

2006 Survey of Exotic Plants along Northwest Territories Highways

By Michael J. Oldham



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Rationale

Non-native or exotic plants are of concern from a variety of perspectives such as economic (e.g. weeds of agricultural crops), aesthetic (e.g. changing the appearance of roadside vistas), conservation (e.g. competition for native plants), and safety (e.g. attracting large mammals to roadsides which can increase vehicle – animal collisions). Despite its large size, the Northwest Territories (NWT) has relatively few documented exotic plants species, which is partly due to a climate which is inhospitable to many exotic plants, relatively little agriculture, few roads, low human population density and associated disturbance to natural habitats, and few botanical surveys focusing on non-native species. However with global climate change, increasing development (e.g. Mackenzie Valley pipeline), and vehicular traffic, the number, diversity, and impact of exotic invasive plants can be expected to increase in future.

Study Area

During the summer of 2006 all major roads in the Northwest Territories were driven to survey for exotic plants. This road survey included all of territorial Highways 1, 2, 3, 4, 5, 6, and 7. Although not surveyed by the author, the NWT portion of the Dempster Highway (from the Yukon Territory border to Inuvik) was surveyed for exotic plants during 2006 by Bruce Bennett and Pippa Secombe-Hett. During three weeks of road surveys in southern NWT, over 5,200 km were driven. In addition, major human settlements were visited to survey for exotic plants in urban areas. Communities visited included Yellowknife, Fort Resolution, Fort Simpson, Fort Smith, Hay River, Enterprise, Fort Providence, Fort Liard, Checkpoint, Wrigley, Aklavik, and Inuvik.

Methods Used

Road surveys consisted of systematically driving territorial highways at moderate speed (generally 50-70 km/hr) watching for concentrations of exotic plants. During the survey period (primarily August 2006), several species of invasive exotic plants were in flower and conspicuous due to their large size and showy blooms. The road surveys focused on these species since they could be detected and identified from a moving vehicle.

Relatively common and widespread invasive exotic plant species readily identifiable from the vehicle were White Sweet-clover (*Melilotus alba*), Yellow Sweet-clover (*Melilotus officinalis*), Field Sow-thistle (*Sonchus arvensis*), Scentless Chamomile (*Tripleurospermum maritimum*), Narrow-leaf Hawk's-beard (*Crepis tectorum*), Alsike Clover (*Trifolium hybridum*), Red Clover (*Trifolium pratense*), Alfalfa (*Medicago sativa*), Yellow Lucerne (*Medicago falcata*), and Awnless Brome (*Bromus inermis*). Using a dashboard-mounted GPS (global positioning system) and a field notebook, all populations separated by approximately 5 km from a previous population of the same species were recorded. Since none of the highways in NWT are loop-roads, all highways were driven at least twice, which allowed for both roadsides to be surveyed (the surveyor tended to concentrate on the right-hand road shoulder in the direction being travelled) increasing the probability of detecting invasive plants.

In order to detect populations of less conspicuous exotic plant species (e.g. smaller, non-flowering, or not identifiable from a vehicle), periodic roadside stops were made to survey plants on foot. These walking surveys were of two types: informal and formal. Informal walking surveys consisted of stopping in locations which either had a high likelihood of invasive species (e.g. disturbed habitats along the road such as construction areas, intersections, roadside borrow pits, ditches) or areas which had large numbers and diversity of exotic plant species visible from the vehicle. During the informal roadside surveys, lists of exotic plant species were made at each stop with notes on abundance, and a GPS position was recorded. An orange reflective vest was worn during roadside surveys.

Formal roadside walking surveys were made at several places along each territorial highway to more systematically survey the roadside flora. Formal surveys were generally made at highway (roadside) rest stops, i.e. pull-offs from the highway, which generally had a parking area, garbage container, pit toilet, and sometimes a shelter and/or picnic tables. Highway rest stops were chosen as survey sites since they provided safe locations to park and survey, often had more habitat for exotic species due to a ditch and associated disturbed ground between the pull-off and highway, the frequent use of these pull-offs by vehicles from outside NWT (e.g. trucks, tourists) make the establishment of exotic species more likely, and these sites are readily recognizable and easily relocated to allow for repeated sampling (i.e. monitoring) to detect changes in exotic plant populations over time. At each formal walking survey site, a GPS reading was taken, the habitat in the vicinity of the survey site was described, the site was photographed, and both roadsides were walked for 100 m in each direction. All vascular plant species growing on the disturbed road shoulder were recorded, including native species, with a qualitative estimate of abundance (rare, uncommon, common, abundant) and an indication of whether or not the species was flowering. Flowering was recorded to gather data on flowering period of exotic plants in NWT (which could assist with the timing of future surveys and control efforts) and also to potentially document the effects of climate change, since plant flowering periods have been shown to change as a result of climatic warming. In total, 15 formal roadside walking surveys were conducted.

In addition to roadside surveys, other areas of human disturbance which might harbour exotic plant species were also investigated. Such areas included sand and gravel pits,

urban areas (e.g. parking lots, industrial areas), railways, ports, agricultural areas, parks (e.g. territorial park picnic areas and campgrounds), utility corridors, and construction sites. At each site, a GPS reading and list of exotic plant species present, with notes on abundance, habitat, and flowering were taken. Photographs and voucher specimens were taken at some locations to document unusual species or habitats.

In order to document invasive species and habitats, digital photographs were taken and are on file with the Department of Environment and Natural Resources, Government of the Northwest Territories, Yellowknife (c/o Suzanne Carriere) and with the Department of Industry, Tourism, and Investment, Agriculture Section, Hay River (c/o Gene Hachey). Voucher plant specimens were also collected to document range extensions and new records of exotic plant species. Specimens collected were deposited in the herbarium of Agriculture and Agri-Food Canada (DAO) in Ottawa, where most vascular plant specimens from the Northwest Territories are housed.

Although the surveys focused on exotic plant species, on an opportunistic basis, records (sight, photographic, specimen) were also kept for a variety of native plant species (particularly species with a NWT General Status of 'May Be At Risk', 'Sensitive', or 'Undetermined'; see Working Group on General Status of NWT Species 2006) and faunal groups (e.g. birds, mammals, reptiles, amphibians, Unionid molluscs (clams), terrestrial gastropods (snails), tiger beetles, butterflies, and dragonflies). Faunal specimens collected (primarily Odonata (dragonflies and damselflies), but including terrestrial gastropods, tiger beetles, and butterflies) have yet to be fully identified or confirmed by an expert and will be reported on at a later date.

Preliminary results

Biological observations were recorded at 548 unique GPS-determined locations in the Northwest Territories during summer 2006 fieldwork. A total of 2,959 biological observations were recorded and databased during 3 weeks of survey work. Most database observations were of vascular plants (2,604; including 391 collected voucher specimens). Other biological observations were of mammals (14), birds (38), reptiles (2), amphibians (17), Unionid molluscs (6; 5 collections), terrestrial gastropods (8; all collections), aquatic gastropods (8; all collections), Odonata (223; including 196 collections), butterflies (40; including 35 collections), moths (2; both collections), and tiger beetles (9; all collections). Most of the 391 vascular plant collections made during fieldwork have been identified, however a few require further study or submission to a taxonomic expert for verification. Information in this report will be updated as future identifications are made. Faunal observations and collections will be reported on in a separate documents, when identification of specimens collected has been completed.

According to the recent compilation "NWT Species 2006-2010" (Working Group on General Status of NWT Species 2006), there are 94 species of exotic vascular plants in NWT. 1634 records of 49 of these 94 species (52%) were recorded during 2006 fieldwork (Appendix 1). The ten most common exotic plants along NWT roadsides

based on the 2006 survey are White Sweet-clover (*Melilotus alba*) [319 sites], Field Sow-thistle (*Sonchus arvensis*) [172], Narrow-leaved Hawk's-beard (*Crepis tectorum*) [134], Yellow Sweet-clover (*Melilotus officinalis*) [113], Alsike Clover (*Trifolium hybridum*) [94], Alfalfa (*Medicago sativa*) [71], Red Clover (*Trifolium pratense*) [61], Pineapple-weed (*Matricaria discoidea*) [57], Smooth Brome (*Bromus inermis*) [56], and Prostrate Knotweed (*Polygonum aviculare sensu lato*) [52].

An additional 36 vascular plant species which may be at least partially introduced in NWT (based on floristic literature, primarily Porsild and Cody (1980), and field observations) were also identified (Appendix 2). 287 records of 25 of these 36 additional species (69%) were recorded during the 2006 survey. The published distribution and abundance of many species of exotic plants in NWT is based on outdated information. In some cases further study will be needed to determine whether particular species are native, introduced, or both introduced and native in NWT. Surveys in 2006 have better documented the current distribution and status of exotic and weedy native vascular plants in NWT.

Since Porsild and Cody's (1980) book on "Vascular Plants of the Continental Northwest Territories, Canada", additions to the territorial flora continue to be documented. Recent publications updating Porsild and Cody (1980) with respect to the occurrence of exotic plants in NWT include Wein et al. (1992), Cody (1996), Cody et al. (2000), Cody et al. (2003), Catling et al. (2005), Cody and Reading (2005), and Catling (2005). During the 2006 survey, at least 13 plant species new to the flora of NWT were recorded (Appendix 3), most or all of which are non-native. Some collected specimens are not yet fully identified, which could result in further additions.

Fifteen formal roadside weed survey transects were conducted, resulting in records of 261 weedy roadside plants. At least one formal roadside weed survey was conducted on each territorial highway, except Highway 2.

Proposed Follow-ups

It is hoped that the results of the 2006 survey of exotic plants will establish a baseline against which the spread of exotic plants in NWT can be compared. The aim of the 2006 surveys was to gather as many georeferenced locations for exotic plant species presence in NWT as possible. About 2,000 such records were documented. Future surveys should be conducted to document the change in exotic plant species distribution and abundance in NWT.

Some limitations to the current survey include time of year and road conditions. The 2006 survey was conducted primarily during the month of August, meaning that vascular plant species at peak growth or detectability (e.g. flowering) at that time of year were most frequently recorded. Spring-blooming exotic plants were probably under-detected due to the August survey period. Because the survey was also conducted primarily from a moving vehicle, larger, easily identifiable and conspicuous species were preferentially

recorded. Some stretches of highway had been recently mown prior to being surveyed, reducing the detectability of exotic plant species. In other cases weather (e.g. rain) or road condition (e.g. potholes or heavy traffic) may have influenced road survey results.

Not all exotic species are invasive, and many of the non-native plant species occurring in NWT will not cause economic or environmental damage. It would be useful to examine the exotic species present in NWT in order to determine which ones might cause problems from a natural area or other perspectives. Species with high probability of causing environmental or economic problems can be specifically targeted for control and monitoring. It would also be useful to try and predict new invasive species which might colonize NWT and cause problems. Such a list could be compiled by looking at the weed floras of adjacent jurisdictions.

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Appendix 1. Number of 2006 sight and collection records of exotic plants in NWT. All species (n = 94) are considered exotic in NWT by Working Group on General Status of NWT Species (2006).

Appendix 1. Number of 2006 sight and collection records of exotic plants in NWT.							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
FABACEAE	<i>Melilotus albus</i>	White Sweet-clover	7	"Cosmopolitan. Introduced roadside weed increasingly common in the upper Mackenzie Valley."		2	317
ASTERACEAE	<i>Sonchus arvensis</i>	Field Sow Thistle	7	"Cosmopolitan weed of roadsides and waste places; in the N.W.T. reported but once north of lat. 60, along the Mackenzie Highway."	Now a fairly common roadside weed. Most records are ssp. <i>uliginosus</i> .	5	167
ASTERACEAE	<i>Crepis tectorum</i>	Narrow-leaved Hawksbeard	7	"Cosmopolitan weed of roadsides and town sites in the southeastern part of our area."	Although listed as an addition by Catling, Cody & Mitrow (2005), based on the report of Cody, Reading & Line (2003), this species was included in Porsild & Cody (1980).	2	132
FABACEAE	<i>Melilotus officinalis</i>	Yellow Sweet-clover	7	"Cosmopolitan. Recently reported from waste places in southernmost Mackenzie Valley."		1	112
FABACEAE	<i>Trifolium hybridum</i>	Alsike Clover	7	"Naturalized from Europe. Occasional escape from cultivation; in the District of Mackenzie near towns and settlements north to Liard River."		1	93
FABACEAE	<i>Medicago sativa</i>	Alfalfa	7	"Cosmopolitan. An occasional escape, reported in the Mackenzie River region, from Alexandra Falls on the Hay River, and at Fort Simpson."	Both subsp. <i>sativa</i> (3 collections, 38 sight records) and subsp. <i>falcata</i> (3 collections, 27 sight records) are widespread along NWT highways.	6	65
FABACEAE	<i>Trifolium pratense</i>	Red Clover	7	"Naturalized from Europe. Occasional escape from cultivation."		1	60
ASTERACEAE	<i>Matricaria discoidea</i>	Pineapple Weed	7	"Cosmopolitan weed. Waste places and roadsides."		1	56
POACEAE	<i>Bromus inermis</i>	Smooth Brome	7	"A native of Eurasia widely cultivated, in our area occasional in waste places and by roadsides."		4	52
POLYGONACEAE	<i>Polygonum aviculare</i>	Prostrate Knotweed	7	"This, and probably other introduced and weedy members of the Section <i>Avicularia</i> , is common near settlements and towns along the Mackenzie River northward to the Delta."	There are almost certainly native and introduced members of <i>Polygonum</i> Section <i>Avicularia</i> in NWT, which are treated as separate taxa by most recent	7	45

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Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
					authors.		
CHENOPODIACEAE	<i>Chenopodium album</i>	Lamb's Quarters	7	"Circumpolar. Introduced weed now well established near settlements north along the Mackenzie River to its delta."		5	45
ASTERACEAE	<i>Artemisia biennis</i>	Biennial Wormwood	7	"A cosmopolitan weedy species, in the District of Mackenzie confined to waste places near human habitations along the Mackenzie R. and tributaries, north to the Arctic Circle."	Possibly native in NWT but a species that does well in disturbed habitats and is spread by human activities.	3	45
BRASSICACEAE	<i>Erucastrum gallicum</i>	Common Dog Mustard	7	"A relatively recent introduction to North America which is apparently spreading quickly. Weed of waste places in southwestern District of Mackenzie."		2	43
PLANTAGINACEAE	<i>Plantago major</i>	Common Plantain	7	"Common as a road-side weed now well established in and near towns and settlements along the Mackenzie River and tributaries, northward nearly to the Mackenzie Delta. However, in the District of Mackenzie and also in Yukon Territory and Alaska a plant reported as <i>P. major</i> var. <i>asiatica</i> has been observed as 'decidedly a component of the aboriginal flora'."	Probably both native and introduced in NWT, therefore should not be GS 7.	9	42
POLYGONACEAE	<i>Polygonum achoreum</i>	Striate Knotweed	7	"Common by roadsides and in waste places near settlements, along the Slave and upper Mackenzie Rivers where probably a recent introduction."		2	29
CHENOPODIACEAE	<i>Atriplex patula</i>	Spreading Orache	7	"Circumpolar; widespread. Somewhat saline or disturbed peaty situations in southern District of Mackenzie where it is presumably introduced."		2	24
POACEAE	<i>Puccinellia distans</i>	Spreading Alkali Grass	7	"A weedy species native of Eurasia, in our area collected a few times near townsites along the upper Mackenzie R."		4	22
BRASSICACEAE	<i>Capsella bursa-pastoris</i>	Shepherd's Purse	7	"Cosmopolitan. A common weed in gardens and by roadsides."		2	21
POACEAE	<i>Phleum pratense</i>	Common Timothy	7	"Introduced and becoming naturalized near settlements of the upper Mackenzie valley."		3	16

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Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
POACEAE	<i>Poa annua</i>	Annual Blue Grass	7	"Circumpolar. A weedy introduced species common in lawns and by road sides. As yet not actually reported from our area where it is likely to occur around settlements."	Reported new to NWT by Cody et al. (2000).	3	16
POACEAE	<i>Elymus repens</i>	Quack Grass	7	"Introduced from Eurasia. Waste places, southern District of Mackenzie." (as <i>Agropyron repens</i>)		3	14
POACEAE	<i>Phalaris arundinacea</i>	Reed Canary Grass	7	"Circumpolar (with gaps), non-arctic. Moist, sandy lake and river banks. Upper Mackenzie drainage north to Fort Simpson."	Almost certainly mostly native in NWT (should probably be GS 4 not 7). Although not mentioned as a weed in Porsild & Cody (1980), this species is both native and introduced in Ontario and at least some NWT populations may be non-native (e.g. M.J. Oldham #33170 from roadside in Yellowknife).	1	13
ASTERACEAE	<i>Tripleurospermum perforata</i>	Scentless Chamomile	7	"Cosmopolitan weed. An occasional roadside introduced weed in towns along the Mackenzie River." (as <i>Matricaria maritima</i> var. <i>agrestis</i>)		9	11
POACEAE	<i>Agrostis gigantea</i>	Redtop	7	"Circumpolar. In waste places; introduced."		1	10
ASTERACEAE	<i>Taraxacum laevigatum</i>	Red-seeded Dandelion	7	"Road sides and waste places near towns of the Upper Mackenzie Valley, beside trading posts along the Arctic Coast." (as <i>T. erythrospermum</i>)		3	7
POACEAE	<i>Alopecurus pratensis</i>	Meadow Foxtail	7	not included	Reported new to NWT by Cody et al. (2000).	6	6
POACEAE	<i>Agropyron cristatum</i>	Crested Wheat Grass	7	"Introduced from Eurasia. Occasional in waste places, near settlements in southern District of Mackenzie." (as <i>A. pectiniforme</i>)		3	6
BRASSICACEAE	<i>Thlaspi arvense</i>	Field Pennycress	7	"Introduced weed by roadsides and in waste places."		2	6
ASTERACEAE	<i>Tanacetum vulgare</i>	Common Tansy	7	"Cosmopolitan, strongly aromatic roadside weed, in the N.W.T. reported from the southern District of Mackenzie."		3	5
CARYOPHYLLACEAE	<i>Stellaria media</i>	Common Starwort	7	"Cosmopolitan weed. An introduction, but now a widely established weed in gardens and cultivated fields, north along the Mackenzie River to its delta."		1	5

Appendix 1. Number of 2006 sight and collection records of exotic plants in NWT.							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
ASTERACEAE	<i>Cirsium arvense</i>	Canada Thistle	7	"Cosmopolitan, roadside weed, reported once from Ft. Simpson."		2	4
BRASSICACEAE	<i>Descurainia sophia</i>	Herb Sophia	7	"A weed introduced from Europe, common in the southern parts of the Mackenzie Valley. Roadsides and waste places, but also readily spread to abandoned camp sites far beyond settled areas."		1	4
ASTERACEAE	<i>Senecio vulgaris</i>	Common Ragwort	7	"Circumpolar weed, barely entering N.W.T., near human settlements along the upper Mackenzie R."		1	4
POACEAE	<i>Poa compressa</i>	Canada Blue Grass	7	"Cosmopolitan weedy species, introduced and seemingly established at Ft. Simpson and perhaps elsewhere in southern District of Mackenzie"		3	2
LAMIACEAE	<i>Galeopsis tetrahit</i>	Common Hemp-nettle	7	"Naturalized from Europe. Waste places and near settlements."		1	2
ASTERACEAE	<i>Gnaphalium uliginosum</i>	Marsh Cudweed	7	"Circumpolar weedy species, in N.W.T. known from a single collection near Yellowknife."	Possibly native in NWT but a species that does well in disturbed habitats and is spread by human activities.	1	2
FABACEAE	<i>Medicago lupulina</i>	Black Medick	7	"Cosmopolitan weed. A single specimen reported from garden at Fort Smith."		1	2
FABACEAE	<i>Trifolium repens</i>	White Clover	7	Introduced and naturalized from Europe. Weed of lawns, in the District of Mackenzie reported but once at Fort Simpson."		1	2
CARYOPHYLLACEAE	<i>Cerastium fontanum</i>	Common Chickweed	7	"Cosmopolitan weed, with us thus far reported only from Fort Smith, but likely to turn up elsewhere in southern District of Mackenzie by roadsides and in disturbed areas." (as <i>C. vulgatum</i>)		2	1
SCROPHULARIACEAE	<i>Veronica longifolia</i>	Long-leaved Speedwell	7	not included	Reported new to NWT by Cody (1996).	1	1
BRASSICACEAE	<i>Brassica rapa</i>	Bird's Rape	7	"Cosmopolitan. Weed of cultivated fields collected once at Yellowknife." (as <i>B. campestris</i>)		4	0
BORAGINACEAE	<i>Lappula squarrosa</i>	European Stickseed	7	"An introduced cosmopolitan weed, occasional in the townsites in S.W. District of Mackenzie. Fields, roadsides and about buildings." (as <i>L. echinata</i>)		3	0

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Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
POLYGONACEAE	<i>Fallopia convolvulus</i>	Black Bindweed	7	"Occasional in gardens and on cultivated land near settlements along the Mackenze, north at least to Fort Simpson." (as <i>Polygonum convolvulus</i>)		2	0
POACEAE	<i>Agrostis stolonifera</i>	Creeping Bent Grass	7	not included	Reported new to NWT by Cody et al. (2000).	1	0
BRASSICACEAE	<i>Lepidium densiflorum</i>	Dense-flowered Pepperwort	7	"N. America. On disturbed soil near settlements of the upper Mackenzie Valley."		1	0
ASTERACEAE	<i>Leucanthemum vulgare</i>	Ox-eye Daisy	7	"Cosmopolitan weed, with us reported only from Ft. Smith. Meadows and roadsides." (as <i>Chrysanthemum leucanthemum</i>)		1	0
SCROPHULARIACEAE	<i>Linaria vulgaris</i>	Butter-and-eggs	7	"Introduced cosmopolitan weed reported a few times from townsites of the upper Mackenzie R. drainage."		1	0
POACEAE	<i>Lolium perenne</i>	Perennial Rye Grass	7	not included	Reported new to NWT by Cody et al. (2000), both subsp. <i>multiflorum</i> and subsp. <i>perenne</i> .	1	0
ACERACEAE	<i>Acer negundo</i>	Manitoba Maple	7	"W. North America but widely cultivated and naturalized across Canada. Escaped from cultivation about some townsites in S.W. District of Mackenzie."		0	0
ASTERACEAE	<i>Achillea ptarmica</i>	Sneezeweed	7	not included	Reported new to NWT by Catling (2005). Native to Europe.	0	0
POACEAE	<i>Agropyron fragile</i>	Siberian Wheat Grass	7	"Introduced from Eurasia. Occasional in waste places about settlements in southern District of Mackenzie." (as <i>A. sibiricum</i>)	<i>Agropyron sibiricum</i> is included in <i>A. fragile</i> by Kartesz (1999).	0	0
LILIACEAE	<i>Allium fistulosum</i>	Welsh Onion	7	not included	Reported new to NWT by Cody (1996). Native to Europe.	0	0
POACEAE	<i>Alopecurus arundinaceus</i>	Creeping Foxtail	7	not included	Reported new to NWT by Cody et al. (2000). Native to Eurasia.	0	0
AMARANTHACEAE	<i>Amaranthus retroflexus</i>	Green Amaranth	7	"Cosmopolitan weed. A recent and no doubt ephemeral adventive."		0	0
CHENOPODIACEAE	<i>Atriplex hortensis</i>	Garden Orache	7	"Native of Asia. Occasional escape from cultivation."		0	0
POACEAE	<i>Avena fatua</i>	Wild Oats	7	"Cosmopolitan. Occasional weed in waste places."		0	0
POACEAE	<i>Avena sativa</i>	Cultivated Oats	7	"Cultivated widely."		0	0

Appendix 1. Number of 2006 sight and collection records of exotic plants in NWT.							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
CHENOPODIACEAE	<i>Axyris amaranthoides</i>	Russian Pigweed	7	"Eurasian. Introduced weed reported from Enterprise on the Hay River Highway where, obviously, a recent and, likely ephemeral introduction."		0	0
BRASSICACEAE	<i>Brassica juncea</i>	Chinese Mustard	7	"Cosmopolitan. Weed of cultivated fields collected once in our area."		0	0
BRASSICACEAE	<i>Brassica napus</i>	Turnip	7	"Cosmopolitan. Persistent after cultivation and often found in waste ground."		0	0
POACEAE	<i>Bromus commutatus</i>	Meadow Brome	7	not included	Reported new to NWT by Cody et al. (2000). Native to Europe.	0	0
POACEAE	<i>Bromus hordeaceus</i>	Soft Brome	7	not included	Reported new to NWT by Cody et al. (2000).	0	0
POACEAE	<i>Bromus squarrosus</i>	Corn Brome	7	not included	Reported new to NWT by Cody et al. (2000).	0	0
POACEAE	<i>Bromus tectorum</i>	Downy Brome	7	not included	Reported new to NWT by Cody et al. (2000).	0	0
BRASSICACEAE	<i>Camelina sativa</i>	Large-seeded False-flax	7	not included	Not listed for NWT by Porsild & Cody (1980) or included in Catling et al.'s (2005) compilation of additions to the flora of NWT, but included in the NWT GS 2006-2010 report. Native to Eurasia.	0	0
SCROPHULARIACEAE	<i>Chaenorhinum minus</i>	Dwarf Snapdragon	7	not included	Reported new to NWT by Catling (2005). Native to Europe.	0	0
POACEAE	<i>Festuca trachyphylla</i>	Hard Fescue	7	not included	Reported new to NWT by Cody et al. (2000).	0	0
POACEAE	<i>Festuca valesiaca</i>	Steppe Fescue	7	not included	Reported new to NWT by Cody et al. (2000).	0	0
RUBIACEAE	<i>Galium aparine</i>	Catchweed Bedstraw	7	not included	Reported new to NWT by Catling (2005). Native to both North America and Europe, but the location and habitat of plants in NWT (vacant lots in Yellowknife) suggests the species may be introduced in NWT.	0	0

Appendix 1. Number of 2006 sight and collection records of exotic plants in NWT.							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
CARYOPHYLLACEAE	<i>Gypsophila elegans</i>	Showy Baby's-breath	7	not included	Not listed for NWT by Porsild & Cody (1980) or included in Catling et al.'s (2005) compilation of additions to the flora of NWT, but included in the NWT GS 2006-2010 report. Listed for NWT in FNA Vol. 5. Native to Eurasia.	0	0
CARYOPHYLLACEAE	<i>Gypsophila paniculata</i>	Tall Baby's-breath	7	"Cosmopolitan. Reported from Fort Smith where it was noted as persisting and spreading from gardens."		0	0
LAMIACEAE	<i>Lamium amplexicaule</i>	Henbit	7	"Naturalized from Europe. Waste ground in gardens, Fort Providence."		0	0
BRASSICACEAE	<i>Lepidium sativum</i>	Garden Pepperwort	7	"An introduced European weed, thus far collected but once, at Norman Wells."		0	0
LINACEAE	<i>Linum usitatissimum</i>	Common Yellow Flax	7	"Native of Europe. A casual weed of waste places."		0	0
MALVACEAE	<i>Malva neglecta</i>	Common Mallow	7	not included	Reported new to NWT by Catling (2005). Native to Europe.	0	0
BRASSICACEAE	<i>Neslia paniculata</i>	Yellow Ball-mustard	7	"Circumpolar. Occasional introduced weed around settlements along the Mackenzie drainage."		0	0
APIACEAE	<i>Pastinaca sativa</i>	Wild Parsnip	7	"Introduced from Europe and growing as a weed, particularly in Ont. and Que. In the Northwest Territories thus far known only from a cabin clearing along the South Nahanni River."		0	0
POACEAE	<i>Phalaris canariensis</i>	Common Canary Grass	7	"Cosmopolitan. Accidentally introduced in settled areas where probably always ephemeral."		0	0
RANUNCULACEAE	<i>Ranunculus acris</i>	Common Buttercup	7	"Native of Eurasia, widely naturalized by roadsides and farms across N. America, barely entering our area at Ft. Smith."		0	0
POLYGONACEAE	<i>Rumex crispus</i>	Curly Dock	7	not included	Not listed for NWT by Porsild & Cody (1980) or included in Catling et al.'s (2005) compilation of additions to the flora of NWT, but included in the NWT GS 2006-2010 report. Listed for NWT in FNA Vol. 5. Native to Eurasia.	0	0

Appendix 1. Number of 2006 sight and collection records of exotic plants in NWT.							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
CARYOPHYLLACEAE	<i>Sagina procumbens</i>	Procumbent Pearlwort	7	not included	Reported new to NWT by Rabeler & Thieret (1997). Not listed as an introduction by Catling, Cody & Mitrow (2005).	0	0
POACEAE	<i>Secale cereale</i>	Common Rye	7	not included	Reported new to NWT by Cody et al. (2000). Native to Eurasia.	0	0
POACEAE	<i>Setaria verticillata</i>	Bristly Foxtail	7	"Introduced from Eurasia. Ephemeral and accidental introduction, in waste places and gardens."		0	0
POACEAE	<i>Setaria viridis</i>	Green Foxtail	7	"Introduced from Eurasia. Ephemeral and accidental introduction, in waste places and gardens."		0	0
BRASSICACEAE	<i>Sinapis arvensis</i>	Corn Mustard	7	"Cosmopolitan. Introduced weed mainly in fields and gardens."		0	0
BRASSICACEAE	<i>Sisymbrium altissimum</i>	Tall Hedge Mustard	7	"Introduced weed occasional in gardens and waste places."		0	0
ROSACEAE	<i>Sorbaria sorbifolia</i>	False Spiraea	7	not included	Not listed for NWT by Porsild & Cody (1980) or included in Catling et al.'s (2005) compilation of additions to the flora of NWT, but included in the NWT GS 2006-2010 report. Native to Eurasia.	0	0
CARYOPHYLLACEAE	<i>Spergula arvensis</i>	Corn Spurry	7	"Cosmopolitan weed, in the N.W.T. known from a single collection near the town of Yellowknife on Great Slave L."		0	0
CHENOPODIACEAE	<i>Spinacia oleracea</i>	Spinach	7	"Cosmopolitan. Garden escape."		0	0
ASTERACEAE	<i>Tragopogon dubius</i>	Yellow Goatsbeard	7	"Cosmopolitan roadside weed; in waste places north to Ft. Smith."		0	0
POACEAE	<i>Triticum aestivum</i>	Common Wheat	7	not included	Reported new to NWT by Cody et al. (2000). Native to Eurasia.	0	0

Appendix 1. Number of 2006 sight and collection records of exotic plants in NWT.							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
VIOLACEAE	<i>Viola tricolor</i>	Johnny-jump-up	7	not included	Not listed for NWT by Porsild & Cody (1980) or included in Catling et al.'s (2005) compilation of additions to the flora of NWT, but included in the NWT GS 2006-2010 report. Native to Eurasia.	0	0
POACEAE	<i>Vulpia bromoides</i>	Squirrel-tail Vulpia	7	not included	Reported new to NWT by Cody et al. (2000). Native to Europe.	0	0
CARYOPHYLLACEAE	<i>Silene csereii</i>	Balkan Catchfly	7	not included	Reported new to NWT by Catling (2005). Native to Eurasia.	0	0

Appendix 2. Vascular Plants which may be introduced or both native and introduced in NWT and which aren't classified as "exotic" (GS7) by Working Group on General Status of NWT Species (2006) [n = 36]. In the NWT GS column, NI indicates "not included" in the NWT GS report.

Appendix 2. Vascular Plants which may be introduced or both native and introduced in NWT							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
ASTERACEAE	<i>Taraxacum officinale</i>	Common Dandelion	4	"Cosmopolitan weed, in the N.W.T. known near settlements along the upper Mackenzie R."	Included with native species (e.g. <i>T. ceratophorum</i>) by Kartesz (1999) and GS list (therefore GS 4 in NWT), though Porsild & Cody (1980) and most other authors restrict <i>T. officinale</i> to the introduced weedy species.	5	94
POACEAE	<i>Hordeum jubatum</i>	Squirrel-tail Grass	4	"Native of N. America and eastern Asia. Often a troublesome weed common in waste places near townsites north to the Mackenzie Delta."	Although weedy and common along roadsides, this is undoubtedly largely native.	1	50
ASTERACEAE	<i>Achillea millefolium</i>	Common Yarrow	4	"Circumpolar. A weedy Old World species widespread and fully naturalized across the continent, north to the limit of agriculture. In the District of Mackenzie collected a few times near settlements north to Ft. Simpson."	Porsild & Cody (1980) separate <i>A. millefolium</i> (introduced) from <i>A. nigrescens</i> and <i>A. lanulosa</i> (both native), while most authors (e.g. FNA) now combine them. In the broad sense (i.e. including <i>A. lanulosa</i>), <i>A. millefolium</i> is likely both native and introduced in NWT.	3	36

Appendix 2. Vascular Plants which may be introduced or both native and introduced in NWT							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
POACEAE	<i>Poa pratensis</i>	Kentucky Bluegrass	4	"Circumpolar, non-arctic; several races of <i>P. pratensis</i> are grown as lawn grasses and hay crops. A lowland species of moist river-flat meadows and open woods, in the District of Mackenzie north to Norman Wells and <u>mainly restricted to settlements and roadsides and probably not indigenous</u> . In the northern parts of our area and in the mountains the closely related and clearly <i>indigenous P. alpigena</i> ."	Possibly native and introduced in NWT.	2	20
JUNCACEAE	<i>Juncus bufonius</i>	Toad Rush	4	"Cosmopolitan, non-arctic weedy species. In our area thus far <u>recorded only from damp roadsides in or near settlements</u> of the wooded parts, north to the Mackenzie Delta."	Probably mostly native in NWT, but perhaps introduced at some sites.	5	12
POACEAE	<i>Beckmannia syzigachne</i>	Slough Grass	4	"... along the Mackenzie River <u>in settlements where it was likely introduced</u> with shipments of native hay from upriver points."	Undoubtedly mostly native in NWT.	0	8
POACEAE	<i>Festuca rubra</i>	Red Fescue	NI	"A <u>cultivated variety has been introduced</u> in the upper Mackenzie River area." (as <i>F. rubra</i> subsp. <i>rubra</i>)	<i>Festuca rubra</i> subsp. <i>rubra</i> is often used in seed mixes.	1	7
POLEMONIACEAE	<i>Collomia linearis</i>	Narrow-leaved Collomia	3	"N. America; N.B. to B.C. but <u>spreading as a weed in disturbed situations far beyond its natural range. Introduced in townsites</u> of the southern parts of our area."		1	6
URTICACEAE	<i>Urtica dioica</i>	Stinging Nettle	4	"... although anthropochorous, and in the District of Mackenzie <u>reported mainly from places where live-stock has been regularly kept for more than a century</u> , some collections, at least from the upper Mackenzie Valley, undoubtedly represent indigenous plants." (as <i>U. gracilis</i>)	Typically divided into a native subspecies (subsp. <i>gracilis</i>) and a subspecies introduced from Europe (subsp. <i>dioica</i>). Only subsp. <i>gracilis</i> has been reported from NWT.	2	3
POLYGONACEAE	<i>Persicaria lapathifolia</i>	Pale Smartweed	4	"Circumpolar. <u>Waste places and roadsides</u> of the upper Mackenzie drainage." (as <i>Polygonum lapathifolium</i> and <i>P. scabrum</i>)	Including <i>P. scabrum</i> .	2	2

Appendix 2. Vascular Plants which may be introduced or both native and introduced in NWT							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
BRASSICACEAE	<i>Descurainia sophioides</i>	Northern Tansy Mustard	4	"An indigenous but <u>weedy species, no doubt often spread by man and frequently growing on refuse heaps near human habitations.</u> "		2	1
CARYOPHYLLACEAE	<i>Cerastium nutans</i>	Nodding Chickweed	3	"N. America. A <u>recent introduction</u> in S.W. District of Mackenzie."	Perhaps entirely introduced in NWT.	1	1
ASTERACEAE	<i>Helenium autumnale</i>	Common Sneezeweed	3	"...north along the upper Mackenzie R. to Ft. Simpson where, <u>perhaps, introduced.</u> "	I doubt this is introduced at Ft. Simpson, and may be entirely native in NWT.	1	1
RANUNCULACEAE	<i>Ranunculus pensylvanicus</i>	Bristly Crowfoot	2	"Boreal N. America. Wet ditches and marshy places; <u>with us perhaps a recent introduction.</u> Thus far reported only from a few stations along the upper Mackenzie River."		0	1
FABACEAE	<i>Vicia cracca</i>	Vetch	NI	not included	Reported new to NWT by Wein et al. (1992).	4	0
CYPERACEAE	<i>Carex praticola</i>	Northern Meadow Sedge	3	"N. America. The <u>only record from our area is from a cultivated field at Simpson where it may have been introduced with imported hay.</u> It should be looked for in the southern half of the District of Mackenzie."	Probably mostly native in NWT, but perhaps introduced at some sites.	3	0
BRASSICACEAE	<i>Erysimum cheiranthoides</i>	Worm-seed Wallflower	4	"Circumpolar. In moist, turfy places <u>commonly near human settlements or camps,</u> but sometimes also by lake shores and on creek-banks. In the Mackenzie Valley north nearly to the arctic coast."	Perhaps both native and introduced in NWT.	2	0
BORAGINACEAE	<i>Lappula occidentalis</i>	Northern Stickseed	3	"Western Canada and U.S.A., in the Mackenzie R. drainage where <u>likely introduced,</u> and in eastern N. America." (as <i>L. redowskii</i>)		2	0
BRASSICACEAE	<i>Lepidium ramosissimum</i>	Branched Peppergrass	4	"N. America, prairies and plains. <u>Obviously a recent introduction</u> thus far collected but twice, on recently disturbed soil within town sites."	Perhaps entirely introduced in NWT.	2	0
FABACEAE	<i>Caragana arborescens</i>	Siberian Peashrub	NI	not included	Reported new to NWT by Wein et al. (1992).	1	0
CHENOPODIACEAE	<i>Chenopodium simplex</i>	Maple-leaved Goosefoot	3	"A <u>recent introduction near settlements</u> in southwest District of Mackenzie." (as <i>C. gigantospermum</i>)	Perhaps entirely introduced in NWT.	1	0

Appendix 2. Vascular Plants which may be introduced or both native and introduced in NWT							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
ASTERACEAE	<i>Conya canadensis</i>	Canada Horseweed	5	"Roadside weed barely entering the District of Mackenzie near Ft. Smith." (as <i>Erigeron canadensis</i>)	Native to North America, but occurring in weedy habitats and perhaps entirely introduced in NWT.	1	0
POACEAE	<i>Elymus sibiricus</i>	Siberian Wild-rye	3	"... the sporadic occurrence of <i>E. sibiricus</i> suggests that it is a recent introduction."	Bennett (2006) suggested that this species is not native to North America.	1	0
ARACEAE	<i>Acorus calamus</i>	Sweet-flag	NI	"Native of Eurasia, <u>widely introduced and established</u> , particularly in eastern North America. ... the single station known for the NWT, along the newly constructed Yellowknife Highway near Fort Rae, <u>may be a recent and accidental introduction</u> , but it is interesting to note that the Rev. Father Petitot in his memoirs published in 1891, reported <i>Acorus calamus</i> growing along stream banks near Lac la Martre some 100 km northwest of Fort Rae."	It is now known that there are two species in North America, the native <i>A. americanus</i> and the introduced <i>A. calamus</i> . All NWT records may be the native <i>A. americanus</i> .	0	0
CARYOPHYLLACEAE	<i>Cerastium arvense</i>	Field Chickweed	4	" <i>C. arvense</i> L. is <u>always weedy</u> and distinguished by its more caespitose habit and lower stature; it has been collected in the southern District of Mackenzie, but <u>always in disturbed areas by roadsides and near townsites where, obviously, it is a recent introduction</u> ." [As opposed to <i>C. campestre</i> which Porsild and Cody consider native, but include within <i>C. arvense</i> .]		0	0
CHENOPODIACEAE	<i>Corispermum villosum</i>	Hairy Bugseed	5	not included	<i>C. orientale</i> var. <i>emarginatum</i> reported new to NWT by Cody et al. (2000), who state that it is native to North America but adventive in NWT. FNA Vol. 4 includes <i>C. orientale</i> var. <i>emarginatum</i> within <i>C. villosum</i> .	0	0

Appendix 2. Vascular Plants which may be introduced or both native and introduced in NWT							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
POACEAE	<i>Deschampsia elongata</i>	Slender Hairgrass	NI	not included	Reported new to NWT by Cody, Reading & Line (2003). Although native to western North America, it was considered introduced in the Yukon by Cody (1996).	0	0
ASTERACEAE	<i>Gaillardia aristata</i>	Great Blanket-flower	5	"In N.W.T. reported as a <u>recent introduction on farm land</u> near Ft. Simpson."	Probably should be GS 7 in NWT.	0	0
BRASSICACEAE	<i>Halimolobos mollis</i>	Soft Rock Cress	4	"Endemic of arctic N. America. A dung-loving calciphilous species of peculiar, disrupted range and <u>undoubtedly often dispersed by man</u> and by animals."		0	0
POLYGONACEAE	<i>Polygonum fowleri</i>	Fowler Knotweed	2	not included	Reported new to NWT by Cody, Reading & Line (2003). Native to North America but collected in NWT from "fill along roadside" near Fort Smith and perhaps introduced.	0	0
POACEAE	<i>Puccinellia interior</i>	Inland Alkali Grass	NI	"Described from Alaska, its known range has now been extended across Y.T. to the upper Mackenzie Basin where <u>it may be a recent but already established introduction</u> , mainly near human habitations. ... of weedy habit and readily spread by man."	Not included in GS database, though accepted by Kartesz (1999).	0	0
BRASSICACEAE	<i>Rorippa barbareaefolia</i>	Hoary Yellow Cress	2	"Amphi-Beringian. Non-arctic species of weedy habit, common locally and mainly in disturbed soil through Alaska and Yukon Territory; it is known from a single station in the Mackenzie Delta where it <u>may be a recent introduction</u> ."		0	0
BRASSICACEAE	<i>Rorippa crystallina</i>	Asiatic Cress	2	"Endemic of the lowland area northwest of Great Slave Lake...."	Now known to be likely of Asian origin (Mulligan and Cody 1995). Should probably be GS 7 in NWT and Canada.	0	0

Appendix 2. Vascular Plants which may be introduced or both native and introduced in NWT							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
ROSACEAE	<i>Sanguisorba officinalis</i>	Great Burnet	2	"Cosmopolitan. An Old World species of weedy habit.... In AK, YT and northern District of Mackenzie ... <u>known mainly from places near human habitation</u> , but also from stations where its presence could not be ascribed to human agencies."		0	0
CRASSULACEAE	<i>Sedum spurium</i>	Two-row Stonecrop	NI	not included	Reported new to NWT by Wein et al. (1992).	0	0
POACEAE	<i>Sorghum halepense</i>	Johnson-grass	NI	not included	Reported new to NWT by Barkworth (2003).	0	0

Appendix 3. Exotic or possibly exotic vascular plants new to the flora of NWT based on 2006 fieldwork (n = 13).

Appendix 3. Exotic or possibly exotic vascular plants new to the flora of NWT based on 2006 fieldwork							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
ASTERACEAE	<i>Bellis perennis</i>	English Daisy	new	not included	New to NWT. Single patch found in a campground in Blackstone Territorial Park.	1	0
BRASSICACEAE	<i>Berteroa incana</i>	Hoary False-alyssum	new	not included	New to NWT. Roadside weed along Hwy. 3.	1	0
CYPERACEAE	<i>Carex adusta</i>	Sedge	new	not included	New to NWT. Collected from disturbed ground in Yellowknife. Native to North America, and possibly native in NWT.	1	0
CYPERACEAE	<i>Carex praegracilis</i>	Sedge	new	"To be looked for in S.W. District of Mackenzie."	First NWT record (M.J. Oldham #33648) in 2006 was from a roadside ditch where probably introduced.	1	0
LAMIACEAE	<i>Dracocephalum thymiflorum</i>	Thyme-leaf Dragonhead	new	not included	Not listed for NWT by Porsild & Cody (1980) or NWT GS 2006-2010, but listed for NWT by Kartesz (1999; based on 1981 Feddes Repertorium). Collected as a roadside weed along Hwy. 1 at Enterprise.	1	0
JUNCACEAE	<i>Juncus longistylis</i>	Long-styled Rush	new	not included	New to NWT. Collected from a roadside ditch along Hwy. 1, where it is probably introduced. Native to North America.	1	0
CHENOPODIACEAE	<i>Kochia scoparia</i>	Summer Cypress	new	not included	New to NWT. Not listed for NWT by Porsild & Cody (1980) or NWT GS 2006-2010.	1	0
ASTERACEAE	<i>Lactuca serriola</i>	Prickly Lettuce	new	not included	New to NWT. Not listed for NWT by Porsild & Cody (1980) or NWT GS 2006-2010.	1	0
POACEAE	<i>Lolium arundinaceum</i>	Tall Rye Grass	new	not included	New to NWT. Collected from a roadside along Hwy. 3. Native to Eurasia.	1	0
FABACEAE	<i>Lotus corniculatus</i>	Bird's-foot Trefoil	new	not included	New to NWT. Collected from a disturbed roadside near the golf course in Fort Simpson. Native to Eurasia.	1	0
FABACEAE	<i>Onobrychis viciifolia</i>	Sainfoin	new	not included	Collected by M.J. Oldham in 2006, south of Fort Liard along Hwy. 7 and new to NWT.	1	0

Appendix 3. Exotic or possibly exotic vascular plants new to the flora of NWT based on 2006 fieldwork							
Family	Scientific Name	English Common Name	NWT GS	Porsild & Cody 1980	Notes	2006 colls	2006 sight
BRASSICACEAE	<i>Sisymbrium loeselii</i>	False London Rocket	new	not included	New to NWT. Collected as a weed adjacent to a playground in Yellowknife and as a roadside weed along Hwy. 3. Native to Eurasia.	2	0
POACEAE	<i>Thinopyrum intermedium</i>	Intermediate Quack Grass	new	not included	New to NWT. Collected on a roadside bank along Hwy. 1 between Fort Simpson and Wrigley. Native to western North America but probably introduced in NWT.	1	0

Appendix 4. Exotic plants of NWT. Photos of exotic plant species in NWT. Photos taken August 2006 by M.J. Oldham. Note that photos reduced to 50% of original resolution. Original digital images on file with Suzanne Carriere, GNWT.

Road survey site #2, Hwy. 3. Dominant species include *Chenopodium album*, *Atriplex patula*, *Polygonum aviculare sensu lato*, and *Hordeum jubatum*. 8 August 2006; photo by M.J. Oldham.



White Sweet-clover (left; *Melilotus alba*), Yellow Sweet-clover (centre; *Melilotus officinalis*), and Yarrow (right; *Achillea millefolium*), all common roadside weeds in NWT. 13 August 2006, Hwy. 7, photo by M.J. Oldham.



Spreading Orache (*Atriplex patula*). 8 August 2006, Hwy. 3, photo by M.J. Oldham.



Awnless Brome (*Bromus inermis*). 13 August 2006, Fort Liard, photo by M.J. Oldham.



Lamb's Quarters (*Chenopodium album*). Hwy. 3, 8 August 2006, photo by M.J. Oldham.



Narrow-leaf Hawk's-beard (*Crepis tectorum*). 13 August 2006, Hwy. 7, photo by M.J. Oldham.



Squirrel-tail Barley (*Hordeum jubatum*), a native species which is a widespread weed along NWT highways. 13 August 2006, Fort Liard, photo by M.J. Oldham.



Pineapple-weed (*Matricaria discoidea*). 13 August 2006, Fort Liard, photo by M.J. Oldham.



Black Medick (*Medicago lupulina*). 13 August 2006, Hwy. 7, photo by M.J. Oldham.



Yellow Lucerne (*Medicago sativa* subsp. *falcata*). 8 August 2006, Hwy. 3, photo by M.J. Oldham.



Alfalfa (*Medicago sativa* subsp. *sativa*). Hwy. 7, 12 August 2006, photo by M.J. Oldham.



White Sweet-clover (*Melilotus alba*). Most commonly encountered exotic plant during 2006 road surveys. 8 August 2006, Hwy. 7, photo by M.J. Oldham.



Common Sanfoin (*Onobrychis viciifolia*). Hwy. 7, south of Fort Liard. First record for NWT. 12 August 2006; photo by M.J. Oldham.



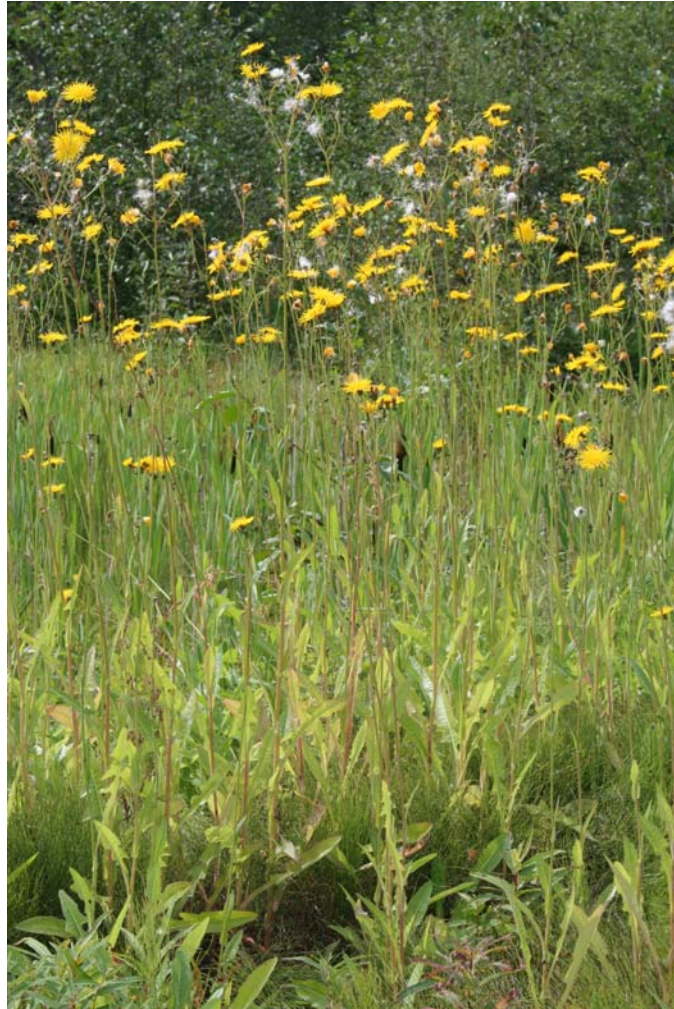
Knotweed (*Polygonum aviculare sensu lato*). A complex group of similar plants, some of which are native and others introduced. 8 August 2006, Hwy. 3, photo by M.J. Oldham.



Field Sow-thistle (*Sonchus arvensis* subsp. *arvensis*); note the glandular hairs which distinguish this subspecies from the glabrous subsp. *uliginosus*. 19 August 2006, Hwy. 1, photo M.J. Oldham.



**Field Sow-thistle (*Sonchus arvensis* subsp. *uliginosus*). 13 August 2006, Hwy. 7,
photo by M.J. Oldham.**



Common Dandelion (*Taraxacum officinale*). 13 August 2006, Hwy. 7, photo by M.J. Oldham.



Alsike Clover (*Trifolium hybridum*). 13 August 2006, Hwy. 7, photo by M.J. Oldham.



Red Clover (*Trifolium pratense*). 12 August 2006, Hwy. 7, photo by M.J. Oldham.



Scentless False Mayweed (*Tripleurospermum perforata*). A widespread roadside weed in NWT, though population sizes are usually small. Inuvik, 6 August 2006; photo by M.J. Oldham.

