

**THE ARMOLIA DRAGONFLY SANCTUARY**  
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In Autumn 2012 I received a copy of Studien zur Libellenfauna Griechenlands IV. LIBELLULA supplement 10, Bremen, 15 JULY 2010. Julia Lopau. ISSN 0723-6314. This summarised all Dragonfly records from Greece known to the author, recording 11 species from Chios.

I recognised that many of the dragonfly records from Chios made during World Museum Liverpool (WML) invertebrate study of Chios since 1992, and published in 2003 in my booklet 'The Naturalist on Chios', were not recorded in LIBELLULA Supplement 10.

I decided to concentrate my entomological investigations in Chios from 2013, on dragonflies in continuation of the work under World Museum Liverpool licences issued by the Greek authorities.

As a result of my finding many further unrecorded species of dragonflies in the spring of 2013, bringing the total recorded on the island to 27 and the discovery of an important species rich site at the Armolia Reservoir I proposed that the reservoir at Armolia be given the status of an official sanctuary.

I gave a presentation to Kostas Ganiaris , Deputy Administrator for the area of the Northern Aegean, on 4<sup>th</sup> June 2013. This meeting was attended by Maria Kova and Thodoros Chaviaras.

My presentation covered the history of Eco-tourism in Chios following the publication of my 'First Report on the Invertebrate Biodiversity Study of Chios', carried out by World Museum Liverpool, 2003. This report identified the potential for establishing a strong and sustained Eco-tourism industry in Chios and described the steps necessary to achieve this goal.

I outlined progress so far in this endeavour and further potential:-

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#### **MY PRESENTATION TO KOSTAS GANIARIS**

#### **HISTORY OF DEVELOPMENT OF ECO-TOURISM IN CHIOS**

March 2003. The First Report on the Invertebrate Biodiversity Study of Chios, carried out by Liverpool Museum, and recommendations on the potential for establishing a strong and sustained Eco-Tourism industry. M.J.Taylor. Circulated.

October 2003. The Naturalist on Chios. M.J.Taylor.published.

#### **ORCHIDS**

April 2004, Pantelis Saliaris, Mike Taylor and others proposed at a meeting with the Prefect that he supported the holding of 'Ophrys 2005. The Second Congress on Hardy Orchids', in April 2005 in Chios. This proposal was accepted.

October 2004, Greentours one of the leading UK Natural History Holiday Tour Operators included Chios for the first time as a destination for Orchid enthusiasts, this first tour encompassed 'Ophrys 2005'.

September 2005, Illustrated Checklist, Orchids of Chios, Inousses and Psara. M.J.Taylor, published.

December 2011, Revised Illustrated Checklist, Orchids of Chios, Inousses and Psara. M.J.Taylor, published.

Growth in annual Orchid visitor numbers to the Voulamandis Pension, 2003 to 2013:-  
2003 ( 0 ), 2005( 21 ), 2007( 22 ), 2009( 22 ), 2011( 26 ), 2013( 34 ).

## **DRAGONFLIES**

Natural History Holiday Companies are increasingly including dragonfly focussed content in their holiday tour programmes.

e.g. Greentours Percentage of 72 annual tours including dragonflies:-

2006(0%), 2007(?%), 2008(16%), 2009(22%), 2010(22%), 2011(22%), 2012(23%), 2013(25%).

## **DRAGONFLY LITERATURE**

2006, Major new publication ' Field Guide to the Dragonflies of Britain and Europe' stimulated growth of dragonfly tours.

2010, Studien zur Libbelenfauna Griechenlands IV. LIBELLULA SUPPLEMENT 10. This book is based on dragonfly occurrence records to date, however it under-recorded the Chios fauna, in comparison with that achieved through extensive surveys in Lesvos, Samos and Ikaria:-

Species Recorded:- Lesvos(44), Samos(32), Chios(11) and Ikaria(18).

Note that the, unpublished, World Museum Liverpool Dragonfly Biodiversity Study has recognised 24 separate dragonfly taxa on Chios, and estimates that this will total approximately 30 by the end of 2013.

## **FUTURE TASKS**

### **ENCOURAGING DRAGONFLY TOURISM IN CHIOS**

Complete survey of the dragonfly fauna of Chios, publish Checklist, by December 2013.

Seek input from Chios residents to help identify cisternas, ponds, pools etc. requiring investigating for dragonfly presence. Perhaps an appeal through 'Chios Nature', for

information on potential sites seeking place name, GPS. Lat /Long, photographs and habitat descriptions.

Identify, improve access to, protect and publicise the ten best dragonfly sites on Chios, capable in total of having all known Chios species.

#### **THE POTENTIAL FLAGSHIP SITE HAS ALREADY BEEN IDENTIFIED**

#### **THIS IS THE POTTERY WATER SUPPLY RESERVOIR IN ARMOLIA**

It is now no longer being used to supply water to the pottery industry.

Since its construction 60 years ago it has accumulated a rich and diverse breeding population of dragonflies.

The size, approximately one Hectare in area, and the dam construction, feed water channels and overflow weir have created a stable permanent ideal dragonfly habitat. You could not design and build a better dragonfly sanctuary from scratch!!! To create such a habitat from the original terrain at this site in current money could easily cost €500K.

It appears to be self-sustaining with minimal maintenance costs.

However some modest expenditure, perhaps around €20K would be required to create ease of access and viewing platforms for visitors, it incidentally is very attractive to waterfowl, including Herons and Egrets.

Information needed includes:-

Current ownership and management control.  
Health and safety, legal framework, authorisation.

#### **ACTION REQUESTED FROM THE DEPUTY ADMINISTRATOR FOR THE AREA OF THE NORTHERN AEGEAN**

Would he authorise the undertaking of a feasibility study into establishing the Armolia Reservoir as the '**Flagship Dragonfly Sanctuary**'?

#### **PLANNED FUTURE ACTIONS BY M.J.TAYLOR.**

Produce and publish a Checklist of the Dragonflies of Chios, by December 2013.

Has already arranged a meeting in Liverpool on his return to the UK in June, with Dr S.Judd, Director of World Museum Liverpool together with Richard Gabb, a leading British specialist on dragonflies, author and tour leader, to assess the diversity of the Chios Dragonfly fauna, and its potential interest to Eco-tourism.

#### **WHERE WILL THE NEXT BIG STEP IN INTEREST IN INVERTEBRATES LEAD TO IN GREECE ?**

In my opinion Grasshoppers and Crickets are possibly the most likely candidates for increased interest from natural history enthusiasts in Greece, which has a notably rich fauna high in endemic species, and therefore as a region is a prime candidate for being encompassed by wildlife tour companies.

The main reasons being their clear widespread everyday presence and appealing character. The increasing availability of books on their identification, their attractiveness, accessibility and suitability, albeit challenging, as photographic subjects all increase the appeal of these insects.

Greece is particularly well placed with respect to availability of identification literature, particularly the three volumes published by the Hellenic Zoological Society in English, and still available, under their FAUNA GRAECA series :-

1. 1. Catalogue of the Orthoptera of Greece .Per Willemse , Athens 1984.
2. 1a. Supplementary Notes on the Orthoptera of Greece. Per Willemse, Athens 1985.
3. 2. Key to the Orthoptera Species of Greece. Per Willemse, Athens 1985.

The well-illustrated Key in this series is easy to use and will usually result in correct identification, particularly as the associated catalogue and distribution maps will help the avoidance of serious errors.

Work is currently in hand in the World Museum Invertebrate Biodiversity Study to increase our knowledge of the Chios grasshopper and cricket fauna, hitherto under-recorded compared to adjacent islands, as was the case with dragonflies. Several somewhat surprising discoveries have already recently been made concerning the Chios fauna. It is hoped that an illustrated checklist and simplified key to the grasshoppers and crickets of Chios and adjacent islands can be published in the next two years, following further studies on the island.

Some interesting sites of high grasshopper and cricket biodiversity have been found, for example behind the beach at Ag Markella where the large handsome Bush Cricket, *Pholidoptera fallax*, with only one previous Greek record from Thrace, has been found.

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## **RESPONSE TO MY PROPOSAL**

Kostas Ganiaris thanked me for my proposal saying that he did not believe that a feasibility study was required. He decided to proceed immediately with my proposal and asked for the land ownership and access status to be clarified. There was a currently funded 'I walker' path and track programme in place.

I raised the issue of the ten year autumn reservoir maintenance due in late 2013, currently being planned. As I had found breeding of two rare, endangered and protected dragonflies at the reservoir, *Lindenia tetraphylla* and *Selysiotthemis nigra* this programme should be cancelled as there was an EU directive requiring the Greek government to avoid any action

in their waters which could harm them, particularly the former species. The reservoir drainage programme would be almost certain to destroy dragonfly populations therein. Therefore Mr Ganiaris instructed that the maintenance programme be cancelled.

The subject of mosquito control was discussed, I explained that the nature of the water in the reservoir, low in organic matter and being of large volume and spring fed, made it unsuitable for the breeding of mosquitos. Mosquitos normally select small stagnant water bodies in shady situations, typically in old clay pots, tin cans, water butts, rims of discarded car tyres etc. If occasionally a mosquito laid eggs on the margins of the reservoir, the aquatic larvae of the carnivorous dragonflies and water beetles would soon eat them. Also the treating of the reservoir water with insecticide would require very high costs due to the large volume of water, it would be in contravention of the EU directive noted earlier as it would probably kill off many dragonfly nymphs which are all aquatic, and reduce the numbers of mature flying dragonflies during hot weather. Dragonflies being avid consumers of adult mosquitos.

Kostas Ganiaris concluded by requesting that I arrange for a British dragonfly specialist, Richard Gabb, to come to Chios in September 2013 to do a presentation with myself to the villagers of Armolia at a meeting which he would host. This meeting would seek the approval of the villagers to the Dragonfly Sanctuary proposal. This meeting was subsequently arranged for the 10<sup>th</sup> September.

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### **THE VILLAGE MEETING ARMOLIA 10<sup>th</sup> September 2013**

At a packed meeting in the Church Hall, with two TV film crews in attendance, after the presentation and questions and answers, the proposal was put to the vote and received overwhelming support.

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### **FOLLOW UP ACTION**

Meetings were held with the Chairman and engineers from the Chios water company to clarify the actions needed to establish a dragonfly sanctuary at Armolia, and to make the water company aware of the presence of the specially protected *Lindenia tetraphylla* at the Zifias reservoir.

Site visits to the Armolia reservoir attended by representatives of the water company, the municipality, the N Aegean Periphery and local residents took place in September and October 2013.

An outline process was established to detail the protective steps which would have to be taken, including re-shaping the contours of the reservoir basin, to protect the dragonfly aquatic stages if an autumn maintenance programme was to be required in the future.

In June 2015 the Chios Municipal Council agreed to proceed with survey work and preparations for establishing the dragonfly sanctuary at the Armolia reservoir.

I had a site visit to the reservoir in October 2017 with Antonia Aga to decide on the location of the main noticeboard and viewing seating. I also helped with the design of the notice board. The noticeboards, access steps and seating are all now in place.

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## **IMPLICATIONS FOR FUTURE TOURISM**

Since I published my article 'Dragonfly Destination, Chios, Greece', on my website [miketaylornaturalist.co.uk](http://miketaylornaturalist.co.uk) I have had a large number of visitors to the site, many of which have downloaded the document. Contacts have been widespread but particularly from Germany, France, UK, Belgium, Holland, Italy, Ireland, Scandinavia, Greece and Russia.

I expect that these contacts will now be considering visits to Chios in search of dragonflies. This is now more probable with Greece having now stabilised its financial situation with a growing economy. The difficult situation in Turkey may well now increase Greek tourism.

In this context the establishment of a dragonfly sanctuary in Armolia is of symbolic and practical importance. The willingness of the authorities, with the support of citizens to plan ahead positively in these kinds of initiatives will help to dispel any lingering reservations eco-tourists may have regarding visits to Chios in future. The Municipal Council must be congratulated on taking their far-sighted decision. Further efforts should now be made to identify a broad range of future sanctuaries to build on the excellent start made with the dragonfly sanctuary.





