

# 長莖全爪蟎 (*Panonychus elongatus* Manson)

## (絨蟎目：葉蟎科) —— 一種新興的害蟎

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### 摘要

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2007–2010 年間在高山水蜜桃園發現長莖全爪蟎 (*Panonychus elongatus* Manson) 為害，在平地水蜜桃園主要發現神澤氏葉蟎 (*Tetranychus kanzawai* Kishida) 為害，並記錄了長莖全爪蟎族群中所發現的捕食性天敵。

關鍵詞：水蜜桃、葉蟎、捕食性天敵。

### 前言

台灣為害農作物的葉蟎種類歷來均以葉蟎屬 *Tetranychus* 為主，小爪蟎屬 *Oligonychus* 與全爪蟎屬 *Panonychus* 為次，葉蟎屬主要發生的有神澤氏葉蟎 (*Tetranychus kanzawai* Kishida)、二點葉蟎 (*Tetranychus urticae* Koch)、赤葉蟎 (*Tetranychus cinnabarinus* Boisduval)、截形葉蟎 (*Tetranychus truncatus* Ehara)，小爪蟎屬主要是為害茶樹的茶葉蟎 [*Oligonychus coffeae* (Neitner)] 與為害芒果樹的芒果葉蟎 [*Oligonychus mangiferus* (Rahman and Sapra)]，全爪蟎屬則以柑桔葉蟎 [*Panonychus citri* (McGregor)] 為主 (Ho *et al.* 1995, 1997)，間以歐洲葉蟎 [*Panonychus ulmi* (Koch)] 在梨山地區為害蘋果及梨 (Wu & Lo 1979; Lo *et al.* 1986; Ho *et al.* 2011)。其後荔枝葉蟎 (*Oligonychus litchii* Lo & Ho) 在廿世紀末、廿一世紀初，發展成為台灣數種農作物上的主要害蟎，躍身而為台灣為害農作物的重要害蟎之一 (Ho 2004; Ho *et al.* 2013)。

高山水蜜桃為台灣近十餘年來極受歡迎之水果，水分多、香、甜，售價尚，深受消費者

及農友喜愛。在桃園縣復興鄉巴陵地區、新竹縣尖石鄉、台中市和平區梨山村、平等村、南投縣仁愛鄉翠峰、高雄市那瑪夏區、花蓮縣秀林鄉洛韶均有高山水蜜桃栽植區。筆者於 2007–2010 年間調查溫帶果樹害蟎時，發現長莖全爪蟎 (*Panonychus elongatus* Manson) 已發展成高山水蜜桃果園中主要發生之害蟎，將台灣為害農作物之重要經濟害蟎又添一種。特將調查期間所獲有關長莖全爪蟎之資料披露於此，供農友及植物保護同仁參考。

### 材料與方法

前往台灣各高山水蜜桃栽培區，在高山水蜜桃園中尋找葉蟎，發現葉蟎族群或為害狀後，摘取被害葉片，置於封口袋中，攜回實驗室，於解剖顯微鏡下檢視，挑選雌雄成蟎，以 Hoyer's medium 製作玻片標本；雄蟎需製作陽莖 (aedeagus) 之側面標本。於 45°C 烘箱中烘烤 1 wk，而後在光學顯微鏡下鑑定種類。同時記錄其所發現之捕食性天敵。

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此期間亦在其他地區調查葉蟎，間或採得長莖全爪蟎，並記錄有關天敵資料。

## 結果

2007–2010 年間，筆者等在前述之高山水蜜桃產區調查，採得長莖全爪蟎之記錄如表 1，族群中觀察到之捕食性天敵亦列於表中。高山水蜜桃園多位於海拔 700 m 以上之山區，在此高度以上，平地水蜜桃園極為少見，幾全為高山水蜜桃園。採收以前，農友所採防治方法極為有效，無論高山水蜜桃或平地水蜜桃，葉片清潔翠綠，不見葉蟎蹤跡；僅未防治園方有可能發現葉蟎。在花蓮縣秀林鄉洛韶所調查之高山水蜜桃園，即為未防治園，長莖全爪蟎密度極高，佈滿葉片之上下兩面。高山水蜜桃採收後，相當時間內，農民不在桃園施藥，幾乎每個桃園中均可見到葉蟎族群，亦皆為長莖全爪蟎。

此期間亦曾調查數平地水蜜桃園（俗稱甜桃者，為七分熟之平地水蜜桃），部分亦發現此蟎

為害，有關資料及捕食性天敵發生情形列於表 2。平地水蜜桃園一般發生葉蟎屬之葉蟎，筆者之資料中，採得雄蟎而鑑定得種類者，為復興鄉上巴陵、新竹縣尖石鄉泰崗及玉峰平地水蜜桃中採得之神澤氏葉蟎；在台中市和平區梨山村（主要在省道 7 甲沿線），可能受梨園之二點葉蟎族群影響，二點葉蟎盛行於該地之小面積桃園或零星桃樹上。此外，和平區往東勢方向之桃樹，曾發現柑桔葉蟎之族群。平地水蜜桃亦能發生長莖全爪蟎為害，能發生至高數量，密布全葉，或全株受害，但筆者未見全園發生長莖全爪蟎之平地水蜜桃園。

不論高山水蜜桃或平地水蜜桃，長莖全爪蟎主要棲息於葉背，也會前往葉面。一般棲息於葉背之葉蟎，在葉背之密度甚高後，才會移往葉面棲息。長莖全爪蟎不然，往往葉背上族群密度不很高時，即有雌成蟎前往葉面產卵，建立棲群。數量少時，大體沿中肋分布，但在葉尖處可能散開；而後順主要支脈擴散，而及於葉脈間之區域。

表 1. 長莖全爪蟎在高山水蜜桃上的採集紀錄及相關天敵。

Table 1. Collection records of *Panonychus elongatus* on high land peach and associated predators.

Location	Date	m.a.s.l <sup>z</sup>	Coordinate	Predators associated <sup>y</sup>
Xiulin, Hualien County				
Loshao	2007/7/30	1,146 m	N25°1' 11.1", E121° 27' 12.3"	phytoseiids, larvae of ceccidomyiid
Upper Baling, Fushing, Taoyuan County				
Shanbaling	2008/9/10	1,232 m	N24°41'55.5", E121°24'31.2"	
Beverly Villa	2007/7/18、 2008/9/10	1,147 m	N24°41'18.0", E121°23'40.7"	
Police station	2008/7/7	1,176 m	N24°41'08.5", E121°23'55"	
Jianshih, Hsinchu County				
Yufeng	2008/9/10	776 m	N24°40'23.4", E121°19'58.6"	
Yufeng	2008/9/10	789 m	N24°39'38.9", E121°17'25.7"	
Taigang	2008/7/23	1,125 m	N24°36'31.2", E121°17'1.3"	<i>Oligota</i> beetle
Taigang	2008/7/24	1,027 m	N24°36'39.9", E121°17'5.1"	Larvae of <i>Oligota</i> and ceccidomyiid
Taigang	2008/9/9	1,005 m	N24°36'46.5", E121°16'35.3"	
Taigang	2008/9/9	1,120 m	N24°36'37.7", E121°16'31.2"	<i>Amblyseius</i>
Namaxia, Kaohsiung City				
Maya	2009/7/21	759 m	N23°14'32.3", E120°42'7.1"	<i>Amblyseius maai</i> , <i>Oligota</i> (larvae)

<sup>z</sup> m.a.s.l: Meters above sea level.

<sup>y</sup> Predator that was observed to feeding on *P. elongatus* is underlined.

表 2. 長莖全爪蟎在平地水蜜桃上的採集紀錄及相關天敵。

Table 2. Collection records of *Panonychus elongatus* on low land peach and associated predators.

Location	Date	m.a.s.l <sup>z</sup>	Coordinate	Predators associated <sup>y</sup>
Baling, Fushing, Taoyuan County				
Beverly Villa	2007/7/18	1154 m	N24°41'11.4", E121°24'11.3"	<i>Amblyseius herbiocolus</i>
	2008/7/8	1154 m	N24°41'12.0", E121°24'13.1"	Stigmaeidae, dark red in color, may had fed on <i>P. elongatus</i> .
Jianshih, Hsinchu County				
Hsinler	2008/7/23	346 m	N23°43'31.7", E121°13'12.5"	
Hsinler	2008/7/23	438 m	N24°43'45.9", E121°14'43.3"	
Taichung City				
Datei, Hoping	2008/10/21	639 m	N24°11'14.5", E120°53'0.2"	<i>Amblyseius maai</i> , <i>A. ovalis</i> , cecidomyiid larva, <i>Oligota</i> sp.
Ruanbeikong, Qingfu, Tungshih	2009/9/23	494 m	N24°11'31.9", E120°51'17.3"	Various stages of <i>A. herbiocolus</i>

<sup>z</sup> m.a.s.l: Meters above sea level.

<sup>y</sup> Predator that was observed to feeding on *P. elongatus* is underlined.

數年來亦曾在其他植物上採得長莖全爪蟎，有關資訊列於表 3。在這些植物上，長莖全爪蟎亦主要棲息於葉背，但亦會分布至葉面。在葉上之分布仍以中肋兩側優先，而後主要支脈，再及於支脈間之區域。然此原則並非絕對，常有未沿中肋至底即順支脈而去；或是沿中肋分布之後，即分布於支脈間之區域者。

在長莖全爪蟎族群中或附近發現之捕食性天敵，包括捕植蟎 (Phytoceiidae)、捕食性癭蚋 (Cecidomyiidae)、小黑隱翅蟲 (*Oligota* sp.)、長鬚 (網背) 蟎 (Stigmaeidae)、巨鬚蟎 (Cunaxidae)。其中，曾觀察到捕食性癭蚋之幼蟲及小黑隱翅蟲捕食長莖全爪蟎；另外，有些樣品中之長鬚蟎體色暗紅 (一般見到時，較為鮮紅)，植綫蟎 *Phytoseius* sp. 體有紅痕 (一般無紅痕)，通常採得者均非如此，而葉片上無其他可供為食物之紅色生物，懷疑其曾取食長莖全爪蟎。

## 討論

Tseng (1990) 於台灣葉蟎專論中記錄 6 種全爪蟎，包括長莖全爪蟎，但他所繪之長莖全爪蟎陽莖長而直，與國外文獻不同。長莖全爪蟎為 Manson (1963) 以單隻雄蟎所發表的種類，而後又採得各齡期予以描述 (Manson 1968)。在此兩篇文章中所描繪之陽莖圖均為長而彎曲者，

且 Manson (1968) 指出長莖全爪蟎與柑桔葉蟎近似，特別與柑桔葉蟎各齡期做形態比較，柑桔葉蟎之陽莖為 S 型。此均指出長莖全爪蟎之陽莖是呈 S 狀彎曲的。如是，Tseng (1990) 中之長莖全爪蟎陽莖圖可能誤植了。

全爪蟎屬中為害農作物者以柑桔葉蟎和歐洲葉蟎為中較為普遍，田間發生的歐洲葉蟎的捕食性昆蟲天敵一般為小黑瓢蟲類 (*Stethorus* spp.) 為主 (Parent 1973; Childers & Enns 1975; Laffi & Giovanni 1978; Injac & Dulič 1992; Liu *et al.* 1994; Hardman & Thistlewood 2002; Biddinger *et al.* 2009)；柑桔葉蟎則或以小黑瓢蟲類為主 (Jaimieson *et al.* 2005; Abad-Moyano *et al.* 2009)，或以小黑隱翅蟲類 (*Oligota* spp.) 為主 (Kishimoto & Takagi 2001)。柑桔葉蟎在台灣的捕食性昆蟲天敵，包括小黑瓢蟲及小黑隱翅蟲，但以小黑瓢蟲為主 (Wen 1988; Wen *et al.* 1993)。筆者等在長莖全爪蟎族群中迄未發現小黑瓢蟲，與柑桔葉蟎和歐洲葉蟎的狀況有所不同，此點有待更多田間資料以確認。

## 誌謝

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表 3. 長莖全爪蟪在其他植物上之採集紀錄及相關天敵。  
 Table 3. Collection records of *Panonychus elongatus* and associated predators on other plants.

Location	Date	m. a.s. <sup>1</sup>	Coordinate	Host plant	Predators associated <sup>2</sup>
Highway 7a, Tatung, Ilan County					
10.5 K	2008/7/8	517 m	N24°33'00.8"; E121°27'27.9"	<i>Cerasus campanulata</i>	
20.2 K	2007/8/6	807 m	N24°28'30.9"; E121°25'4.8"	as above	Stigmaeidae
24.0 K	2008/7/8	949 m	N24°27'46.0"; E121°23'45"	as above	
24.5 K	2007/8/6	969 m	N24°27'45.5"; E121°23'46.9"	as above	
Xiulin, Hualien County					
Loshao	2007/7/30	1,146 m	N25°01'11.1"; E121°27'12.3"	<i>Humulus scandens</i>	Phytoseiids, cecidomyiid larvae
Fushing, Taoyuan County				<i>Pueraria phasedoides</i>	Many <i>Phytoseius</i> sp., with red marks on body.
Shanbaling	2008/7/7	1,176 m	N24°41'08.5"; E121°23'55"	<i>Secitium edule</i>	
	2008/9/10	1,147 m	N24°41'12.9"; E121°23'51.1"	<i>P. phasedoides</i>	
Nantou County					
Liyutan, Puli	2007/5/10	508 m	N23°58'23.3"; E120°59'35.8"	<i>Tabebuia chrysantha</i>	
Lushanwenhuan, Renai	2010/11/29	1,110 m	N24°01'24.5"; E121°11'21.3"	<i>Mallotus paniculatus</i>	
Chungkung <sup>3</sup>	1982/12			<i>Morus</i> sp.	
Taichung City					
Hoping	2008/10/20	523 m	N24°10'03.5"; E120°52'0.8"	<i>Pyrus pyrifolia</i>	<i>Amblyseius</i> spp.
Guguan	2007/5/29	849 m	N24°12'38.2"; E121°1'26.8"	<i>P. phasedoides</i>	
Tungshih Forest Garden	2007/5/22	468 m	N24°17'08.5"; E120°52'12.4"	<i>C. campanulata</i>	
Chungpu, Chiayi County					
Dongaka	2010/7/12	352 m	N23°20'45.7"; E120°31'1.1"	<i>Mallotus</i> sp.	
		552 m	N23°21'13.3"; E120°31'14.2"	<i>Morus</i> sp.	
Baihe, Tainan City					
Guanziling	2010/1/9	376 m	N23°19'50.4"; E120°30'13.2"	<i>Mallotus</i> sp.	<i>Phytoseius</i> , <i>Cumaxidae</i>
		397 m	N23°19'44.2"; E120°30'11.5"	<i>Manihot esculenta</i>	Ascidae

<sup>1</sup> m. a. s. l.: Meters above sea level.

<sup>2</sup> Predator that was observed to feeding on *P. elongatus* is underlined.

<sup>3</sup> Data from Tseng (1990).

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## *Panonychus elongatus* (Trombidiformes: Tetranychidae), a New Prosperous Crop Pest in Taiwan

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### Abstract

Ho, C. C., S. C. Wang, S. H. Liang, and S. C. Chang. 2018. *Panonychus elongatus* (Trombidiformes: Tetranychidae), a new prosperous crop pest in Taiwan. *J. Taiwan Agric. Res.* 67(2):218–223.

The survey in 2007–2010 indicated that high land peach was infested with *Panonychus elongatus* Manson in Taiwan. *Tetranychus kanzawai* Kishida was mainly found in low land peach orchards. Predators associated with the population of *P. elongatus* were also recorded.

**Key words:** Peach, Spider mite, Predator.

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