Family: ***Asteraceae***

Taxon: ***Arctotheca calendula***

Synonym: *Arctotis calendula L. (basionym)*
Cryptostemma calendula (L.) Druce
Cryptostemma calendulacea R. Br.
Venidium decurrens hort.

Common Name: Capeweed
plain-treasure flower

Questionaire : current 20090513 **Assessor:** Patti Clifford **Designation:** H(HPWRA)
Status: Assessor Approved **Data Entry Person:** Patti Clifford **WRA Score 8**

101	**Is the species highly domesticated?**	**y=-3, n=0**	**n**
102	**Has the species become naturalized where grown?**	**y=1, n=-1**	
103	**Does the species have weedy races?**	**y=1, n=-1**	
201	**Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"**	**(0-low; 1-intermediate; 2-high) (See Appendix 2)**	**Intermediate**
202	**Quality of climate match data**	**(0-low; 1-intermediate; 2-high) (See Appendix 2)**	**Intermediate**
203	**Broad climate suitability (environmental versatility)**	**y=1, n=0**	**n**
204	**Native or naturalized in regions with tropical or subtropical climates**	**y=1, n=0**	
205	**Does the species have a history of repeated introductions outside its natural range?**	**y=-2, ?=-1, n=0**	**y**
301	**Naturalized beyond native range**	**y = 1*multiplier (see Appendix 2), n= question 205**	**y**
302	**Garden/amenity/disturbance weed**	**n=0, y = 1*multiplier (see Appendix 2)**	**n**
303	**Agricultural/forestry/horticultural weed**	**n=0, y = 2*multiplier (see Appendix 2)**	**n**
304	**Environmental weed**	**n=0, y = 2*multiplier (see Appendix 2)**	**y**
305	**Congeneric weed**	**n=0, y = 1*multiplier (see Appendix 2)**	**y**
401	**Produces spines, thorns or burrs**	**y=1, n=0**	**n**
402	**Allelopathic**	**y=1, n=0**	
403	**Parasitic**	**y=1, n=0**	**n**
404	**Unpalatable to grazing animals**	**y=1, n=-1**	**n**
405	**Toxic to animals**	**y=1, n=0**	**y**
406	**Host for recognized pests and pathogens**	**y=1, n=0**	
407	**Causes allergies or is otherwise toxic to humans**	**y=1, n=0**	**n**
408	**Creates a fire hazard in natural ecosystems**	**y=1, n=0**	**n**
409	**Is a shade tolerant plant at some stage of its life cycle**	**y=1, n=0**	**n**

410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y=1, n=0**	**y**
411	**Climbing or smothering growth habit**	**y=1, n=0**	**n**
412	**Forms dense thickets**	**y=1, n=0**	**y**
501	**Aquatic**	**y=5, n=0**	**n**
502	**Grass**	**y=1, n=0**	**n**
503	**Nitrogen fixing woody plant**	**y=1, n=0**	**n**
504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**y=1, n=0**	**y**
601	**Evidence of substantial reproductive failure in native habitat**	**y=1, n=0**	**n**
602	**Produces viable seed**	**y=1, n=-1**	**n**
603	**Hybridizes naturally**	**y=1, n=-1**	
604	**Self-compatible or apomictic**	**y=1, n=-1**	**y**
605	**Requires specialist pollinators**	**y=-1, n=0**	**n**
606	**Reproduction by vegetative fragmentation**	**y=1, n=-1**	**y**
607	**Minimum generative time (years)**	**1 year = 1, 2 or 3 years = 0, 4+ years = -1**	**1**
701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**y=1, n=-1**	**y**
702	**Propagules dispersed intentionally by people**	**y=1, n=-1**	
703	**Propagules likely to disperse as a produce contaminant**	**y=1, n=-1**	
704	**Propagules adapted to wind dispersal**	**y=1, n=-1**	**n**
705	**Propagules water dispersed**	**y=1, n=-1**	
706	**Propagules bird dispersed**	**y=1, n=-1**	**n**
707	**Propagules dispersed by other animals (externally)**	**y=1, n=-1**	**n**
708	**Propagules survive passage through the gut**	**y=1, n=-1**	**n**
801	**Prolific seed production (>1000/m2)**	**y=1, n=-1**	**n**
802	**Evidence that a persistent propagule bank is formed (>1 yr)**	**y=1, n=-1**	**n**
803	**Well controlled by herbicides**	**y=-1, n=1**	**n**
804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	**y=1, n=-1**	**y**
805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	**y=-1, n=1**	

Designation: H(HPWRA) **WRA Score** **8**

Supporting Data:

101	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	This is a sterile version of the Arctotheca calendula.
102	2011. WRA Specialist. Personal Communication.	N/A
103	2011. WRA Specialist. Personal Communication.	N/A
201	2011. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Online Database Index]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	Native range: Lesotho; South Africa -Eastern Cape, KwaZulu-Natal, Northern Cape, Western Cape.
202	2011. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Online Database Index]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	Native range: Lesotho; South Africa -Eastern Cape, KwaZulu-Natal, Northern Cape, Western Cape.
203	2002. MacKenzie. Perennial ground covers. Timber Press, http://books.google.com/books?id=u2MYhwxcVycC&pg=PA73&lpg=PA73&dq=arctotheca+calendula+%2B+%22soil%22&source=bl&ots=4xHUkwpRu8&sig=_OzP-HAiFczTRWdx07UTSD_T5kI&hl=en&ei=BhS_TZ-PLIzTiAKF95wp&sa=X&oi=b	Hardiness zones 9-11.
204	2011. WRA Specialist. Personal Communication.	Unable to tell if naturalized plants are the sterile or fertile variety.
205	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	A sterile, vegetatively reproducing race of capeweed was introduced to the United States in 1963 from the Cape of Good Hope in South Africa. Capeweed was propagated by Los Angeles State and County Arboretum, and it was made available to the nursery trade in 1965.
205	2011. WRA Specialist. Personal Communication.	Unable to tell if widely naturalized plants are the sterile or fertile variety from the literature.
301	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Capeweed grows over and displaces other herbs and in coastal grasslands and riparian zones forms monospecific stands of impenetrable mats up to several thousand square feet (Alvarez unpubl. data). It is a rapidly growing groundcover, and, if planted on one-foot centers, will establish full cover within six months (Sunset 1985). Capeweed is an aggressive competitor for water and space, and it seriously threatens native plant communities by crowding out grasses, herbs, and small shrubs. Once capeweed is established, it is difficult for other plants, particularly perennials, to become established."
302	2011. Tamar Valley Weed Strategy. Tamar Valley Weed Strategy - Arctotheca calendula. www.weeds.asn.au	Capeweed is a troublesome, widespread weed in Tasmanian pastures, crops, home gardens and disturbed sites like building sites and roadsides. [scored 3.04 environmental weed]
303	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Capeweed grows over and displaces other herbs and in coastal grasslands and riparian zones forms monospecific stands of impenetrable mats up to several thousand square feet (Alvarez unpubl. data). It is a rapidly growing groundcover, and, if planted on one-foot centers, will establish full cover within six months (Sunset 1985). Capeweed is an aggressive competitor for water and space, and it seriously threatens native plant communities by crowding out grasses, herbs, and small shrubs. Once capeweed is established, it is difficult for other plants, particularly perennials, to become established." (sterile variety)

304	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Capeweed grows over and displaces other herbs and in coastal grasslands and riparian zones forms monospecific stands of impenetrable mats up to several thousand square feet (Alvarez unpubl. data). It is a rapidly growing groundcover, and, if planted on one-foot centers, will establish full cover within six months (Sunset 1985). Capeweed is an aggressive competitor for water and space, and it seriously threatens native plant communities by crowding out grasses, herbs, and small shrubs. Once capeweed is established, it is difficult for other plants, particularly perennials, to become established."
305	1992. Carr, G.W./Yugovic, J.V./Robinson, K.E.. Environmental weed invasions in Victoria conservation and management implications. Department of Conservation and Environment, East Melbourne	Arctotheca populifolia is an environmental weed in Victoria.
401	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Stems: creeping or decumbent, originating from an individual rosette; succulent, hairy (tomentose), and ribbed; stems creep along or just below the soil surface, bearing fully formed leaves and reaching lengths of up to nine feet in one growing season. Leaves: pinnately lobed, 2-10 in (5-25 cm) long, upper surface finely hairy (cobwebby), lower surface densely hairy or silky (white-woolly). "
402	2011. WRA Specialist. Personal Communication.	Unknown.
403	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	Asteraceae.
404	2011. Tamar Valley Weed Strategy. Tamar Valley Weed Strategy - Arctotheca calendula. www.weeds.asn.au	Although stock will eat Capeweed, it is of lower nutritional value than many good pastures. Plants die off after flowering decreasing the food supply available to stock and leaving bare patches that allow more invasive weeds to establish.
405	2011. Tamar Valley Weed Strategy. Tamar Valley Weed Strategy - Arctotheca calendula. www.weeds.asn.au	Stock have died from nitrate poisoning after grazing on Capeweed growing on highly fertile soils. Milk from dairy cows feeding on the weed can have tainted milk. Horses and donkeys can have allergic skin reactions to the pollen encountered as they graze on the plant.
406	2011. WRA Specialist. Personal Communication.	Unknown.
407	2011. National Center for Biotechnology Information. PubMed. U.S. National Library of Medicine, Bethesda, Maryland http://www.ncbi.nlm.nih.gov/	No evidence of toxicity.
407	2011. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	No evidence of allergies or toxicity.
408	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	Herbaceous. [no evidence of biomass that promotes fire]
409	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	Grows best in full sun to light shade.
409	2002. MacKenzie. Perennial ground covers. Timber Press, http://books.google.com/books?id=u2MYhwxcVycC&pg=PA73&lpg=PA73&dq=arctotheca+calendula+%2B+%22soil%22&source=bl&ots=4xHUkwpRu8&sig=_OzP-HAiFczTRWdx07UTSD_T5kI&hl=en&ei=BhS_TZ-PLIzTiAKF95wp&sa=X&oi=b	Full sun.

410	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	Tolerates a wide range of soil types.
410	2002. MacKenzie. Perennial ground covers. Timber Press, http://books.google.com/books?id=u2MYhwxcVycC&pg=PA73&lpg=PA73&dq=arctotheca+calendula+%2B+%22soil%22&source=bl&ots=4xHUkwpRu8&sig=_OzP-HAiFczTRWdx07UTSD_T5kI&hl=en&ei=BhS_TZ-PLIzTiAKF95wp&sa=X&oi=b	Adaptable to various well-drained soils.
411	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Stems: creeping or decumbent, originating from an individual rosette; succulent, hairy (tomentose), and ribbed; stems creep along or just below the soil surface, bearing fully formed leaves and reaching lengths of up to nine feet in one growing season. Leaves: pinnately lobed, 2-10 in (5-25 cm) long, upper surface finely hairy (cobwebby), lower surface densely hairy or silky (white-woolly). " [herbaceous)
412	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Capeweed grows over and displaces other herbs and in coastal grasslands and riparian zones forms monospecific stands of impenetrable mats up to several thousand square feet (Alvarez unpubl. data). It is a rapidly growing groundcover, and, if planted on one-foot centers, will establish full cover within six months (Sunset 1985). Capeweed is an aggressive competitor for water and space, and it seriously threatens native plant communities by crowding out grasses, herbs, and small shrubs. Once capeweed is established, it is difficult for other plants, particularly perennials, to become established."
501	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	Terrestrial.
502	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	Asteraceae.
503	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	Herbaceous. - Asteraceae.
504	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	Capeweed can form small tubers 1 cm thick and 3 cm long. Plants can be spread when tubers and stem pieces with nodes are moved from location to location by heavy equipment used for routine grading, resurfacing, or fill removal.
601	2011. WRA Specialist. Personal Communication.	No evidence.
602	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Propagation or reproduction of capeweed is by vegetative means. Flowering occurs principally from March to June, but this variety does not produce fertile seed. It is a sterile race, extremely successful at spreading by sending out extensive stolons (stems) from one individual crown (rosette). These stolons are capable of rooting at each node and forming a new plant that remains attached to the runner until it is capable of making its own stolons (approximately one season)."
603	2011. WRA Specialist. Personal Communication.	Unknown.

604	1989. Powles, S.B./Tucker, E.S.. A capeweed (Arctotheca calendula) biotype in Australia resistant to Bipyridyl herbicides. Weed Science. 37: 60-62.	This study on herbicide resistance in Arctotheca calendula states that there are biotypes of this species resistant to the herbicide. [Biotypes are groups of organisms having the same genotype. A genotype is created by apomixis].
605	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	Sterile.
606	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Capeweed grows over and displaces other herbs and in coastal grasslands and riparian zones forms monospecific stands of impenetrable mats up to several thousand square feet (Alvarez unpubl. data). It is a rapidly growing groundcover, and, if planted on one-foot centers, will establish full cover within six months (Sunset 1985). Capeweed is an aggressive competitor for water and space, and it seriously threatens native plant communities by crowding out grasses, herbs, and small shrubs. Once capeweed is established, it is difficult for other plants, particularly perennials, to become established." "Propagation or reproduction of capeweed is by vegetative means. Flowering occurs principally from March to June, but this variety does not produce fertile seed. It is a sterile race, extremely successful at spreading by sending out extensive stolons (stems) from one individual crown (rosette). These stolons are capable of rooting at each node and forming a new plant that remains attached to the runner until it is capable of making its own stolons (approximately one season)."
607	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Propagation or reproduction of capeweed is by vegetative means. Flowering occurs principally from March to June, but this variety does not produce fertile seed. It is a sterile race, extremely successful at spreading by sending out extensive stolons (stems) from one individual crown (rosette). These stolons are capable of rooting at each node and forming a new plant that remains attached to the runner until it is capable of making its own stolons (approximately one season)."
701	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Another method by which capeweed is known to spread is the mechanical removal of a piece of stem or root tuber from an established patch to a new location. Capeweed infestations are often located along roads and trails, particularly where heavy equipment operators perform routine grading, resurfacing, or fill removal activities."
702	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	A sterile, vegetatively reproducing race of capeweed was introduced to the United States in 1963 from the Cape of Good Hope in South Africa. Capeweed was propagated by Los Angeles State and County Arboretum, and it was made available to the nursery trade in 1965 .
704	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Propagation or reproduction of capeweed is by vegetative means. Flowering occurs principally from March to June, but this variety does not produce fertile seed. It is a sterile race, extremely successful at spreading by sending out extensive stolons (stems) from one individual crown (rosette). These stolons are capable of rooting at each node and forming a new plant that remains attached to the runner until it is capable of making its own stolons (approximately one season)."
705	2011. WRA Specialist. Personal Communication.	Unknown.
706	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Propagation or reproduction of capeweed is by vegetative means. Flowering occurs principally from March to June, but this variety does not produce fertile seed. It is a sterile race, extremely successful at spreading by sending out extensive stolons (stems) from one individual crown (rosette). These stolons are capable of rooting at each node and forming a new plant that remains attached to the runner until it is capable of making its own stolons (approximately one season)."

707	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Another method by which capeweed is known to spread is the mechanical removal of a piece of stem or root tuber from an established patch to a new location. Capeweed infestations are often located along roads and trails, particularly where heavy equipment operators perform routine grading, resurfacing, or fill removal activities." "Propagation or reproduction of capeweed is by vegetative means. Flowering occurs principally from March to June, but this variety does not produce fertile seed. It is a sterile race, extremely successful at spreading by sending out extensive stolons (stems) from one individual crown (rosette). These stolons are capable of rooting at each node and forming a new plant that remains attached to the runner until it is capable of making its own stolons (approximately one season)."
708	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	Sterile.
801	1989. Powles, S.B./Tucker, E.S.. A capeweed (Arctotheca calendula) biotype in Australia resistant to Bipyridyl herbicides. Weed Science. 37: 60-62.	Sterile.
802	2011. Tamar Valley Weed Strategy. Tamar Valley Weed Strategy - Arctotheca calendula. www.weeds.asn.au	Sterile.
803	1989. Powles, S.B./Tucker, E.S.. A capeweed (Arctotheca calendula) biotype in Australia resistant to Bipyridyl herbicides. Weed Science. 37: 60-62.	"Paraquat and diquat were used from 1963 until 1986 to control capeweed and other annual weeds on an alfalfa field at Elmhurst, Victoria, Australia. From 1983, control of capeweed with these bipyridyl herbicides was no longer satisfactory. In experiments conducted on this field in 1986 and 1987, 800 g ai/ha of diquat was required to equal the control of capeweed obtained by 100 g/ha diquat in an adjacent pasture field with no history of herbicide use. There were substantial numbers of a diquat-resistant biotype within the population in the alfalfa field. It is concluded that the diquat-resistant biotype of capeweed became dominant due to the strong selection pressure provided by over 20 yr of use of the bipyridyl herbicides."
803	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	Herbicide application to large, dense capeweed patches can be successful in reducing the density of the infestation. Repeated application of 3 percent glyphosate may be needed to permanently eliminate capeweed. Glyphosate has been recommended for use on the related fertile capeweed. However, ten years of continual herbicide use on the fertile capeweed in Australia resulted in a herbicide-resistant biotype
804	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	"Propagation or reproduction of capeweed is by vegetative means. Flowering occurs principally from March to June, but this variety does not produce fertile seed. It is a sterile race, extremely successful at spreading by sending out extensive stolons (stems) from one individual crown (rosette). These stolons are capable of rooting at each node and forming a new plant that remains attached to the runner until it is capable of making its own stolons (approximately one season)."
805	2000. Alvarez, M.. Arctotheca calendula. University of California Press, Berkeley http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=7&surveynumber=182.php?print=y	Capeweed is not known to be eaten by California wildlife or invertebrates and has no known pathogens in the central coast region of California. No effective biological control agents have been reported.
805	2011. WRA Specialist. Personal Communication.	Unknown.