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Confirmation of the presence of both *Gegenes pumilio pumilio* (Hoffmansegg, 1804) and *Gegenes nostrodamus* (Fabricius, 1793) on the Greek island of Kríti (Crete) (Lepidoptera : Hesperidae)

John G. COUTSIS & Alain OLIVIER

Samenvatting. Bevestiging van het voorkomen van zowel *Gegenes pumilio pumilio* (Hoffmansegg, 1804) als *Gegenes nostrodamus* (Fabricius, 1793) op het Griekse eiland Kríti (Kreta) (Lepidoptera : Hesperidae)

De auteurs geven een overzicht van de literatuur betreffende het voorkomen van *Gegenes pumilio pumilio* (Hoffmansegg, 1804) en *Gegenes nostrodamus* (Fabricius, 1793) op het Griekse eiland Kreta. Hieruit blijkt dat er geen enkele volledig betrouwbare melding bestaat van *G. nostrodamus* voor dit eiland. Hierna wordt voor het eerst melding gemaakt van een onmiskenbaar geval van sympatrisch en synchroon voorkomen van beide *Gegenes*-soorten op Kreta. De verschillen tussen beide soorten worden geïllustreerd aan de hand van exemplaren verzameld op Kreta door de tweede auteur.

Résumé. Confirmation de la présence en l'île grecque de Kríti (Crète) d'aussi bien *Gegenes pumilio pumilio* (Hoffmansegg, 1804) que *Gegenes nostrodamus* (Fabricius, 1793) (Lepidoptera : Hesperidae)

Les auteurs donnent un aperçu de la littérature concernant la présence de *Gegenes pumilio pumilio* (Hoffmansegg, 1804) et de *Gegenes nostrodamus* (Fabricius, 1793) en l'île grecque de Crète. Il en résulte qu'il n'existe aucune mention réellement fiable quant à la présence de *G. nostrodamus* sur cette île. Ensuite, pour la première fois, un cas indiscutable de coexistence sympatrique et synchrone des deux espèces de *Gegenes* en Crète est démontré. Les différences entre les deux espèces sont illustrées au moyen d'exemplaires collectionnés par le second auteur en Crète.

Key words : *Gegenes pumilio pumilio* - *Gegenes nostrodamus* - Kríti - Crete.

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Introduction

Although *Gegenes pumilio pumilio* (Hoffmansegg, 1804) and *Gegenes nostradamus* (Fabricius, 1793) differ constantly in their external morphology as well as in their genitalia, both taxa are often confused with one another and therefore older literature records dealing with the presence of these butterflies in different areas should be treated with the greatest caution.

Both species have been recorded on the island of Kríti (Crete) in the past, but at least for the latter taxon, none of these mentions seems to bring definite proof that it is indeed *G. nostradamus* that is involved. Mathew (1898: 111) lists «*Hesperia nostradamus*. - One or two», collected during June 1897 in the neighbourhood of Canea [Haniá] and Suda Bay [Soúda]. The next mention is by Rebel (1916: 117) : «*Parnara nostradamus* F. (680). - Math, p. 111. Mathew fand die Art bei Canea (oder der Suda Bay) im Juni. Ich erbeutete ein frisches ♂ in St. Nicolo [Ágios Nikólaos] am 18. Mai [1904]». Rebel (1938: 35) writes : «ad 37. *Parnara nostradamus* F. RBL. Fn. S. 117. Der Ansicht REVERDINS (Soc.ent. 26[1911] S. 43, fig.genit.), dass *P. lefebvrei* RBR.eine von *P. nostradamus* verschiedene Art sei, vermag ich nach einem einzigen Stück von Kreta nicht näherzutreten».

Troniček (1949: 13) reports : «*Gegenes nostradamus* F. Herapetra [Ierápetra], at the Livadia-potamos, 28/V, 2 ♂. New for southern Crete». Hockin (1979: 194), in a paper entitled «*Gegenes pumilio* (Lep. : Hesperiiidae : a record for Crete)», says : «Belatedly, I would like to record the capture of a single specimen of this species on the island of Crete. The specimen was taken on 9.iv.1973 on rough land, close to a small patch of cultivated land at about 400 metres above sea-level, close to Neapolis [Neápoli] (...). Whilst this is not the first record of this butterfly occurring in Crete (L.G. Higgins pers. comm.), the fact remains unrecorded in Higgins and Riley, *A Field Guide to the Butterflies of Britain and Europe*, third Edition (1975)».

Consultation of several editions of Higgins & Riley's «Field Guide» revealed that in these Kríti was blackened on the distribution map relating to *G. nostradamus* only, except for the last edition (Higgins & Riley 1984: 365, maps 382 & 383), where it is blackened for both *nostradamus* and *pumilio*. Larsen (1982: 105) includes Kríti among the known distribution records of *G. pumilio*. Rutherford (1984: 218-219) collected three specimens (and missed a fourth) of *G. pumilio* in the environs of the village of Hersónisos. Olivier (1987: 79), dealing with material, all belonging to *G. pumilio*, present in the collection of the Instituut voor Taxonomische Zoölogie (Zoölogisch Museum) Amsterdam, lists a series of localities from the west, the centre, as well as the east of the island (all previous records except Mathew (1898) were from the eastern part of the island, in the present-day Nóm. Lassíthi).

Parker (1989) notes both *Gegenes pumilio* (from near Kalamafka, p. 172) and *G. nostradamus* (from the public gardens near the Iráklio Museum, p. 173). A species list on pp. 174-175 also incorporates the data of Charles & Nick Derry (June 1981), who also list both species. In two subsequent letters to the junior author, Parker (in litt. 1.IV.1990 & 2.VI.1990) states resp. «I saw

only one, in Heraklion, just minutes after I saw the *pumilio*. It was a fairly large ♀, but I did not capture it so I'm afraid we shall never know for sure...» and «Charles Derry (...) confirms that his collection contains 12 *pumilio* (3 ♀) and 4 *nostrodamus* (1 ♀) from Crete. He has no doubt about the distinction, and says that side by side they are very different, *nostrodamus* being much larger and paler. He found *pumilio* widely on Crete, but found *nostrodamus* only in one very small area above Knossos, and assumes it to be very local».

Finally, Hemmersbach (1989: 344) mentions «*Gegenes nostrodamus* F. bei 9 [Ágia Pelagía (0-20m), 4/5.VII.1987], 13 [Vái (0-50m), 30.VI.1987] und 14 [Káto Zákros (0-50m), 1.VII.1987]». Asked for more information, Hemmersbach (in litt. 16.I.1990) admits that he based himself on the distribution maps in an edition of Higgins & Riley's «Field Guide» to ascribe his material to *nostrodamus* and informs the junior author that his material is now in the collection of Dr Ernst Brockmann. Brockmann (in litt.) states that all the *Gegenes* material from Kríti he received from Hemmersbach that he could examine so far, belongs to *G. pumilio*.

A review of the literature dealing with *Gegenes* on Kríti thus does not include one single record that proves unambiguously that *G. nostrodamus* is present on the island. The written communication by Parker, however, suggests that at least the material of Derry includes both species. Because there was no absolutely reliable record available for *G. nostrodamus*, this taxon was not included among the species present on Kríti by Olivier (1993: 200-201, table 13).

Report of the sympatric and synchronic occurrence of both *Gegenes pumilio* and *G. nostrodamus* on Kríti

The junior author visited Kríti for the third time on 15/19.VI.1990 and was able to collect 3 ♂ *Gegenes* at Néa Kidonía, 5 km W. Haniá (Nóm. Haniá) on 16.VI.1990. While noting that one of these was much smaller -and also darker- than the other two, he inadvertently took all of these for *G. pumilio*. While rearranging his collection early in 1993 and comparing his *Gegenes* material with larger series from the Greek mainland (including the material collected by Dirk van der Poorten) it became apparent that the small specimen belongs to *G. pumilio*, while both larger specimens turned out to belong to *G. nostrodamus*. The senior author dissected the small one and one of the larger specimens, thereby confirming their identity. The present contribution establishes that both *Gegenes* species do indeed occur on Kríti. The butterfly fauna of this island thus amounts to 41 reliably recorded species with the present addition of *G. nostrodamus* (see also Olivier 1993).

The morphological differences between both species have been listed in a series of publications (e.g. Lorković 1971, Higgins & Riley 1984: 340 and -especially- Fernández Vidal 1987 and references therein). In the next heading we list some of these as they become apparent from the illustrations of the characters of the wings (Lorković 1971) and of the male genitalia in the present study (figs 1 & 2) of both the *pumilio* and *nostrodamus* specimens from Kríti illustrated, thus proving their identity beyond doubt.

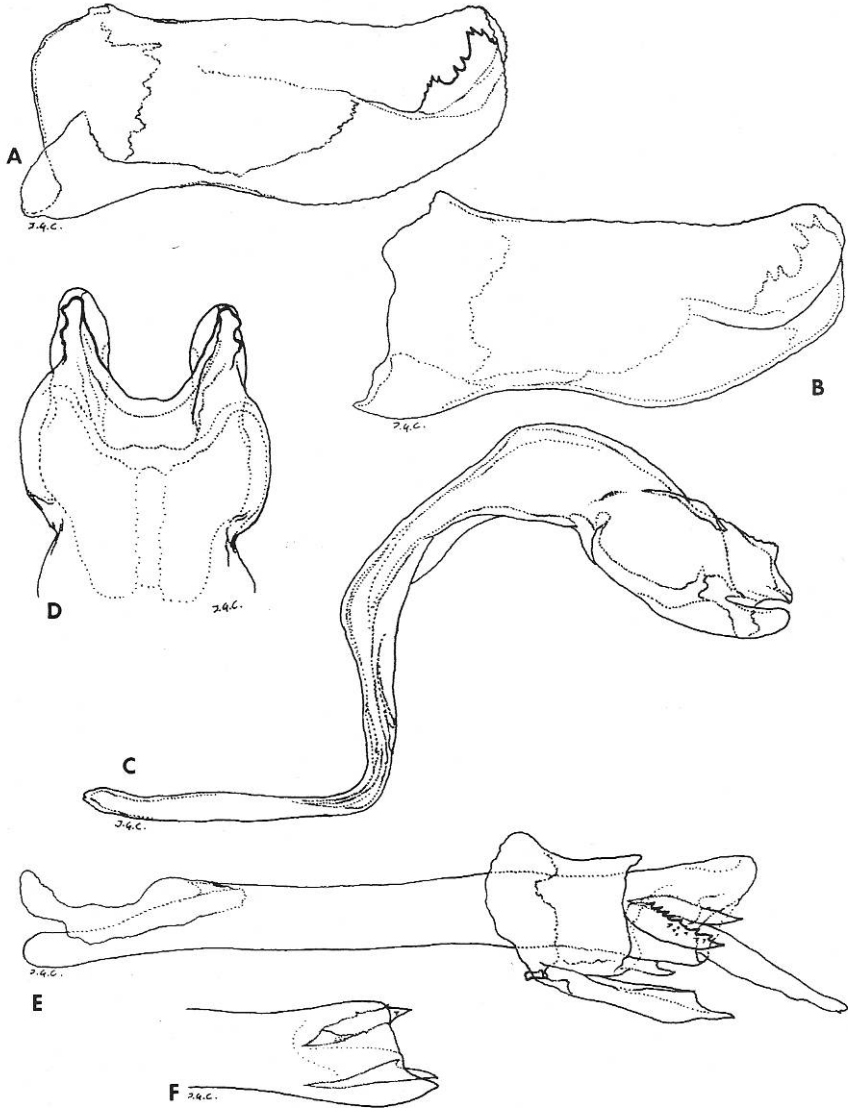


Fig. 1 : *Gegenes pumilio pumilio* (Hoffmansegg, 1804) Male genitalia; Néa Kidonía, 5 km W. Haniá (Nóm. Haniá, Kríti, Greece) (0m) 16.VI.1990, leg. et coll. A. Olivier (Prep. No 2015 - J.G. Coutsis); A. Right valve, interior view; B. Left valve, exterior view; C. Side view of tegumen and uncus, vinculum and saccus (valves, penis and furca removed); D. Dorsal view of tegumen and uncus; E. Side view of penis with furca attached to it; F. Ventral view of distal end of penis (vesica with cornuti).

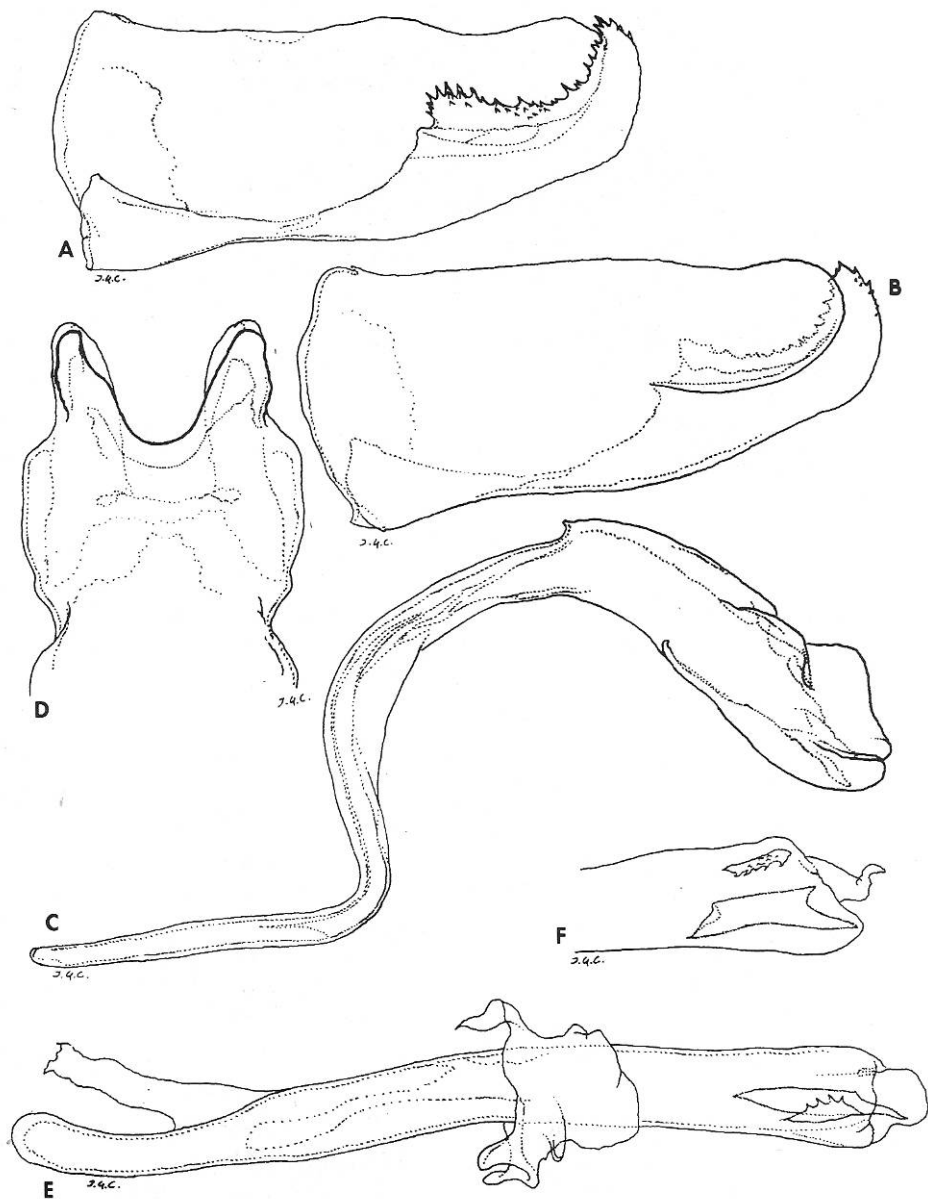


Fig. 2 : *Gegenes nostradamus* (Fabricius, 1793) Male genitalia; Néa Kidonía, 5 km W. Haniá (Nóm. Haniá, Kríti, Greece) (0m) 16.VI.1990, leg. et coll. A. Olivier (Prep. No 2016 - J.G. Coutsis; A-F. Same as for fig. 1.

The presence of *G. nostradamus* on Kríti is no surprise at all, but it still had to be confirmed. It seems impossible to find out who exactly recorded the very first specimen of each species for the island. This, however, is not so important. What matters is that now we know both species to occur on the island of Kríti for sure.

Differentiating morphological characters between *Gegenes pumilio pumilio* and *G. nostradamus*

	<i>G. pumilio pumilio</i>	<i>G. nostradamus</i>
Size	small	much larger as compared to <i>pumilio</i>
Groundcolour upper-side wings	dark, blackish brown	pale brown, with a cinnamon tinge
Underside hindwing	pale grey-brown, with indistinct pale postdiscal spots	pale sandy brown, unmarked
Front edge of basal part of hindwings (underside)	fringes or hairs sparse, fine and short, patch of fine dense dark brown scales located in basal part of discoidal cell of forewings uncovered and therefore easily visible (Lorković 1971)	fringes or hairs dense, long and broad, overlapping patch of fine dense dark brown scales located in basal part of discoidal cell of forewings, which is therefore invisible (Lorković 1971)
Valve	cucullus short, scarcely overlapping costa; upper margin with two groups of prominent teeth, one distal, the other proximal and with occasional teeth midway between these two groups (fig. 1A, B)	cucullus longer, more broadly overlapping costa and distally extending beyond it; upper margin evenly dentated (fig. 2A, B)
Side view of uncus and tegumen, vinculum and saccus	saccus rather short (fig. 1C)	saccus much longer, almost as long as uncus + tegumen (fig. 2C)
Distal end of penis	vesica with two cornuti of even size, left one dentated in side view, right one plain (fig. 1E, F)	vesica with two cornuti of uneven size, right one large and unindented and left one much smaller and dentated (fig. 2E, F)

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Boekbesprekingen

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Hoewel de insectenfauna in het Middellandse Zeegebied zeer rijk is aan soorten en vormen, zijn er slechts weinig bruikbare boeken over verschenen. Deze Kosmos Natuurgids is een poging om daar verandering in te brengen. Veel mensen brengen hun vakantie door in het zuiden van Europa en komen tijdens natuurwandelingen in contact met de plaatselijke fauna. Met dit boekje kunnen ze de meest voorkomende groepen herkennen en er wat meer over te weten komen.

Het inleidend deel bevat gegevens over de verschillende biotopen in het gebied, over giftige dieren en overbrengers van ziekten, de lichaamsbouw en een voorbeeld van hoe men het boek moet gebruiken om de dieren die men tegenkomt te determineren. Het grootste deel van het boek wordt ingenomen door een overzicht van de rijke fauna aan spinachtigen en insecten. Telkens wordt bovenaan de bladzijde een kleurenfoto afgedrukt en onderaan de tekst over het dier. Deze tekst bevat bijzonderheden over het uiterlijk, het gedrag, de verspreiding en een verwijzing naar andere, niet behandelde soorten. In een symbolenbalk onderaan de bladzijde staat aangegeven in welke biotopen het behandelde dier voorkomt, in welke tijd van het jaar, wanneer het actief is, hoe groot het is en op welke wijze het zich voedt.

In het totaal worden op deze manier een 320 soorten beschreven. Dit is uiteraard erg weinig voor een zo rijke fauna, maar het boek biedt de reiziger toch een goed overzicht van de verschillende levensvormen uit het Middellandse Zeegebied. De foto's zijn werkelijk van uitstekende kwaliteit. Het boek is stevig ingebonden en kan heel wat natuurwandelingen doorstaan.

W.O. De Prins