

Mites Associated with Water Weeds in Egypt

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ABSTRACT

A survey on mites associated with water weeds was conducted at different areas. Random samples were collected from different locations. Nineteen families belonging to three sub-orders were found. Sub-order Gamasida included eight families namely Parasitidae, Digamasellidae, Ologamasidae, Ascidae, Ameroseiidae, Phytoseiidae, Macrochelidae and Laelapidae, Sub-order Actinedida included five families namely Bdellidae, Cunaxidae, Stigmaetidae, Tetranychidae and Eriophyidae and sub-order Oribatida comprised six families namely Hypochthoniidae, Lohmannidae, Oppidae, Hydrozetidae, Oribatulidae and Galumnidae.

Key Words: Water weeds, Acari, Gamasida, Actinedida, Oribatida.

INTRODUCTION

Weeds decrease crop yields, increase costs of production and reduce the quality of crop and livestock products (Buchholtz, 1967). Water hyacinth, *Eichhornia crassipes* (Mart.) is a perennial aquatic floating weed which grows and multiplies in fresh water of reservoirs, dams, rivers and drainage canals, lagoons and lakes. It may be considered as the worst aquatic weed invading water canals and reservoirs in tropical, subtropical and warm countries all over the world (Viet-Meyer, 1975; Holm *et al.*, 1977). In Africa, it was first recorded in the Sudan in 1955 (Beshir and Bennett, 1985). Although *E. crassipes* was recorded in Egypt in 1980, it only became a serious threat in the River Nile in 1960.

The rapid spread of *E. crassipes* in the Nile Delta is a normal consequence to the development of river control schemes, particularly the Aswan High Dam (Batanouny *et al.*, 1984).

Weeds usually act as dwellings for many mites and insects. The arthropods collected from water hyacinth in its native range of distribution constitute a list of about 43 different species (Perkins, 1974a). Half of them hardly cause noticeable damage or have a wide range of food plants.

Research done by Tuttle *et al.*, (1977) indicated that only seven species belonging to family Tetranychidae were collected from the water weed *Convolvulu arvensis* L.

Cromroy and Reinert (1981) reported three mite species belonging to the families Tarsonemidae and Eriophyidae collected from the water weeds. In 2003, Haq and Sumangala showed that a survey of mite fauna associated with water hyacinth yielded 21 species belonging to two orders (Actinedida and Oribatida) and nine families. Among these, three species of Tetranychidae, namely *Eutetranychus orientalis*

(Klein) *Tetranychus ludeni* Zacher, and *Oligonychus biharensis* (Hirst), and one species of Galuminiidae, *Orthogalumna terebrantis* Wallwork has been demonstrated to cause feeding damage to the host plant.

Orthogalumna terebrantis is one of a few mites causing phytodamages to water hyacinth (Bennett, 1968; 1970; 1974; Del Fosse *et al.*, 1975). Perkins (1974b) found that mites could enter pseudolamine (false leaves) to feed.

In Egypt very little work concerning water weeds was done. Therefore, the present work aims to throw light on the incidence of different phytophagous, predacious and saprophagous mite species associated with water weeds.

MATERIALS AND METHODS

A. Sampling extraction and identification of various mites associated with water weeds.

1. Sampling:

Samples of water weeds with apparent damage symptoms were collected from some localities, throughout three years during (2004 – 2006) at certain Governorates. Localities studied were: Qalubya, Monofiya, Dymiat, Bani – Sweef and Assiut.

2. Extraction:

Owing to the samples consisting entirely of organic matter, a heat desiccation method of extraction based on the Tullgren funnel was used in preference to a flotation method. The extracted mites were received in Petri dish with a piece of moistened cotton.

b. Identification of mites:

The generic concepts of most mesostigmatic mites followed Lindquist & Evans (1965) and de Moreas *et al.*, (2004). The generic concepts of oribatid mites followed Balough (1972).

Table (1): Mite species associated with water weeds, during March 2004 to December 2006

Family	Species	Weeds/Habitat	Locality
Parasitidae	<i>Parasitus zaheri</i> Hafez & Nasr	<i>Eichhornia crassipes</i> (Mart.) (leaves)	Banha, Met-Elramla,
	<i>Parasitus badrii</i> Hafez & Nasr	<i>Conyza dioscoridis</i> (L.) (leaves)	Kaluob, Bahada Manfalout, Banyady Berket El-sabi, Horen Kewesna, Mostay Bosh, Der-Elnahia
Digamasellidae	<i>Dendrolaelaps aegypticus</i> Metwally & Mersal	<i>E. crassipes</i> (Mart.) (root)	Banha, Met-Elramla
		<i>Conyza dioscoridis</i> (L.) (leaves).	Tokh, Alamar
		<i>Arono donax</i> L. (leaves)	Kewesna, Mostay
		<i>Ceratophyllum demersum</i> L. (leaves)	Bosh, Der-Elnahia Manfalout, Banyady
Ologamasidae	<i>Gamasiphis pulchellus</i> (Berlese) <i>Gamasiphis aegypticus</i> Nasr & Afifi	<i>E. crassipes</i> (roots)	Tokh, Alamar
		<i>Silybium marianum</i> (L) (leaves)	Dayrout, Sanabo Manfalout, Banyady Bosh, Der-Elnahia El-Bagoor, Santres
Ascidae	<i>Lasioseius lindquisti</i> Nasr and Abou Awad	<i>E. crassipes</i> (M.) (roots) <i>C. dioscoridis</i> (L.) (leaves)	Banha, Met-Elramla Tokh, Alamar
	<i>Lasioseius athiasae</i> Nawar and Nasr	<i>A. donax</i> L. (leaves)	Kaluob, Bahada
	<i>Lasioseius zaheri</i> Nasr	<i>A. donax</i> L. (leaves)	Mostorud, Khosos
	<i>Lasioseius africanus</i> Nasr	<i>A. donax</i> L. (leaves)	El-Badary, Afadra
	<i>Cheiroseius nepalensis</i> Evans and Hyatt	<i>A. donax</i> L. (leaves)	Manfalout, Banyady
	<i>Cheiroseius egypticus</i> Hussein and Mazen		Kewesna, Mostay Sheben El-Kom, Astobary Bosh, Der-Elnahia
Ameroseiidae	<i>Cheiroseiulus crassipes</i> Ramadan	<i>E. crassipes</i> (M.) (leaves)	Tokh, Alamar
	<i>Proctolaelaps orientalis</i> Nasr	<i>A. donax</i> L. (leaves)	Bosh, Der-Elnahia
	<i>Proctolaelaps aegyptiaca</i> Nasr	<i>C. demersum</i> L. (leaves)	El-Badary, Afadra
	<i>Ameroseius aegypticus</i> El-Badry, Nasr & Hafez	<i>C. demersum</i> L. (leaves)	
Phytoseiidae	<i>Neoseiulus barkeri</i> (Hughes)	<i>E. crassipes</i> (M.) (leaves)	Banha, Met-Elramla
	<i>Amblyseius zaheri</i> Yousef & El-Borolossy	<i>C. dioscoridis</i> (L.) (leaves) <i>A. donax</i> L. (leaves)	Tokh, Alamar
	<i>Euseius yousefi</i> (Zaher & El-Borolossy)	<i>S. marianum</i> (L.) (leaves)	Sheben El-Kom, Astobary
	<i>Proprioseiopsis lindquisti</i> (Schuster & Pritchard)	<i>C. dactylon</i> (L.) (leaves) <i>Oxalis corniculata</i> L. (leaves)	Kewesna, Mostay Manfalout, Banyady
	<i>Typhlodromips swirskii</i> (Athias-Henriot)	<i>O. corniculata</i> L. (leaves)	Dayroot, Sanabo
	<i>Euseius scutalis</i> (Athias & Henriot)	<i>O. corniculata</i> L. (leaves)	Farscor, Kafir-Elarab
	<i>Typhlodromus transvaalensis</i> Nesbitt	<i>O. corniculata</i> L. (leaves)	Bosh, Der-Elnahia
	<i>Typhlodromus negevi</i> Swirski & Amitai		
	<i>Phytoseius finitimus</i> Ribaga		
Macrochelidae	<i>Macrocheles</i> sp.	<i>E. crassipes</i> (M.) (roots)	Banha, Met-Elramla Manfalout, Banyady
Laelapidae	<i>Hypoaspis reticulatus</i> Hussein & Mazen <i>Otolaelaps chanti</i> Hussein & Mazen	<i>E. crassipes</i> (M.) (roots)	Tokh, Alamar
		<i>C. dioscoridis</i> (L.) (roots)	Kewesna, Mostay
		<i>A. donax</i> L. (roots)	El-Bagoor, Santres
		<i>S. marianum</i> (L.) (roots)	Bosh, Der-Elnahia
		<i>C. demersum</i> L. (roots)	El-wasta, El-Dohya El-Badary, Afadra
Cunaxidae	<i>Cunaxa setirostris</i> (Hermann)	<i>E. crassipes</i> (M.) (leaves)	Tokh, Alamar
		<i>C. dioscoridis</i> (L.) (leaves)	Kewesna, Mostay
		<i>A. donax</i> L. (leaves)	Manfalout, Banyady
Bdellidae	<i>Spinibdella bifurcata</i> (Atyeo) <i>Cyta latirostris</i> (Hermann)	<i>E. crassipes</i> (M.) (leaves)	Banha, Met-Elramla
		<i>C. dioscoridis</i> (L.) (leaves)	Tokh, Alamar
		<i>A. donax</i> L. (leaves)	Mostorud, Khosos
		<i>C. dactylon</i> (L.) (leaves)	Berket El-sabi, Horen Sheben El-Kom, Astobary Manfalout, Banyady El-Badary, Afadra
Stigmatidae	<i>Agistemus exsertus</i> Gonzales	<i>E. crassipes</i> (M.) (leaves)	Banha, Met-Elramla
		<i>C. dioscoridis</i> (L.) (leaves)	Sheben El-kom, Astobary
		<i>A. donax</i> L. (leaves)	Manfalout, Banyady
		<i>O. corniculata</i> (leaves)	Farscor, Kafir-Elarab Bosh, Der-Elnahia

Continued: Table (1)

Family	Species	Weeds/Habitat	Locality
Tetranychidae	<i>Tetranychus urticae</i> Koch	<i>E. crassipes</i> (M.) (leaves)	Banha, Met-Elramla
	<i>Eutetranychus pyri</i> (Attiah)	<i>C. dioscoridis</i> (L.) (leaves)	Mostorud, Khosos
	<i>Bryobia praetiosa</i> Koch	<i>C. dactylon</i> (L.) (leaves)	Tokh, Alamar
	<i>Oligonychus krantzi</i> Zaher, Gomaa & El-Enany	<i>Cyperus difformis</i> (L.) (leaves)	Sheben El-Kom, Astobary
		<i>O. corniculata</i> L. (leaves)	Berket El Sabi, Horen Farscor, Kafr-Elarab Bosh, Der-Elnahia El-Fashn, Bany Saleh Manfalout, Banyady
Eriophyidae	<i>Aceria dioscoridis</i> (Soliman & Abou – Awad)	<i>Conyze dioscoridis</i> (L.) (leaves)	Banha, Met-Elramla Tokh, Alamar
	<i>Eriophyes cynodoniesis</i> (Sayed)	<i>C. dactylon</i> (L.) (leaves)	Manfalout, Banyady El-Badary, Afadra Farscor, Kafr-Elarab Berket El- Sabi.Horen Bosh, Der-Elnahia
			Manfalout, Banyady
Hypothoniidae	<i>Hypothonius</i> sp.	<i>E. crassipes</i> (M.) (root)	Manfalout, Banyady
Lohmanniidae	<i>Lohmannia aegypticus</i> El-Badry & Nasr	<i>E. crassipes</i> (M.) (roots)	Tokh, Alamar El-Badary, Afadra Sheben El-Kom, Astobary
Oppiidae	<i>Oppia sitnikovae</i> (Shereef)	<i>E. crassipes</i> (M.) (roots)	Banha, Met-Elramla
	<i>Multioppia wilsoni</i> Aoki		El-Badary, Afadra
	<i>Oppiella niliua</i> Popp		Kewesna, Mostay
Hydrozetidae	<i>Hydrozetes</i> sp.	<i>E. crassipes</i> (M.) (roots)	Manfalout, Banyady Kewesna, Mostay Sheben El-Kom, Astobary El-Wasta, El-Dahya Farscor, Kafr-Elarab
Galumnidae	<i>Galumna flebillifera</i> Hammer	<i>E. crassipes</i> (M.) (roots)	Banha, Met-Elramla Bosh, Der-Elnahia El-Badary, Afadra
Oribatulidae	<i>Zygoribatula tameyai</i> El-Badry & Nasr	<i>E. crassipes</i> (M.) (roots)	Banha, Met-Elramla
	<i>Scheloribates laevigatus</i> (koch)	<i>Ceratophyllum demersum</i> L. (roots)	El-Bagoor, Santres Farscor, Kafr-Elarab
	<i>Scheloribates zahari</i> Yousef & Nasr	<i>Lemn gibba</i> L. (roots)	Bosh, Der-Elnahia El-Badary, Afadra

RESULTS AND DISCUSSION

A. Mites associated with water weeds:

Forty seven mite species belonging to three sub orders and 19 families were collected from various water weeds. The materials collected were namely *Eichhornia crassipes*, (Mart.) *Conyza dioscoridis* (L.) *Arundo donax* L. *Lemn gibba* L. *Oxalis corniculata* L. *Cynodon dactylon* (L.) and *Cyperus difformis* (L.). The localities of collected samples were from Qalubya, Monofiya, Dymiat, Bani-Sweef and Asuot Governorates. Mites of sub order Gamasida included eight families, namely Parasitidae, Digamasellidae, Ologamasidae, Ascidae, Ameroseiidae, Phytoseiidae, Macrochelidae, and Laelapidae.

The suborder Actinedida included five families, namely Bdellidae, Cunaxidae, Stigmaeidae, Tetranychidae and Eriophyidae. The suborder Oribatida was represented by six families, namely

Hypothoniidae, Lohmanniidae, Oppiidae, Hydrozetidae, Oribatulidae and Galumnidae.

Mites collected during the present study at different localities in Egypt are shown in Table, 1.

Eichhornia crassipes (Mart.) was the common water weed in the survey. The rich fauna recorded herein on *E. crassipes* and other water weeds could be due to the fact that the sampling covered the whole plant (leaves and roots) comparing with studies where only leaves were examined.

Members of the family Ascidae represented by nine species on roots and leaves, while Phytoseiidae including nine species on leaves only, are the most dominant groups in this study. Feeding habits of both families are different. since phytoseiid mites were found on leaves only, whereas ascid mites were found on roots and leaves of water weeds.

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