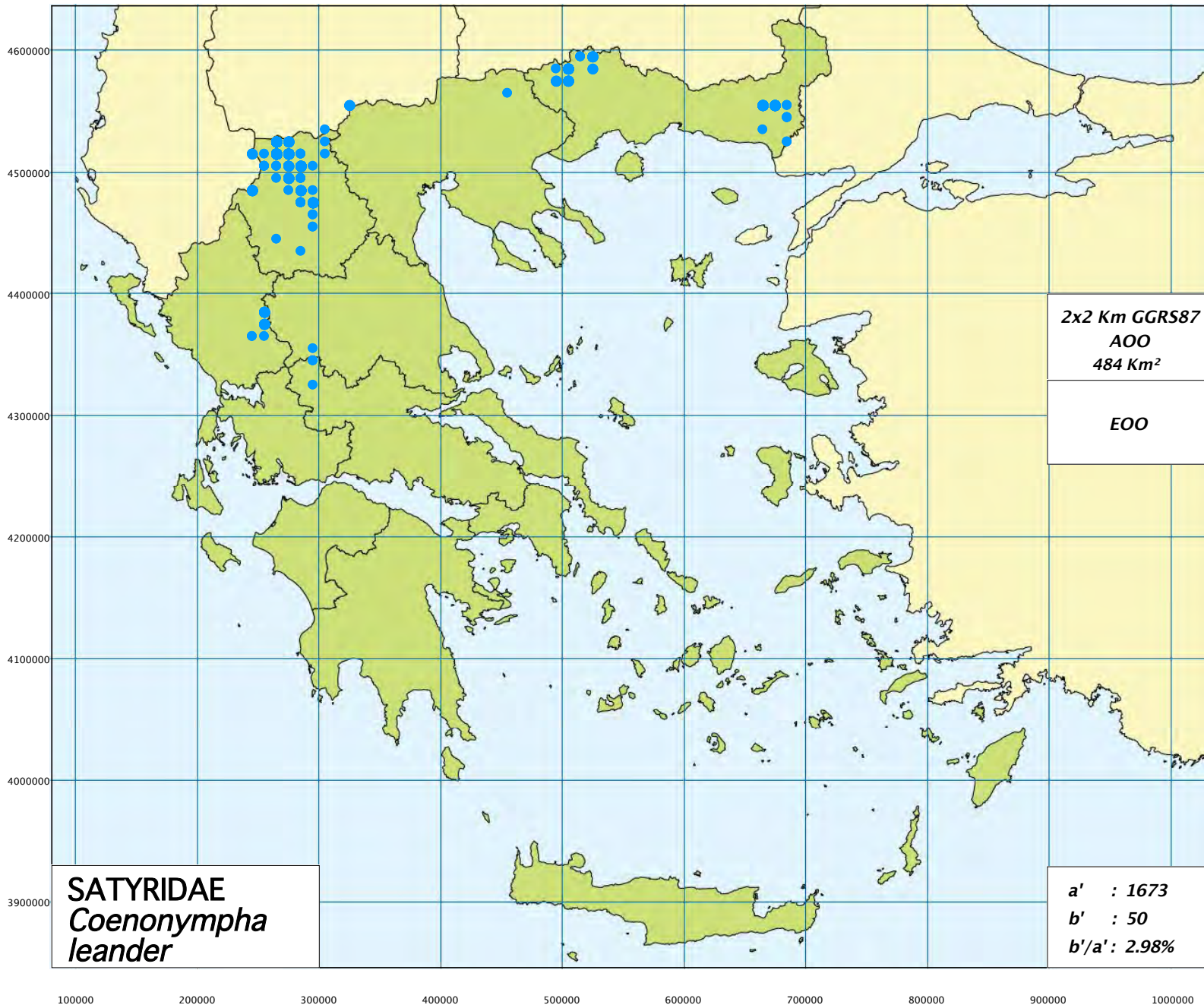


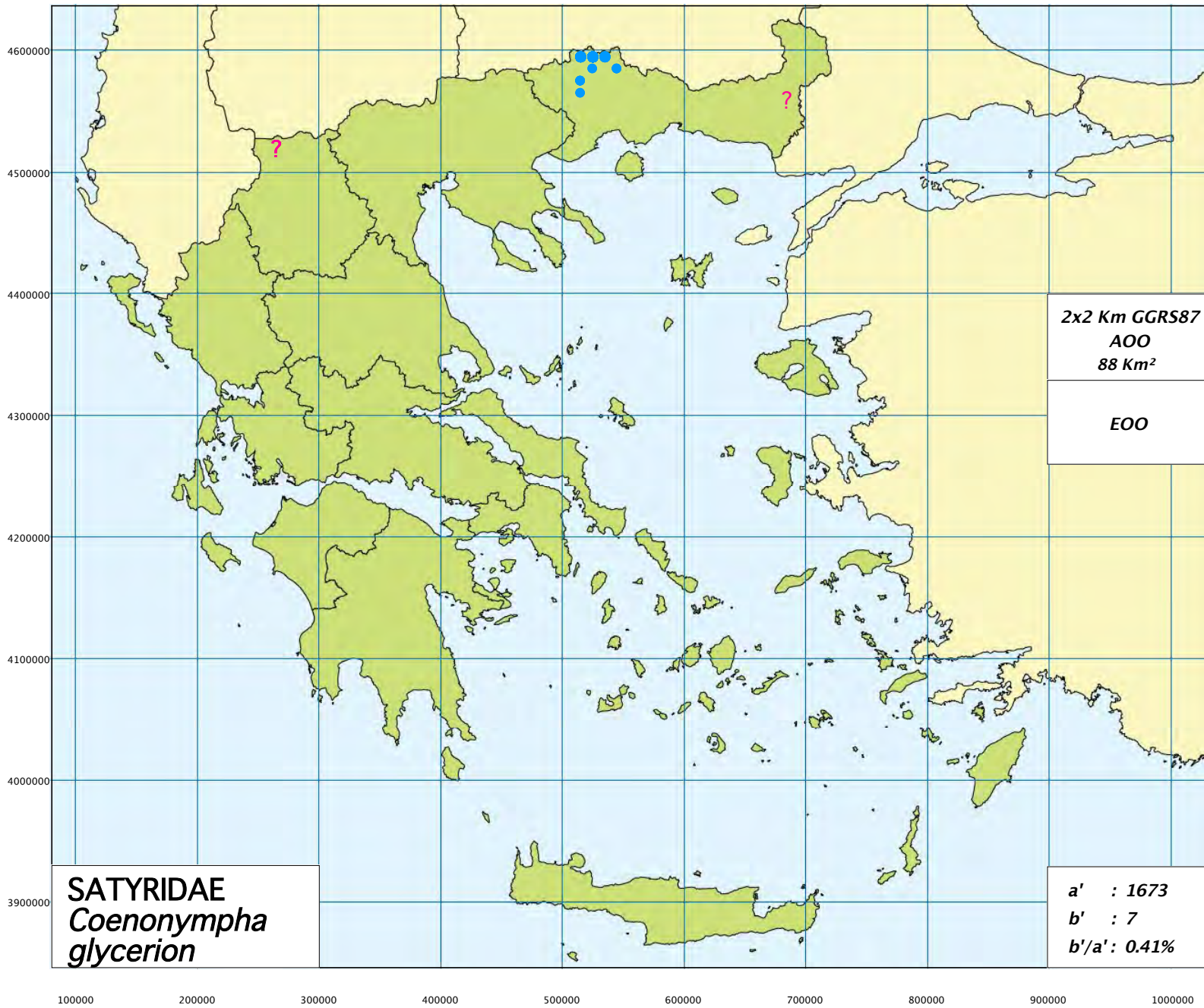












**SATYRIDAE**  
*Coenonympha*  
*glycerion*

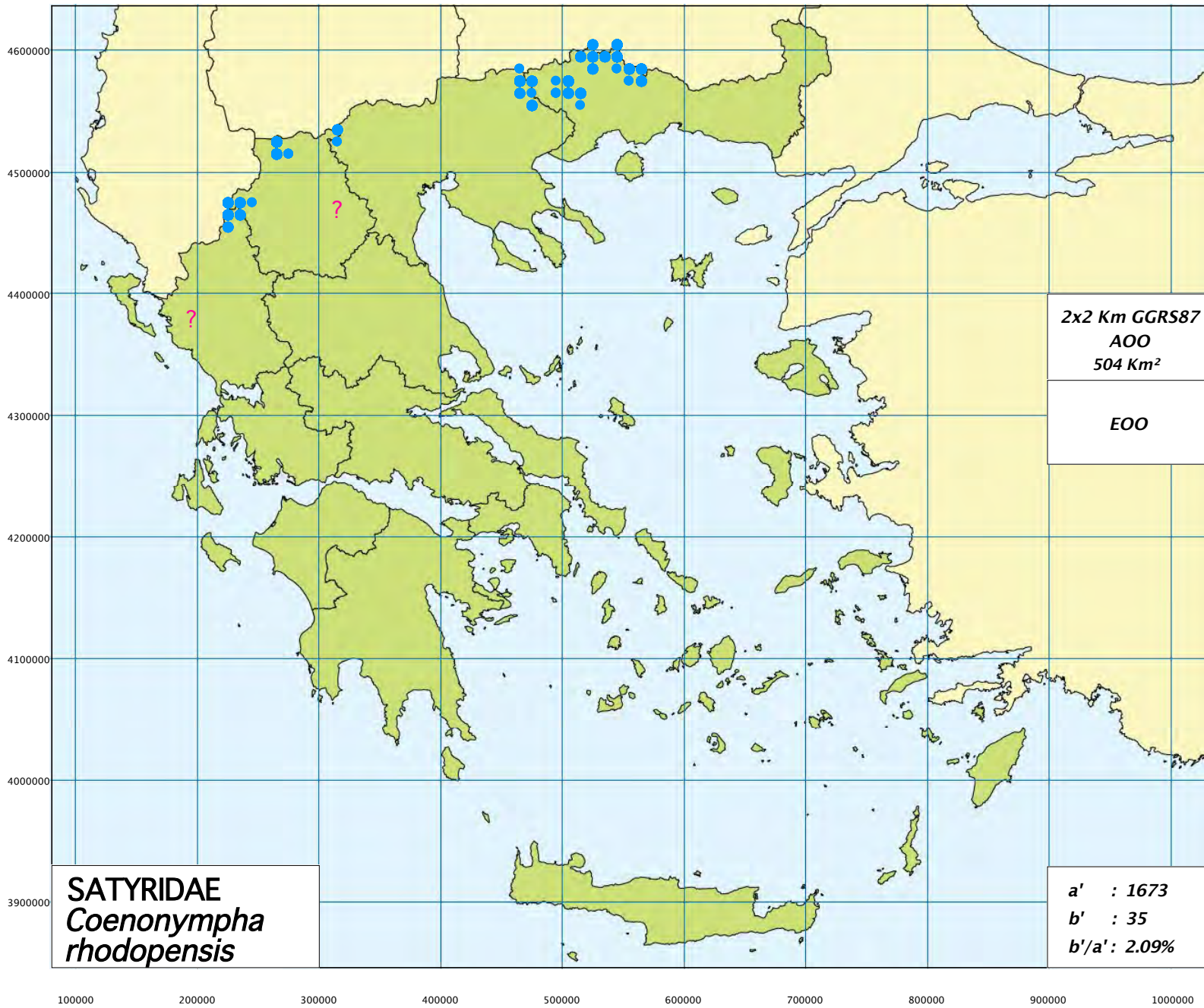
**2x2 Km GGRS87**  
**AOO**  
**88 Km<sup>2</sup>**

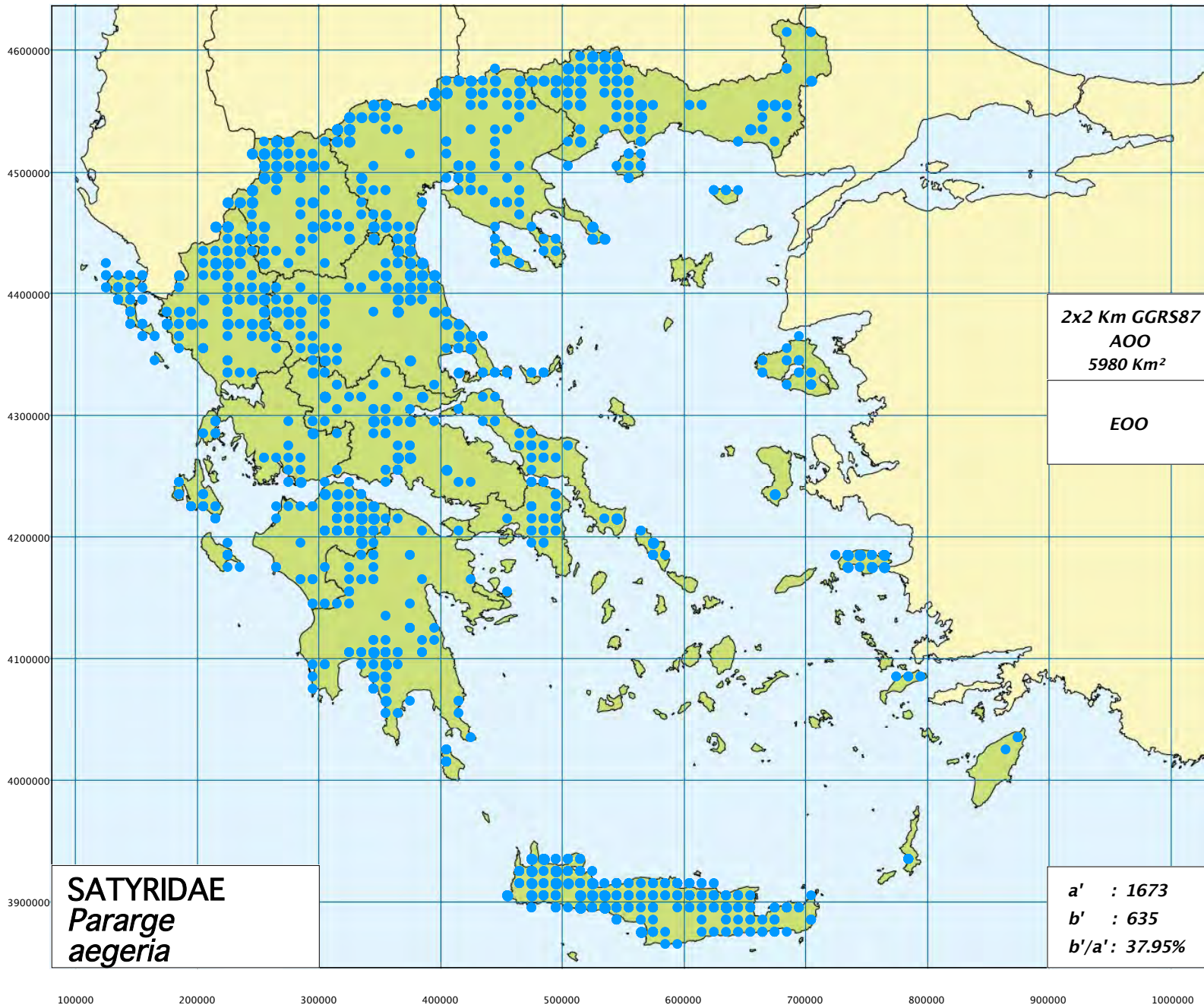
**EOO**

**a' : 1673**  
**b' : 7**  
**b'/a' : 0.41%**

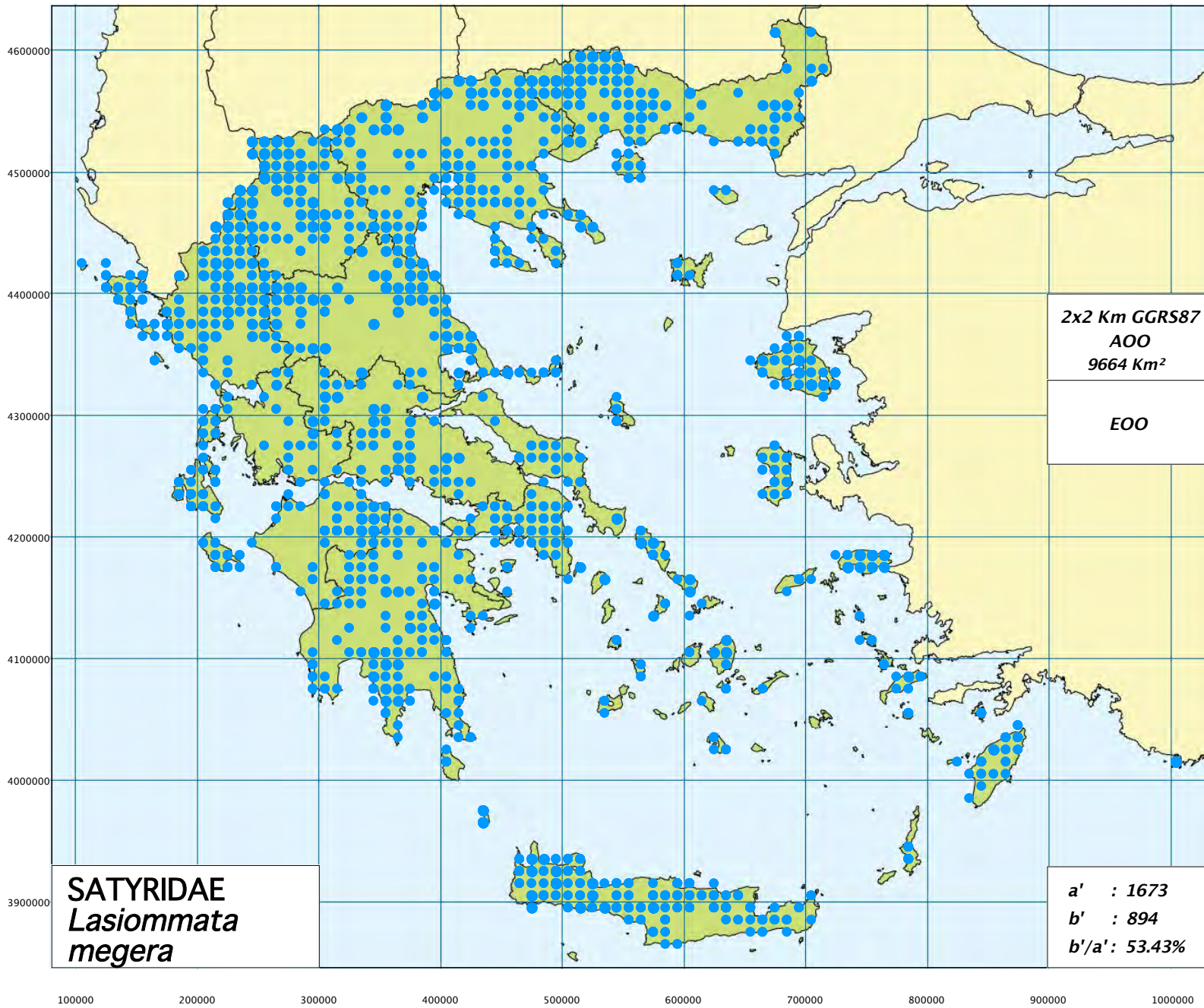
100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000

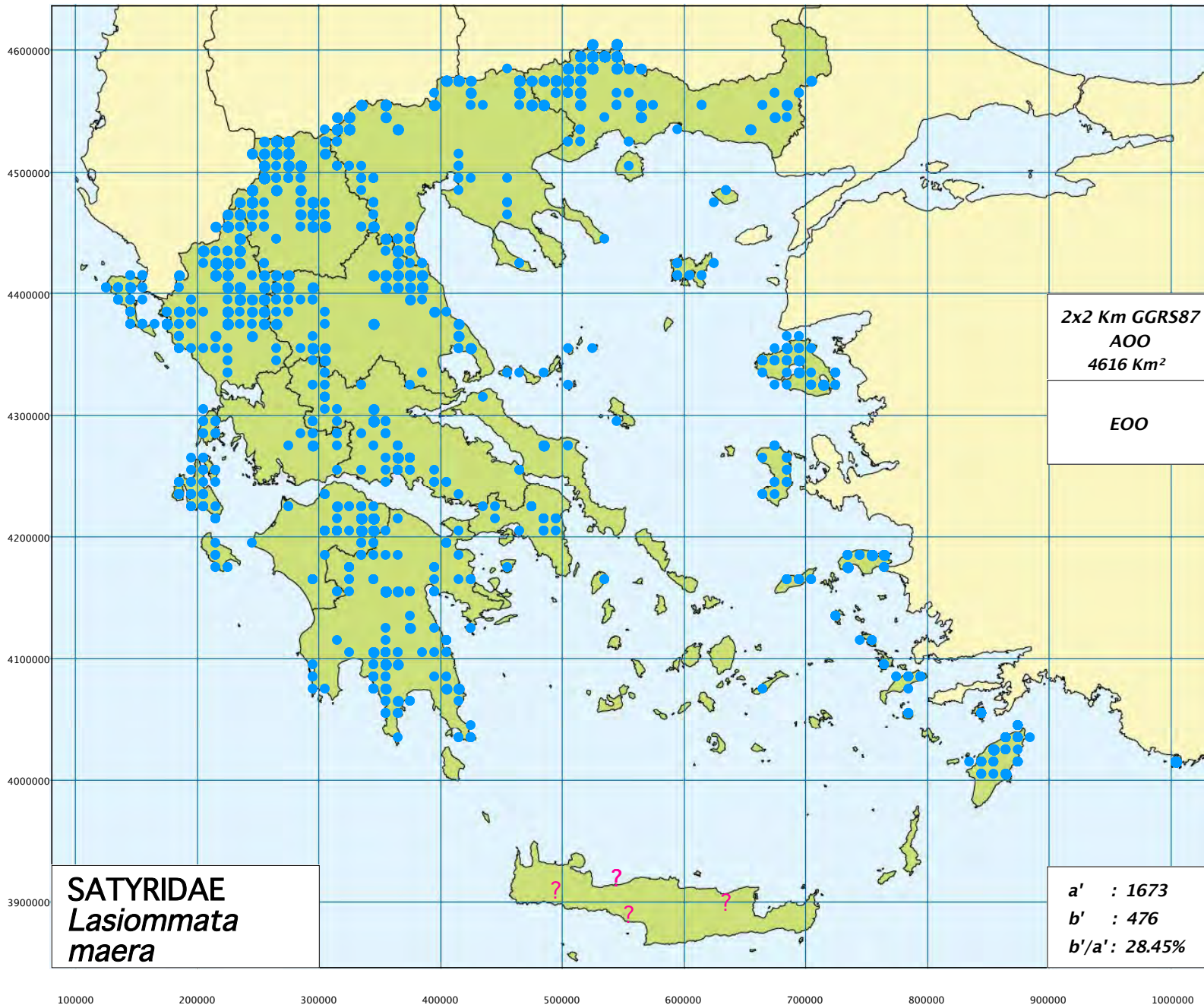




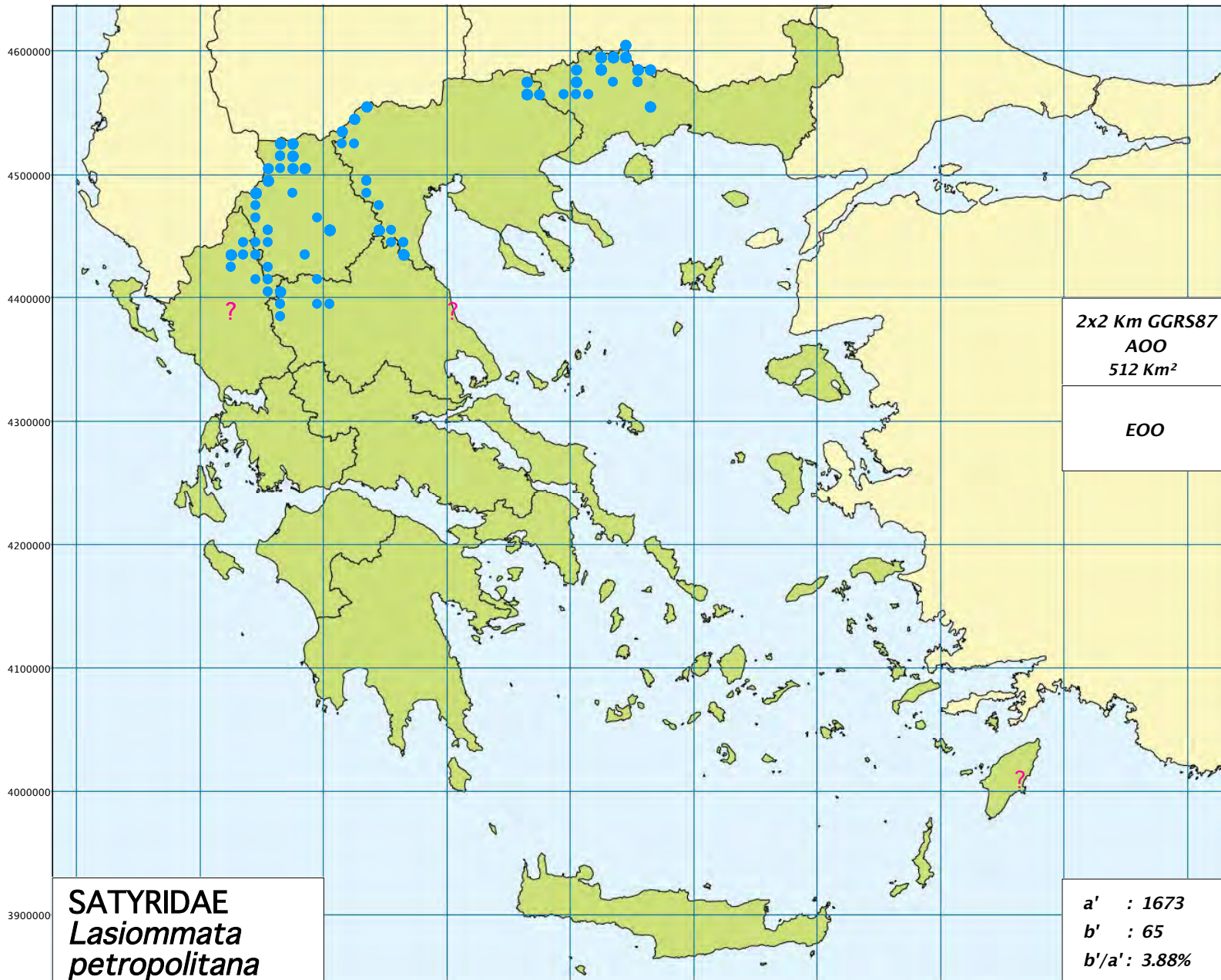


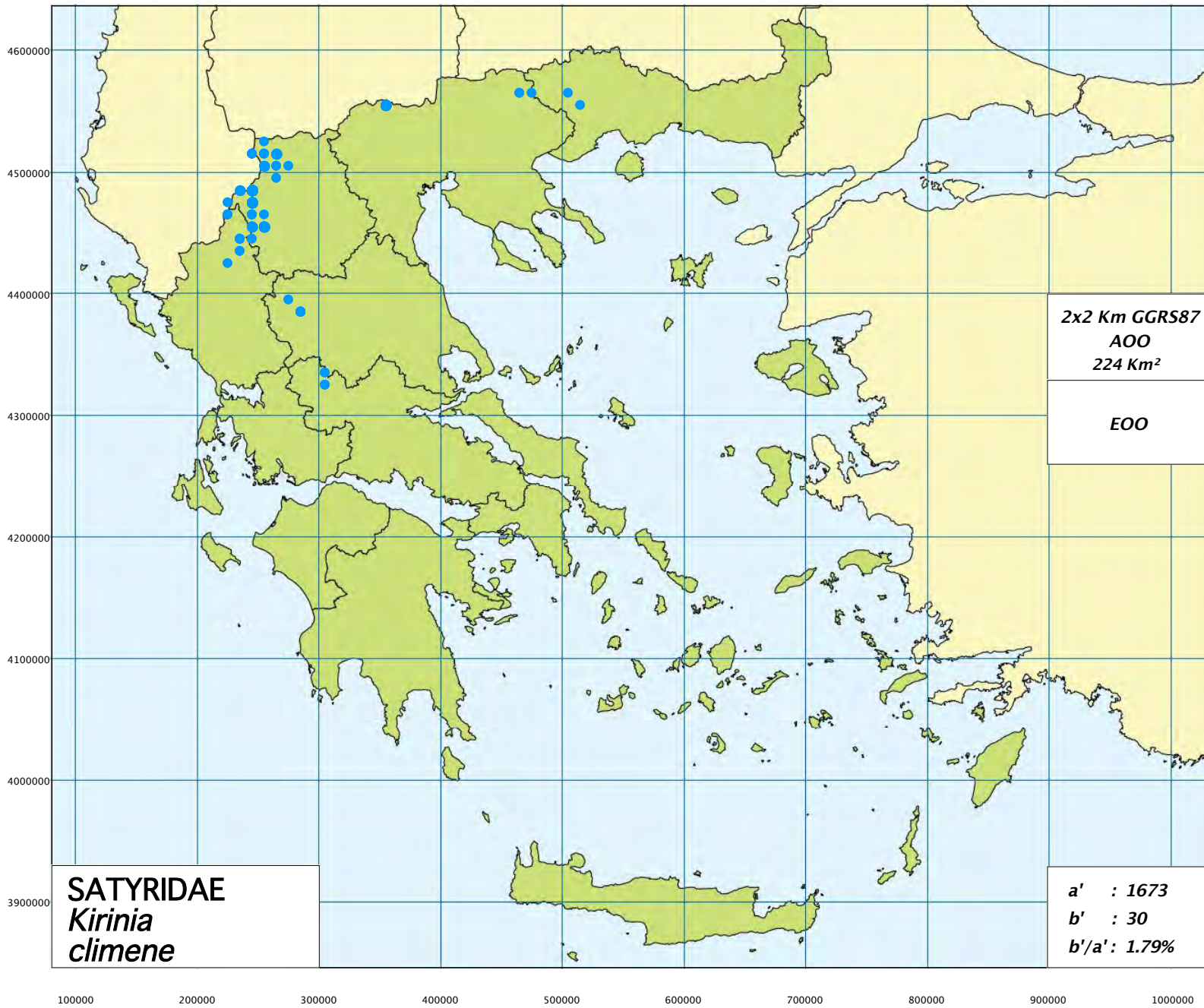




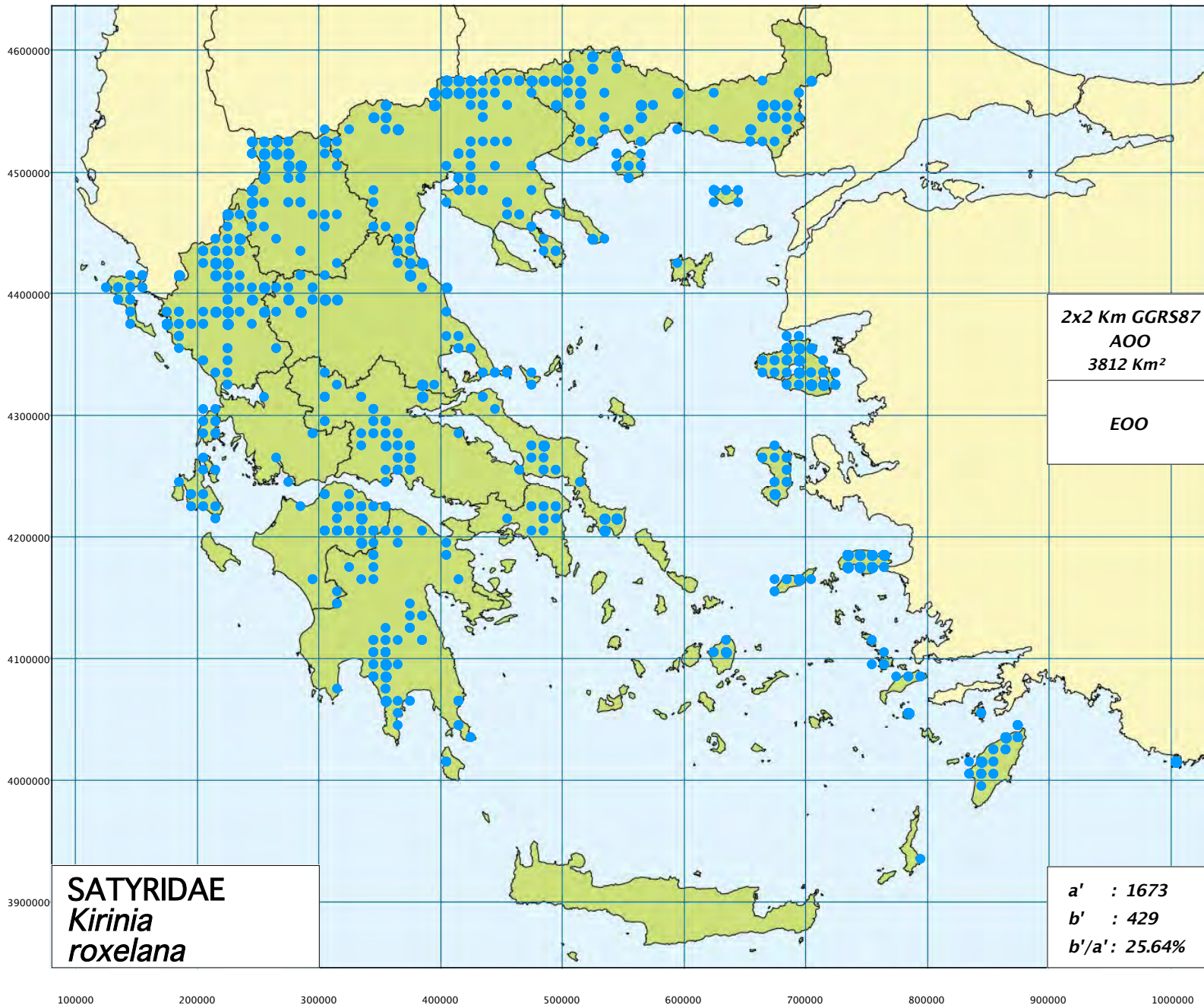


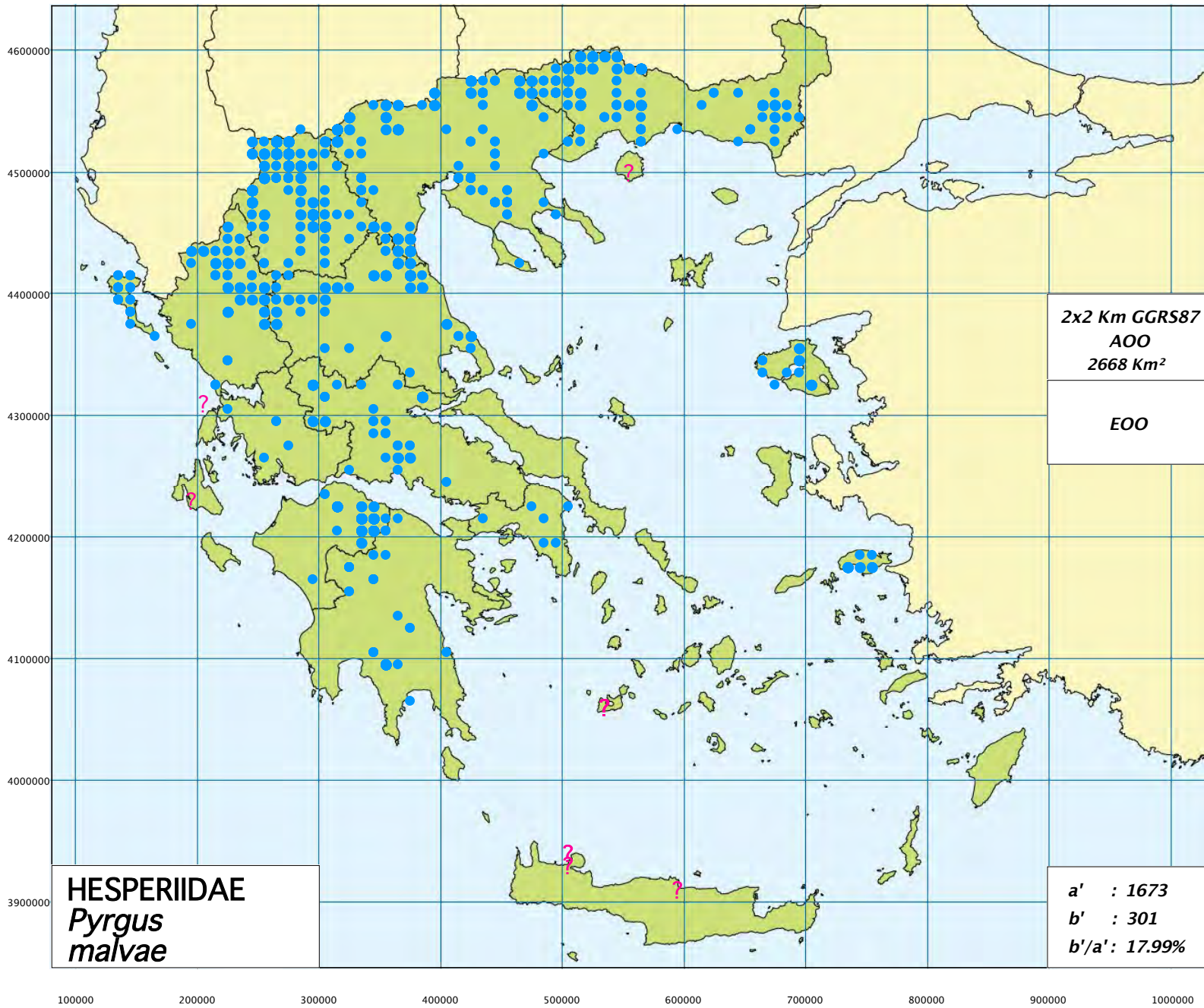




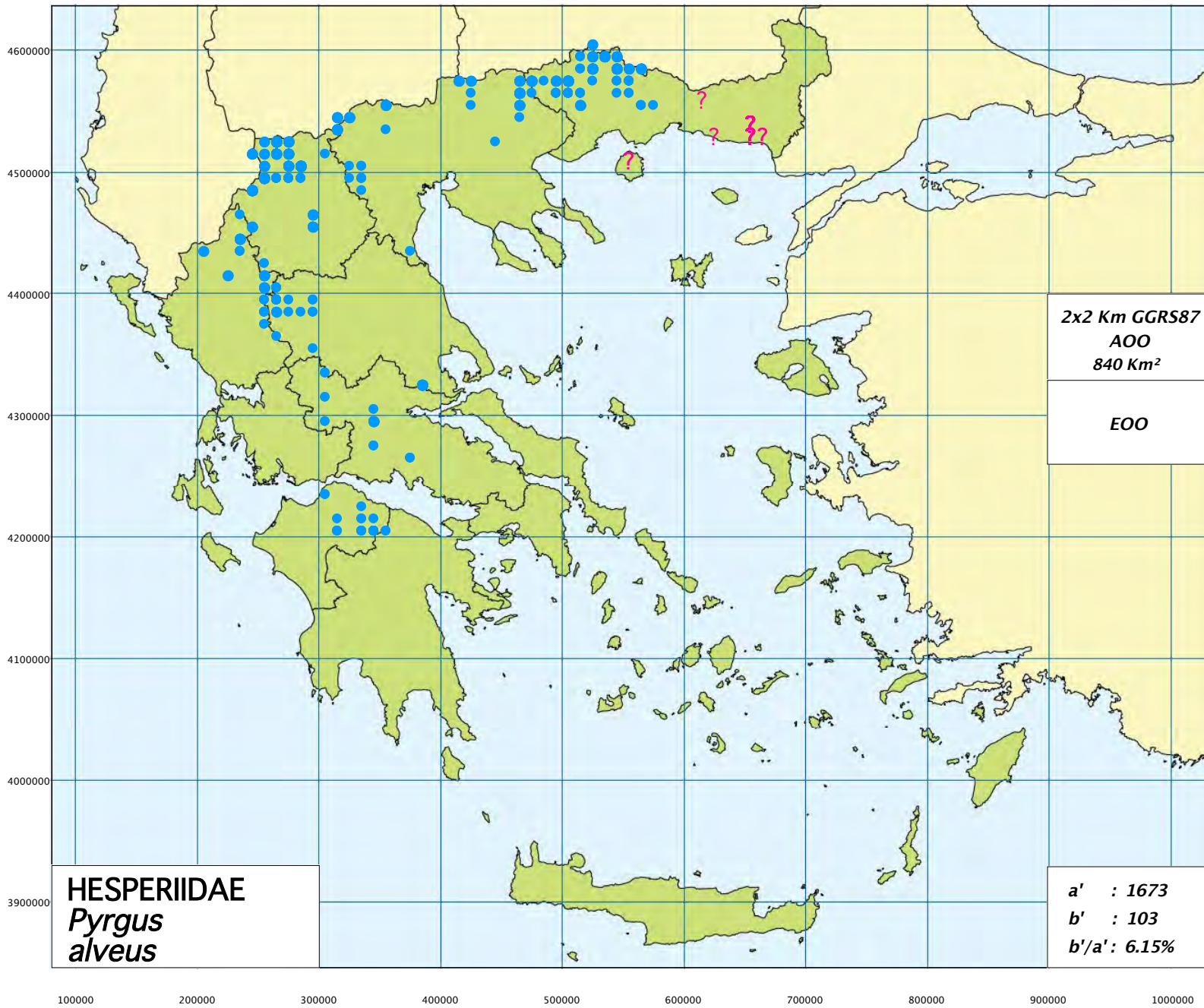


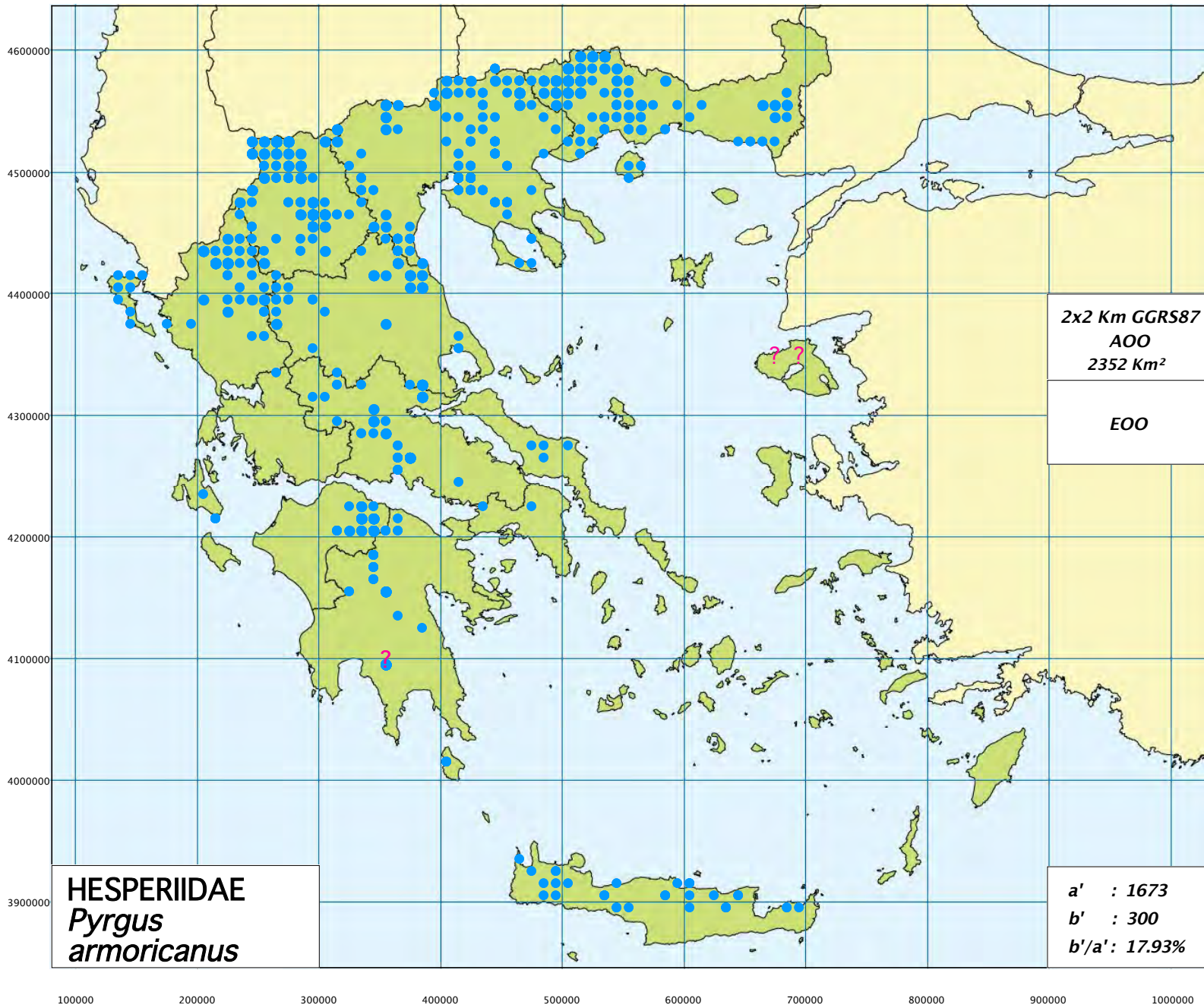




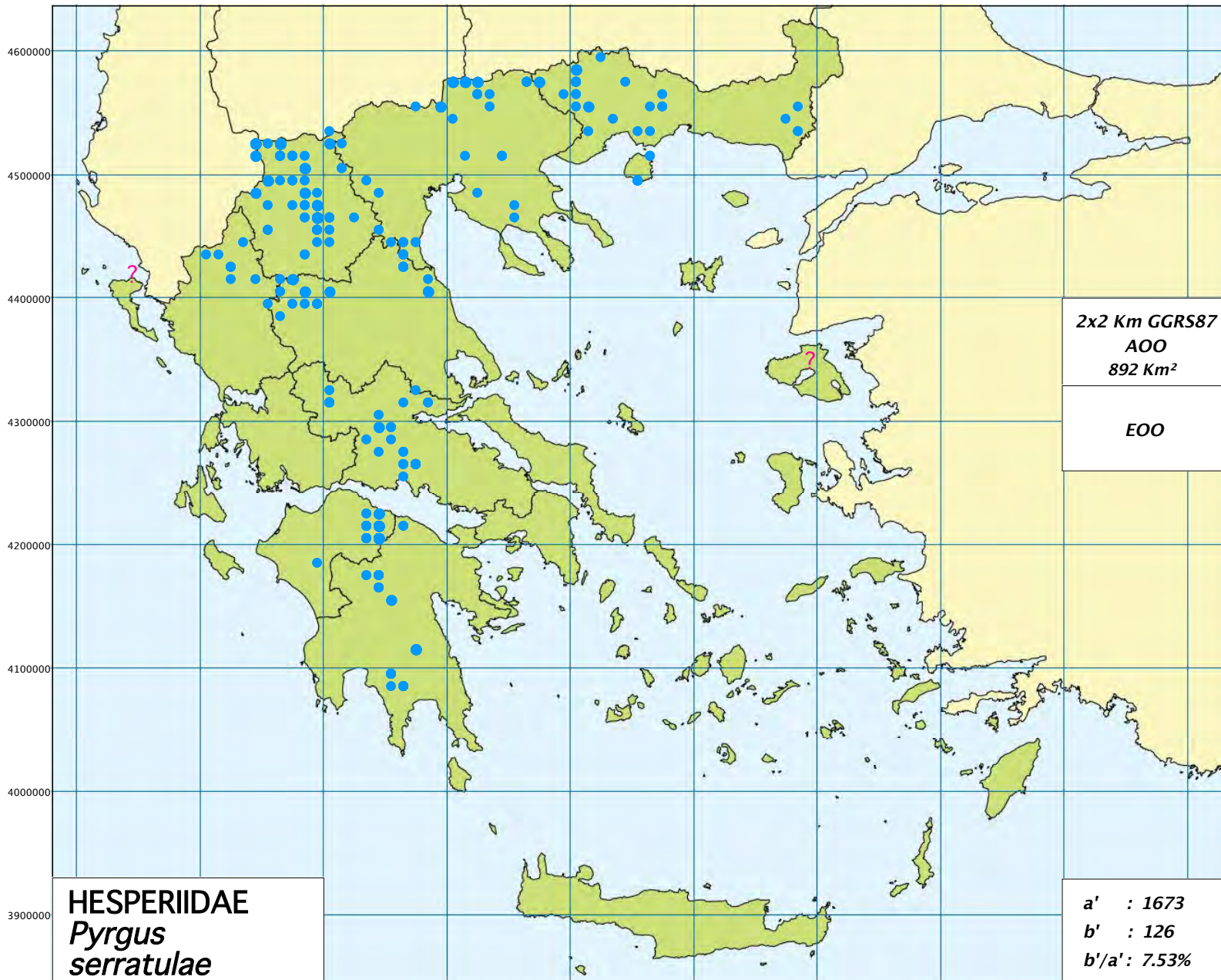


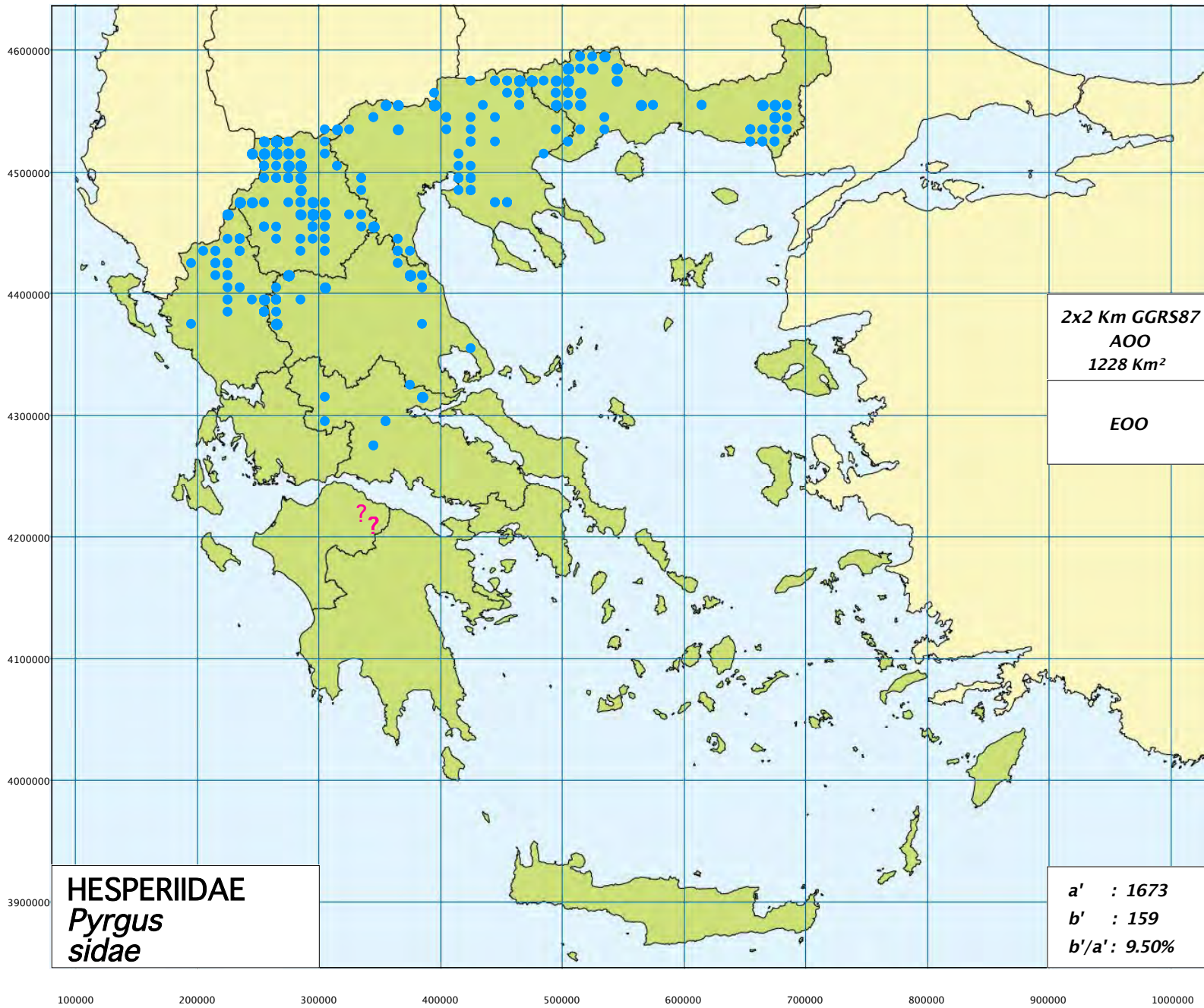




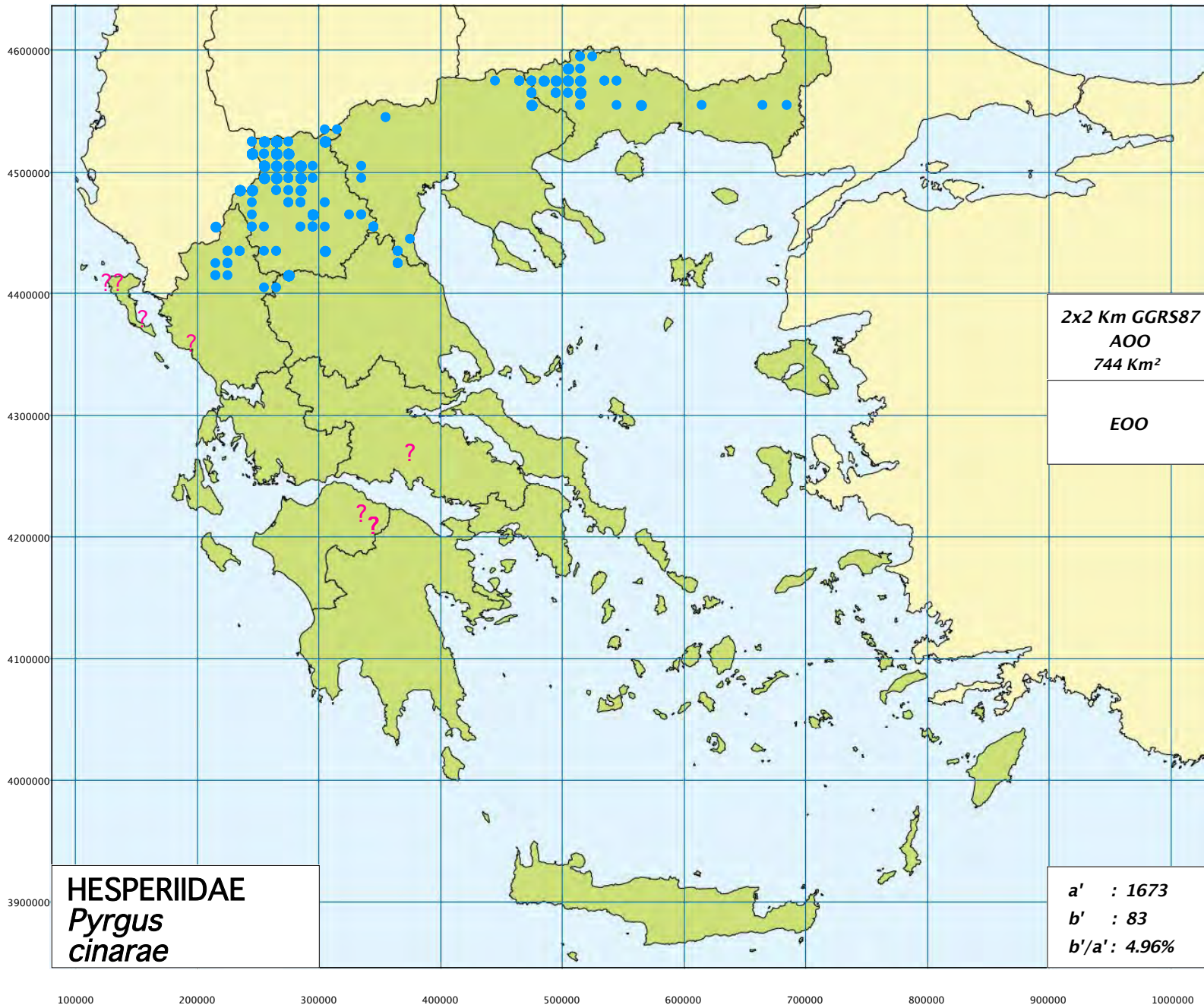


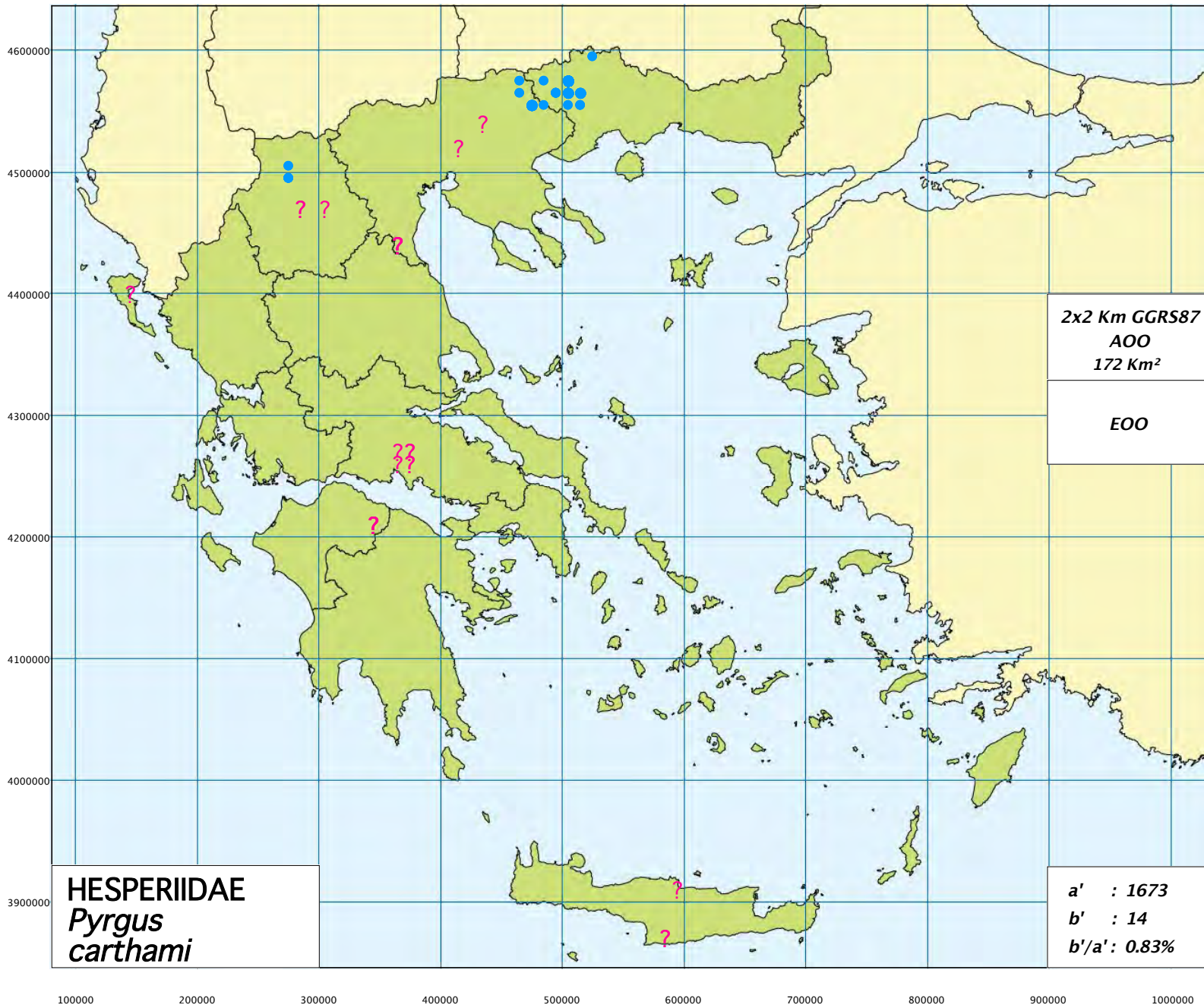




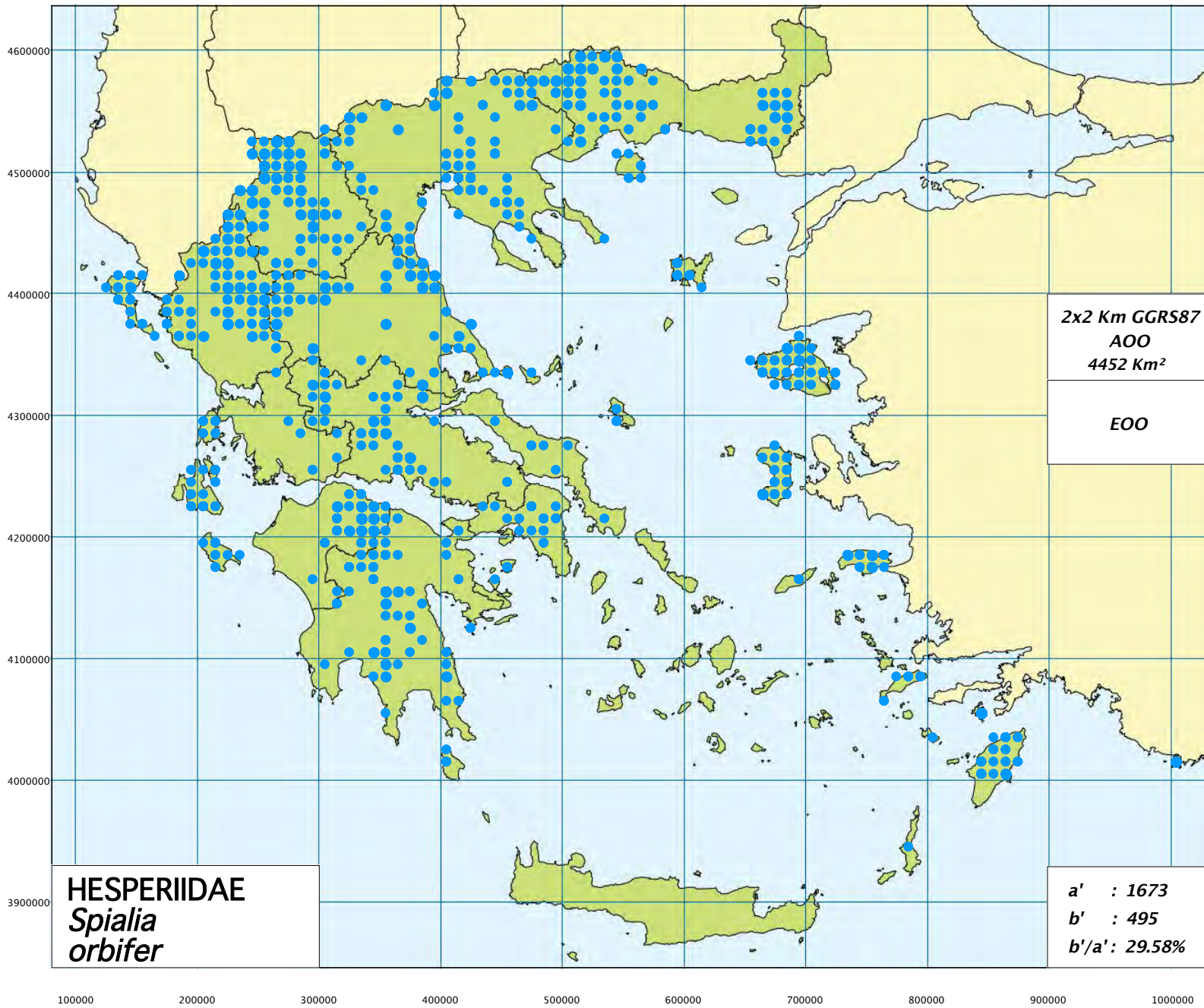


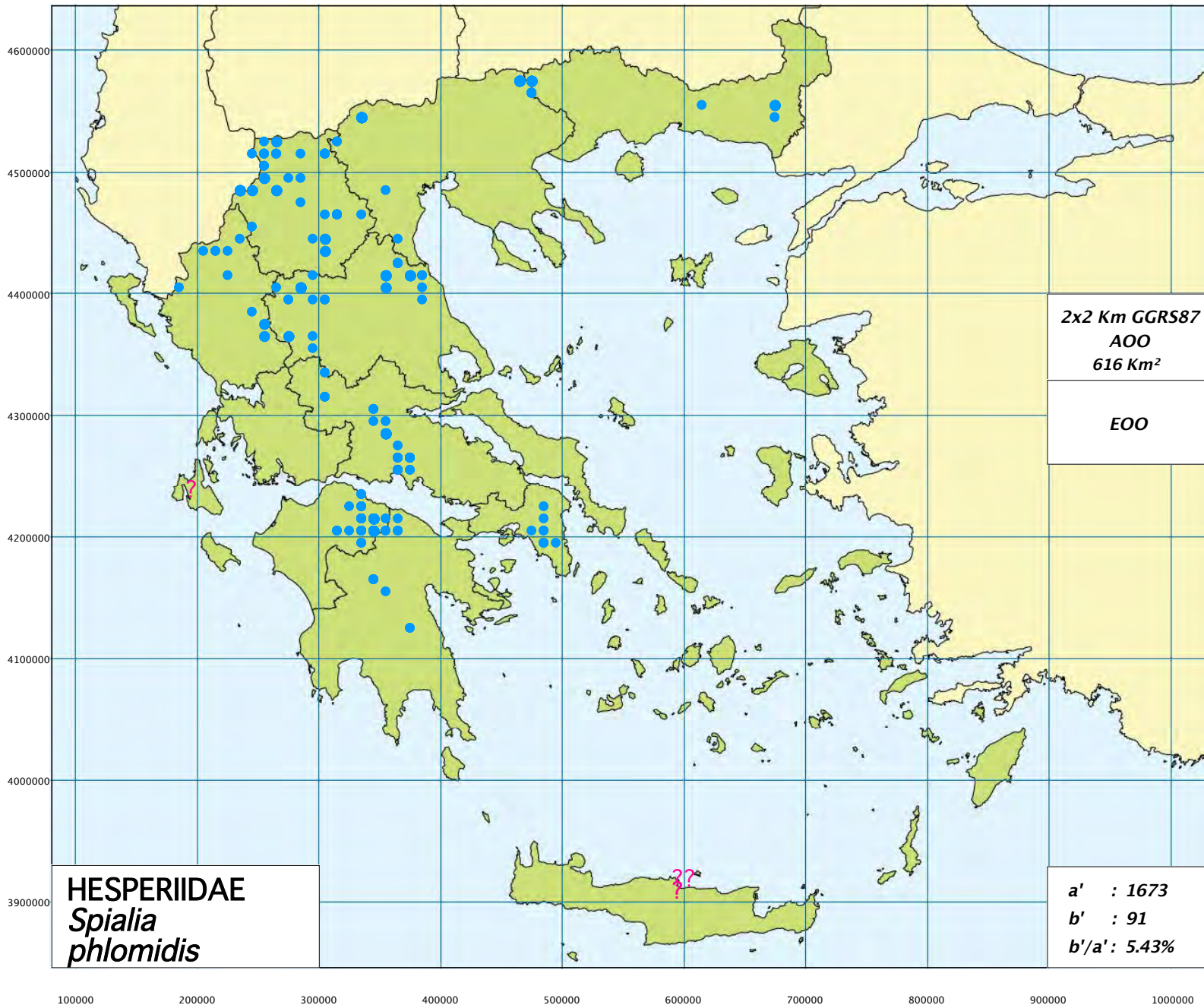




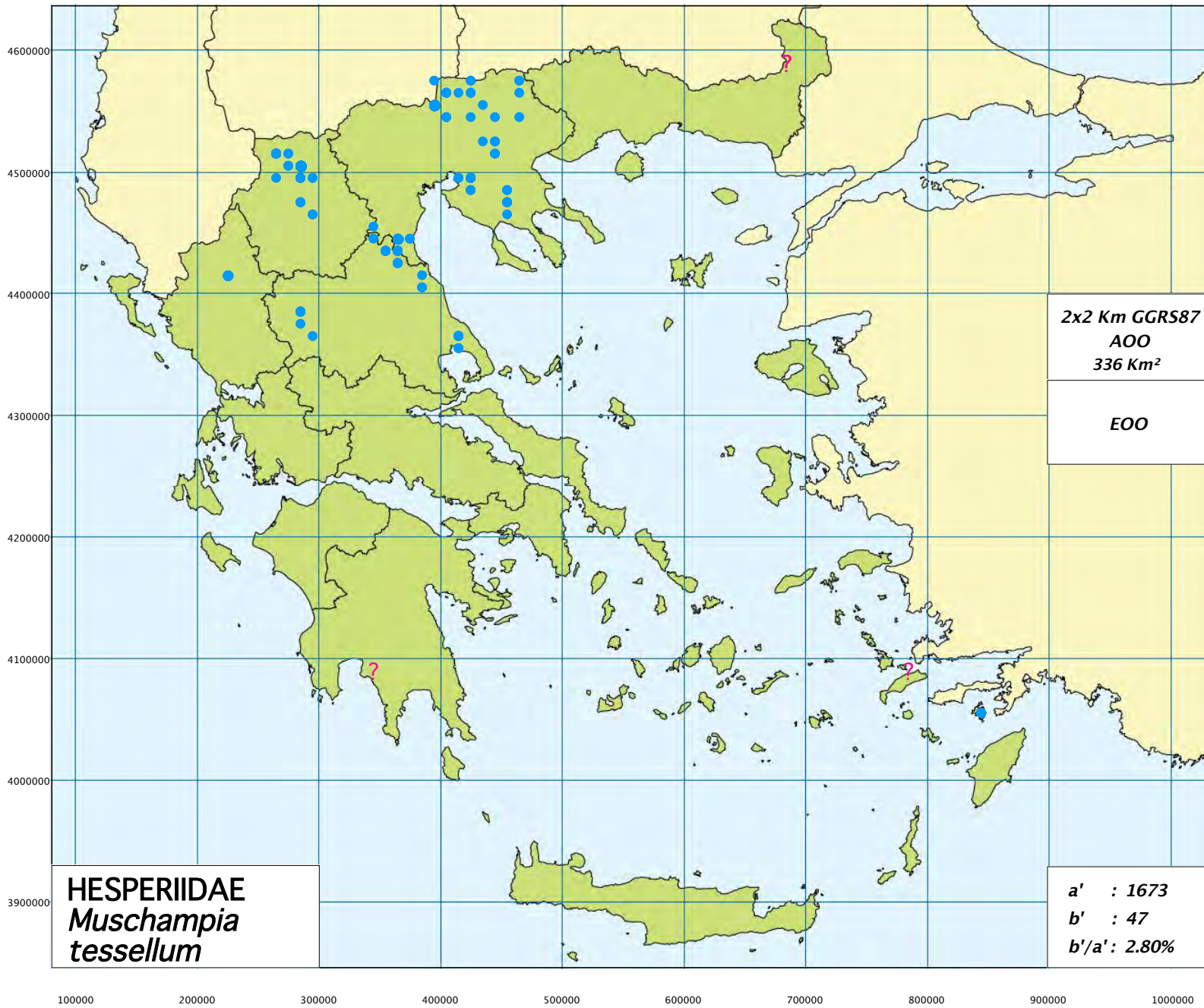


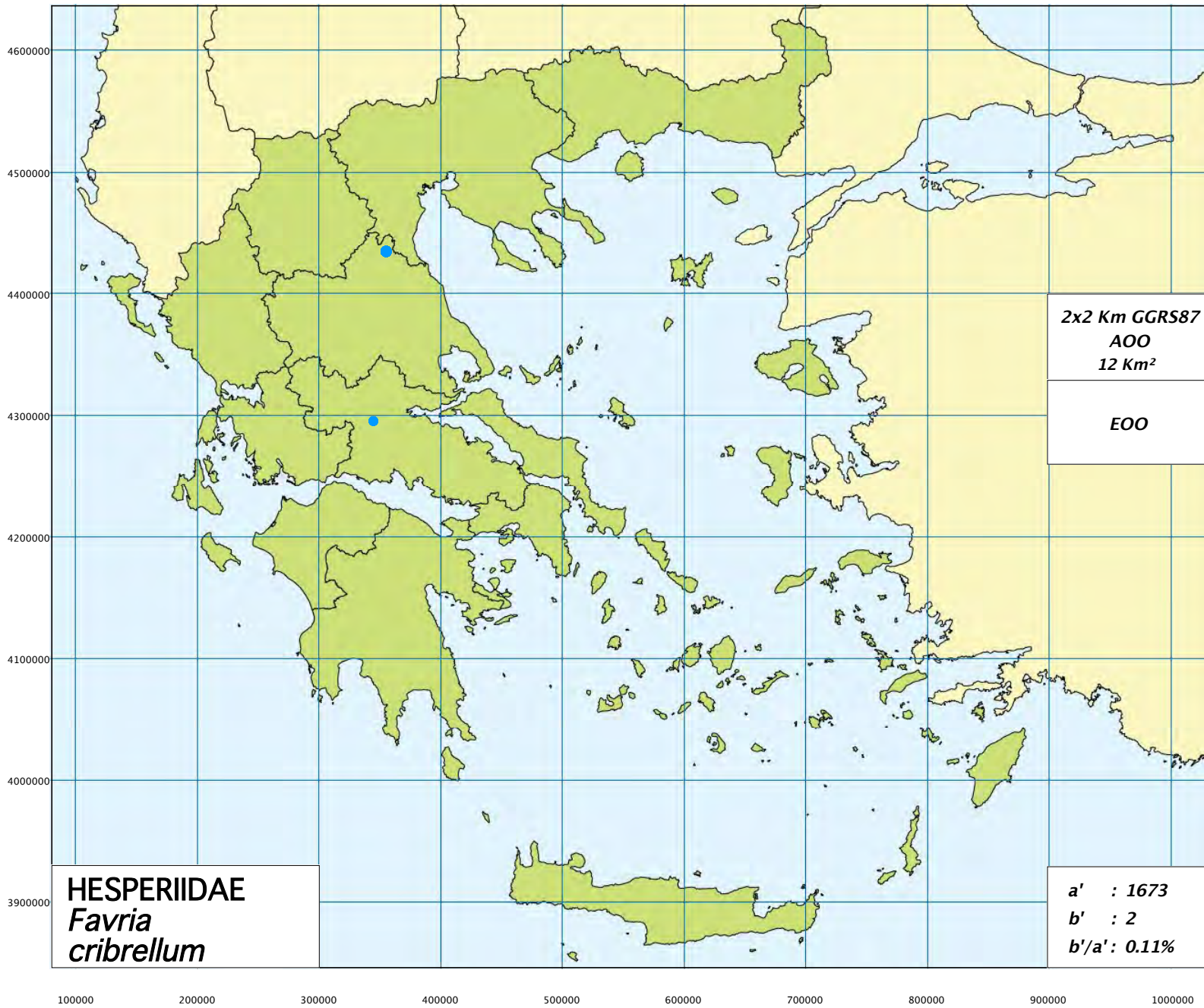




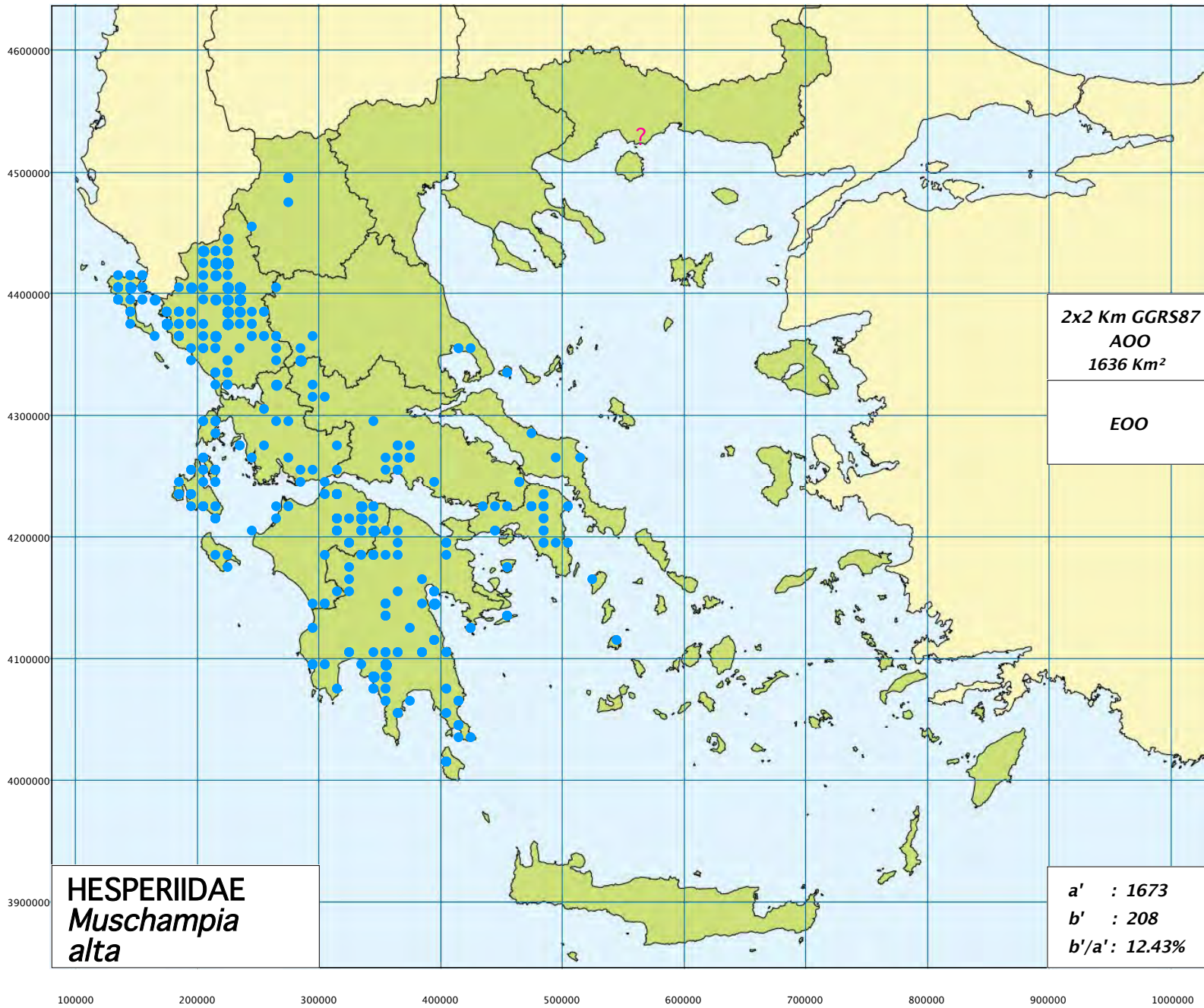


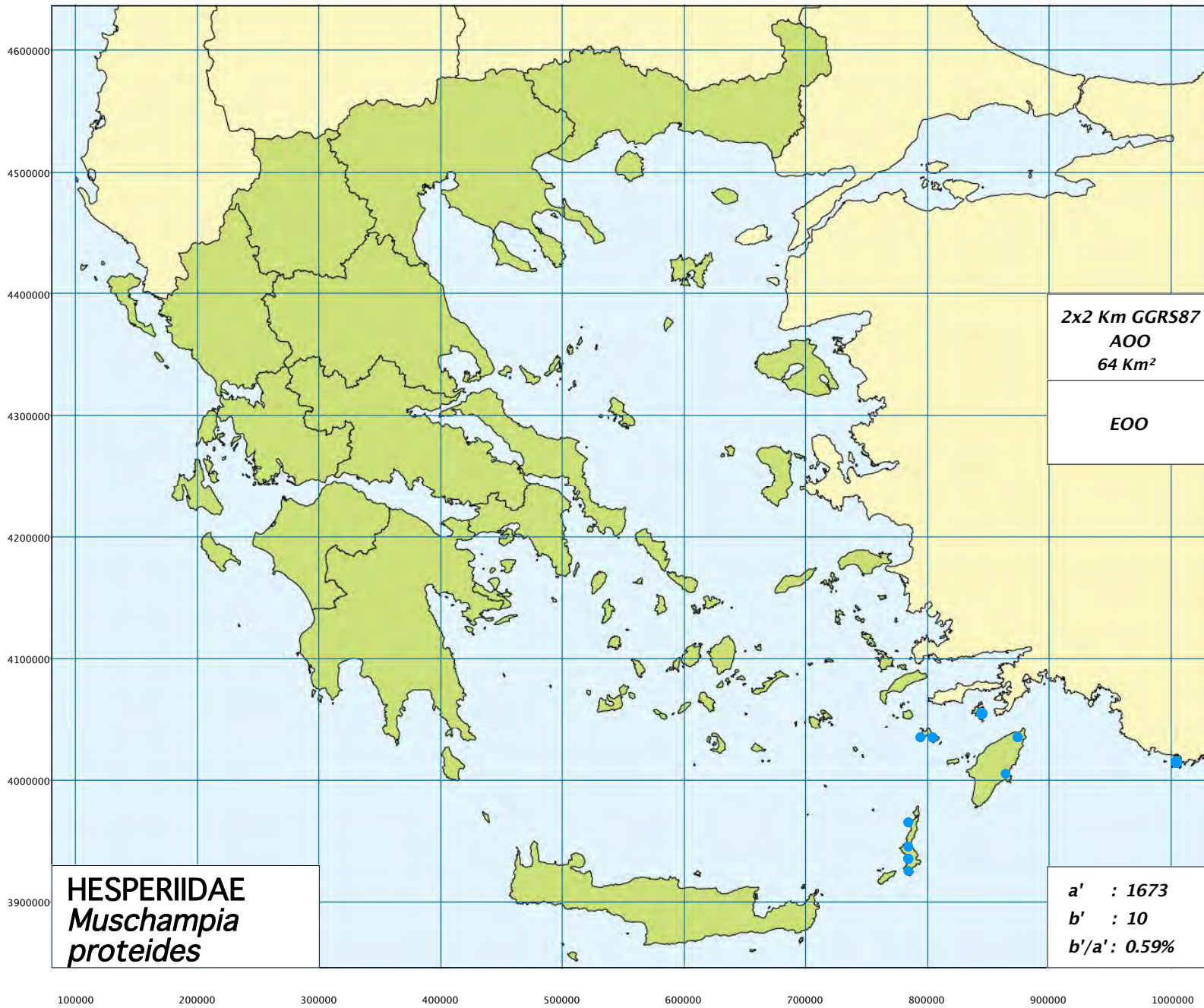




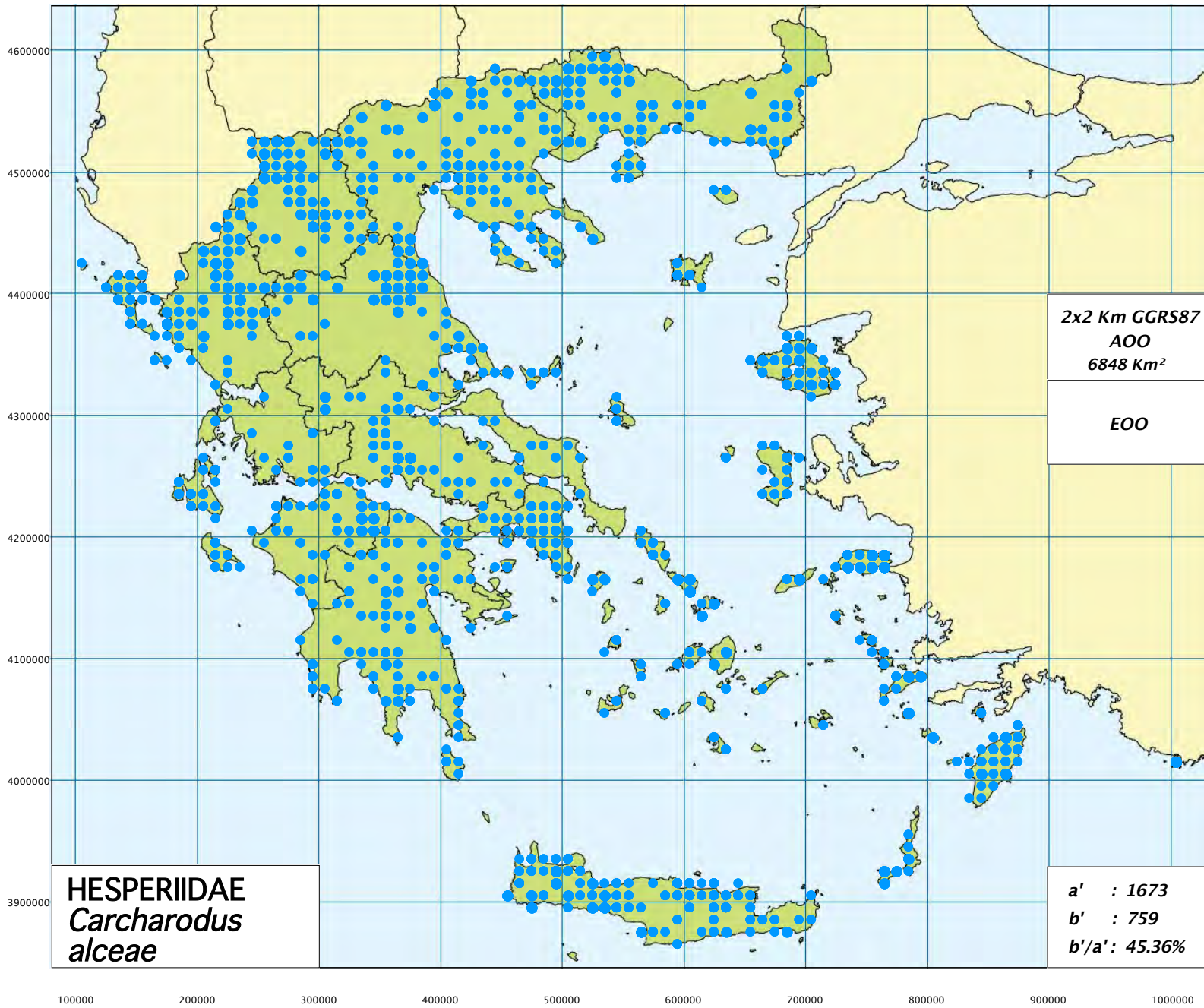


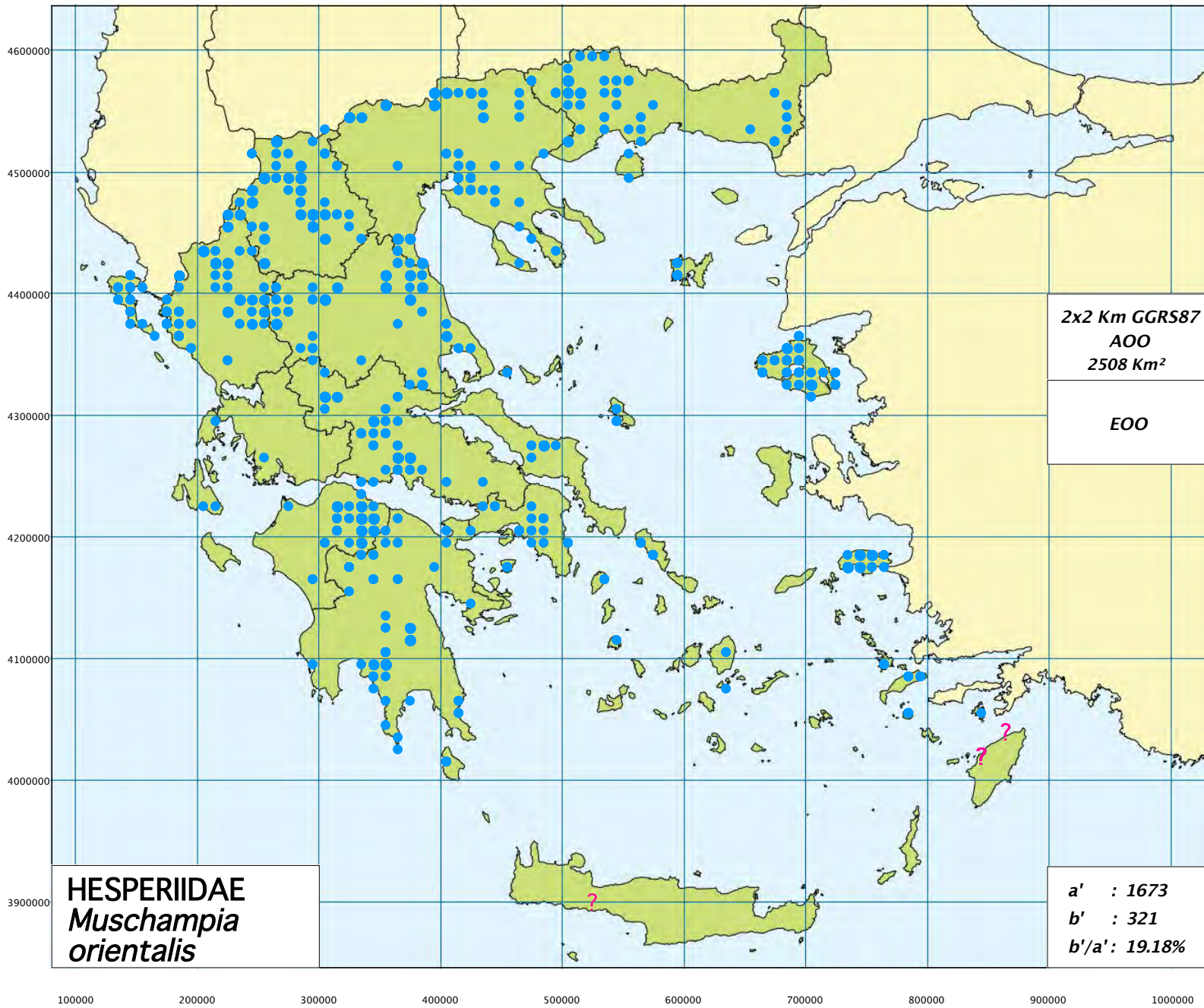




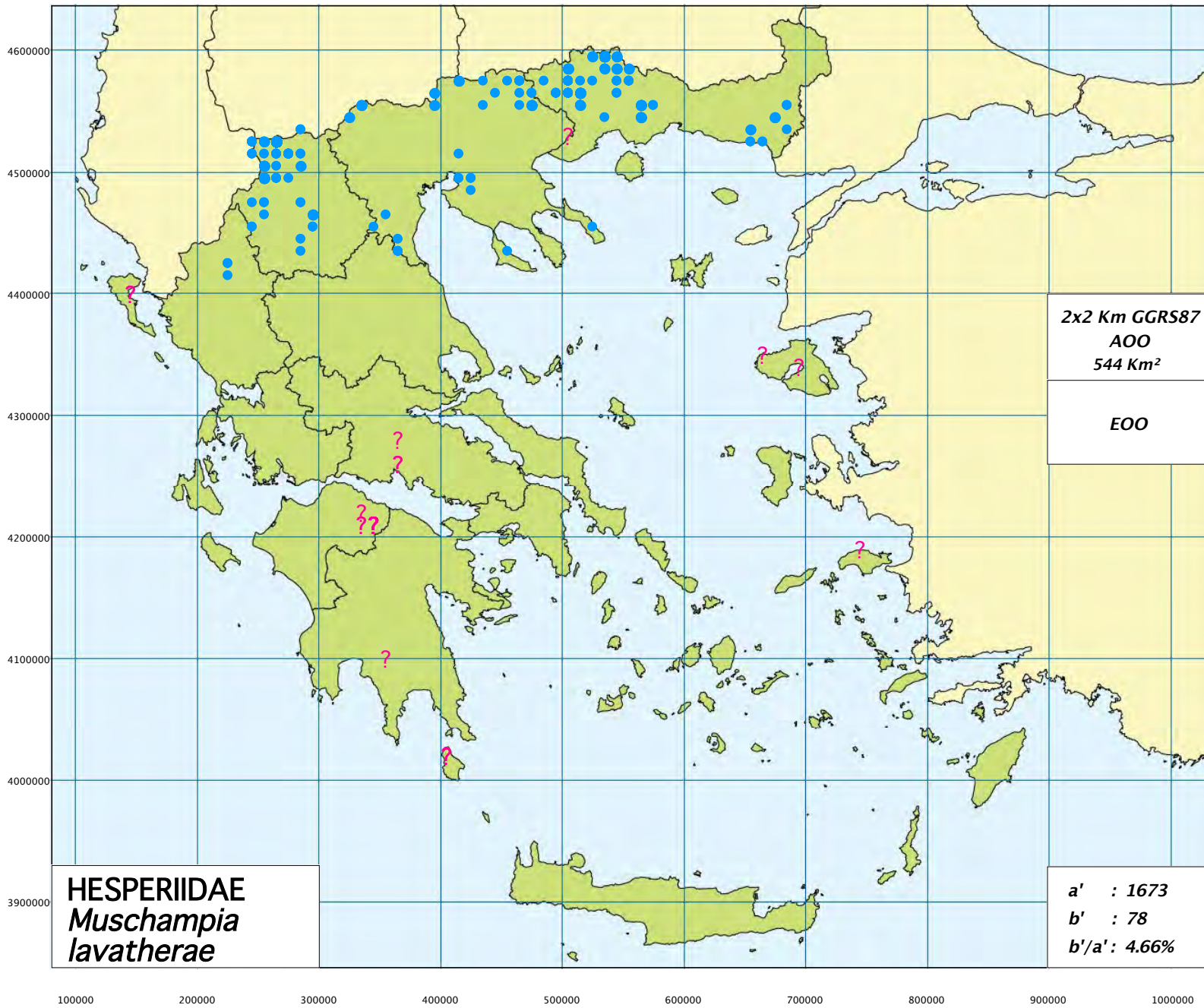


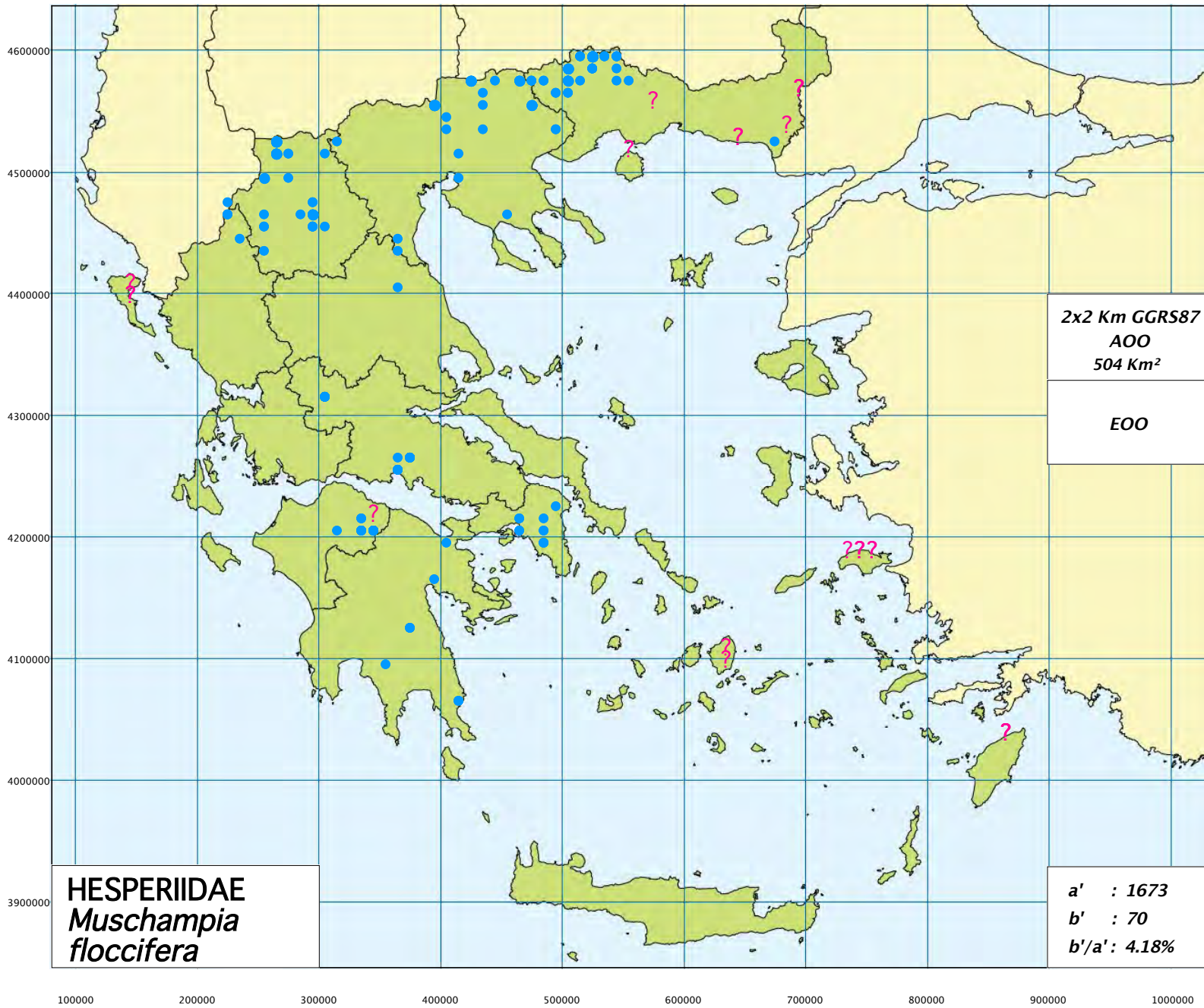




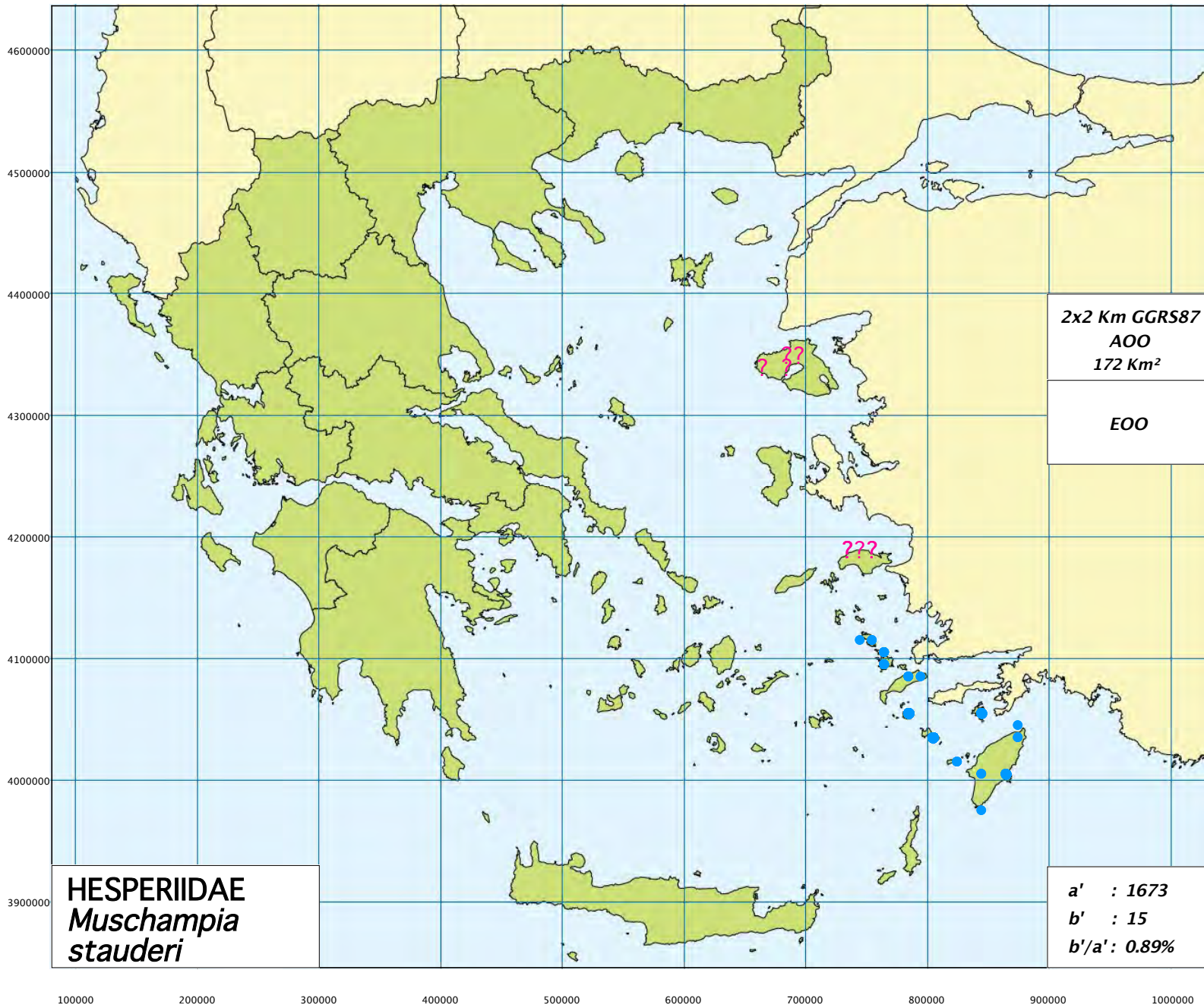


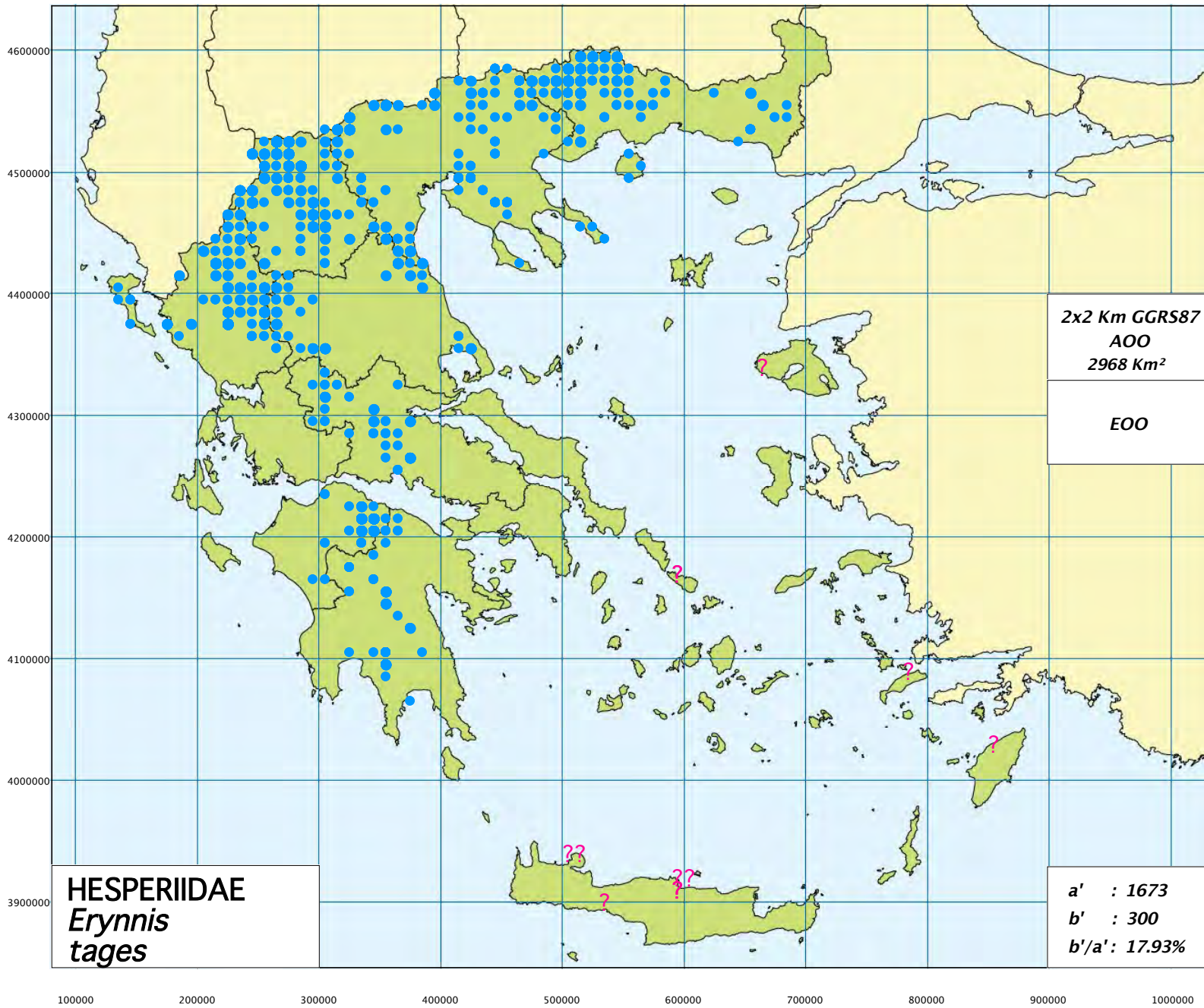




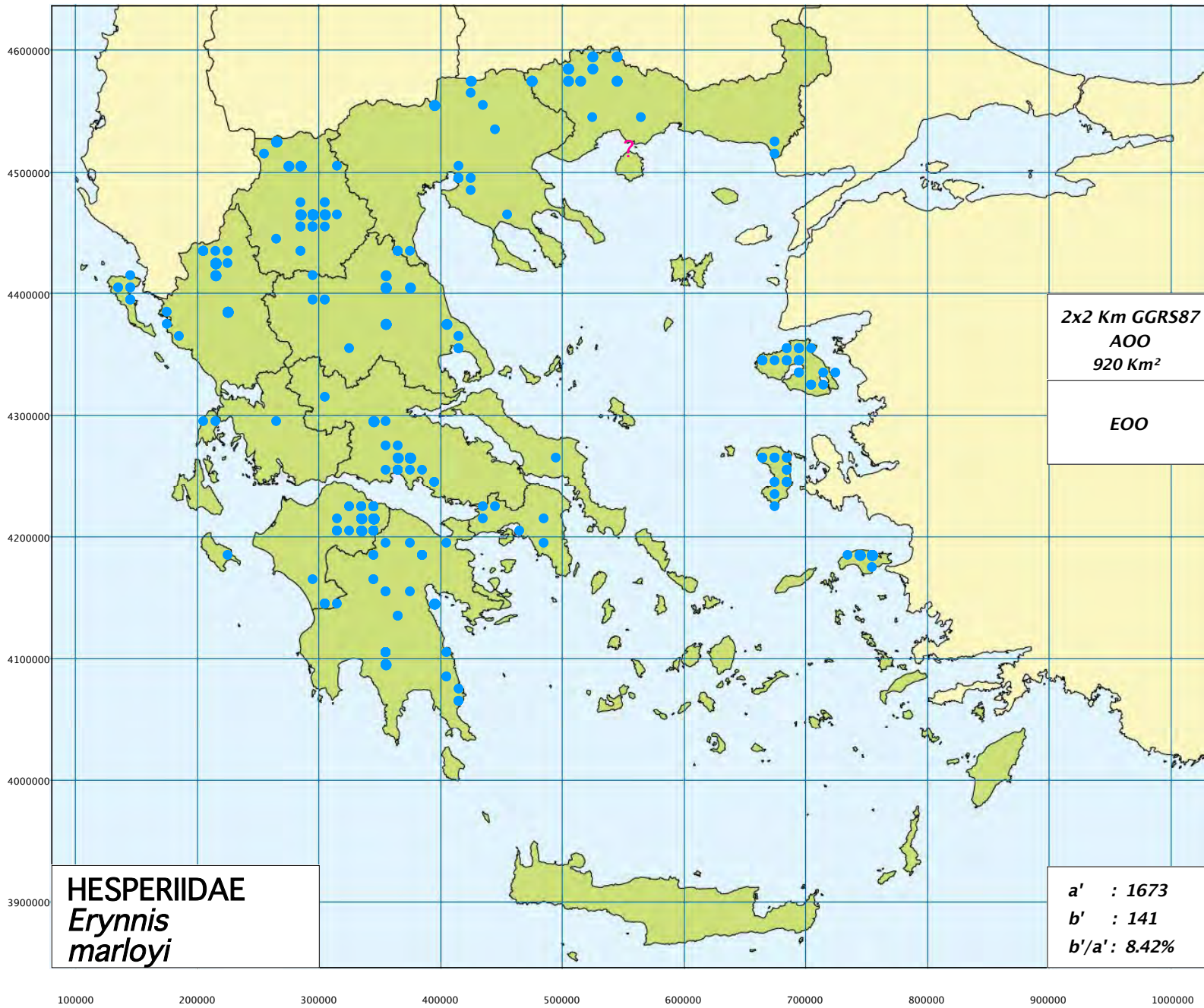


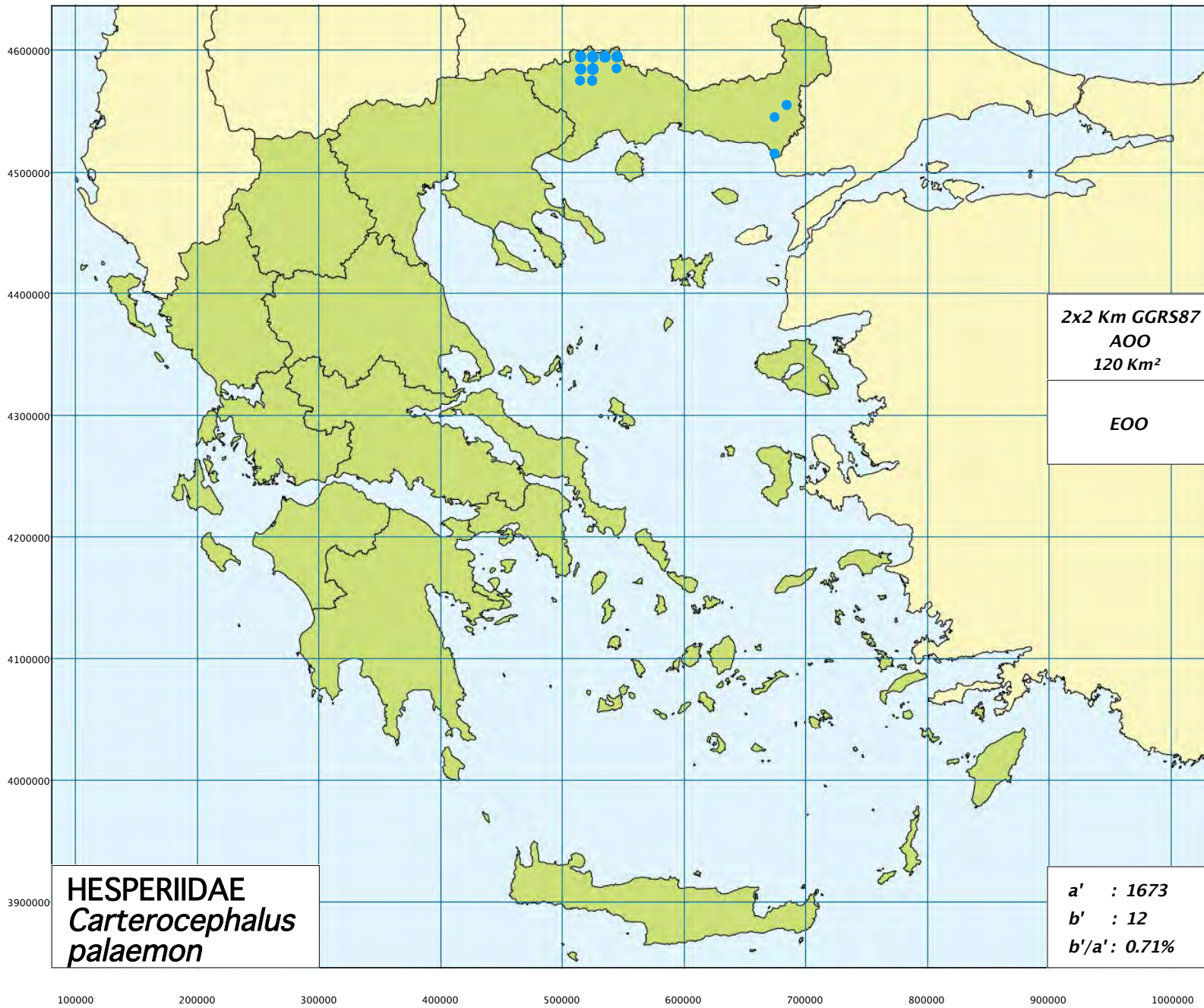




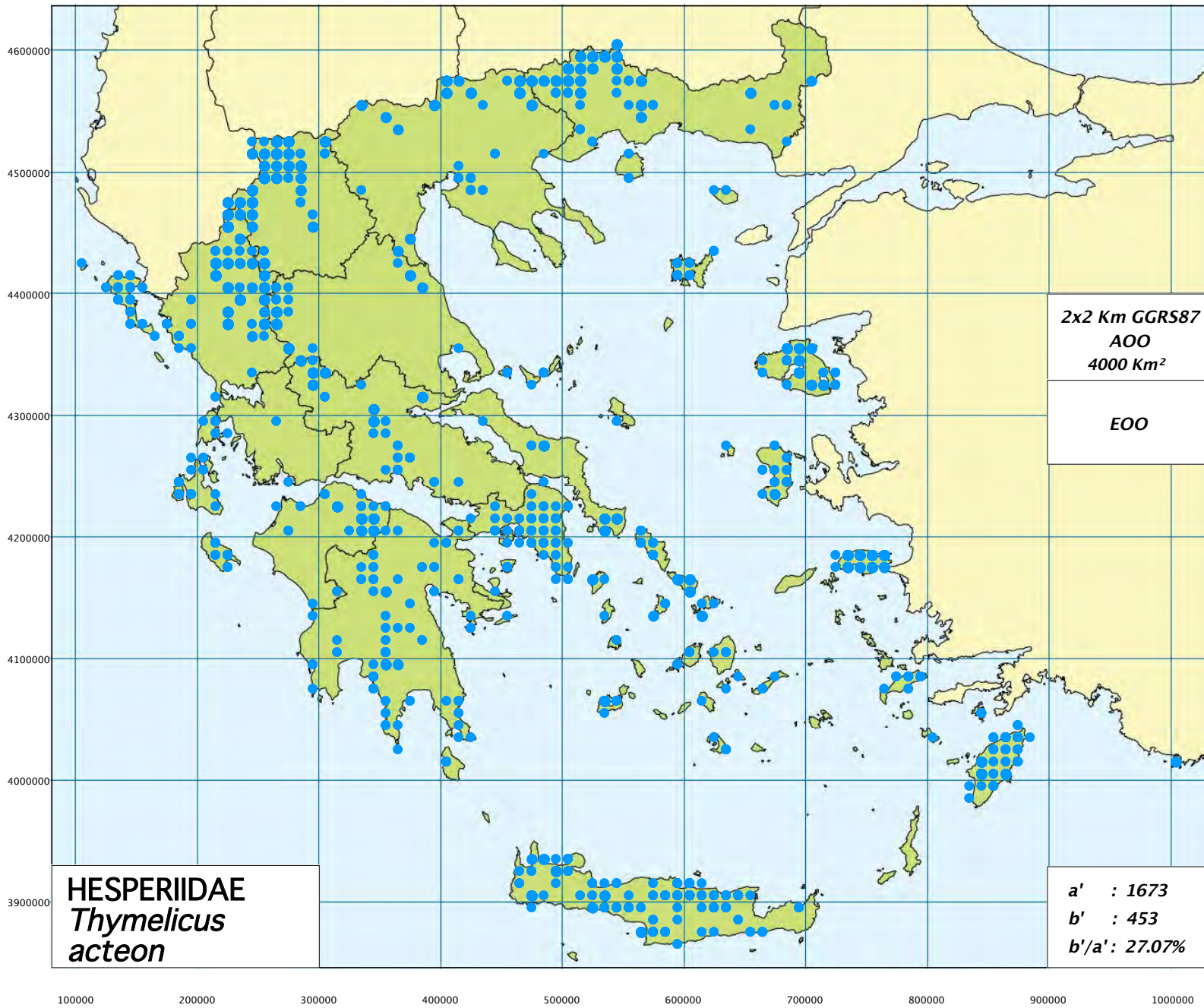


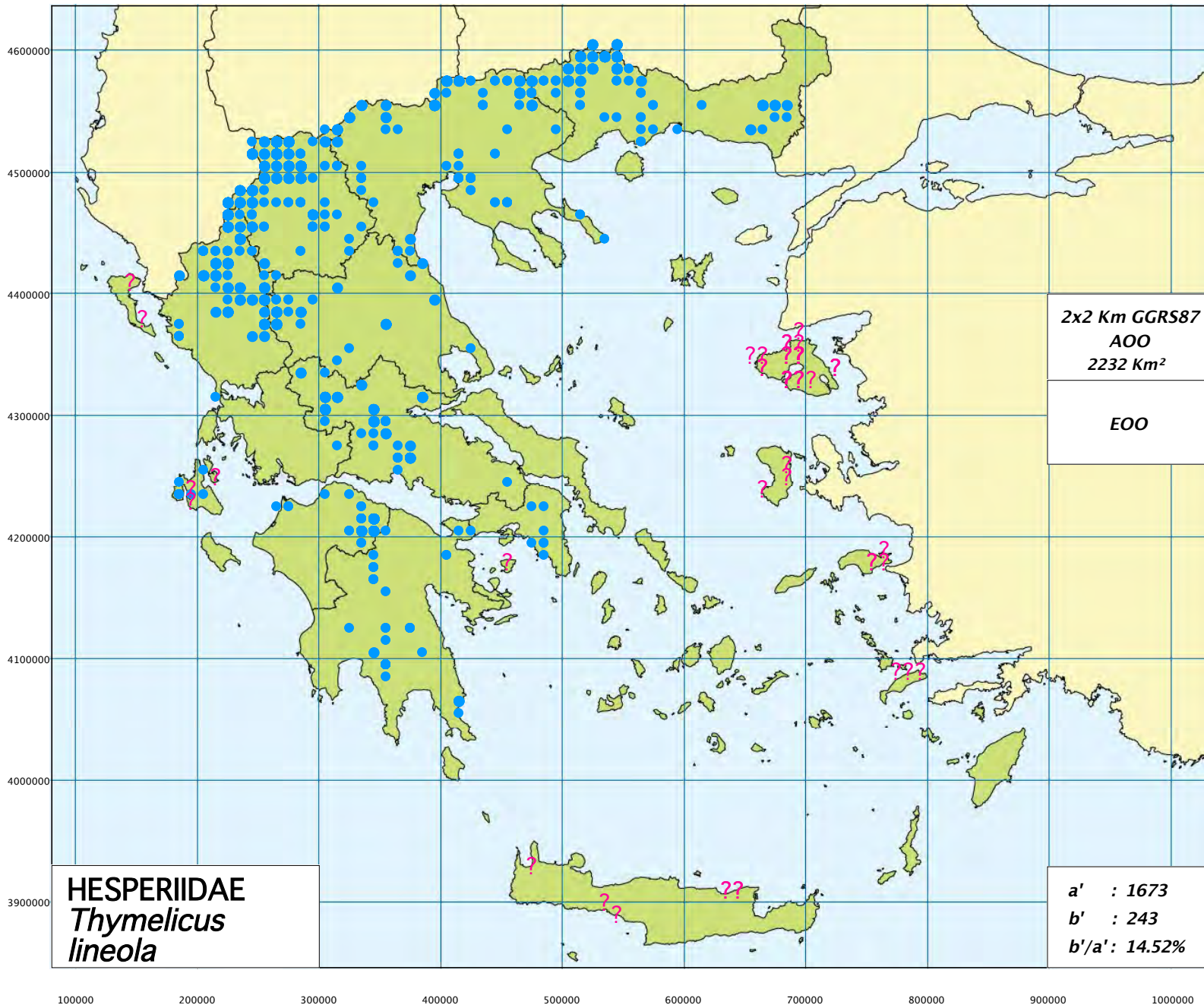












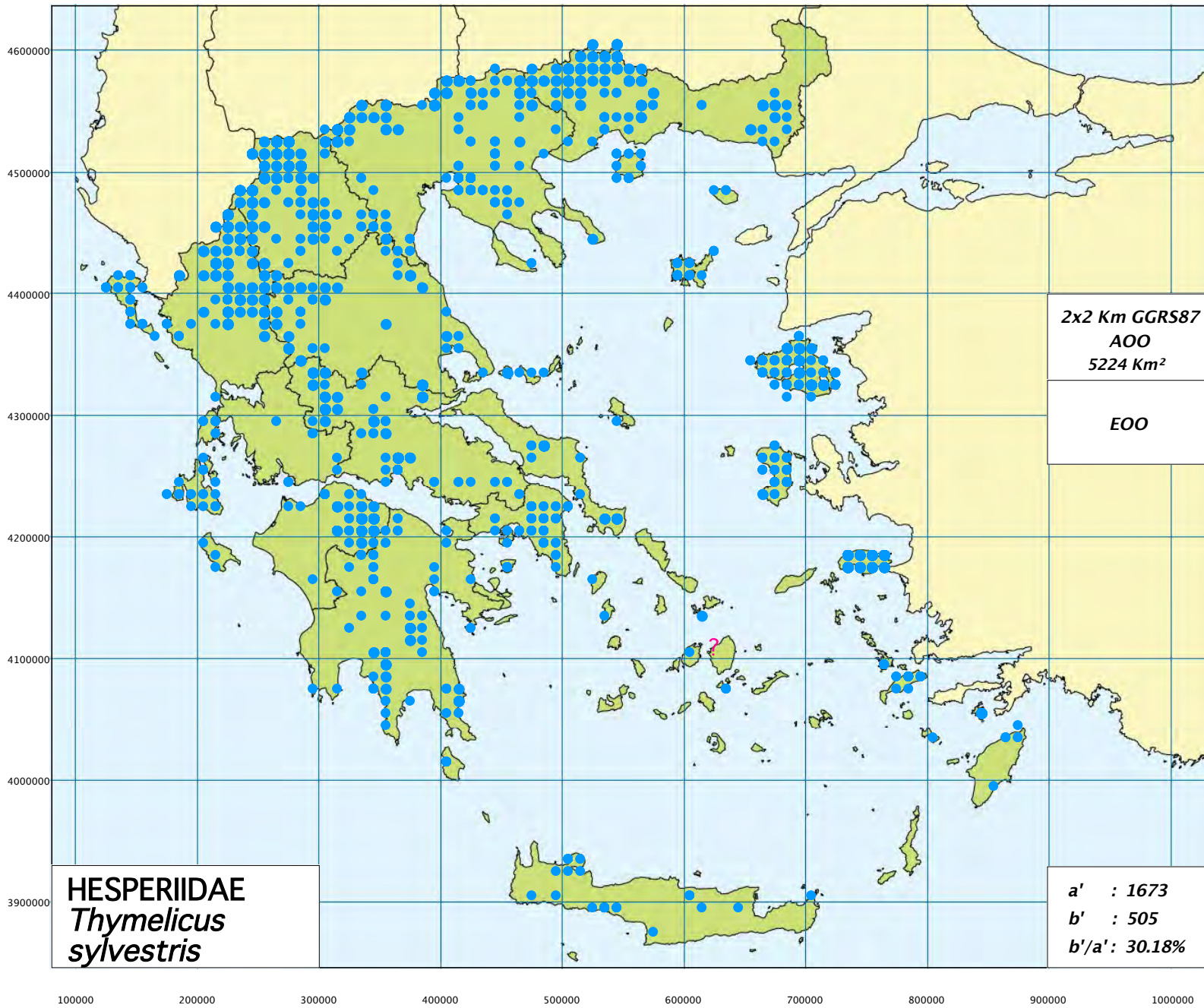
**HESPERIIDAE**  
*Thymelicus*  
*lineola*

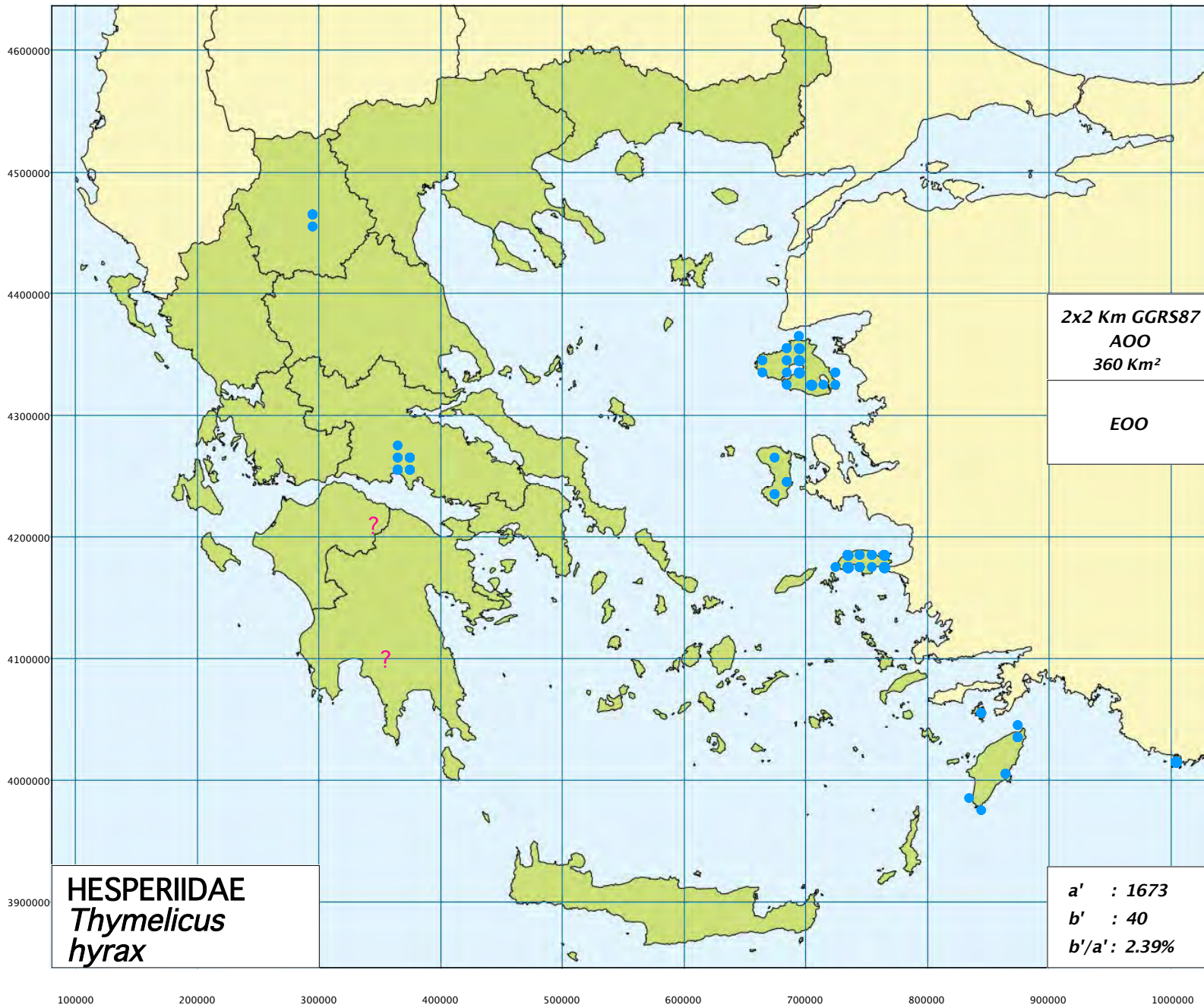
2x2 Km GGRS87  
 AOO  
 2232 Km<sup>2</sup>

EOO

a' : 1673  
 b' : 243  
 b'/a' : 14.52%







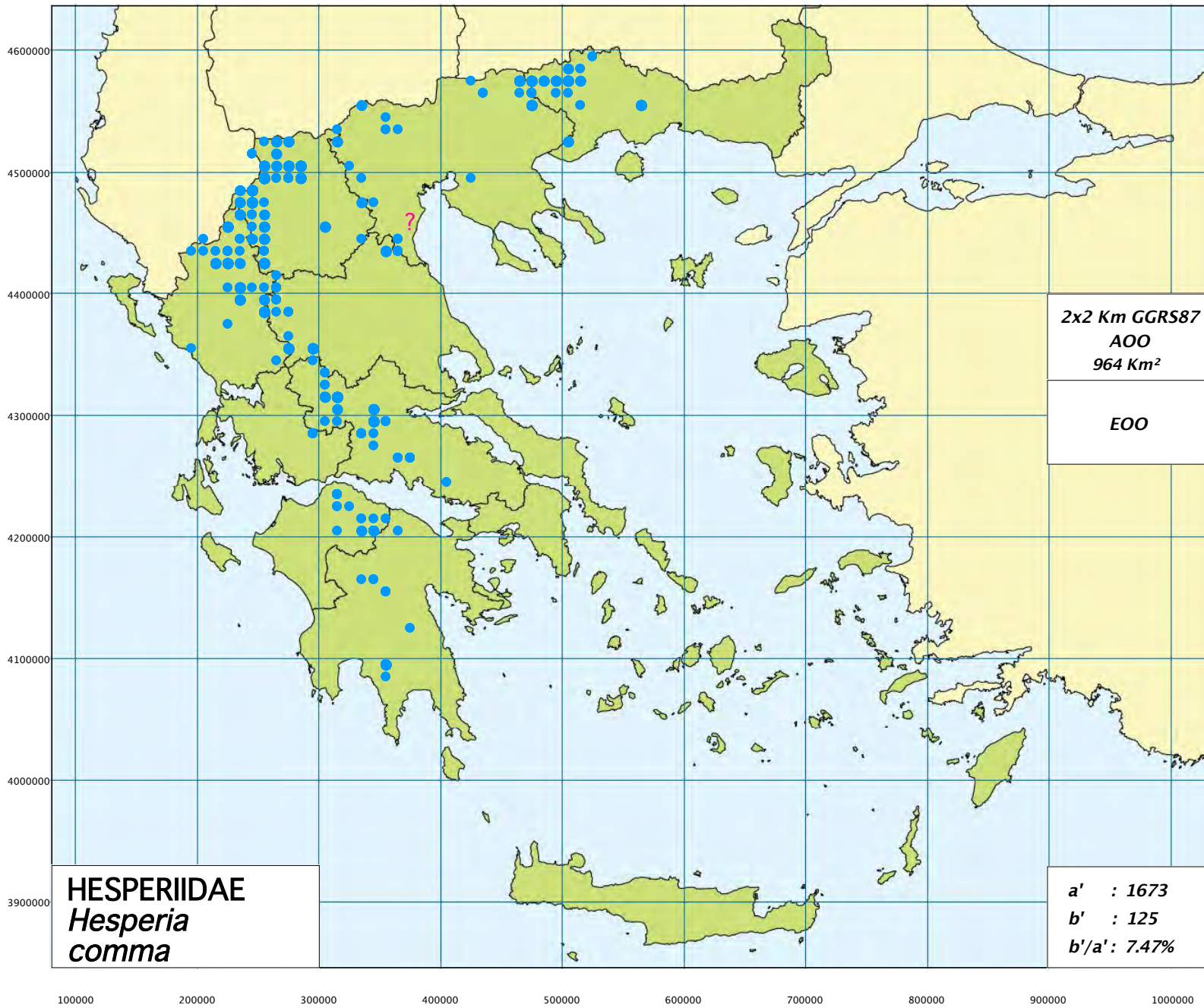
2x2 Km GGRS87  
AOO  
360 Km<sup>2</sup>

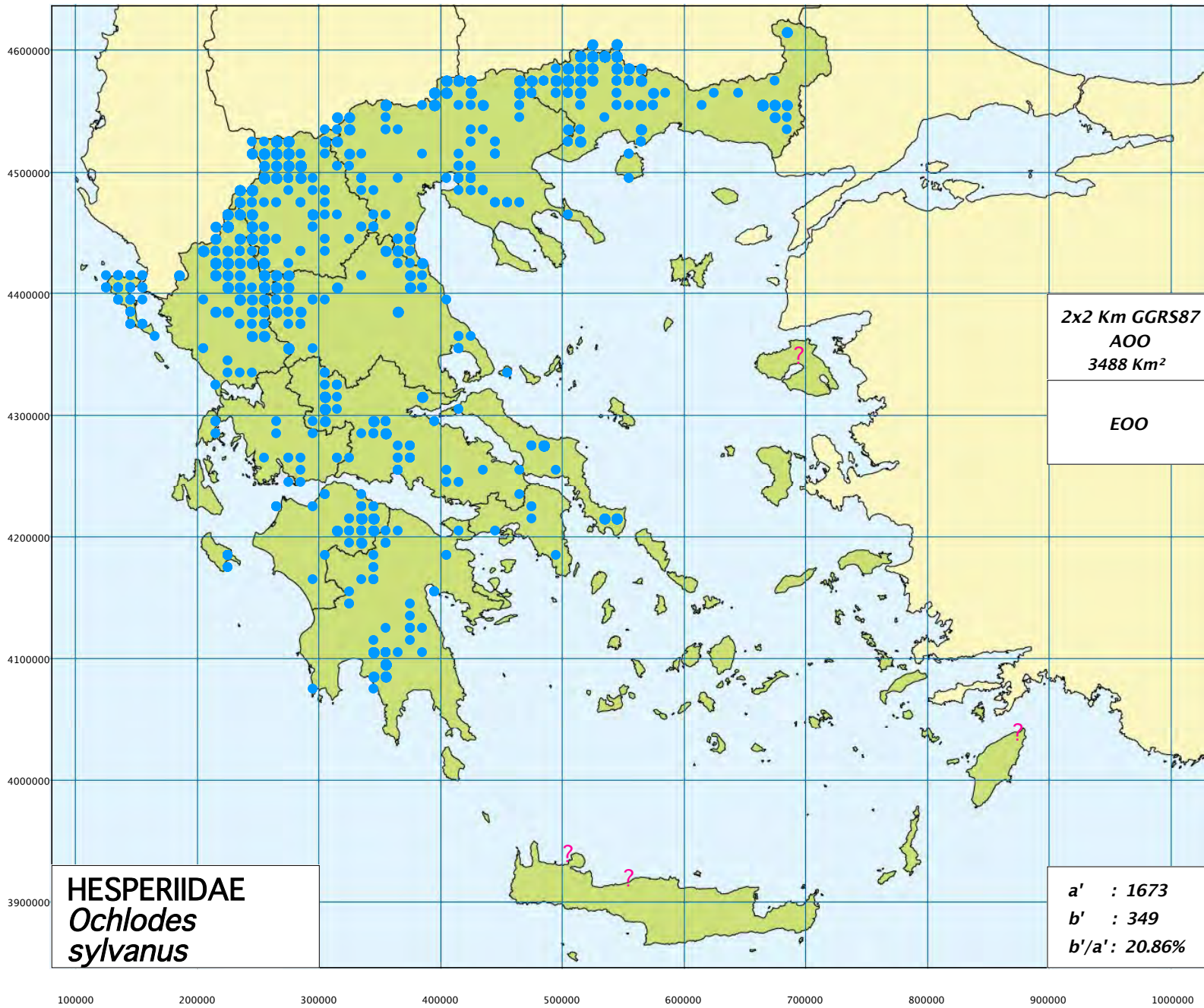
EOO

**HESPERIIDAE**  
*Thymelicus*  
*hyrax*

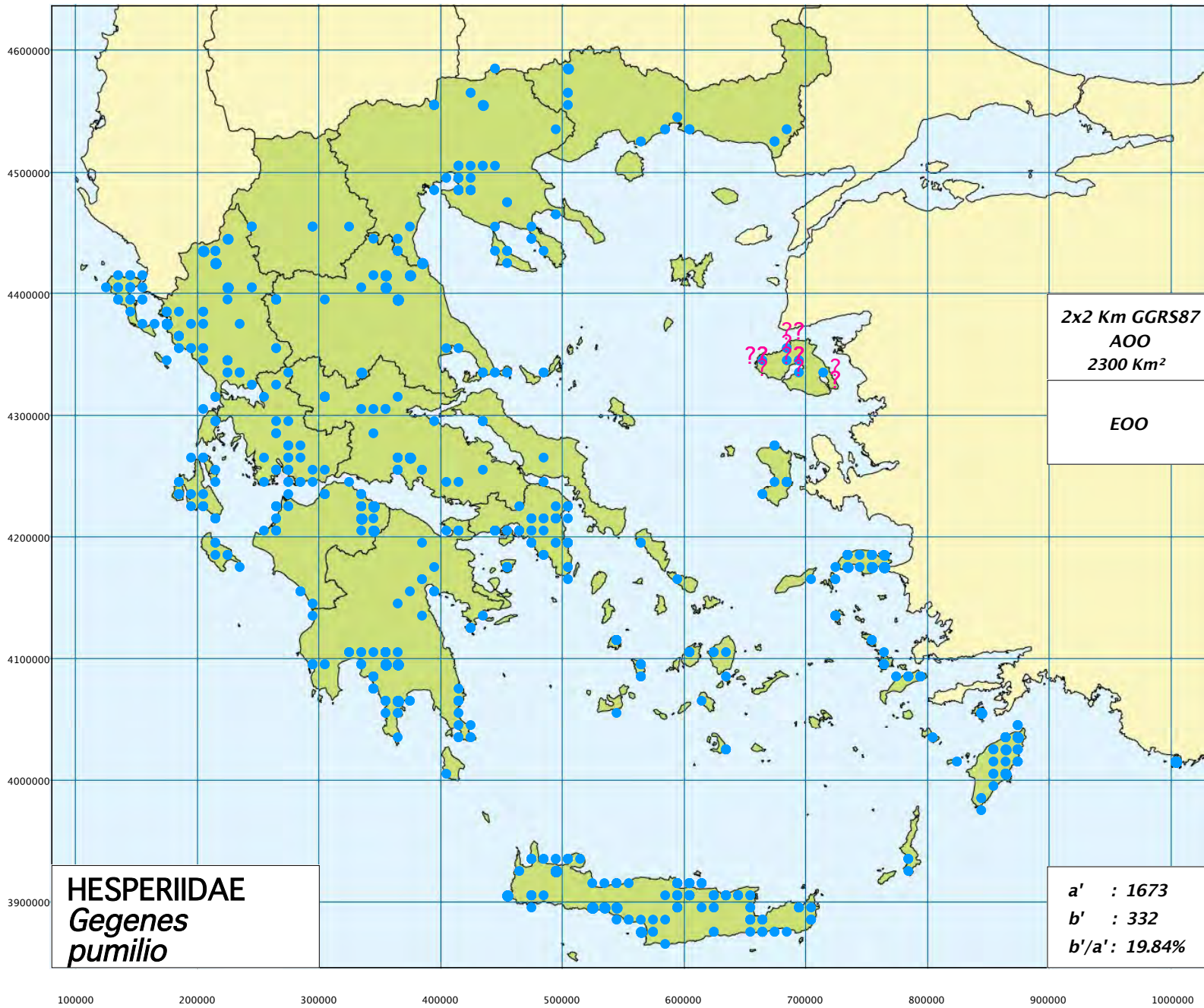
*a'* : 1673  
*b'* : 40  
*b'/a'* : 2.39%











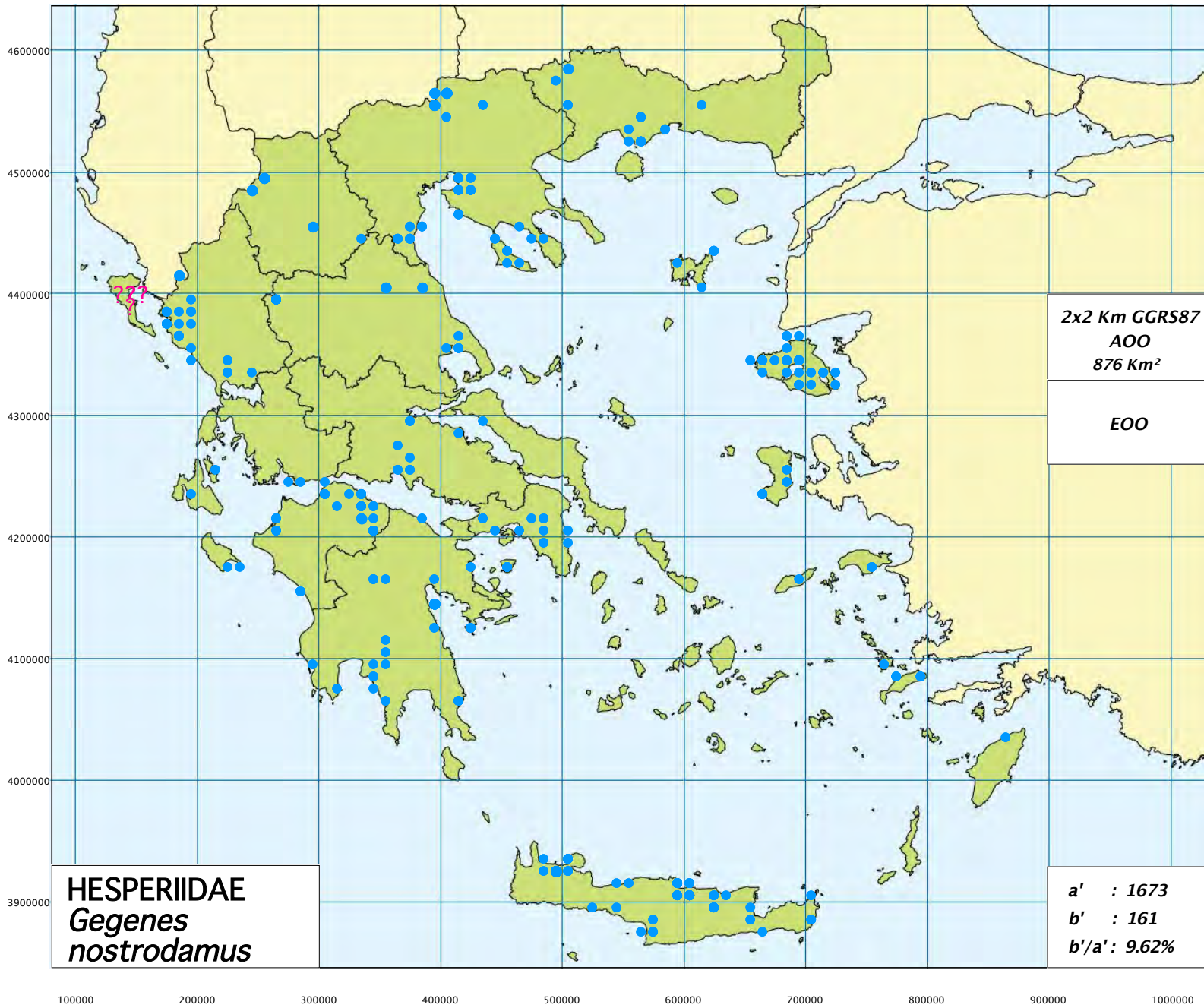
2x2 Km GGRS87  
AOO  
2300 Km<sup>2</sup>

EOO

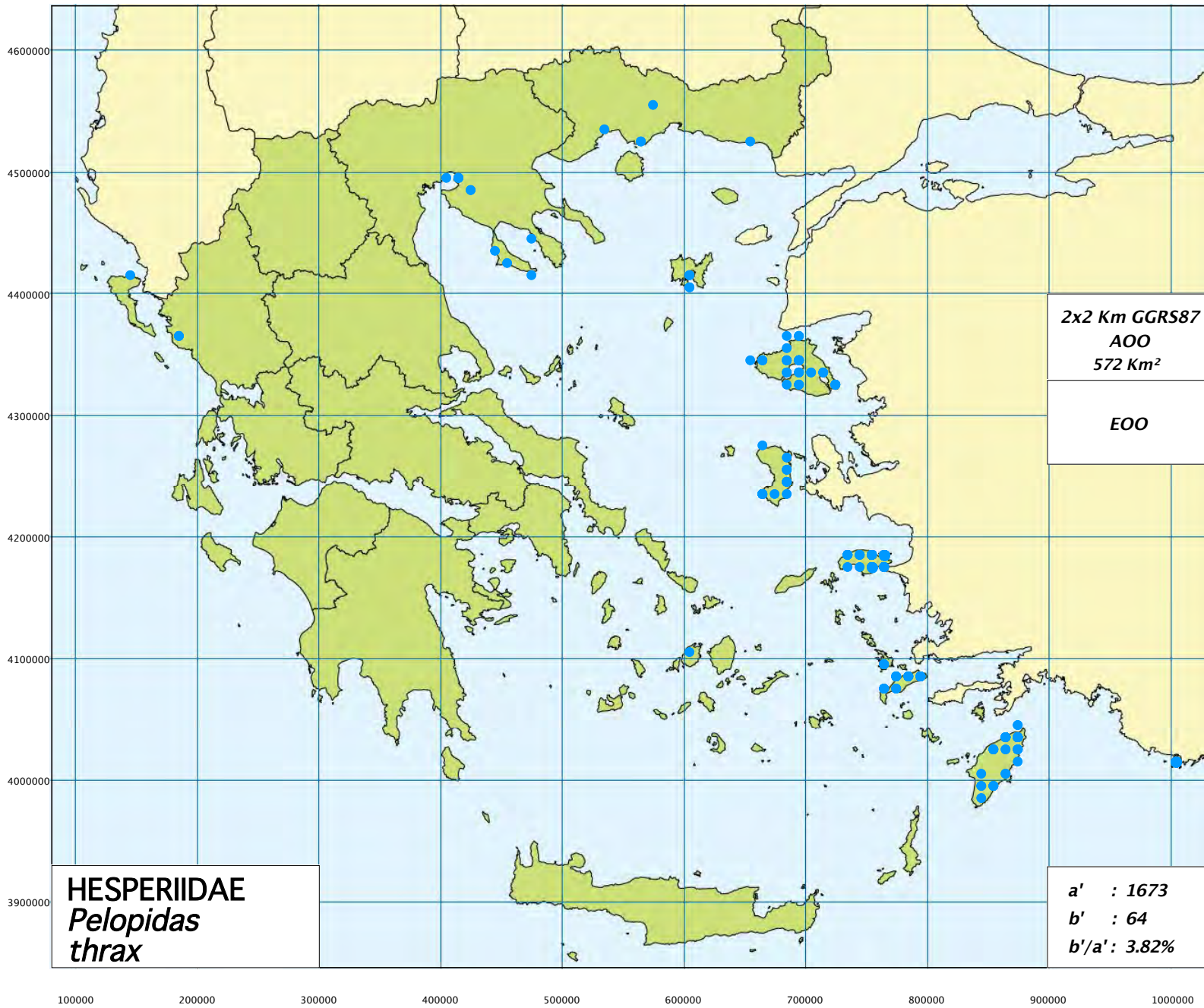
**HESPERIIDAE**  
*Gegenes*  
*pumilio*

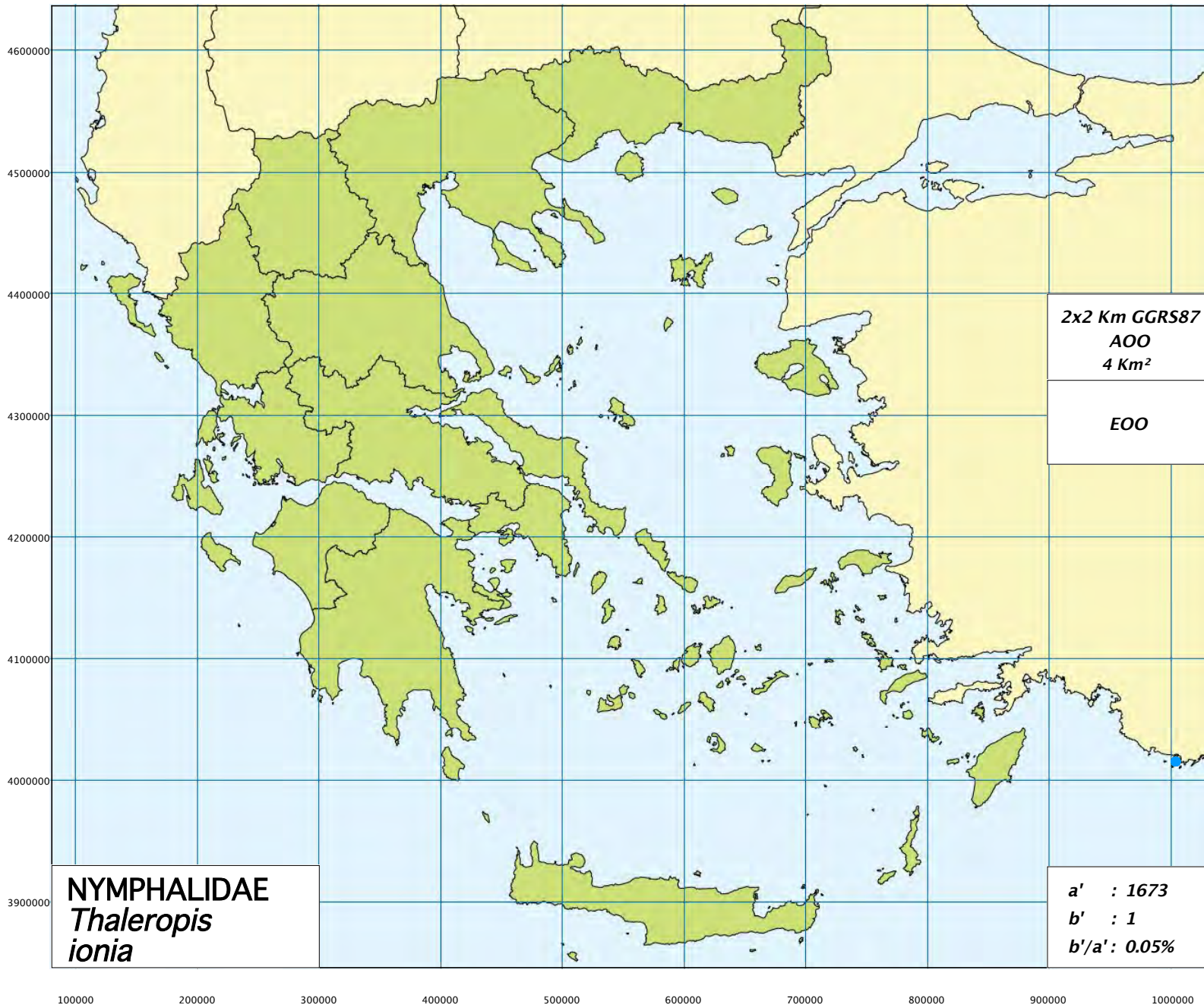
*a'* : 1673  
*b'* : 332  
*b'/a'* : 19.84%

100000 200000 300000 400000 500000 600000 700000 800000 900000 1000000









**NYMPHALIDAE**  
*Thaleropsis*  
*ionia*

**2x2 Km GGRS87**  
**AOO**  
**4 Km<sup>2</sup>**

**EOO**

**a' : 1673**  
**b' : 1**  
**b'/a' : 0.05%**



