# DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT 307

Swan Region. 3044 Albany Highway, Kelmscott Fax: (09) 390 7059

MR IAN ABBOTT
PRINCIPAL RESEARCH SCIENTIST
CRAWLEY

<del>061307</del> 664908

Your Ref:

SR: 51/02 JLR:jed

Our Ref: Enquiries: Phone:

J L Robson 390 5977

Subject:

SUMMARY OF SWAN REGION'S GAZETTED RARE FLORA FINDS - J L ROBSON

In accordance with your request on the 24 March 1995, pertinent to the above, please find attached hereto the completed data sheets and a copy of our Swan Region's 1994 Rare Flora Management Report as reference material, which may clarify any queries you have with the information provided.

The following is of relevance:

- (a) All of the documented gazetted rare flora finds are completely new discoveries and have never been recorded before.
- (b) If any of these species on the data sheets were deleted from the gazetted rare flora list during a particular year, then subsequent finds of that taxon were not included, due to its revised rating as only a Priority Listed species eg. *Drosera occidentalis*.
- (c) Some clarification is necessary in the interpretation of those gazetted rare flora populations on the data sheets that are bracketed alongside the other finds in the columns denoting the 1989 to 1994 finds eg. 7+(4), which is merely specifying that out of a total of 11 new discoveries, 4 of them are subpopulations, ie. being located at less than 500m in any one direction from another rare flora population of the same species.
- (d) I have only included those gazetted rare flora species where I personally made a new discovery during the period from January 1989 to December 1994.

There are other gazetted rare species currently on our list like *Aponogeton hexatepalus*, where other officers in our Region found new populations of it during 1989 to 1995 that have not been included, as my perception was that you only required my finds.

(e) Further to your earlier phone discussion with me, I would like to reiterate again that from approximately January 1989 to December 1991 I would have had close to a 100% involvement in Rare and General Flora Management on the basis of 50% Rare and Priority Listed Flora searches and 50% on associated Rare Flora assignments eg. establishing Regional Herbarium (Rare and General Flora), preparing Rare Flora training slide programmes and setting up new Rare Flora Fire Research Plots, etc.

From January 1992 onwards I have been on a definite 100% participation in Rare & Priority Listed Flora Management with a 65% involvement in rare flora searches and 35% on associated rare flora assignments as noted above.

Under the circumstances setting up the data sheet table commencing from January 1989 through to December 1994 would appear to be quite appropriate.

Hoping this information meets all of your requirements.

J L ROBSON

FOR REGIONAL MANAGER

31 March, 1995

## SUMMARY OF SWAN REGION'S GAZETTED RARE FLORA DISCOVERIES

## J L ROBSON

	New Finds For the State	J L Robson New Rare Flora Finds						
SPECIES NAME	UP TO DEC. 1988	1989	1990	1991	1992	1993	1994	COMMENTS
Acacia anomala	10			1+(4)				
Acacia aphylla	10		1	7+(6)				
Anthocercis gracilus	4				2+(3)	1+(2)		
Anigozanthos humilus subsp. chrysanthus	2				7+(4)			
Aponogeton hexatepalus	13					1		
Asterolasia grandiflora	4		4+(1)					
Asterolasia nivea	1		1+(2)		1			Extremely rare and endangered
Daviesia microphylla	12 (only noted JLR's finds here for 1988)							Species now taken off the Gazetted Rare Flora list approx. 1990
Diuris purdiei	7	2+(6)	1+(1)			1+(1)		
Drosera occidentalis	8	12 + (10)						Species now taken off the Gazetted Rare Flora list
Euc. argutifolia	4		7	1				
Euc. latens	1	1				-		Species now taken off the Gazetted Rare Flora list
Grevillea cirsiifolia	8	3	2	4	15	5	1	Species now taken off the Gazetted Rare Flora list 1994
Grevillea flexuosa	1			1	3+(1)	1	7+(16)	v .

	New Finds		J L Ro	BSON NEW	RARE FLORA	A FINDS		
SPECIES NAME	FOR THE STATE  UP TO DEC.  1988	1989	1990	1991	1992	1993	1994	COMMENTS
Grevillea saccata	10		1		3+(3)	3+(1)		Species now taken off the Gazetted Rare Flora list
Hemiandra rutilans	1 (now dead)						1	Unconfirmed identification to date. Currently presumed extinct in the wild.
Hydrocotyle lemnoides	3 + 1 JLR find						1	
Lechenaultia laricina	4	1			1	1		Extremely rare
Lechenaultia pulvinaris	13				1	9+(5)		
Pimelea rara	1				5	3+(3)	×	
Pultenaea pauciflora	. 4						5	Prior to 1994 extremely rare and endangered.
Spirogardnera rubescens	8	1						
Stylidium scabridum	3						7+(2)	Previously one of the most endangered species in the State.
Thelymitra dedmaniarum	1		2+(1)	+(2)	1+(2)			
Thelymitra stellata	8			4				
Verreauxia verreauxii	5				2	4	23 + (5)	Will be nominated this year to be taken off the Gazetted Rare Flora list.
Wurmbea drummondii	9		5	1				Species now taken off the Gazetted Rare Flora list

## DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

Swan Region. 3044 Albany Highway, Kelmscott

Form CLM 80B

TO: RECTONAL MANAGER SWAN RECTON

Your Ref:  $\begin{array}{ll} \text{Your Ref: SR: } & 51/02 \\ \text{Enquiries: J } L & Robson \\ \text{Phone: } 390 & 5977 \end{array}$ 

Tan - Your reference copy only - the actual 1994 List of Gazetted Rave Flora finds for this Region are attached hereto on the back of this report.

Subject:

ANNUAL RARE FLORA MANAGEMENT REPORT FOR THE YEAR 1994 SWAN REGION

#### 1. New Rare Flora Finds

Attached hereto please find the data sheets that detail quite specifically each new discovery of Gazetted Rare Flora and Priority Listed Flora populations by Swan Region's District and Regional staff for the calendar year 1994.

In summarising overall we have discovered 45 new gazetted rare flora finds in our Region or actually 69 new populations when inclusive of 24 sub-populations - which in total cover 7 different rare flora species.

This certainly compares more than favourably with the previous year's tally of 38 new finds and the 1993 total comprising 54 new rare flora populations.

Before continuing, it would be appropriate to elaborate on the definition of a new rare flora find as noted hereunder:

"A new population must be located at a minimum distance of 500m in any one direction from another rare flora population of the same species, before it can be categorised and numbered as a new population, and any new find located less than 500m from another rare flora site is referred to herein as a sub-population and generally numbered numerically on the one line as a,b,c etc from the main population".

Noted hereunder are the most significant of these new rare flora populations:

## (a) 6/12/94 Hemiandra rutilans - 1000+ plants

It is somewhat ironical that the most significant of all of the year 1994's new finds without any doubt is a species that we are still awaiting positive identification on, namely *Hemiandra rutilans*.

In very recent times they have just lost the one and only known living plant of this species in the wild at a private property near Dowerin, so to date this species is presumed extinct, thus confirming the importance of this new find if it is genuinely *Hemiandra rutilans*.

#### (b) 25/11/94 - Stylidium scabridum - 724 plants

Prior to this latest discovery of 7 populations of *Stylidium scabridum* totalling to 724 plants, this species was ranked in the top 20 of the State's most endangered flora, with only a mere 3 small scattered populations, totalling to less than 60 plants in the entire State.

Having located all of these latest populations of *Stylidium scabridum* in our Region's Wandoo Conservation Park, this must now considerably enhance this previously threatened taxon's long term preservation in the wild.

## (c) 7/10/94 Pultenaea pauciflora - 2860 plants

This species was presumed extinct until 1984 when 4 small populations totalling to 100 plants were discovered near Narrogin, hence its appropriate common name then of the Narrogin Pea.

Since then nothing further was heard of this very rare taxon until May 1994 when Ecologia Botanist Consultants made an exciting discovery of a few plants in our Region's Lupton State Forest Block.

The follow-up discovery by this Region's staff of 5 populations of this species, totalling up to an excellent 2860 plants has certainly contributed substantially to the future long term preservation of the Narrogin Pea.

#### **General Comments**

As adequately illustrated in the attached data sheets, the participation of other staff and employees in the discovery of new rare flora populations within their own Districts would appear at first glance to be almost non-existent.

However, more to the point, on the odd occasions when any of our Districts' Endangered Flora Officers and others do find the time, they inevitably have to more appropriately concentrate their efforts on urgent rare flora resurveys, etc.

From my own observations at rare flora training venues etc. there is certainly no lack of personal interest in the subject and whilst looking for other applicable reasons, it is certainly interesting to note that almost 98% of the 1994 new rare flora finds were all located in the Region's far eastern fringe areas of Flynn, Gunapin and Lupton Blocks, etc. where the majority of our District staff would have very little exposure to in their normal work environment.

Nevertheless it was very pleasing indeed to see Overseer Max Bending discover a new population of the gazetted rare species *Pimelea rara* in Greystones Plantation at Mundaring. Max has always had a natural interest in flora generally, and as a consequence he knew immediately what he had found when he saw the *Pimelea* flowering in late February. When you consider his discovery was only the tenth for the State for that species, it was certainly an excellent find.

We also designated quite a substantial amount of time very early in the year to searching for Priority Listed Flora species in our Region and in particular the Priority 1 to 3 species.

As documented in the attached data sheets we succeeded in discovering some 20 new populations with the finds of the Priority 1 listed species *Thysanotus fastigiatus* in Lane Poole Reserve, Dwellingup and *Verticordia paludosa* in Boonanarring Nature Reserve and the Moore River National Park noted as the best of them.

#### 2. ESTABLISHMENT OF NEW RARE FLORA FIRE RESEARCH PLOTS DURING 1994

#### (a) Lechenaultia pulvinaris - Plot No 1 - Tribune Road

An autumn ignition was carried out over this new plot on the 5 May 1994 when 11 *Lechenaultia pulvinaris* plants were burnt and subsequently fenced around.

To date we already have knowledge that 8 of the plants have regenerated from rootstock and 44 very tiny seedlings have germinated so it is going to be particularly interesting to see how they survive this summer of 1995.

#### (b) Verreauxia verreauxii - Plot No. 2 - Warrigal Road

This new 10m x 10m fenced plot was established on the 25 October 1994 with the application of a Spring Regen burn involving 16 plants, representing a logical follow-up to the successful 1993 ignition in Plot No. 1 which revealed excellent rootstock and seedling regeneration.

A recent unscheduled check of this plot revealed 3 of the 16 burnt plants had regenerated again from rootstock.

## (c) Asterolasia nivea - Plot No. 1 - Flat Rock Gully Nature Reserve

An autumn regeneration burn was implemented over this 10m x 5m fenced plot on 3 May 1994 involving 11 mature plants of *Asterolasia nivea*.

The first re-inspection on 28 October 1994 revealed an excellent 106 seedlings had germinated but no rootstock regeneration was evident.

However, the indications then were rather ominous, when even at that early stage of the season some of the seedlings were exhibiting weak, poor coloured foliage, leaving some considerable doubt as to whether the majority would survive the summer of 1995.

## 3. Re-inspection and Monitoring of Established Rare Flora Fire Research Plots during 1994

### (a) Verreauxia verreauxii - Plot No. 1 - Warrigal Road

Following an autumn 1993 ignition over this plot supporting 11 mature plants, a routine second re-inspection on the 18 August 1994 showed that 6 plants had successfully regenerated from rootstock and had subsequently survived the long dry summer of 1994.

This assessment also revealed that out of a total of 52 seedlings that had earlier germinated during Spring 1993, a 50% total of 26 seedlings were now missing, presumed dead.

Summarising it would appear that providing these remaining plants and seedlings successfully develop into maturity, then all of those Aircraft Burns supporting populations of *Verreauxia verreauxii* in our Region could quite feasibly be programmed for Autumn dry soil ignitions.

### (b) Acacia aphylla - Plot Nos QF2 and QU2 - Mokine Nature Reserve

After an autumn ignition over the both plots on 14 April 1993, re-inspection of both the fenced QF2 10m x 10m plot and the unfenced QU2 10m x 10m plot were carried out on the 18 August 1994 and the 27 January 1995 respectively.

Briefly, re Plot QF2 an excellent 354 *Aphylla* seedlings were counted but regrettably after the summer of 1994, an unbelievable 338 are now dead through essentially drought related circumstances, with 7 in a poor condition and 9 in a varying fair to good condition.

In the unfenced plot, 248 *Acacia aphylla* seedlings were counted and currently 133 seedlings are now dead, 41 seedlings are in a varying fair to good condition and 74 seedlings are in a good to excellent condition.

Briefly summarising what we have acquired now is undoubted proof that *Acacia aphylla* will certainly regenerate in abundance from seed following an autumn dry soil ignition, but can only satisfactorily develop thereafter if their habitat is strategically located below large sheet granite outcrops to accept maximum water run-off from the odd summer thunderstorm, or alternatively the plant's habitat is situated in shady conditions eg. *Acacia aphylla* Plot QF1.

#### (c) Grevillea cirsiifolia - Plots Nos 1 & 2 - Lindy Lane Road

Following an Autumn 93 ignition of the above two plots, subsequent reassessments on the 18 January 1994, 29 June 1994 and 25 January 1995 respectively, revealed adequate seedling regeneration occurring in both plots, with all of it easily surviving the long dry summer of 1994.

Interestingly, not one of the 10 burnt *Grevillea cirsiifolia* plants in Plot 1 and the 45 burnt plants in Plot 2 have regenerated from rootstock to date and appear to have died completely, which is quite contrary to what occurred with this same species in a Manjimup Aircraft Burn.

Regionally, any Aircraft Burn Blocks supporting this previously gazetted rare *Grevillea cirsiifolia* must now be scheduled for only Autumn dry soil ignitions or alternatively ignite the flats supporting this species in Autumn, leaving the remainder for a prescribed Spring ignition.

#### 4. RARE FLORA TRAINING

Up until recently we have only had the one quite comprehensive and very detailed rare flora slide programme that we produced in 1990, where viewers were subjected to a very long programme covering 24 to 28 slides over a 5 to 6 minute period for each rare flora species, which although it was very thorough in content, proved to be too much all at once for most viewers to thoroughly absorb and understand.

During 1994 we have produced another two rare flora slide programmes, the first of which is comprised of only 5 slides and 2½ minutes dialogue per species, thus allowing us the opportunity to effectively cover 16 rare flora species during the one presentation in a relatively short period of time.

It was professionally produced by Sound Images - West Perth, with integrated background music and myself as narrator using an interesting, well prepared script.

For those viewers seeking a quick overall summarisation of the botanical characteristics of most of our Region's rare flora species, this programme generally proves ideal, and has been very well received to date by those who have seen it.

The second rare flora slide programme was compiled locally using our own Cassette Recorder, (Audiotronic) tapes, etc. but no background music.

The main theme behind this production was to concentrate solely on the more recently gazetted rare flora species that the overall majority of our staff and employees had neither heard of or seen before.

Covering 9 species involving 63 slides and breezy commentary, it provides an interesting and probing introduction into these new rare taxons.

During 1994 these two slide programmes were shown to Swan Region staff and Mundaring staff and employees and their Rare Flora Volunteers during the Region's Threatened Flora Training Course at Mundaring on 30 August 1994.

A second presentation of these slide programmes was to Regional and District Officers attending their Regional Meeting at Hillarys on 14 October 1994.

Prior to the commencement of the 1995 peak rare flora season, we would like to ensure that all of our other staff and employees in Perth and Dwellingup Districts are given the opportunity of viewing these two new rare flora slide programmes.

J L ROBSON

REGIONAL CONSERVATION OFFICER

Copy: D/M Mundaring - Attention John Carter

D/M Perth - Attention Lyndon Mutter

D/M Dwellingup - Attention Mike Tagliaferri

Admin Officer / Flora - Wildlife Branch, Como

Dr D Coates - WA Herbarium

Mr Andrew Brown - WATSCU - Woodvale Research Centre.

29 March, 1995

## SWAN REGION'S STAFF GAZETTED RARE FLORA FINDS FOR THE YEAR 1994

Date	Person	Taxon	Pop. No. (for State)	No. of Plants	Locality / District	
19/1/94	J L Robson	Verreauxia verreauxii	4b	90	Flynn S/F Mundaring	
25/1/94	п	Verreauxia verreauxii	9	12	Flynn S/F Mundaring	
1/2/94	11	Verreauxia verreauxii	10	800+	Flynn S/F Mundaring	
2/2/94	"	Verreauxia verreauxii	4c	150+	Flynn S/F Mundaring	
2/2/94	"	Verreauxia verreauxii	11	200	Flynn S/F Mundaring	
4/2/94	11.	Verreauxia verreauxii	12a,b,c & d	281	Flynn S/F Mundaring	
9/2/94	"	Verreauxia verreauxii	12e	145	Flynn S/F Mundaring	
14/2/94	п	Verreauxia verreauxii	4d	176	Flynn S/F Mundaring	
14/2/94	п	Verreauxia verreauxii	4e	185	Flynn S/F Mundaring	
18/2/94	O/S M Bending	Pimelea rara	10	3	Greystones Pltn. Compt 26 Mundaring	
24/2/94	J L Robson	Verreauxia verreauxii	13a & b	710	Gunapin S/F Mundaring	
1/3/94	п	Verreauxia verreauxii	14a	250	Gunapin S/F	
1/3/94	11	Verreauxia verreauxii	15	108	Gunapin S/F	
16/3/94	11	Verreauxia verreauxii	14b	260	Gunapin S/F	
16/3/94	п	Verreauxia verreauxii	16	76	Gunapin S/F	
12/4/94	11	Verreauxia verreauxii	17	92	Flynn S/F Mundaring	
12/4/94	н	Verreauxia verreauxii	18	200	Flynn S/F Mundaring	
28/4/94	11	Verreauxia verreauxii	19	8	Gunapin S/F Mundaring	
6/5/94	п	Verreauxia verreauxii	20	65	Gunapin S/F Mundaring	
13/5/94	11	Verreauxia verreauxii	21	110	Gunapin S/F Mundaring	
19/5/94	п	Verreauxia verreauxii	22	127	Flynn S/F Mundaring	
27/5/94	11	Verreauxia verreauxii	23	185	Flynn S/F Mundaring	
10/6/94	11	Verreauxia verreauxii	24a & b	232	Flynn S/F Mundaring	
17/6/94	11	Verreauxia verreauxii	25	550	Gunapin S/F	
1/7/94	"	Grevillea flexuosa	5a	12	PP Locn. Lot 150 Toodyay	
1/7/94	п	Grevillea flexuosa	6a, b, c, d, e, f, g & h	85	PP Locn. Lot 150 Toodyay	
4/7/94	tt.	Grevillea flexuosa	5b	40	PP Locn. Lot 150 Toodyay	
5/7/94	TI.	Grevillea flexuosa	3g, h & i	117	Rugged Hills N/Reserve	
5/7/94	11	Grevillea flexuosa	7a, b, c & d	494	PP Locn. No. 22048	
5/8/94	"	Grevillea flexuosa	7e, f, & g	144	PP Locn. No. 22048	
//9/94	11	Grevillea flexuosa	8a, b, c & d	133	Forest Edge SubdivToodyay	
/9/94	ш	Hydrocotyle lemnoides	8	30000+	Lane Poole Reserve, Collie	
3/10/94	H.	Pultanaea pauciflora	5	2000+	Lupton S/F - Mundaring	
0/10/94	п	Pultanaea pauciflora	6	643	Lupton S/F - Mundaring	
7/10/94	11	Pultanaea pauciflora	7		Lupton S/F - Mundaring	
/11/94	ít	Pultanaea pauciflora	8		Lupton S/F - Mundaring	
0/11/94	Ü	Pultanaea pauciflora	9		Lupton S/F - Mundaring	
8/11/94	п	Stylidium scabridum	4a, b & c		Flynn S/F - Mundaring	

Date	Person	Taxon	Pop. No. (for State)	No. of Plants	Locality / District
29/11/94	11	Stylidium scabridum	5	27	Flynn S/F - Mundaring
29/11/94	"	Stylidium scabridum	6	3	Gunapin S/F Mundaring
1/12/94	II .	Stylidium scabridum	7	10	Gunapin S/F Mundaring
2/12/94	"	Stylidium scabridum	8	18	Gunapin S/F Mundaring
6/12/94	н	Hemiandra rutilans (unconfirmed to date)	1	1000+	Flynn S/F - Mundaring
7/12/94	п	Stylidium scabridum	9	180	Flynn S/F - Mundaring
13/12/94	11	Stylidium scabridum	10	20	Gunapin S/F - Mundaring

FINDS94.DOC

## SWAN REGION'S STAFF PRIORITY LISTED RARE FLORA FINDS FOR THE YEAR 1994

Date	Person	Taxon	Priority No.	No. of Plants	Locality / District
19/1/94	J L Robson	Daviesia microphylla	4	150+	Flynn S/F - Mundaring Dist.
11/2/94	п	Dryandra echinata	3	22	Mogumber West Road - Perth
4/3/94	"	Verticordia paludosa	1	50000+	Boonanarring N/R Perth
10/3/94	п	Verticordia paludosa	1	17	Moore River National Park - Perth
18/3/94	и	Verticordia paludosa	1	200+	Moore River National Park - Perth
18/3/94	"	Verticordia paludosa	1	500+	Moore River National Park - Perth
18/3/94	"	Verticordia lindleyi subsp lindleyi	4	3000+	Moore River National Park - Perth
18/3/94	п	Verticordia lindleyi subsp lindleyi	4	5000+	Moore River National Park - Perth
25/3/94	"	Verticordia lindleyi subsp lindleyi	4	3000+	Moore River National Park - Perth
25/3/94	11	Verticordia paludosa	1	70	Moore River National Park - Perth
7/4/94	"	Verticordia lindleyi subsp lindleyi	5	2650	Moore River Nature Reserve
7/4/94	"	Verticordia lindleyi subsp lindleyi	4	400+	Moore River Nature Reserve
20/4/94	"	Verticordia lindleyi subsp purpurea	3	70000	Darkin Swamp Flats - Mundaring
21/4/94	11	Verticordia lindleyi subsp lindleyi	4	300+	Moore River National Park, Perth
22/4/94	"	Verticordia paludosa	1	800+	Moore River National Park, Perth
22/4/94	п	Verticordia lindleyi subsp lindleyi	4	300+	Moore River National Park, Perth
23/6/94	п	Acacia anarthros	2	477	Wannamal E - Mundaring
4/7/94	п	Wurmbea drummondii	4	200+	P P Toodyay - Mundaring
9/9/94	"	Villarsia submersa	4	3000+	Lane Poole Res Collie
18/11/94	п	Thysanotos fastigiatus	1	5000+	Lane Poole Res Dwellingup

FINDS93.DOC

# SWAN REGION GAZETTED RARE FLORA SPECIES LIST 1994/95

## Flowering Period

Acacia anomala	. Aug - Sept
Acacia aphylla	. Aug - Sept
Anthocercis gracilus	Sept - Oct
Anigozanthos humilus subsp. chrysanthus	Aug - Sept
Aponogeton hexatepalus	Aug - Sept
Asterolasia grandiflora	July - Sept
Asterolasia nivea	. Aug - Oct
Caladenia dorrienii	. Sept - Oct
Caladenia huegelii	. Aug - Oct
Calytrix breviseta subsp breviseta	Sept - Oct
Chorizema varium	. Sept - Oct
Darwinia acerosa	. Sept - Oct
Darwinia apiculata	. Oct - Nov
Diuris drummondii	. Nov - Dec
Diuris micrantha	. Aug - Sept
Diuris purdiei	. Sept - Oct
Drakaea elastica	.Oct - Nov
Drakaea micrantha	. Aug - Sept
Dryandra mimica	. Dec - Jan
Epiblema grandiflorum var. cyanea	.Nov - Dec
Euc. argutifolia	. Mar - May
Grevillea flexuosa	. July - Sept
Hydrocotyle lemnoides	.Sept - Oct
Lechenaultia laricina	.Oct - Dec
Lechenaultia pulvinaris	.Oct - Dec
Paracaleana dixonii	. Nov - Jan
Pimelea rara	. Dec - Jan
Ptychosema pusillum	. Oct - Nov
Pultanaea pauciflora	. Oct - Nov
Restio chaunocoleus	
Schoenus natans	.Oct -
Spirogardnera rubescens	
Spir ogar arrer a risoeseeris	.Aug - Nov
Stylidium scapridum Tetraria australiensis	. Sept - Oct
Stylidium scapridum	. Sept - Oct Nov - Dec
Stylidium scapridum Tetraria australiensis	. Sept - Oct Nov - Dec Oct - Nov
Stylidium scapridum Tetraria australiensis Thelymitra dedmaniarum	. Sept - Oct Nov - Dec Oct - Nov . Oct - Nov

SR: 51/02



