RECENTLY IDENTIFIED NEW PLANT DISEASES IN HAWAII, THEIR IMPACTS, PATHS OF ENTRY OR ESTABLISHMENT AND CURRENT STATUSES

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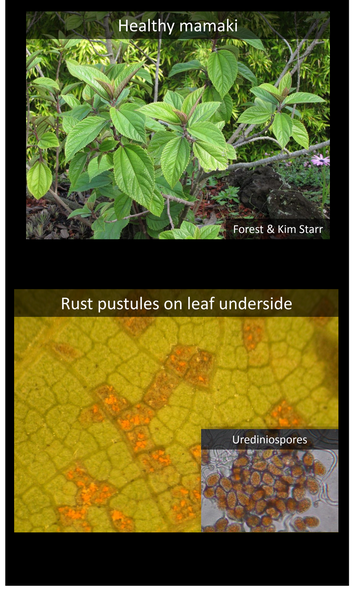
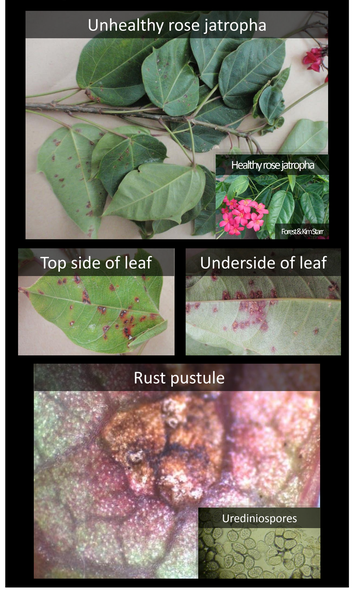
We in Hawaii have identified over twenty plant diseases the past three years that were either new to the U.S. or Hawaii. We found their impacts to the host varied, ranging from mild to severe. Regardless, we tried to monitor their effects on closely-related endemic or endangered Hawaiian plant species, if present. These diseases were considered "new" for various reasons including: recent introductions, extant plant pathogens infecting new hosts, detection by more sensitive molecular techniques, and nomenclature changes due to recent updates in pathogen taxonomy. Their distribution statuses since first-detection also varied, ranging from "absent" by way of prompt eradication to "widespread," as some were not detected in a timely manner and, consequently, got established. Here are some examples of these diseases.

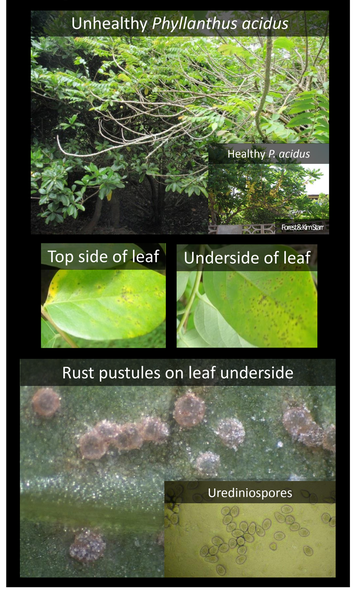
1 Mamaki Rust *Pucciniastrum boehmeriae*



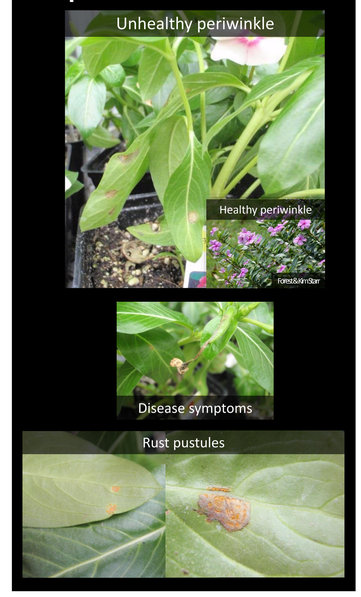
2 Rose Jatropha Rust *Phakopsora jatrophicola*



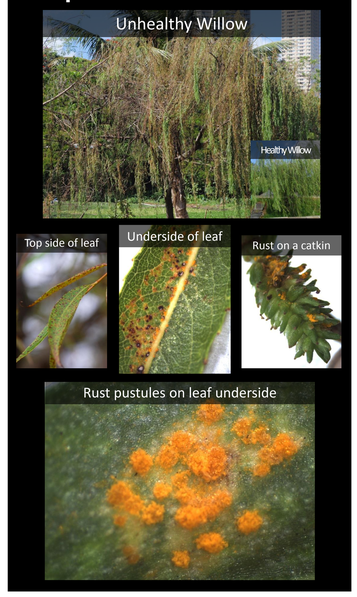
3 Phyllanthus Rust *Phakopsora phyllanthi*



4 Periwinkle Rust *Coleosporium plumeriae*

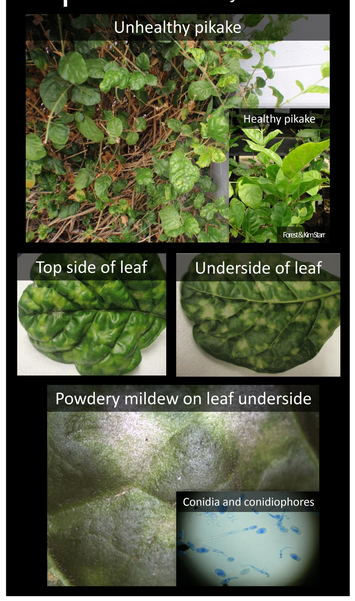


5 Willow Rust *Melampsora* sp.

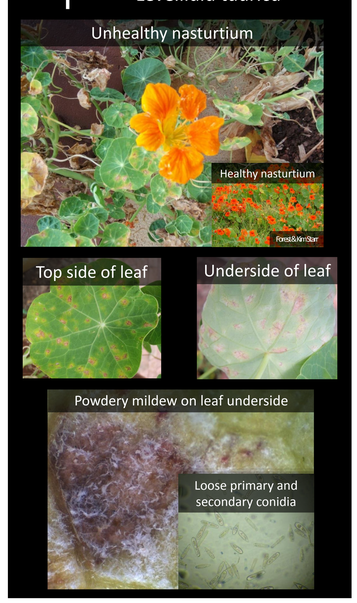


6 Bitter Herb White Blister Rust *Pustula centaurii*

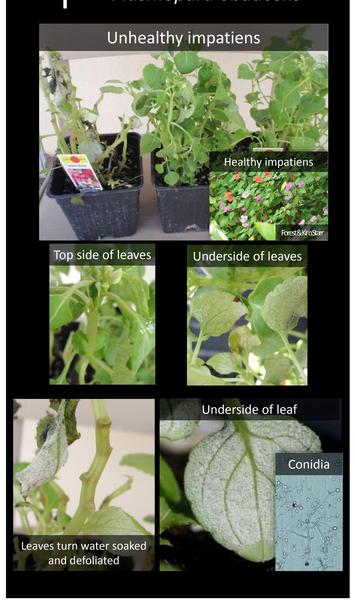
7 Pikake Powdery Mildew *Pseudoidium jasmini*



8 Nasturtium Powdery Mildew *Leveillula taurica*

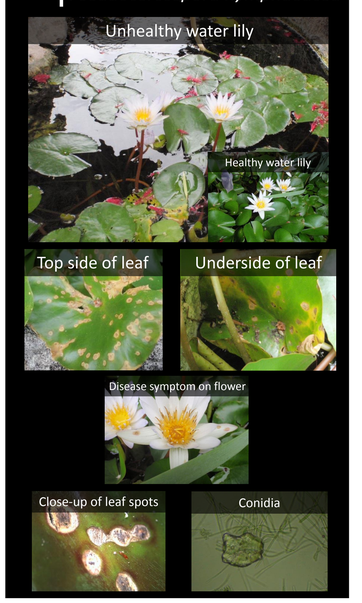


9 Impatiens Downy Mildew *Plasmopara obducens*



10 Dracaena Anthracnose *Colletotrichum petchii*

11 Water Lily Cercospora Leaf Spot *Pseudocercospora nymphaeacea*



Number	Disease	Host	Symptoms	Impacts	How First Discovered	Pathways to Hawaii	Status
1	*Pucciniastrum boehmeriae*, Rust*	*Pipturus albidus* (Mamaki)	Rust pustules on underside leaf surface; leaf defoliation	Loss of plants for tea and other ethno-medicinal usages	University of Hawaii Agricultural Diagnostic Services intercepted sample	Unknown introduction	Absent from the Big Island where it was first found, due to immediate eradication; Rust fungus recently resurfaced on Oahu
2	*Phakopsora jatrophicola*, Rust	*Jatropha integerrima* (Rose Jatropha)	Irregularly shaped leaf spots where rust pustules appear on the underside	No visible impact to host other than leaf blemishes	Leaf spots in plain view on street or landscape Jatropha trees	Introduced with contaminated hosts	Widespread on the island of Oahu; unknown distribution on the other islands
3	*Phakopsora phyllanthi*, Rust*	*Phyllanthus acidus* (Tahitian gooseberry)	Chlorotic spots on leaflets with rust pustules on their underside; leaf defoliation	Unthrifty tree with thin canopy and reduced and damaged fruit delete "s"	USDA-APHIS-PPQ-PIS Honolulu intercepted sample	Established locally after earlier introduction with the host	Widespread on the island of Oahu and Kauai
4	*Coleosporium plumeriae*, Rust	*Catharanthus roseus* (Periwinkle)	Leaf spots with bright yellow pustules on the underside	Leaf defoliation and tip dieback	In plain view on periwinkle plants at local retail garden shops	Extant plant pathogen infecting new hosts	Infected periwinkle seedlings distributed to the other islands through nursery outlet-store chains, which has been stopped.
5	*Melampsora* sp., Rust	*Salix* spp. (Willows)	Rust pustules mostly on undersides of leaves	Chlorotic leaves, defoliation, unthrifty growth; whole tree may be killed	Incidental find by HDOA personnel during visit to a watercress farm	Introduction with nursery stock	Rust still present on all weeping willows found on Kauai, Oahu, Maui
6	*Pustula centaurii*, White Blister Rust*	*Centaurium erthraea* (Bitter herb)	Blister on leaves, stems and flower buds	Host plants killed if heavily infected	Incidental find by HDOA personnel during visit to a Ranch	Unknown	So far only found at several sites on the Island of Maui; not present on other islands
7	*Pseudoidium jasmini*, Powdery Mildew*	*Jasminum sambac* (Pikake)	Leaf yellowing and crinkling, white powdery growth on underside of leaves	Defoliation, chlorotic leaves, unthrifty growth, loss of flowers for leis	Chlorotic pikake plant in plain view in a resident's yard	Unknown; Fungus only reported in India and other foreign countries	Eradicated by the owner upon first discovery
8	*Leveillula taurica*, Powdery Mildew	*Tropaeolum majus* (Nasturtium)	Chlorotic leaf spots	Stunted and unthrifty vine with tip diebacks and eventual plant death	Sample submitted by Kapiolani Community College personnel	Introduction with imported seedlings or seeds	Eradicated by the grower upon HDOA recommendations
9	*Plasmopara obducens*, Downy Mildew	*Impatiens walleriana* (Impatiens)	Chlorotic yellow leaves, white downy growth under leaves, leaf wilt and drop, blossom drop	Eventual plant death	Incidental find by HDOA personnel during visit to a nursery outlet store	Introduction with contaminated seedlings imported from infested out-of-state areas	Still present on all the major islands of Hawaii
10	*Colletotrichum petchii*, Anthracnose*	*Dracaena* sp.	Dark elongated or irregular lesions on leaves	Unsightly plants	Intercepted by CA Dept. of Food and Agriculture (CDFA) for plants imported from Hawaii (Big Island)	Probably previously identified as *C. gloeosporioides* that is now resolved by molecular techniques into different species	Subsequent surveys indicate presence of the fungus on the Big Island, Oahu, and Kauai
11	*Pseudocercospora nymphaeacea*, Cercospora Leaf Spot	*Nymphaea* sp. (Water Lily)	Oval leaf spots with shot holes	Unsightly plant that eventually dies	Incidental find by HDOA personnel during visit to a pond	Recent introduction with imported water lily seedlings or rhizomes	Present in all the water lily growing areas on the Island of Oahu

*New U.S. Record