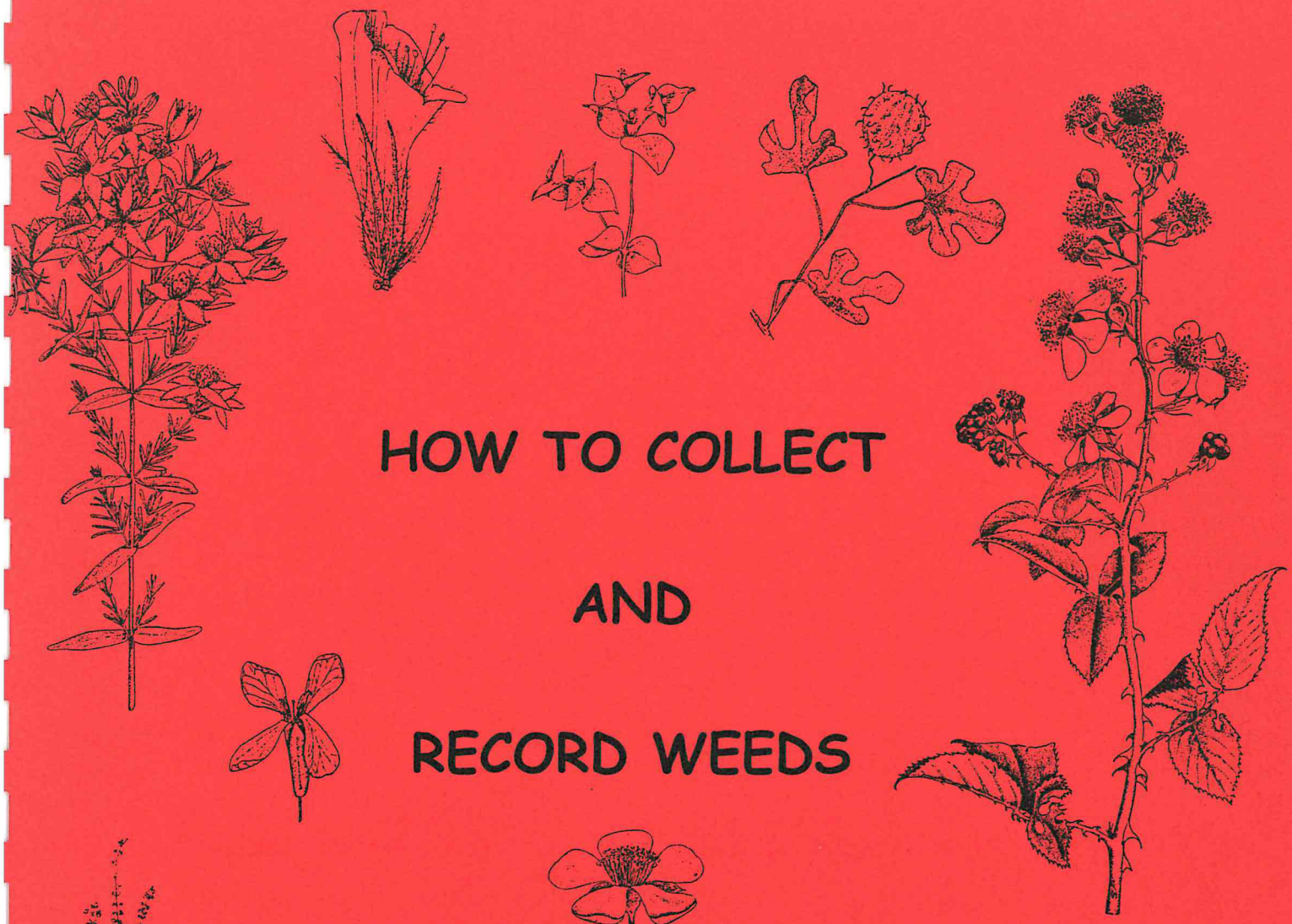

HOW TO COLLECT

AND

RECORD WEEDS

Neville Marchant
Jan Gathe
Margaret Lewington

Weed Information Network

Western Australian Herbarium, Department of Conservation and Land Management, The Natural Heritage Trust

September 01, 2001

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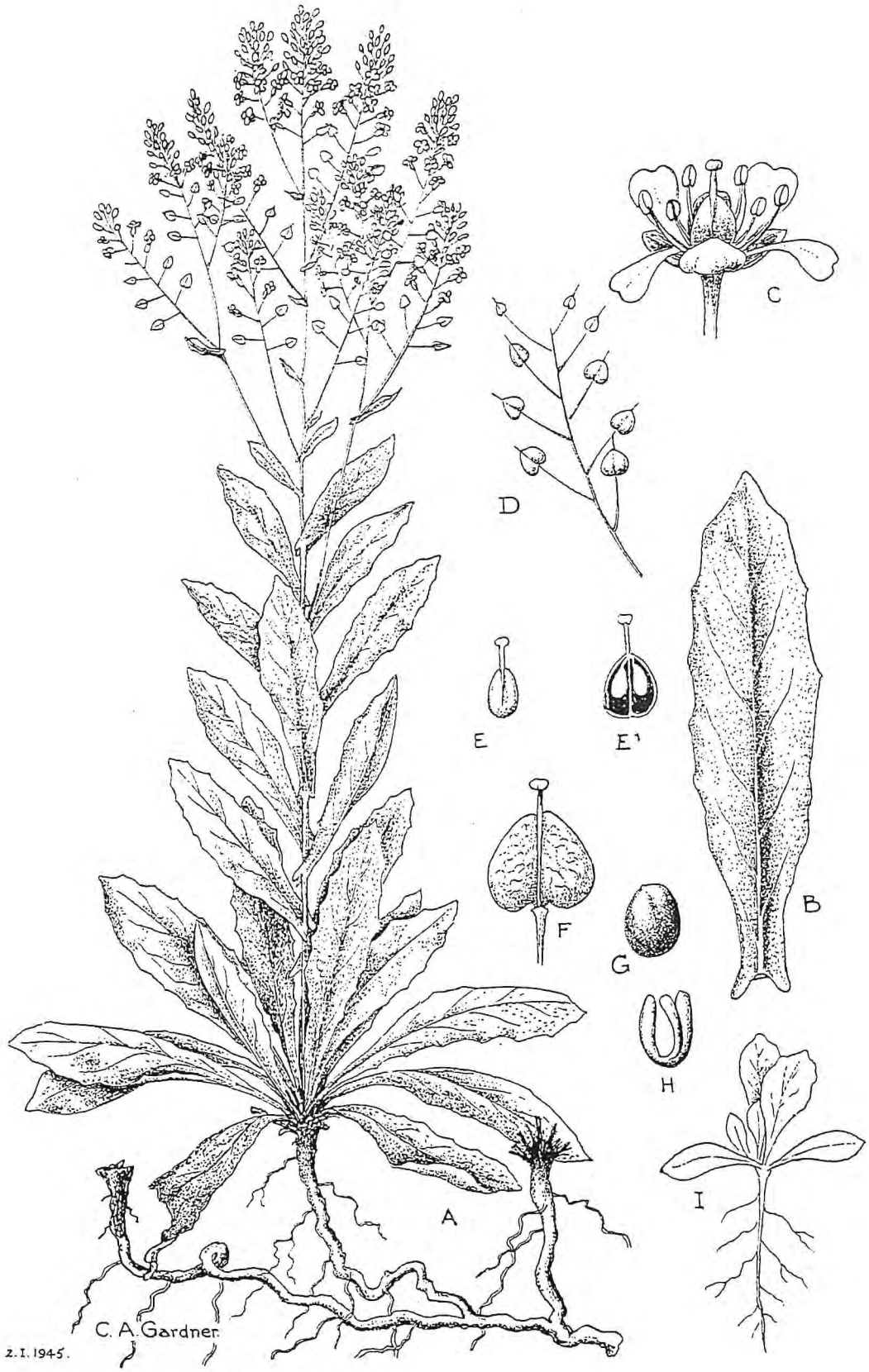


Hoary Cress ***Cardaria draba***

A.	Habit	**E, E¹.**	Ovary
B.	Upper stem leaf	**F.**	Fruit
C.	Flower (much enlarged)	**G.**	Seed
D.	Fruits	**H.**	Embryo
		I.	Seedling

WHAT IS A WEED?

A weed is *"a plant that is growing where it is not wanted."*

The 1200 or so species of weeds in WA have been introduced to parts of Western Australia from other countries; e.g. Capeweed (*Arctotheca calendula)* from southern Africa. Incidentally, this particular species is not necessarily a weed to a sheep farmer! Some weeds, still regarded as aliens, are from other states of Australia e.g. Silver Wattle *(Acacia dealbata)* is native to New South Wales.

A few weeds are native Western Australian species that have been introduced (on purpose or by accident) outside their normal distribution range. Some may be very invasive in certain habitats even in locations close to their area of original distribution, e.g. Geraldton Wax (*Chamelaucium uncinatum*). Some weed species occur naturally in WA but may have been introduced to other WA locations from eastern Australia or overseas e.g. the aquarium plant Ribbon Grass (*Vallisneria spiralis).*

It is estimated that more than half the number of weed species recorded in Australia occur in Western Australia. But there is as yet no definitive list of weed species that grow in this State that can be supported with scientific evidence, i.e. a permanently preserved plant specimen (voucher).

Some of the inter-related questions the WIN Project will help to answer are: -

- What particular weed species are naturalised in WA?
- Which ones are more invasive than others?
- Do we have the correct name for them?
- Where do they occur in WA and are they still there?
- What are the habitat preferences of each species?
- What is their potential to spread?
- What biological characteristics do we need to gather to develop management priorities?
- What weeds are important in particular geographic areas?
- How can we best detect new weed invasions?

THE WEED INFORMATION NETWORK ("WIN")

Introduction

The Weed Information Network ("WIN") Project is funded by the Department of Conservation and Land Management and a Natural Heritage Trust (NHT) grant.

The NHT grant is for two years, the second year being conditional on the outcomes achieved in the first year.

The Project will involve hundreds of volunteers, both in the field and in Perth, working closely with staff at the WA Herbarium.

The WIN Project will provide a framework for the surveillance and documentation of weed infestations. This will be achieved by compiling an electronic database of information on each weed species that will be readily accessible to any interested person or community group. The aim of this part of the Project is to enable reliable, rapid and easy identification of any weed species recorded in Western Australia.

In the short term the Project will:

- train community groups to gather weed data, based on "voucher specimens";
- train volunteers to assist staff to identify and process weed specimen vouchers;
- train community groups to access published, up-to-date, biological data on weeds;
- add to the already available electronic information on weed species;
- train volunteers to assist staff to database morphological characteristics of weeds to add to the plant descriptions database.

voucher specimen: a preserved, labelled specimen of biological material, which is housed in a museum or herbarium collection. The specimen represents a sample of an organism or taxon that has been studied or was collected for an ecological, phytochemical, ethnobotanical, taxonomic or other survey. Data relating to the specimen is recorded on the specimen label and may be captured and stored in an electronic database that facilitates the updating of "name changes" that are due to initial misidentification, taxonomic and nomenclatural changes.

In the longer term the Project will:

- Provide comprehensive descriptions of WA's weeds in **FloraBase**, the herbarium's delivery system for its electronically captured data;
- Produce electronic software that enables reliable, rapid and easy identification of WA's weeds;
- Create an electronic database of information on each weed species, including biology, control and other relevant data.

FloraBase

FloraBase is a state-wide electronic flora. It presents an integration of a number of WA Herbarium datasets into a single, easy to use website. The datasets relate to all known native and alien flora and include: -

- A complete and up-to-date **Census of WA plants**, including the up-to-date, authoritative list of our alien flora.
- The **specimen database** of the label details of 500 000 preserved herbarium specimens, including 19 000 alien plant specimens.
- A **plant descriptions database** where every known species has a brief description. It is possible to use this as a "first cut" to identify an unknown plant. The WIN Project will expand the descriptions of weed species to include leaf and flower features. Enhanced descriptions will eventually enable more reliable and user-friendly identification of weeds available on-line.
- Titles of **books and published papers database** on WA flora can be accessed through the botanical library database
- **Spatial data**: collecting locations of species, derived from specimen labels, gives a map of the distribution of all known WA species. You can already access a distribution map of every weed species recorded in WA.
- **Plant images** (photographs or line drawings) are available. We urgently need more photos of weeds and their habitats. Photographs are particularly valuable if they depict the site and particular sample selected for the herbarium specimen.

All of these datasets are presented through **FloraBase**.

NatureBase Science Matters

Department of Conservation and Land Management Online

Home: Science Matters: FloraBase Home: Advanced Access to FloraBase

FloraBase

Find Out More About FloraBase

Search FloraBase Names

Coming in FloraBase 2!

Search FloraBase Descriptions

Search FloraBase Specimens

Search FloraBase Specimens
(Display fields for Declared and Priority taxa)

The registration process was recently revised.
Find out more..

[Home] [About] [Help Folder] [Families] [Names] [Descriptions] [Specimens]
[Specimens with Declared and Priority Fields]

Cite this website as:
Western Australian Herbarium (1998). FloraBase - Information on the Western Australian flora.
Department of Conservation and Land Management. http://www.calm.wa.gov.au/science/florabase.html

Home: Science Matters: FloraBase Home: Advanced Access to FloraBase

Figure 1. **Screen Grab 1**
FloraBase "Advanced Access buttons"
clicked on "Descriptions" to produce Screen Grab 2

NatureBase Science Matters

Department of Conservation and Land Management Online

Home: Science Matters: FloraBase (Advanced): FloraBase Descriptions

FloraBase DESCRIPTIONS

The Description database contains over 12,500 records of basic descriptive information on the state's vascular flora. To interrogate the database fill in any fields below, and click on the Search Descriptions button.

Family | *Genus* | *Species* | Common name

Flower colour | Habit | Habitat | Soil type

Flowers in | Manuscript | Alien | Status

Northern | Eremaean

Southwest

◉ Species Summary ○ Annotated Checklist

Search Descriptions | Reset Form

For more information please read the Help topics before contacting the FloraBase Administrator

Western Australian Herbarium | Gordon Reid Foundation | Kings Park & Botanic Garden | Wildflower Society

Home: Science Matters: FloraBase (Advanced): FloraBase Descriptions

Figure 2. **Screen Grab 2**
"Descriptions" screen
typed in common name "castor oil" and clicked on
"Search Descriptions" to produce Screen Grab 3

NatureBase Science Matters

Department of Conservation and Land Management Online

Home: Science Matters: FloraBase (Advanced): Search Descriptions: Descriptive Records

FloraBase DESCRIPTIONS

This document contains information sourced from collections, records and databases maintained at the WA Herbarium, Department of Conservation and Land Management.

Your search resulted in 1 match Viewing matches 1-1

Page: 1

I: Image, M: Map, D: Description, S: Specimens

Euphorbiaceae	I	M	D	S
Ricinus				
* *Ricinus communis* L. [illegible] Taxon 4705 is current. Common name: Castor Oil Plant	◉	◉	◉	◉

Page: 1

Home: Science Matters: FloraBase (Advanced): Search Descriptions: Descriptive Records

Figure 3. **Screen Grab 3**

gives:- family name of "castor oil plant" (Euphorbiaceae)
details of this family are available
current Latin name
authority of name; in this case Linnaeus
where and when name was published; in this case the book "Species Plantarum" in 1753
common name
access to:-
"I": image; in this case a colour photogragh
"M": map showing distribution of all specimens of this species in the Herbarium
"D": a brief description
"S": a complete list of the 42 herbarium specimens and their label details

FloraBase DESCRIPTIONS

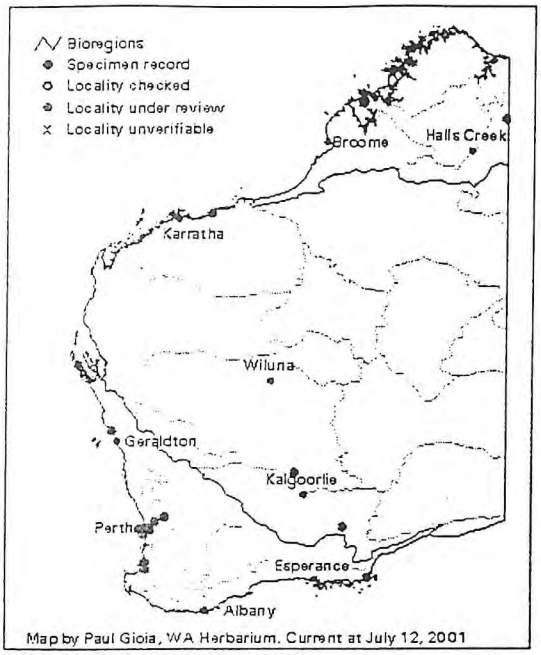
This document contains information sourced from collections, records and databases maintained at the WA Herbarium, Department of Conservation and Land Management.

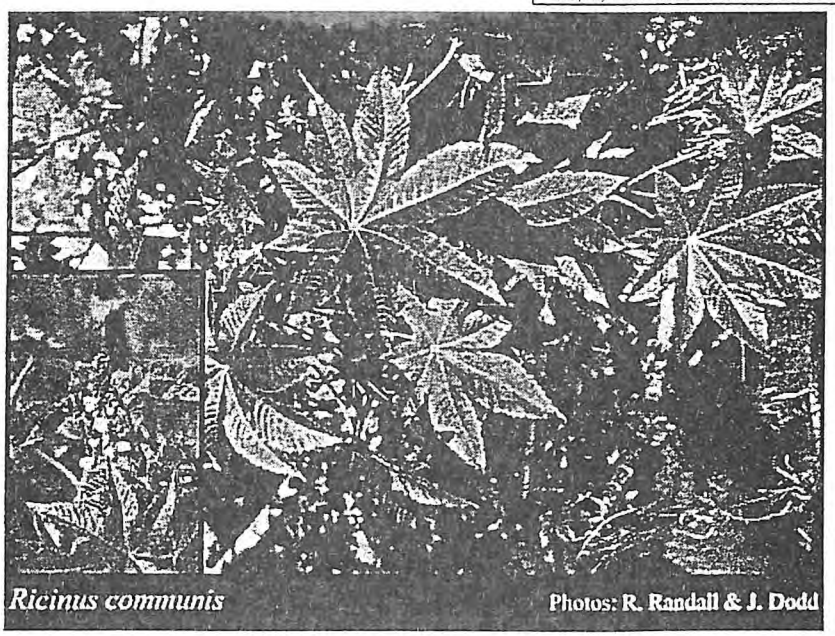
Euphorbiaceae : Ricinus

* *Ricinus communis* L.
Sp. Pl. 2:1007(1753)
Taxon 4705 is current.
Common name: Castor Oil Plant

Conservation Status: alien

Description:
Shrub, to 5 m high. Fl. cream, yellow, red, Jul-Sep. Waste grounds. Distribution: ER: COO, MUR, PIL; SW: GS, JF, SWA.





Screen Grab 4

Clicking on "Smartie Button D" gives details of the name, conservation status, a brief description, geographic distribution in Bioregions, a map and, in at least some cases, a colour image.

The Herbarium is developing a new **biological attributes** database to capture details such as salinity tolerances, fire response and in the case of weeds, biological information with links to other sources of information on control and management.

What more do we need to know about WA's weeds?

The only way we can be sure that a weed has been recorded or is still growing at a particular location is to have a correctly named preserved specimen in the State Collection, the WA Herbarium. Specimens voucher a weed occurrence; they provide positive proof that a weed with a particular name has been recorded at the place named on the label. A preserved herbarium specimen also enables a botanist to verify the name by using taxonomic literature. In some cases we need to send a duplicate specimen to another Herbarium for positive identification. This is why we want three specimens of each weed collection; one for the Regional Herbarium, one for Perth and one to send to a specialist herbarium or botanist in another Herbarium.

Correct names are vital if we are to effectively communicate about weeds. Common names are usually reliable but not always so. As in the case of native plants there are often different common names for the same plant in different places and there are often different plants given the same common name. So, the Herbarium documents both common and scientific (Latin) names.

There are just under 1200 alien species recorded in the Herbarium. Many have very poor label data so it is likely that a number of these are garden plants and not growing and reproducing in the bush as naturalised weeds. Some of these may be "sleeper weeds", ones that may have the potential to become a pest under suitable conditions.

A preliminary WIN inventory indicates that there are about 1000 weed species in WA that may be naturalised. 1000 too many! We do not yet have an authoritative list of weeds for WA but we are working on it.

We desperately need more specimen-based data, which is a prime aim of the WIN Project. Properly collected and documented vouchers made by participants in the Project will address the current gaps in knowledge so that we have a better understanding of our weed problem. The collections and their accompanying label data will provide basic information that can be used to better manage our weeds. When we know more about our weed flora we will be in a better position to recognise new incursions. The WIN Project aims to establish a network of aware volunteers who can detect new local or even State weeds before they take hold.

FloraBase SPECIMENS

This document contains information sourced from the specimen collection of the Western Australian Herbarium (Department of Conservation and Land Management).

Your search resulted in **47** matches Viewing matches **1-20**

Page: **1** 2 3 Next

Users with appropriate access should redo this search at Level 5 if the matches below contain rare or threatened taxa

---

PERTH 05821991
Asparagus asparagoides (L.)Druce
Asparagaceae

Plant Description: Perennial creeper.
Vegetation: Growing over pepper tree in old garden of ruins.
Site Description: Grey sand.
Locality: Ruins W of Bills Paddock [S of Balladonia], **State:** WA
Lat: 33° 3' 9.540" S **Long:** 123° 23' 0.420" E (AGD84)
Collector: K.L. Brown, N. Gibson & B. Moyle KLB 544
Date: 17 11 2000

DET

PERTH 05616689
Asparagus asparagoides (L.)Druce
Asparagaceae

Plant Description: Creeper, perennial, 2 m high x 80 cm wide.
Site Description: Plain. Brown clay over limestone.
Frequency: abundant.
Locality: 1 km N of Toolinna Cove, **State:** WA
Lat: 32° 43' 27.000" S **Long:** 125° 01' 51.000" E (AGD84)
Collector: R. Davis 9314
Date: 10 06 2000

DET

PERTH 05617022
Asparagus asparagoides (L.)Druce
Asparagaceae

Plant Description: Creeper, 1 m high x 1 m wide.
Vegetation: Open Woodland.
Site Description: Plain. Brown clay over granite.
Frequency: occasional.
Locality: Booanya Rock, 45.2 km S of Balladonia, **State:** WA
Lat: 32° 45' 42.000" S **Long:** 123° 36' 24.000" E (AGD84)
Collector: R. Davis 9347
Date: 11 06 2000

WIN NETWORK PERSONNEL

Project Managers	Dr Neville Marchant
	Dr Terry Macfarlane
Specimen data entry	Kaye Veryard
Systems and data integration	Mike Choo
Botanists	
Regional training, identification and volunteers	Jan Gathe
Information capture	Amanda Spooner
	Margaret Lewington
	Rosemarie Rees
	Maggie Hankinson
Literature and international collaboration	Beng Siew Mahon
Weed taxonomist	Mike Hislop

Also working in this project are other WA Herbarium personnel including staff and over 60 volunteers based in Perth. This includes a team of expert plant identification volunteer botanists, the image capture team and the specimen mounting team. Other volunteers support curation and other staff are expert at databasing. Some key staff specialise in Information Technology and will develop the software needed to achieve WIN objectives.

Telephone contact number for any of the above:- **(08) 9334 0500**

For email contacts:-Jan and Margaret

janetteg@calm.wa.gov.au
margl@calm.wa.gov.au

Beng Siew Mahon:- bengm@calm.wa.gov.au

Figure 5. A screen grab of the first page of a printout of details of 47 Bridal Creeper specimens in the WA Herbarium.

THE REGIONAL HERBARIA PROJECT AND THE WIN PROJECT

The Regional Herbaria Project started as a pilot developed collaboratively by Greening WA and the WA Herbarium. Greening WA obtained the first grant enabling the early expansion of the Project. Later, the WA Herbarium, in partnership with a number of stakeholders and local communities received substantial funding to develop the network of Regional Herbaria. The Department of Conservation and Land Management and Natural Heritage Trust (NHT) funded Regional Herbaria Project has over 70 functioning Regional Herbaria throughout WA. These herbaria are linked together by the database systems developed in the WA Herbarium and are up-to-date local resources for plant and ecological studies, surveys, and ecotourism ventures. Regional Herbaria also support Landcare and Bushcare conservation projects.

The WIN Project will be closely integrated with the Regional Herbaria Project. It is envisaged that most of the 70 or so Regional Herbaria in the State will act as focal points for collection and documentation of the State's weeds, just as they do for native plants. Many regional volunteers in the local Herbaria are already concerned about weeds and will contribute to both the WIN and the Regional Herbaria projects. After all, many of our weeds are now unfortunately part of the flora.

The Regional Herbarium system is based on the computerisation of all of the existing records in the State Collection, the WA Herbarium in Perth. Each collection in a Regional Herbarium is duplicated in Perth; they share the same barcode number, which means that any changes in identification of the specimen in Perth can flow to the Regional Herbarium. This system ensures that local herbaria are up to date, specimens have the latest name and with this they can access enormous amounts of data through electronic connections to the herbarium through the Internet delivery system *FloraBase*.

The training sessions to be presented through the Department of Conservation and Land Management and NHT-funded WIN Project will demonstrate how to maximise use of Regional Herbaria. The most important immediate benefit provided by the Regional Herbaria is that it allows anyone to identify a weed by comparing specimens. There is no need to travel to Perth!

Don't forget we are just beginning to really document what weeds grow where. Any information will be permanently recorded through voucher specimens in the Regional Herbaria and the State Collection in Perth, the WA Herbarium.

Figure 6. A typical herbarium specimen of a weed. **The barcode is unique to that specimen and any duplicates in a regional herbarium.**

WESTERN AUSTRALIAN HERBARIUM, PERTH
Flora of Western Australia

Avena barbata Link in Schrad.

Poaceae

Red-brown clay-loam on roadside. With various weedy grasses and some eucalypts.
Abundance: common.

Loc.: 1 km N of Bidgerabbie Road on road to Dandaragan WA

Lat. 30°47'0"S Long. 115°41'0"E

Coll. B.J. Lepschi & T.R. Lally BJL 2891 Date: 18/08/1996

Dups. to
PERTH 04687876

HOW TO COLLECT AND DOCUMENT WEEDS

For general instructions on how to collect and press plants refer to the Department of Conservation and Land Management publication *"How to Create a Local Herbarium"* by Sue Patrick.

The present guide deals with the special requirements of collecting and documenting weed species, which need to be treated differently in the following ways:

a) No license is needed to collect them. However if you are collecting on road verges, nature reserves, or on private property other than your own, it would be courteous to advise the relevant owner or authority of your intentions.

b) Small weeds can be dug up to show the whole plant - in a number of species the underground organs are essential for correct identification.

c) Hygiene must always be kept in mind. You should take every precaution to avoid the spread of weed fruits, seeds, suckers, rhizomes, bulbs or any other reproductive parts. **You do not want to be responsible for spreading a weed to another paddock, another farm or another district.**

- Dig up specimens very carefully; keep soil disturbance to a minimum so that you don't create a niche for another weed.
- Remove as much soil from the roots as possible at the growth site of the plant
- If there are bulbs or runners in this soil select some to accompany your specimen, put the rest in a bag for later disposal.
- Immediately put your specimen into a sealable bag so that seeds are not distributed to other areas.
- Remove burrs, seeds etc from your boots and clothing
- Ensure your secateurs or spade doesn't spread soil or any propagules.
- Dispose of soil from growth site and any plant parts not wanted or dry soil from the pressed plants by putting into a sealed bag, placing in a bin or by burning.
- After you have pressed and dried your sample make sure that the seeds don't fall out of the press or storage box.

Finally, because the spread of weeds costs the State millions of dollars and the Nation billions of dollars *per annum*, careful observations need to be made at the site of collection to determine the success of that weed species at that locality. This and other information may be very useful in determining the future management of that weed species.

Selecting Material for Collection

As for native species you should collect a number of whole plants if they are small e.g. a 10 cm tall annual, or, you should collect part of plants that seem to you to be most representative of the species in that locality.

A herbarium specimen is a sample that represents an entire population so it must be one that is truly representative. If you select a colour variant or the tallest or shortest or whatever, this should be noted.

Specimens need to be up to 30cm long to fit on the Western Australian Herbarium mounting sheets, which measure 42x26cm. If individual plants are small then select a number of them to make a single herbarium specimen. A good rule to make one specimen is to gather as many small plants as would fit on a single newspaper page so that there is no overlapping of leaves or flowers (they will dry more quickly and be flatter).

Select enough material of the one species at the one site to make a minimum of **three voucher specimens** : two should be submitted to the Herbarium in Perth.

- **one** for WA Herbarium State Collection, the PERTH Herbarium
- **one** for exchange or loan to the country of origin of that particular species
- **one** to be retained for the appropriate Regional Herbarium. (This specimen may later be mounted on an A4 sheet so may need to be smaller in size)

All three should have **an identical tag or label,** that is, **each should have exactly the same details, including your collection number);** they will all receive the same barcode number and thus they all represent duplicates of a single collection and will have identical printed labels.

Most of the flowers of a specimen may be dissected by the botanist to identify the species, so, each specimen should have at least 6-10 mature flowers (if available). If the weed you are collecting has large flowers then pick some extra ones and press them to accompany your specimen. Make sure you tag each one. In the case of small plants, collect whole flowering and fruiting plants.

Cut or Dig up the Weed Plants Selected as Specimens

Ideally each specimen must be fertile, i.e. having flowers, but any other features such as buds, fruit, young or mature leaves (if they differ significantly in size or shape) and underground organs (tubers, corms etc.) improve the quality of the voucher. If the plants are not flowering and if it seems to be an unfamiliar weed you want named then collect it and process it in the normal way. It could be a new record of a potentially serious pest in that area!

For quite a few weed species identification is only possible if particular plant parts are available.

Some examples are: -

i. *Caryophyllaceae* (the Carnation family, Chickweeds, Corn Spurry, and Catchfly) require mature fruits and seeds for identification

ii. *Euphorbiaceae* (the Spurge family) require both male (staminate) and female (pistillate) flowers (take care of the milky sap it is likely to be highly corrosive to skin and eyes).

iii. *Rosaceae* (Rose family) require fruits (hips) as well ordinary leaves and the floral leaves (those just below a flower).

iv. *Alliaceae* (Onion family) require underground organs (bulb) and fruit.

The root system is of particular importance; it gives an indication of the biology of the plant. With weeds it is of course permissible to dig them up, even to wipe out a population! (If you did this you should make a note that you have removed all of the plants). If the roots are fibrous it may be possible to pull out a plant with some roots intact and press it as a whole. If the root structure is a special organ, such as in the case of an underground stem (a rhizome), select a part of the root system that shows its structure such as leaf scars. In the case of a tuber, bulb, corm etc., select one or more of the storage organs as part of the specimen. If the bulb or corm is too large for your plant press then you may need to keep it separate and make sure that it has the same label as the pressed specimen to which it belongs.

Labelling

Half of the value of a herbarium specimen is provided by the label details. As a rule for any plant collection you should capture the information that will not be evident from the pressed specimen when it is lodged in the herbarium. This includes things like size of plant, a description of the habit (its growth form), habitat (the ecosystem and soil environment) leaf and flower colours.

Every specimen, including duplicates, should be tagged using jewellers' tags with your collection number for the specimen on one side of the tag. For extra safety it is a good idea to write the date on the other side of the tag. This should be written as DD/MM/YYYY. The date written on the tag should be the same as that entered onto the Field Data Sheet for that particular collection. You may wish to have your initials or name, e.g. "A. L. Kelly ", on the "date" side of each tag. This certainly helps if you share a press with other collectors.

- Each specimen collected should have your own unique collection number. Start at "Number 1" for your very first specimen and continue on sequentially. Every collector should have his or her own series unless you have joint collectors who share every collecting expedition.
- Use only Arabic numbers on your tag. Prefixes or other abbreviations may be confusing to others, especially with the passage of time.
- Very small plants of the same species collected at the same locality at the same time are to be regarded as one collection and so have the same number. (You may prefer to press these using an old telephone book; if you do, then only use pages ending in "0" so you can find them again! You may like to change the papers so that the specimens dry quickly, to do this you may like to use pages ending in "5").
- Identical specimens collected at the same locality at the same time should all have the same collecting numbers.
- A specimen recollected from a particular plant at a later date should have a new number.
- Specimens of the same species collected from different localities should have different numbers. If collecting sites are close together then you may wish to collect a new specimen only if the habitat or some other factor is different e.g the soil may be entirely different.

The number used on the jewellers' tag should be entered onto the collecting notes for that particular collection and on any photographs you might take of the weed or its habitat.

If you are collecting native plants as well as weeds then both natives and weeds should be included in the same numbering series.

EX WESTERN AUSTRALIAN HERBARIUM, PERTH
Flora of Western Australia

Holcus lanatus L.
Poaceae

Annual grass 60 cm high x 40 cm wide.

Coastal plain (winter wet). Seasonally wet, organic. Dark grey sand. Low Woodland B over Heath A over Low Scrub B over Tall Sedges (Muir 77). Melaleuca preissiana, Acacia pulchella, Hypocalymma angustifolium, Lepidosperma longitudinale.

Frequency: locally common.

Loc.: Remnant vegetation behind Manning Library, Goss Ave, Manning, WA

Lat. 32°0'42"S Long. 115°52'24"E

Coll. M. Hislop 972 Date: 19/10/1997

Dups. to

PERTH 05337461

EX WESTERN AUSTRALIAN HERBARIUM, PERTH
Flora of Western Australia

Avena barbata Link
Poaceae

Annual grass to 60 cm high x 30 cm wide.

Plain. Dry bare, brown shallow loam over granite. Open Low York Gum Woodland A (Muir, 77) over Jam. Acacia acuminata, Dodonaea inaequifolia, Grevillea levis.

Frequency: common throughout reserve. A major weed in deeper loam soils.

Loc.: Dalwallinu Town Reserve, NE corner, WA

Lat. 30°16'41"S Long. 116°39'15"E

Coll. M. Hislop 1376 Date: 24/07/1999

Voucher: Dalwallinu Town Reserve Survey

Dups. to WBN.

PERTH 05396913

Figure 7. Samples of Herbarium specimen labels prepared for a Regional Herbarium or for overseas exchange. The barcode is added directly to these labels. The classification of vegetation mentions Muir, 77. "How to Collect Weeds" adopts a simple system described overleaf.

RECORDING THE DATA

Electronic capture of data

If you use a computer you can use a software program developed by the WA Herbarium's Paul Gioia to capture field data. The program called MAX, is a system that enables specimen collection data to be entered into your computer. It has a built-in list of the WA flora that is updated regularly with the latest species names. Some Regional Herbaria already use this system; they send a diskette to accompany their collections and we can download this to the Herbarium specimen capture database WAHERB. This saves us time and cuts down on errors.

If you wish to know about training sessions on how to use MAX telephone Jan Gathe at the Herbarium in Perth on 9334 0587. Otherwise you can find out more about MAX on the FloraBase website: -

http://www.calm.wa.gov.au/science/max

Using the data sheet

A new Field Data Sheet has been designed for recording observations made in the field at the time of collecting. It replaces that shown on pages 22, 23 of the booklet "How to Create a Local Herbarium".

The field data sheet: -

- Provides a logical sequence of observations that can be captured electronically.
- Can be used for both native and alien species.
- Offers prompts and ensures that you don't miss any important details.
- Makes it quicker and easier to record data under often trying conditions.
- Will provide valuable biological information for inclusion in the database.
- Will ensure greater consistency of records made by different collectors.

As mentioned previously, the label information that accompanies a specimen provides half of the scientific value of the specimen. The following notes explain some ecological and botanical terms you can use.

It is quite likely that your weed collection will be the first record in a particular location; it may even be a new weed for the State. It is vitally important that you accurately document exactly where you have discovered a new population of an invasive weed; we also need to know how it is reproducing, how it survives drought or many other things that a good label will enable us to record.

The completion of as much as possible of a Field Data Sheet for each collection is most important. A specimen is still useful even if we only have a precise locality but is infinitely more useful if we know more about the habitat and the way it grows.

The information noted on each Field Data Sheet will be databased and linked to its particular specimen by its barcode. A label for each specimen will be printed and is pasted in the bottom RH corner of the State Collection mounting sheet. An identical label, with the barcode printed on it, will be made available for each Regional Herbarium duplicate specimen.

Label information stored in the specimen database is linked to the names database (the Census of WA plants), a species description database and an image database (digitised images such as colour photographs and or drawings that assist identification). All of these databases are accessed through FloraBase.

Please use a "B" or similar grade pencil to complete your data sheet and print your notes as clearly as possible.

Use the "continental" style "7" rather than the usual "7" that can easily be misread.

Weed Edition -July 2001

HERBARIUM PERTH- FIELD DATA SHEET FOR DOCUMENTING PLANT COLLECTIONS

Scientific name .....

Field ident./Common name.....

Form: tree / mallee / shrub / herb / grass / sedge /other.....

.....

Height:.....m **Width**:.....m

Habit: annual / perennial / prostrate / climbing / erect / open / compact / caespitose/ rhizomatous / bulbous / tuberous / aquatic: floating or emergent

.....

Dominant flower colour: green / white / cream / yellow / orange / red / pink / purple / violet / blue / brown / black / grey /..... .....

.....

Number of plants: one only / 2-5 / 6-20 / 21-50 / over 50 .....

Population structure: immature/adult: .....% in bud/..... % flowering/.....% fruiting

Reproductive method: suckers / runners / tip roots / bulbs etc. / seeds /.....

Infestation area of this weed: <1 m^2 / 1-10 m^2 / 11-100 m^2 / 101-1000 m^2 / >1 ha

Assoc. veg: tall trees / medium trees / low trees / tall shrubland / low shrubland / grassland/ bare areas /other

.....

.....

.....

Characteristic species:.....

.....

Other alien species: none / few (1-3) / many (4 or more)

Recently burnt? Y / N when?.....

Topography: plain / valley / breakaway / hillside / ridge / dune / flood plain / watercourse / river bank / wetland / salt lake /.....

Collection site: reserve / state forest / plantation / crop / pasture / rangeland / road verge / residential / industrial / wasteland / irrigated / .....

Total weed cover: up to 25% of site / 25-50% / over 50% of site

Soil colour: white / yellow / grey / brown / red / black **Soil disturbed**? Y / N recent / old

Soil: wet / dry / sand / loam / clay / rocky / ironstone gravel / other.....

.....

State: **WA** **Lat.** .....°.....'....."S **Long**.....°.....'....."E **GPS / Man.**

Nearest named place:.....**Prior collection at this site** Y/N Ref. No.....

Precise locality:.....

.....

.....

Collector:.....**No**..... **Date**: ...../...../200.....

Voucher for:...../Reg. Herbarium **Photo** Y/N **Exp. Number** .....

Extra notes: (pto if necessary)

Guide to Completing Plant Collecting Notes (Field Data Sheet)

To complete the Field Data Sheet there are some short cuts where the collector can draw a circle around a particular term that applies to the specific sample collection being recorded. In some cases two or more of the choices listed may apply to the plant you are collecting. Dotted lines or blank spaces indicate where you need to write your observations for a particular feature. Please print or write legibly; our database operator, Kaye, is very highly skilled but she needs to easily read your notes to enter the data into the specimen database.

The following guidelines are classified into sections to assist you. Each section is dealt with under a particular "heading" that is not on the Field Data Sheet because we needed to make the Sheet compact. The "headings" are presented here in ***bold Italics underlined*** and are centered. For example the first heading, "name".

Name

Most people leave this section blank until the correct name is known. There are two headings in this section.

Scientific Name - This is the name determined by the botanists at the WA Herbarium and is the current valid Latin name. If you know the name then fill it in or otherwise leave this space blank. You can enter the "correct" name once you receive a list of your collections from the WIN identification team.

Field ident./Common Name Let us know what you think it is by entering a "field ident(ification); you may help us to identify it if you do. You may wish to refer to your collection by a "made-up name" that helps you to remember it. e.g. yellow-flowered prickle bush. If you know the plant by its local or general common name then write it here. If you know a local name, you may wish to add, "*locally known as ....*"

Plant Description

This section captures details of the plant selected as a specimen that can't be seen from the pressed and dried specimen itself. Alternative terms are given; you can circle the ones that apply to the specimen.

Form: Terms to describe the growth form or appearance of the plant; circle one only.

tree a woody plant over 5m tall usually with an unbranched lower axis

mallee a growth habit in which several to many woody stems arise separately from a lignotuber; usually applied to certain low-growing species of eucalypt

shrub a woody plant usually less than 5m high and many-branched without a distinct main stem except at ground level

herb a plant that is non-woody or woody at the base only, the above ground stems usually being short lived

grass/ sedge applied to the grass family Poaceae and the sedge family Cyperaceae

Height: and **Width:** Give an approximate measurement in metres e.g. 0.5m, 2.0m

Habit: This refers to terms describing the life cycle and the way the plant you are describing grows.

annual completing the full cycle of germination to fruiting within 12 months then dying

perennial with a life span extending over two or more growing seasons

prostrate lying flat on the ground

climbing a woody or non-woody creeper depending on other plants for support

erect upright, perpendicular

open not densely branched so that you can easily see into the centre of the plant

compact densely branched, cannot see into the centre of the plant

caespitose growing densely in tufts, having short closely packed stems

rhizomatous having a creeping stem, usually below ground, consisting of a series of nodes and internodes, with many small roots. e.g. a ginger "stem"

bulbous having a modified underground stem that is short and crowned by a mass of usually fleshy, overlapping scales e.g. an onion "bulb"

tuberous having a modified underground stem enlarged as a storage organ and with minute scale-like leaves and buds or "eyes" e.g. the potato and many orchids

aquatic plant growing in water, may be rooted on the bottom with leaves under water (submerged) with leaves floating or held above the water (***emergent***) or not rooted in the soil (free **floating**)

Dominant flower colour: In some cases you may choose to circle two colours but the majority should be recorded as one dominant or main colour.

Population Characteristics

This section of the field data sheet records the characteristics of the whole population of the species you are collecting at that particular site. There may be a few to thousands of individual plants. You will only select three specimens to represent the whole population.

Number of Plants: -You may need to walk around to see the limits of the population. The number categories are suggestions only. You may wish to count every plant. If the population is small you may decide to kill the few weeds left after you have collected vouchers: if you do this make a note in **Extra notes** at the bottom of the page or on the other side of the page. If the population is large you may wish to say 1000's. If you can't distinguish individual plants then only rely on the area covered (see below)

Population Structure: ***Immature*** means young and not yet flowering or not yet producing buds. You may need to circle both immature and adult to describe the population. If adult plants are present make an estimate of the percentage in the different development stages as shown in the Field Data Sheet.

Reproductive method: See if you can determine how the plant spreads in this **habitat**. If there are young plants try to find evidence to confirm that they have come from seed that germinated at that site, or, are they suckers from a root or underground stem? If you are unsure then leave this part blank.

suckers- in this case, shoots may come from the base of the stem of a plant or may arise ***from*** the roots perhaps some distance from the plant, e.g. the cape lilac or white cedar (*Melia azederach*)

runners where a stem arising from the base of the plant grows horizontally on the soil surface, forming roots ***and*** later whole plants at the nodes, e.g. couch grass

tip roots where stems arch over and form roots on coming in contact with the soil; another plant develops at this point, e.g. blackberry

bulbs etc. already noted above under "habit" but this heading here refers to reproduction method rather than the appearance of the plant (form), e.g sprouting from a bulb, like Guildford grass

seeds young "seedlings" with a range in plant size from immature to mature, may indicate that a species has arisen from germination of viable seed- if you are unsure then just add a"?" or leave it blank

Infestation area of this weed: This refers to the particular weed species that you are collecting. Its area of coverage can be estimated at the same time you are counting the number of plants. If you can't count a mass of tangled weeds then the area estimate is the only way you can record its extent. The symbol "<" = less than, and ">" = greater than.

Site and habitat description

This describes the immediate area surrounding the plants that are sampled.

Assoc(iated). veg(etation).: describes the habitat in relation to other plants in the close vicinity, e.g. within a radius of 10-20 m.

Use the following descriptors to describe the tallest or most dominant "layer" or "stratum". "Tree vegetation" is where the trees are reasonably close together. If trees are very few and widely spaced, say over 10-20 m apart then the site can be classified as a shrubland etc. If there are trees then there is almost certainly a shrub layer; this may be recorded as, for example, - *medium banksia trees over a low shrubland.* You can list any other common trees and one or two on the commonest shrubs under the next heading "characteristic species".

tall trees growing with trees that are greater than 30m tall, shrubs usually present

medium trees growing with trees that are 10 - 30m tall, shrubs usually present

low trees growing with trees that are 5 to 10m tall, shrubs usually present

tall shrubland growing with shrubs that are greater than 2m tall, no trees present

low shrubland growing with shrubs that are less than 2m tall, no trees present

grassland — no trees or tall shrubs or only a very few widely scattered ones. A "pure" grassland can be comprised of many separate plants or clumps with "bare" ground in between (often called a tussock or hummock grassland)

bare areas — virtually no other plants except a "mossy" or lichen cover, includes cleared areas, lake beds, claypans, tidal mud flats, rock, dune sand

Characteristic species: Make a list of the more common species growing at the collection site, common names will do. If you are doing a vegetation survey list the collection numbers of the "dominant" species you collect. If the vegetation type was "trees" then list the common trees and one or two of the common shrubs. List native plants as well as the most common weed species. If you need more space you could add notes overleaf but you will need to indicate that you have done this.

Other alien species: List any other weeds present at the site. If you are collecting them then list only your collection numbers.

Recently burnt? Record (Y)es or (N)o if the area has been burnt in recent (2-5) years. This may require some experience but is often evident. If you are unsure then leave blank

Topography: The terms given here are self-explanatory. Usually only one type should be circled. **Wetland** refers to a fresh or brackish water system. You may need to record how far the specimen you collect is from the feature recorded e.g. watercourse or salt lake.

Collection site: Also self-explanatory. You may not know that the site is a reserve; this may be determined later. You may need to circle two e.g. "pasture" and "irrigated" i.e. artificially watered

Total weed cover: This refers to the abundance (commonness) of all of the weed species that grow in the habitat from which your weed specimen has been taken. "Cover" refers to the proportion of ground space of the site occupied by the plants, as seen from a "bird's eye view". Only two alternatives are given; circle only one choice.

Soil colour: Circle only one colour, that of the top 3cm of soil

Soil disturbed? (Y)es or (N)o. Includes firebreaks, vehicle tracks, road works, campsites, walk trails, rubbish dumps- is the disturbance recent or more than 2-5 years old?

Soil: The training session will help you here. If you are uncertain then put a "?" against the most likely descriptor.

wet/dry	regardless of the season, circle either wet or dry at the time the collection is made.
sand	with at least 3cm of sandy (composed of course grains usually quartz) top soil
loam	with at least 3cm of loamy (composed of a mixture of gritty sand, fine-grained sand (silt) and clay) top soil
clay	with at least 3 cm of clayey top soil
rocky	with more than 20% of large (over 5cms across) fragments throughout (not just on the surface)
ironstone gravel	a layer within the top 20cm that contains more that 20% lateritic gravel
other	make a note of any other characteristics of the soil e.g. shell fragments or deep litter

Details of the locality

State: WA (Lat)itude and (Long)itude. This is best determined using a Global Positioning System ("GPS") device that has been properly calibrated. You may record it as degrees (°), minutes ('), seconds (") [preferred] or else as degrees and minutes to two decimal points. If you do not have a GPS the WIN Project will provide you with maps and overlays that enable latitude and longitude calculation in degrees and minutes.

GPS/Man.: Circle **GPS** if you are using a Geo-positioning System unit, or, **Man.** if you are determining "lats" and "longs" using a manual system.

Nearest named place: Make sure that you list a town or well-known locality that is on a readily available map. It needs to be a permanent feature and easily found on a roadmap.

Prior Collection at this site: The new collection must always have a different number even if your revisit is only a few days on. A later visit to a particular site may enable you to collect fruits or flowers that were not evident at the first visit. Also the population may have increased or decreased. If the answer is (Y)es, then the barcode number or your collection number of the prior collection would be a useful reference.

Precise locality: This is a crucial piece of information so please learn from the following notes how to ensure that your specimen is well documented.

A detailed description of the collection locality is needed as well as the latitude and longitude reading. Each enables a check on the other for correctness. The description should enable any person to revisit the collection site. Towns or other permanent features (man made or a natural topographic ones), distances and directions should be included in the locality statement.
You may wish to draw a "mud map" on the other side of the field data sheet but make sure you write the collection number on top so that it refers to the correct data sheet. If you think that the collection is of general interest a map will enable others to find the exact site again.

Examples of how to record the locality.

The two descriptions below may be too vague for even the original collector to revisit as little as six months later.

Example 1 ***Near the water trough in the back paddock of our farm.***

Example 2. ***On the edge of the road to Beekeepers Reserve.***

A better description is: -
1.2 kms north of the junction of Bagnall's Road and Mt Pleasant Road on the east side of Mt Pleasant Road, next to windmill and water trough, about 50m from the road, 5 km north of Dumbleyung.
Also enter Dumbleyung as the **Nearest named place**.

And: -
On the south side of Beekeepers Road, west of the Brand Highway and approximately 100m west of the railway line cutting across Beekeepers Road, 8.5 km north of Eneabba.
Also enter Eneabba as the **Nearest named place**.

If you use Max, the full locality statement must be put in the 'locality' field; the 'nearest named place' field relates only to calculating the geocode and does not print out on the label.

Collectors name, number and date and reason for making the collection

Collector: Enter your initial(s) first and then your family name in full, e.g. J H Brown.

Number: See earlier note about numbering. It is suggested that a new collector start a field notebook of these Data Sheets and commence with No.1 and then use sequential Arabic (1, 2, 3, etc.) numerals. The same notebook number is also written on the jewellers' tag attached to the specimen.

Date: Use Arabic numerals for DD/MM/YYYY, e.g. 02/05/2001.

Voucher for: Is it a voucher for a particular survey? Is it for a nature reserve or national park survey? Does the specimen voucher a new weed infestation or is it a voucher for a photograph of the actual weed collected?

Photo: If you are taking photographs circle "Y". The number that should be entered on the Field Data Sheet is your film roll number and the (**Exp.**)osure number. If you take more than one photo of the same plant, record each exposure number. When the negative is processed you will then be able to add the correct specimen number to the print or slide.

When the specimen is databased at the WA Herbarium and given its unique 8-digit barcode number the photograph can be given this same barcode number, forever linking it to its specimen (thus the specimen is the voucher for the photograph). You can do the same with a copy of the same photograph and it can be kept together with the correct specimen in the appropriate Regional Herbarium.

Extra notes: If there are other observations you want to record use this space or the back of the Field Data Sheet. As mentioned earlier you may wish to draw a "mud map" here. This could be an invaluable piece of information.

PRESSING, DRYING AND MOUNTING; STORAGE AND PRESERVATION

These procedures are fully described in "How to Create a Local Herbarium" pps 8-16.

It is very important that you press and really dry the specimens to be sent to the WIN team in Perth. Please do not send fresh (that is unpressed and undried) specimens in a plastic bag, box or by other means. If you do then by the time it reaches us it may be useless as a specimen. We also have to prevent insect attacks in the Herbarium so we freeze every specimen on arrival. Try thawing a frozen lettuce and you will see our problem.

A copy of the Field Data Sheet must accompany each voucher collection (A collection is comprised of 3 duplicates, one for the Regional Herbarium and 2 for Perth). You will need to send a photocopy or carbon copy of the Field Data Sheet to Perth; you should retain the original for the local collection. Please make sure Kaye can read the copy you send to us. You need only send 1 Field Data Sheet with the 2 specimens you send to Perth but make sure that this is clear because the 2 may be inadvertently separated when we freeze the bundle on arrival in Perth.

Pack your specimens in a tight fitting bundle in a cardboard box and address it to: -

Jan Gathe
WIN Project
WA Herbarium
Locked Bag 104
BENTLEY DELIVERY CENTRE
WA 6983

If you plan to personally bring in your specimens or those of your group to the Herbarium in Perth then please contact us to let us know you are coming. We would like to show you the Herbarium and how we are developing the WIN Project.

You may wish to wait until you have 5 or 10 or so before sending your specimens so that you can save on postage.

URGENT IDENTIFICATION

Contact any of the team on the Herbarium number 9334 0500;
if it's after hours leave a clear message for Jan.

This kind of speedy action will be part of a super surveillance system we will set up with your help when we can.