

**BANDED STILT *CLADORHYNCHUS LEUCOCEPHALUS*
RESEARCH IN WESTERN AUSTRALIA IN 1995**

**MISCELLANIA,
PARTICULARLY WEATHER, RAINFALL &
EVAPORATION RELATED MISCELLANIA
and including some Pre and Post 1995 materials**

RESEARCH MATERIALS CONSOLIDATION REPORT

NOT TO BE DISTRIBUTED OR RELEASED

**JAK Lane
WA Department of Parks and Wildlife**

June 2014

This **Research Materials Consolidation Report** is a preliminary stage in the preparation of research reports and publications relating to the Banded Stilt breeding event on Lakes Ballard and Marmion in Western Australia in 1995 (and Pre and Post 1995).

The purpose of an RMCR is to consolidate and conserve all of the research materials relating to a research project. The material reproduced here is in its original form, with limited or no reformatting.

Note that from early 1995 to the early 2000s, Jim Lane (JL) was based in Busselton and technical officers Grant Pearson (GBP) and Alan Clarke (ACI) were based at Woodvale (a northern suburb of Perth) – hence the faxes and emails between them listed below.

FUTURE WORK

The next steps to be taken in finalising this RMCR and then preparing reports and publications based on its contents should be to:

- See yellow highlighted text in the remainder of this RMCR summary for other Future Work needed / desirable.

CONTENTS

Note that the contents of this RMCR are only roughly in chronological order.

1. Printout of pages downloaded (11/6/2014) by JL from ‘Dry Lake Racers Australia’ website with some information of interest (e.g. dimensions, areas, history, naming, statues on Ballard, discovery of Lake Barlee by John Forrest in 1869, mining, naming of lake Disappointment by explorer Frank Hann in 1897, Lake Dumbleyung ‘appears to have been shown on a map in 1839 with the name Kondening Lake’) regarding Lakes Ballard, Barlee, Carey, Disappointment, Dumbleyung, Dundas, Lefroy, MacLeod, *et al.*. JL tripped over this website on 11/6/2014 while looking for reference to possible breeding by BaSt at Lake Carey.
2. Email (08/6/2014) from Andy Chapman (ACh) to JL with four photos taken by ACh at Lake Ballard in May 1995 and one photo taken by him at Lake Boonderoo on 16/8/1995. JL already had a copy of the Boonderoo photo (or one very similar) but not the Lake Ballard photos. JL’s request (08/5) and thanks (08/6) emails are also here.
3. Printout (04/6/2014) of ‘Master table of distributions for *Parartemia* from Brian Timms (Read Only)’ which is on the ‘Confluence’ area of the DPaW website courtesy of Adrian Pinder. This table, inter alia, lists *Parartemia informis* at Lake Ballard (18/08/1978, M Geddes) and *Parartemia ‘new species e’* at Lake Barlee (Savage). The paper by Geddes *et al.* ‘*On the chemistry and biota of some saline lakes in Western Australia. ...*’ might be connected to this Geddes record. JL has marked (12/6/2014) the position of the coordinates for this Geddes record on an accompanying Google image. Its position indicates that either the lake had an extensive area of surface water on the collection date, or the coordinates are inaccurate.
4. Map headed ‘Hydrogeology of Australia’, downloaded from internet on 06/6/2014 by JL. Also an enlargement of the Eastern Goldfields (of WA) area of this map. Palaeochannels are shown.
5. Map headed ‘WASANT [WA, SA, NT] PALAEOVALLEY MAP’, downloaded from internet on 04/6/2014 by JL. Palaeochannels are shown. JL was unable to easily print an enlargement of the Eastern Goldfields (of WA) area of this map.
6. Fax (20/5/1997) from JL to GBP asking if he had ‘one or two good quality photos from / of Lake Marmion’. ‘They are needed to accompany a WWF report recommending that

- Marmion be on [the] Register of [the?] National Estate'. Consider checking the WWF report or the Register for any new information relating to Banded Stilt breeding in WA.
7. Copy of a memo (undated) from ACI to GBP headed 'Creery Lagoon Waterbird Survey 16/5/96'. This was probably in response to JL's fax of 04/8/1997 below. The species and numbers recorded during this survey are listed. The note 'Additional birds seen in Harvey River: Pink-eared Duck 1; Darter 4' suggests that ACI visited the lower Harvey River on the same day, probably to conduct salinity profiling of it and the Harvey estuary south of Herron Point Ford. That was one of several projects conducted by JL, GBP & ACI looking at some of the impacts of the recently-constructed Dawesville Channel on Peel-Harvey Estuary, particularly its waterbirds.
 8. A collection of photocopies of field notes supplied to JL by GBP in response to JL's request of 04/8/1997 below. These field notes detail observations made by GBP during visits to Boundary Island and/or Creery Lagoon on 16/8/1994, 02/11/1995 (with BaSt numbers on 'Pearce Lake' on 05/11/1995, 23/4/1996, 01/12/1995, 28/8/1996 & 13/8/1996.
 9. Copies (B&W and colour) of a one page fax (04/8/1997) from JL to GBP saying: 'I am preparing a report on the Peel-Harvey work to meet an EPA requirement of monitoring agencies [monitoring impacts of recently-constructed Dawesville Channel]'. I have copies of most of your reports on Boundary Island [north side of Peel Inlet] visits but have no reports for: ... [a long list of dates (months only) from January 1995 to January 1997 follows]. 'Please ... fax to me any reports I don't have. Photocopies of field notes will suffice. GBP has annotated this list with actual dates of visits [by him, and possibly also some by ACI] to Boundary Island and summary details of pelican numbers and nesting activity. The significance of this list is that GBP & ACI were to survey nearby Creery Lagoon for BaSt numbers when visiting Boundary Island to check on pelican nesting activity. At some stage it will be desirable to collate all of the Creery Lagoon (BaSt and other waterbirds) survey reports & notes and look for timing / patterns / probable causes of BaSt movements to and from Creery Lagoon.
 10. Photocopies of a collection of 'ACRES ImageNet Preview Image and Metadata' pages with previews and metadata of the Lakes Barlee – Ballard (and beyond, sometimes including Lake Marmion) area on 28/2, 12/2 & 20/1/1996 and 26/12, 10/12, 23/10, 04/08, 19/7, 10/6, 16/5, 06/3, 09/2, 08/1/1995 and 07/12/1994. These indicate how much of / which parts of each lake were inundated on these dates.
 11. The first of two pages of hand-written notes (31/7/1997) by JL saying, inter alia:
 - 'Alan [ACI] to get evapn [evaporation] map ... to determine evapn rates at [Lakes] Ballard, Barlee & Marmion in 1995';
 - 'Alan to get long term averages (by month? & annual?) for Kal & Meekatharra'. '1968-74 average – for Jan, April, July, October for whole of ... [blank]'. These are followed by: 'Alan has arranged to receive & will send [to] me'.
 12. Document (two copies, the second with annotations by JL) headed 'Banded Stilt' and beginning 'Aims of Talk (7.10.96)'. Includes a long section commencing with: 'Rainfall: On 02/10/96 I [JL] flipped thru monthly weather reviews from Jan 1985 to Mar 1994 inclusive and picked out months when substantial (>75mm) [rainfall] occurred in the [Lakes] Ballard [and] Barlee area. These are as follows: ... [detailed descriptions of rainfalls in June, 1986, Jan 1987, Dec 1988, Jan 1990, Dec 1991, March 1992, April 1992, Aug 1992 & Feb 1994 then follow]. Then there is the note: 'CHECK APRIL 1994 ONWARDS'.
 13. A page from one of JL's 1995 (May?) field notebooks with the note: 'Wind direction in period leading up to "the big walk" of BaSt chicks thru' Menzies in the 1980's'. JL's intention was apparently to find out the dominant wind direction(s) during "the big walk"

(described in a paper by David Pearson? – check BaSt Publications RMCR) through / near the townsite of Menzies (which is close to Lake Ballard).

14. Hand-written notes (undated) by JL recording Andrew Chapman's Ravensthorpe postal address and that of 'John & Kath Finlayson, "Jeedamya" via Menzies WA 6436'. Ian Kealley mentioned to JL in early 2014 that the Finlaysons left Jeedamya pastoral station some years ago (they were there in 1995).
15. Photo-enlargements (140% of actual size) and then photocopies (actual size) of a number of plant specimens collected by GBP on Lake Ballard in 1995. These are mounted on cards. The cards have been labelled as follows (note that some spelling might be incorrect):
 - '1/4/95, #2, Lake Ballard, Stilt Island, on island in colony. Low, succulent. *Atriplex*.
 - '11/4/95, #2, Lake Ballard. *Eragrostis* sp.
 - '11/4/95, #2, Lake Ballard, *Francenia pauciflora?*
 - '1/4/95, #1, Lake Ballard, Stilt Island. *H. halocnemoides*.
 - '1/4/95, #1, Lake Ballard, Stilt Island. *Halosarcia halocnemoides*.
 - '11/4/95, #2, Lake Ballard, indecipherable [*Maireona?*].
 - '11/4/95, #2, Lake Ballard, indecipherable [*Macreana?*] sp.
 - '11/4/95, #2, Lake Ballard, indecipherable [*Maireana?*] sp.
 - '11/4/95, #2, Lake Ballard, *Sclerolinai* sp. indecipherable [*densiflora?*].
 - '1/4/95, #3, Lake Ballard, Stilt Island, *M.*
 - '1/4/95, #3, Lake 1 [circled], Pink Eared Duck Nest, *Mel uncinata*.
 - '1/4/95, #4, Lake Ballard, Stilt Island. Low saltbush in centre bird colony. *Atriplex*.
 - '1/4/95, #4, Pink eared Duck nest, Lake 1 [circled], *M. uncinata*.
 - '1/4/95, #5, Lake Ballard, Stilt Island. Low Samphire, Island in centre of colony. *Francinia*.
 - '1/4/95, #2, Lake Ballard, Stilt Island. On island in colony. Low succulent. *Atriplex*.
 - '11/4/95, #2, Lake Ballard. *Eragrostis* sp.
 - '11/4/95, #2, Lake Ballard. *Francinia pauciflora?*

Note that most of the writing on these cards is in hand-writing that JL does not recognise (12/6/2014). The plant names (Genus / species) have subsequently been added in GBP's hand-writing. **TO DO: Tidy up these plant names.**

16. Photocopy and photo-enlargement of a folded (field notebook?) page on which is written, in JL's hand-writing, 'Butterfly dead on ground on Camp Island (Lake Ballard) by JL on 6 April 95 [1995]'. The butterfly (unidentified) is still inside (as at May 2014).
17. Photocopy of an empty and unlabelled audio cassette case found in the 'Banded Stilt Project' storage box on 19/5/2014 by JL. **Keep an eye out** for a stray audio cassette.
18. Photocopy of an audio cassette and its case, labelled '1995 Lake Ballard Tape – keep'. **Check to see if this tape has been fully transcribed. Is it aerial surveys or ground work on both?**
19. Two Bureau of Meteorology maps of Rainfall Districts of WA and the Lakes Barlee, Ballard, Marmion, etc. area (Rainfall District 12: Southeast).
20. A photo-reduction (A3 to A4) of the Bureau of Meteorology's '*Climatic Atlas of Australia, Map Set 3, Evaporation*' (May 1975).
21. Three B&W aerial photographs (stereo pairs; Commonwealth of Australia, taken on 23/11/1982) of most of Lake Ballard. On these, GBP {JL presumes) has marked in red pen what are likely to be access tracks (parts thereof) to the northern side of the lake. The numbers 1-3 have been written next to parts of these red lines. **What do they refer to? Do they cross-reference with any notes?** On one of the photos someone (JL? GBP?) has

drawn four small circles and numbered three of these '2', '4,5' & '3' extending west from Camp Island. The westernmost circle is not numbered and appears to be over the second studied (in 1995) BaSt nesting colony. The numbered circles perhaps indicate three sites of collection of BaSt families (for gut contents, etc.) and/or sweep samples? **Attempt to cross-reference to field notes.**

22. A collection of two maps, and enlargements thereof, that might have been supplied by CALM Kalgoorlie to GBP / JL in 1995 (given the fire-related annotations) on which JL has written 'PEARSON / LANE MAPS' and 'SCALE 1:250,000' and drawn a distance-bar of 0-5km and GBP (probably) has written some coordinates (e.g. '29 26 35, 121 02 55'). Someone has also drawn a circle around the site of the second studied (in 1995) BaSt nesting island. Other markings indicate the (or a) track in to the shoreline to the north of Camp Island. The second map (and enlargements thereof) has four circles drawn roughly in blue biro at four locations in the western part of Lake Ballard, near the northern shore. These presumably indicate sites of BaSt (flocks?) seen during an aerial survey (by GBP or JL?) in 1995.
 23. A single, quality, B&W map (enlarged?) of Lake Ballard. There are no annotations on this map.
 24. Two pages of a six page fax (20/3/1995) from JL to GBP with an equipment list for the proposed ground visit to Lake Ballard. Included in JL's list is: Obtain a thermometer (max/min?) so we can monitor ambient (air) temperature through the day (and night)'. See the Excel file 'Calendar & Weather Obs. in 1995.xls' for the data that was collected with this thermometer, which may or may not have been a max/min thermometer.
 25. An excerpt from the Tues 28/2/1995 issue of 'The West Australian' newspaper with descriptions of the weather (including 'ex-cyclone Bobby'), temperatures, rainfalls, etc. for WA. Detailed rainfalls recordings are the 24 hrs to 9am on 27/2 with 72 hr rainfall in brackets. Menzies had the most rain in the State to 9am on 27/2 (162mm).
 26. Copy of business card of David Rosher, PhD Student, School of Science & Technology, Charles Sturt University, Wagga Wagga, NSW. with an annotation by JL that reads: 'remote sending of wetlands in arid Australia'. JL's recollection (12/6/2014) is that he met DRosher 2-3 decades ago and this card would have been from then.
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Printout of pages downloaded (11/6/2014) by JL from 'Dry Lake Racers Australia' website with some information of interest (e.g. dimensions, areas, history, naming, statues on Ballard, discovery of Lake Barlee by John Forrest in 1869, mining, naming of Lake Disappointment by explorer Frank Hann in 1897, Lake Dumbleyung 'appears to have been shown on a map in 1839 with the name Kondening Lake') regarding Lakes Ballard, Barlee, Carey, Disappointment, Dumbleyung, Dundas, Lefroy, MacLeod, *et al.*. JL tripped over this website on 11/6/2014 while looking for reference to possible breeding by BaSt at Lake Carey.



Dry Lakes Racers Australia

Home > Lake Gairdner > Reference > Salt Lakes in Australia

Salt Lakes in Australia

- About the DLRA some of those, more particularly those suited or investigated for dry lakes racing.

> Introduction **Name** **State** **Size** **Elevation** **Owner** **Access**

DLRA Rulebook
 Operational Plan
 Construction
 Classes
 >

Lake Amadeus	Northern Territory	180km long and 10km wide (1032 sq. km)			
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Lake Ballard	Western Australia	50 km long x 20 km wide 4,900 hectares (12,108 acres)			
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Lake Barlee	Eastern Australia	100 km wide from west to east, and about 80 km wide from north to south			
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Technical Inspection
 Push Cars Support Vehicles
 Starters Instructions
 Club Rules
 Record Holders

Bulloo Lake	New South Wales - Queensland border				
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Lake Carey	Western Australia				
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Lake Disappointment	Western Australia				
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Rumbleyung Lake	Western Australia	13Km x 6.5Km (52Km ²)			
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Lake Dundas	Western Australia				
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Lake Eyre	South Australia	9500 sq. km	49 ft (16 m) (AHD) below sea level		
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Lake Frome	South Australia	100Km x 40Km (259,615 hectares)			Vehicles banned
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Drivers
 Members List
 Racing Teams
 Delegates
 Honour Roll
 History of the DLRA
 DLRA in Print
 Get Started
 Frequently Asked Questions
 Contact Us
 Copyright Statement
 Privacy Statement

Lake Gairdner	South Australia	168Km x 48Km (160Km ²)			Agreement with DEH for Speed Week
---------------	-----------------	---------------------------------------	--	--	-----------------------------------

- Forum
- Features
 > Lake Galilee

Lake Galilee	Queensland	Lake Galilee is approximately 29 km long but the width varies between 3 km and 15 km. The lake			
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- -----
- Racing
- Books
- o 150MPH Club
- o 200MPH Club
- o 300MPH Club
- o SA Christmas Party
- o Pre Race Meeting 2001
- o Inspection Day 2000
- o General Meeting July 2000
- o Aussie AsSalt Results
- o International Speed Challenge
- o Aussie AsSalt
- o 1998 Speed trials video
- o A trip to the Salt
- o Victorian Hot Rod Show Promotion
- o History of Land Speed Racing
- o History of World Land Speed Records
- o LSR History

floor is 275 m ASL and has a surface area of approximately 260 km2. It is the only wetlands area in central Queensland and consequently is the home of a large waterfowl population. It has been identified by BirdLife International as an Important Bird Area (IBA) because it regularly supports over 1% of the world populations of Freckled Ducks and Grey Teals. Lake Gregory is a salt lake in northern South Australia. It lies to the west of Lake Blanche; to the east the Birdsville Track runs in between it and Lake Eyre. It is named after the explorer A. C. Gregory, who first passed by it in 1858. Originally Lake Eyre was named Lake Gregory by B. H. Babbage, but the names were modified by Governor Richard Graves MacDonnell, who preferred to name the former after the famous explorer who first investigated the region twenty years prior, Edward John Eyre.

- o Goyder Lagoon South Australia 12m above sea level
- Join the DLRA >
 - o Membership Information
 - o Applications Form
 - o Speed Trials Entry Form
- Lake Gairdner Lake Macleod Western Australia 40Km x 309m above sea level
- o Directions, Instructions and Maps Lake Mungo New South Wales
- o More Images of Lake Gairdner Lake Omeo Victoria 683m above sea level
- o Mt. Ive Lake Torrens Homestead South Australia (5,700Km²)
- o Track Layout Willandra Lakes New South Wales
- o Reference >
 - o Lake Woods Northern Territory
 - o Lake Yamma Queensland 69,000 ha (690 km² 270 sq mi)
 - o Pink Lakes Victoria In overcast weather, this group of lakes in Murray-Sunset National Park has a
 - o Biology
 - o Climate
 - o Geographical
 - o Geological
 - o Government
 - o History
 - o Lunar



- **Lake Cadibarrawirracanna**

- Mining

- Native South Australia

Title east of Coober Pedy

- Salt

Lake Cadibarrawirracanna ([show location on an interactive map] 28°50'S, 135°26'E) is a salt lake in central South Australia. It is located in the northeastern portion of the Australia Camera Prohibited Area, east of the Stuart Highway. Lake Cadibarrawirracanna, meaning stars dancing on water, holds the record for the longest place name in Australia.

- [Home](#)

[View Larger Map](#)

Lake Carey

Western Australia
East of Leonora

Lake Carey, (29°57'S 122°18'E / -29.08444, 122.31556), is a salt lake 80 kilometres (50 mi) south of Laverton, Western Australia within the Laverton Tectonic Zone, that has been associated with the presence of gold since the 1890s [1] and recently there has been renewed exploration drilling. Midas, the company who have sponsored the drilling, estimates that there may be 25 million ounces (780 tonnes) of gold [2] within the site. It has also been reported that there may well be significant amounts of nickel and zinc.

The Wangkathaa people are associated with the land around Lake Carey

[View Larger Map](#)

256 km Kalgoorlie Radar Loop

Lake Disappointment

Western Australia
east of Newman

Lake Disappointment is an ephemeral salt lake in a remote area of Western Australia.

Lake Disappointment was named by the explorer Frank Hann in 1897. Hann was in the area exploring the east Pilbara, around Rudall River. He noticed creeks in the area flowed inland, and followed them expecting to find a large fresh-water lake. To his disappointment the lake turned out to be salt.

The lake is home to many species of waterbirds.

The Lake Disappointment project is comprised of 7 Exploration Licenses covering 1600sqkm's over the playa lake of the same name. An Access and Heritage agreement was executed, in February 2006, between the Martu People and the Company in respect of Exploration Licenses E69/2156-2159 and E45/2801-04.



Landsat image; screen capture from NASA World Wind

[View Larger Map](#)

Dumbleyung Lake

Western Australia
south west of Dumbleyung

Dumbleyung Lake, also widely known as Lake Dumbleyung, is a salt lake in Western Australia. It is located at [show location on an interactive map] 33°20'00"S, 117°39'00"E, in the Great Southern region of Western Australia. At 13 kilometres long and 6.5 kilometres wide, it covers an area of 52 km².

The explorers Henry Landor and Henry Maxwell Lefroy are usually credited with the discovery of Dumbleyung Lake, although it appears to have been shown on a map in 1839 with the name Kondening Lake. Grazing leases around the lake were first granted to George Kersley in 1875.

Dumbleyung Lake received world recognition when [Donald Campbell](#) broke the world water speed record on it on 31 December 1964, travelling at 444.66 km/h (276.3 mph) in his boat Bluebird K7. A granite memorial to Campbell can be seen at Pussy Cat Hill, a prominent feature and vantage point to view the entire lake area.

In recent times, the increased soil salination has made the area unsuitable for grazing. Today the lake is mainly used for aquatic recreation. Despite the extreme salinity of the lake, it provides a habitat for many varieties of water birds, and since 1963 has been protected by the Dumbleyung Lake Nature Reserve.



[View Larger Map](#)

The Racing Campbells - [Lake Dumbleyung](#)

[256 km Perth Radar Loop](#)

Lake Dundas

Western Australia
east of Dundas



Thousands of tendrils of water flood into Goyder's Lagoon in outback South Australia in June 2010.

[View Larger Map](#)

Island Lake

Lake Lefroy

Western Australia
east of Kambalda
40km long x ? wide
309m above sea level

Apart from the lake itself, advantages and facilities available are it is at the doorstep of a mining town called Kambalda, has sealed access roads, fresh water, ambulance service (I think) and a hotel. 60km away is the city of Kalgoorlie which is a major regional centre and has good transport - road, rail (Indian Pacific and freight trains) major

airport, hotels, motels, sporting facilities and parks, fresh water, many engineering and supply outlets, major hospital, land ambulance, flying doctor. Home to the bi-annual Pacific Rim Landsailing Championships hosted by the Sandgropers Land Yacht Club. Last held in 2006. The worlds best land sailing surface!



Windjet at Lake Lefroy

Lake Lefroy 2005



The causeway goes out about 4 km into the lake



This picture is looking from the camp site out onto the lake. As you can see it has just rained but I drove out 5 km out onto the causeway with no problems. I walked onto the lake and the salt was bloody hard.



Close up picture of the surface of the lake



[View Larger Map](#)

More pictures from the [2006 Land Sailing Championships](#)
[Salt harvesting at Lake Lefroy in the 1940-50's](#)

Weather at Kambalda/Lake Lefroy
256 km Kalgoorlie Radar Loop

Lake Macleod

Western Australia 6701

Lake Macleod (located at [show location on an interactive map] 24°10S 113°30E / - 24.167, 113.5) is the westernmost lake in Western Australia. It is located north of the small coastal city of Carnarvon, estimated population 7,200.

Climatically, this part of Western Australia is greatly influenced by the north-flowing Western Australian current that brings cool water northward from Antarctica, which is not conducive to producing inland precipitation. This cool offshore current, coupled with a very flat coastal plain, contributes to the near-desert-like conditions along the coastal region as evidenced by the brown landscape around the lake and the highly reflective salt beds within the lake.

The low point in the lake appears to be near the northern end where the light blues indicate some standing water. Close inspection discloses very faint lines at the southernmost end of Lake Macleod where large evaporation beds are used for the production of high-quality salt and gypsum. Dirk Hartog, a Dutchman, made the first authenticated landing by a European along this coastline in 1616. Early explorers recorded phenomenal tidal ranges along this coastal area.

[View Larger Map](#)

Lake Mungo

New South Wales
north of Arumpo

Lake Mungo is a dry lake in south-western New South Wales, Australia. It is located about 740 km due west of Sydney and 90 km north-east of Mildura. The lake is the central feature of Mungo National Park, and is one of seventeen lakes in the World Heritage listed Willandra Lakes Region. Many important archaeological findings have been made at the lake, most significantly the discovery of the remains of Mungo Man, the oldest human found in Australia, and Mungo Lady, the oldest person in the world to be ritually cremated.

Sediments at Lake Mungo have been deposited over more than 100,000 years. On the eastern shore of the lake are the 'Walls of China', a 26 km long series of lunettes, about thirty metres high, formed over thousands of years. There are three distinct layers of sands and soil forming the Walls. The oldest is the reddish Gol Gol layer, formed between 100,000 and 120,000 years ago. The middle greyish layer is the Mungo layer, deposited between 50,000 and 25,000 years ago. The most recent is the Zanci layer, which is pale brown, and was laid down mostly between 25,000 and 15,000 years ago.

Email (08/6/2014) from Andy Chapman (ACh) to JL with four photos taken by ACh at Lake Ballard in May 1995 and one photo taken by him at Lake Boonderoo on 16/8/1995. JL already had a copy of the Boonderoo photo (or one very similar) but not the Lake Ballard photos. JL's request (08/5) and thanks (08/6) emails are also here.

Lane, Jim

From: Lane, Jim
Sent: Sunday, 8 June 2014 11:55 AM
To: 'Andrew Chapman'
Subject: RE: Emailing: Ballard 3, Ballard 4, Boonderoo 1, Ballard 1, Ballard 2

Many thanks for the photos Andy. I had a copy of the Boonderoo photo, but not the four from Ballard.

All the best,

Jim.

From: Andrew Chapman [<mailto:fishymaster1@bigpond.com>]
Sent: Sunday, 8 June 2014 11:10 AM
To: Lane, Jim
Subject: Emailing: Ballard 3, Ballard 4, Boonderoo 1, Ballard 1, Ballard 2

Hello Jim, Attached as discussed:
Ballard 1 Is. on which we camped
Ballard 2 Late arvo sun on small gypsum ls.
Ballard 3 Self explanatory (your hand by the way)
Ballard 4 Abandoned nesting colony at 29 28.80S, 121 02.00E
All May 1995
Boonderoo 1 Warwick Roe & Ian Kealley on Boonderoo 16/8/95
Kind regards, Andy.

The message is ready to be sent with the following file or link attachments:

Ballard 3
Ballard 4
Boonderoo 1
Ballard 1
Ballard 2

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Lane, Jim

From: Andrew Chapman <fishymaster1@bigpond.com>
Sent: Sunday, 8 June 2014 11:10 AM
To: Lane, Jim
Subject: Emailing: Ballard 3, Ballard 4, Boonderoo 1, Ballard 1, Ballard 2
Attachments: Ballard 3.jpg; Ballard 4.jpg; Boonderoo 1.jpg; Ballard 1.jpg; Ballard 2.jpg; "Certification"

Hello Jim, Attached as discussed:
Ballard 1 Is. on which we camped
Ballard 2 Late arvo sun on small gypsum Is.
Ballard 3 Self explanatory (your hand by the way)
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Ballard 4
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Ballard 1
Ballard 2

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

*Saved and
Call five photos, named appropriately (based on
Andy's description in this email) on 08/6/2014*



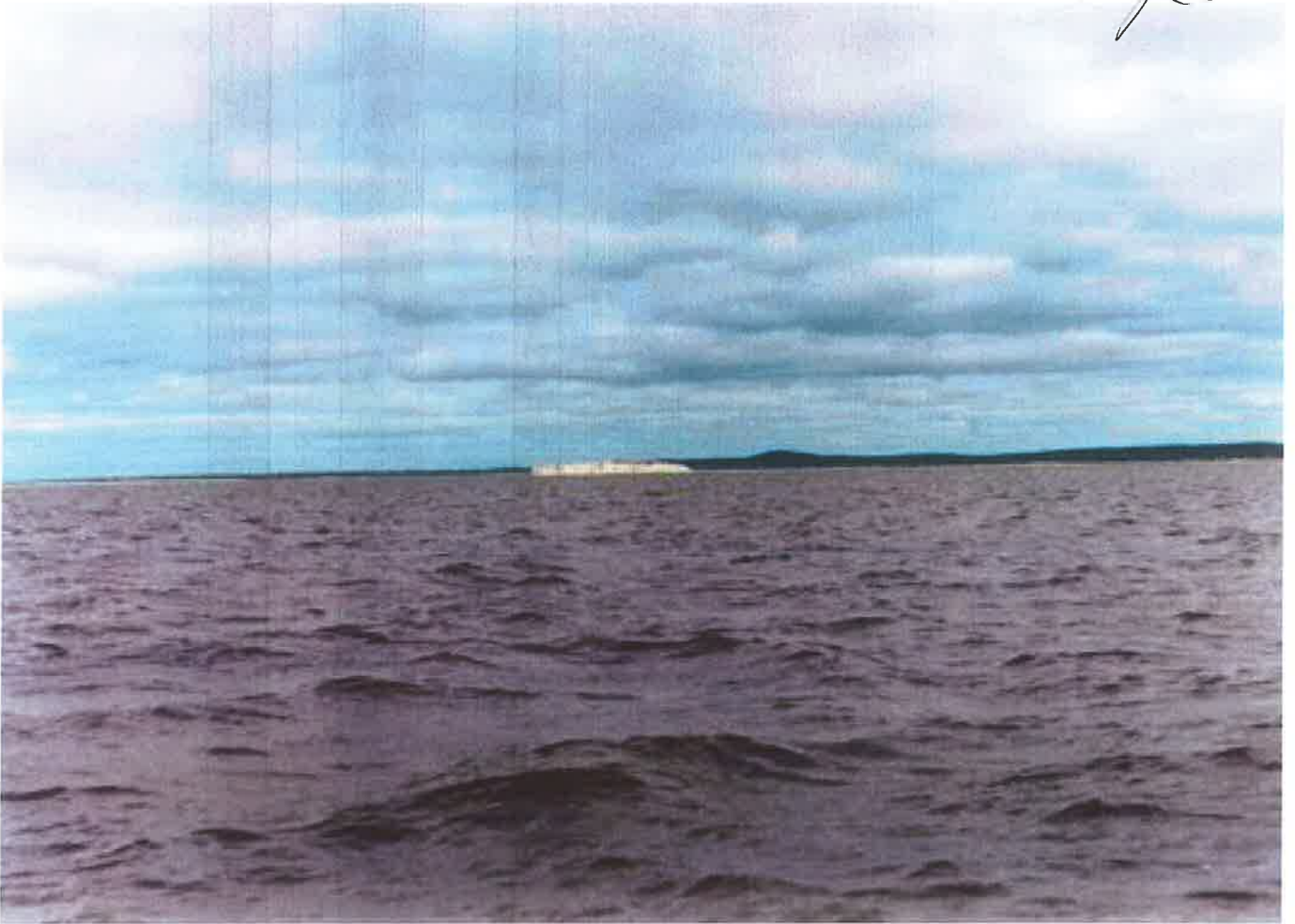
Printed 08/6/2014
R



"Ballard 1, May 95' (Camp Island; photo from ACh on 08 Jun 2014)"

JPEG "

Posted 08/6/2014 J.



"Bellard 2, May 95 ('late auro sun on small gypsum Is' photo from
ACH on 08 Jun 2014), JPEG."

Painted 08/6/2014 J



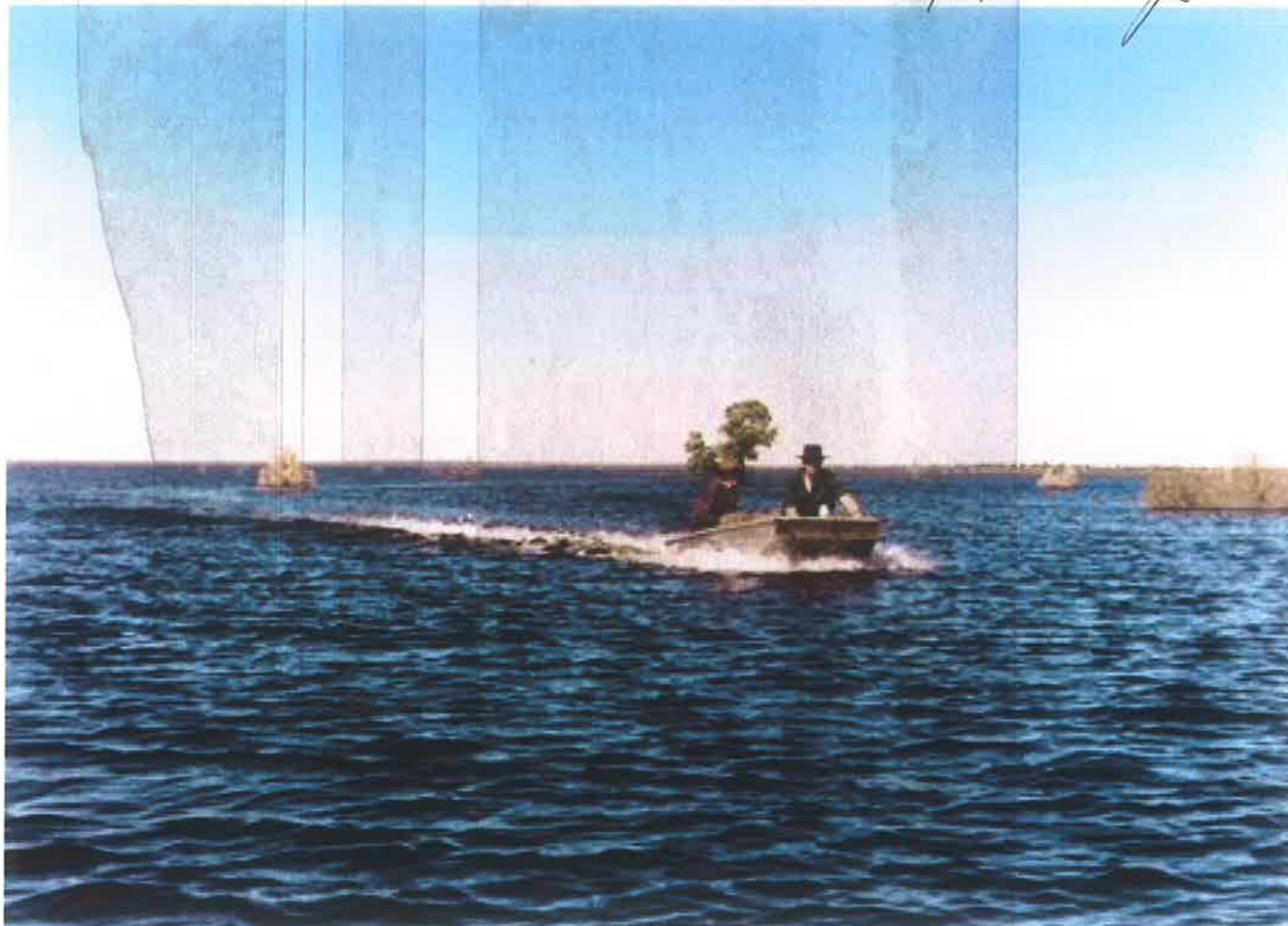
"Ballent 3, May 95 (Best chick bending & flogging ; photo from
ACH on 08 Jun 2014) - JPEG"

Pompeii 08/6/2014
R



"Ballena 4, May 95" (standard)
Colony at 29 28.805 121 02.00E'
Photo from ACh on 08 Jun 2014, JPEG "

Printed 08/6/2014 J



"Boondervo 1, 16 Aug 95 (WR + IK on Boondervo; photo from
ACH on 08 Jan 2014)". JPEG.

Lane, Jim

From: Lane, Jim
Sent: Thursday, 8 May 2014 11:19 AM
To: fishymaster1@bigpond.com
Subject: Lakes Ballard & Marmion 1995 photographs.
Attachments: m_Ballard, 1995.05.02 [4455] (s31) releasing flagd BaSt chicks [ACh].JPG; m_Ballard, 1995.05.02 [4456] (s32) catching BaSt chicks [ACh].JPG; m_Ballard, 1995.05.02 [4457] (s33) JAKL catching BaSt chicks [ACh].JPG; m_Ballard, 1995.05.02 [4458] (s34) catching BaSt chicks [ACh].JPG; m_Ballard, 1995.05.02 [4459] (s35) island [ACh].JPG; m_Ballard, 1995.05.02 [4460] (s36) JAKL resting [ACh].JPG; m_Ballard, 1995.05.02 [4461] (s37end) JAKL resting [ACh].JPG; m_Ballard, 1995.05.02 [4446] (s22) creche of BaSt chicks [ACh].JPG; m_Ballard, 1995.05.02 [4447] (s23) creche of BaSt chicks [ACh].JPG; m_Ballard, 1995.05.02 [4448] (s24) JAKL & ACI catch BaSt chicks, punt [ACh].JPG; m_Ballard, 1995.05.02 [4449] (s25) JAKL bands flags BaSt chick [ACh].JPG; m_Ballard, 1995.05.02 [4450] (s26) BaSt chicks in tub, flagd [ACh].JPG; m_Ballard, 1995.05.02 [4451] (s27) BaSt chicks in tub, flagd [ACh].JPG; m_Ballard, 1995.05.02 [4452] (s28) catching BaSt chicks [ACh].JPG; m_Ballard, 1995.05.02 [4453] (s29) catching BaSt chicks [ACh].JPG; m_Ballard, 1995.05.02 [4454] (s30) creche of BaSt chicks [ACh].JPG; m_Ballard, 1995.05.02 [4438x] (s14) JAKL bands flags BaSt chick [ACh].JPG; m_Ballard, 1995.05.02 [4438y] (s14) JAKL bands flags BaSt chick [ACh].JPG; m_Ballard, 1995.05.02 [4439] (s15) JAKL bands flags BaSt chick [ACh].JPG; m_Ballard, 1995.05.02 [4440] (s16) JAKL bands flags BaSt chick [ACh].JPG; m_Ballard, 1995.05.02 [4441] (s17) JL & ACI catch BaSt chicks, punt [ACh].JPG

G'Day Andy,

Over the past few months I have gathered together all my photos, Grant Pearson's, and some Ian Kealley has lent me, from Ballard and Marmion in 1995.

I also have some that you took, and subsequently gave (I think) to me, of our (you, me, Alan Clarke) BaSt banding & flagging activity on Ballard in May 1995.

Attached are razored' (to very small file sizes) copies of the photos you and IK gave / lent to me.

I'm wondering whether you have any other photos of Ballard or Marmion in 1995? If so, I'd be keen to borrow and scan them if possible?

I think that should be the last of my requests re the BaSt work! I've almost finished 'curation' of all the 1995 materials.

All the best,

Jim

PS: Let me know if you'd like higher resolution copies of any / all of the attached photos and I'll copy them to a 'thumb drive' and drop it in the mail.

PPS: Looks like I'll have to send the razored photos in several emails. I hope it's not too much for your email account.

Printout (04/6/2014) of 'Master table of distributions for *Parartemia* from Brian Timms (Read Only)' which is on the 'Confluence' area of the DPaW website courtesy of Adrian Pinder.

This table, inter alia, lists *Parartemia informis* at Lake Ballard (18/08/1978, M Geddes) and *Parartemia 'new species e'* at Lake Barlee (Savage). The paper by Geddes *et al.* '*On the chemistry and biota of some saline lakes in Western Australia. ...*' might be connected to this Geddes record. JL has marked (12/6/2014) the position of the coordinates for this Geddes record on an accompanying Google image. Its position indicates that either the lake had an extensive area of surface water on the collection date, or the coordinates are inaccurate.

Printed 04/16/2014
from "Confidence" (A. Parker) R.

"Master table of distributions for *Paratemia* from Brian Timms (Need Only)"

Occurrences in Table

• One Belknap
No Merion
• One Beelee
No Linnear (whinnex)

PARATEMIA DISTRIBUTIONS

P. contracta	locality	nearest town	coordinates	date	collector	where kept	other data	32,355	119,138
	King Rock Rd., northern lake	Hyden	32deg 21.3'S; 119deg 08.3'E	26-Jul-03	BVT	BVT	acid		
				3-Aug-04	BVT	BVT			
				31-Aug-04	BVT	BVT			
				12-Oct-08	BVT	BVT			
				9-Sep-08	ABP102	DEC			
	King RK Rd., southern lake	Hyden	32deg 21.5'S; 119 deg 08.1'E	6-Aug-05	BVT	BVT	acid	32,358	119,135
	small lake nr Cowcowing Lakes	Wyalatcham	30deg 58.4'S; 117deg 26.7'E	29-Aug-04	BVT	BVT	acid	32,973	117,445
	Aster L via Afghan Rocks	Norseman	32deg 21.3'S; 123deg 40.1'E	30-Aug-01	BVT	BVT		32,355	123,668
	Red Lake	? nr Kaigoorlie	??	24-Aug-98	A. Savage	BVT	no not Muirs Hwy, nor near Grass Patch,		
	lake nr L O Grady	E of Kalannie	30deg 25.68'S; 117deg 25.38'E	Aug-78	M Geddes	BVT		30,428	117,423
				My84_Ag85	Conte & Geddes, 1988				
	Mackay rd via Daiwallinu	via Pithara	30deg 26.7'S; 116deg 45.5'E	6-Aug-08	BVT	BVT		30,445	116,758
	L Dundas far north end	Norseman	32deg 20.5'S; 121deg 48.5'E	18-Oct-08	BVT	BVT		32,342	121,761
	Mackay Road	via Pithara	30deg 26.8'S; 116deg 45.7'E	ABP020	DEC			30,446	116,762
	Timcoos North Tnb King Rocks Rd West	via Hyden	32deg 19.5'S; 119deg 06.6'E	22/09/2006	ABP022	DEC		32,325	119,11
	Kondinin Salt Marsh Lake	via Kondinin	32deg 34.8'S; 118deg 24.2'E	24/08/1998	SPS016	DEC		32,581	118,403
	North Wallalbin NR Lake	via Koorda	30deg 55.1'S; 117deg 38.0'E	12/09/1999	SPS046	DEC	Not there in 2008 BVT	30,910	117,633
	Shackleton Lake	via Bruce Rock	31deg 56.5'S; 117deg 53.7'E	21/10/1997	SPS088	DEC		31,942	117,895
	Moornie South Lake	via Moornie Rock	31deg 23.9'S; 119deg 06.8'E	9/10/1997	SPS099	DEC		31,988	119,113
	Roachis Lake	via Pithara	30deg 24.8'E; 116deg 44.3'E	20/09/1989	SPS179	DEC		30,413	116,738
	Stokes Lake	via Cunderdin	31deg 37.41'S; 117deg 20.28'E		APB128	DEC		31,623	117,938
	East Hyden Rd	via Hyden	32deg 26.03'S; 118deg 55.95'E		APB103	DEC		32,434	118,932
	Sharman Rd	via Cadoux	30deg 44.09'S; 117deg 20.19'E		APB105	DEC		30,748	117,936
P. cylindrifera									
	Coorong, SA	13 lakes Kingston to Meningie			De Deckler & Geddes 1980				
	site 3		36deg 14.55'S; 139deg 42.35'E					36,243	139,706
	site 5		36deg 26.62'S; 139deg 45.70'E					36,444	139,762
	site 7		36deg 16.33'S; 139deg 43.88'E					36,272	139,731
	site 9		36deg 26.25'S; 139deg 47.33'E					36,437	139,789
	site 10		36deg 25.66'S; 139deg 47.33'E					36,428	139,789
	site 11		36deg 20.17'S; 139deg 44.82'E					36,336	139,747
	site 12		36deg 10.65'S; 139deg 39.77'E					36,177	139,663
	site 13		35deg 32.55'S; 139deg 21.63'E					36,543	139,36
	site 14		36deg 06.03'S; 139deg 37.70'E					36,101	139,628
	site 15		36deg 27.10'S; 139deg 47.88'E					36,452	139,798
	site 16		36deg 28.90'E; 139deg 48.75'E					36,482	139,813
	site 17		35deg 43.60'E; 139deg 38.73'E					35,726	139,645
	site 19		35deg 52.38'S; 139deg 19.98'E					35,873	139,933
	Lagoon Smis WNW Gawler	Gawler	34deg 35'S; 138deg 45'E	11-May-47	Mitchell	SAM		34,583	138,75
	nr Snow Lake, Yorke Pen	Innes Nat Pk	35deg 13.1'E; 136deg 57.4'E	26-Jul-05	BVT	BVT		35,218	136,957
	swamp nr Kyancurtta	Kyancurtta SA	33deg 10'S; 135deg 35'E	27-Aug-01	BVT	BVT		33,167	135,583
	Middle Lake, EP	Elliston SA	33deg 33'S; 134deg 53'E	26-Sep-05	BVT	BVT		33,55	134,883
	western Eyre Peninsula	16 lakes, from nr Steaky Bay to Warrrow, SA							
	3 CB Lake		32deg 57'S; 134deg 14'E					32,95	134,233
	7 Baird Monument Lake		33deg 02'S; 134deg 14'E					33,033	134,233
	8 Lake near Calapatana		33deg 02'S; 134deg 19'E					33,033	134,317
	12 Lake mid Newland		33deg 26'S; 134deg 53'E					33,433	134,883
	13 lake east of No 12		33deg 26'S; 134deg 53'E					33,433	134,883
	14 Middle Lake		33deg 33'S; 134deg 54'E					33,55	134,883
	15 "Three Lakes Pond"		33deg 35'S; 134deg 54'E					33,583	134,9
	16 "Three Lake North"		33deg 35'S; 134deg 54'E					33,583	134,9
	17 "Three Lakes South"		33deg 35'S; 134deg 54'E					33,583	134,9
	18 "Nth Elliston Lake"		33deg 38'S; 134deg 52'E					33,633	134,867
	19 Hamp Lake		33deg 38'S; 134deg 53'E					33,633	134,883
	20 Elliston Cemetery Lake		33deg 39'S; 134deg 53'E					33,65	134,883
	21 Lake Tungketta		33deg 46'S; 135deg 05'E					33,767	135,083
	28 lake east of No 27		34deg 11'S; 135deg 33'E					34,183	135,55
	31. lake east of L. Greenly		34deg 20'S; 135deg 26'E					34,333	135,433
	32. lake on Warrrow Road'		34deg 19'S; 135deg 28'E					34,317	135,467
	swamp nr Fowlers Bay	Fowlers Bay SA	31deg 58.8'S; 132deg 24.7'E	30-Jul-07	BVT	BVT		31,98	132,412
	Coorabee	Fowlers Bay SA	31deg 55'S; 132deg 17'E	30-Jul-07	BVT	BVT		31,883	132,283

10.4 km NNE Norseman	32deg 05'S; 121deg 50'E	WAM	1-Apr-61	H E Hall	WAM	32.083	121.833
little pool near Marbelsump	33deg 51.4'S; 123deg 05.6'E	BVT	31-Jan-07	BVT	BVT	33.857	123.093
Kau NR Lake on Mt Nev Track	33deg 28.41'E; 122deg 21.29'E	BVT	9-Oct-08	BVT	BVT	33.474	122.355
Kau Rd	33deg 31.68'S; 122deg 25.61'E	BVT	13-Sep-05	BVT	BVT	33.528	122.427
Tedis Rd	33deg 52.3'S; 121deg 51.9'E	BVT	24-Jan-07	BVT	BVT	32.872	121.865
Logans Rd	33deg 08.7'S; 121deg 51.0'E	BVT	25-Jan-07	BVT	BVT	33.145	121.85
Scaddan Highway Lake	33deg 24.39'S; 121deg 42.3'E	BVT	10-Aug-08	BVT	BVT	33.407	121.705
Griffiths Rd	33deg 28.88'S; 121deg 41.81'E	BVT	18-Oct-08	BVT	BVT	33.481	121.697
Esperance hinterland:							
21 Mid Dempster	33deg 24'S; 122deg 03'E					33.4	122.05
31 Coolingup	33deg 39'S; 122deg 23'E					33.65	122.383
32 Kau Rock	33deg 25'S; 122deg 20'E					33.417	122.333
37 Kau Rd Sth	33deg 29'S; 122deg 23'E					33.463	122.383
40 Heywood	33deg 29'S; 122deg 37'E					33.463	122.617
Upper Oldfield R	33deg 15'S; 120deg 28'E					33.25	120.487
Holt Rd lakelets	33deg 34.5'S; 119deg 25.0'E	GI	11-Sep-06	GI	GI	33.575	119.417
Holt Rd lakelets	33deg 34.0'S; 119deg 25.0'E	BVT	12-Aug-08	BVT	BVT	33.575	119.417
ck into L Hurfstone	33deg 42.6'S; 119deg 22.0'E	BVT	8-Aug-08	BVT	BVT	33.566	119.417
ck into L Varley	33deg 42.6'S; 119deg 22.0'E	BVT	23-Aug-05	BVT	BVT	32.71	119.347
Dump/camp Lake nr L Carmody	33deg 33.3'S; 119deg 20.8'E	BVT	12-Aug-08	BVT	BVT	33.555	119.347
L Carmody thereabouts	33deg 31'S; 119deg 20'E	BVT	5-Aug-98	A Savage	BVT	33.517	119.333
near Graham Rock	33deg 26.3'E; 119deg 05.2'E	BVT	26-Jul-03	BVT	BVT	32.438	119.087
lakelet E of L Magenta	33deg 30.6'S; 119deg 16.3'E	BVT	7-Oct-08	BVT	BVT	33.51	119.271
Lake Janet	33deg 21.2'S; 118deg 47.9'E	BVT	16-Jul-04	BVT	BVT	33.353	118.796
small lake 15.3 km S of L Grace	33deg 15.27'S; 118deg 28.73'E	paper	Aug-78	M Geddes	paper	33.255	118.479
pool near Lake Grace	33deg 07.5; 118deg 28'E	BVT	6-Jul-03	BVT	BVT	33.117	118.479
nr Lake Althern	33deg 20.4'S; 118deg 27.6'E	BVT	6-Sep-03	BVT	BVT	33.34	118.46
pool nr Lake Grace	33deg 06.62'S; 118deg 22.90'E	BVT	Aug-78	M Geddes	BVT	33.11	118.381
Buniche	33deg 11.8deg 49'58" E	WAMI	J Savage	J Savage	WAMI	33	118.83
Tuckers Rd swamp	34deg 25.5'S; 117deg 16.2'E	BVT	7-Sep-03	BVT	BVT	34.425	117.27
Tuckers Rd Salt Lake	34deg 25.0'S; 117deg 15.1'E	BVT	5-Oct-08	BVT	BVT	34.417	117.252
Besamont NR Salt Lake	33deg 28.0'S; 122deg 36.7'E	DEC	SFS112	SFS112	DEC	33.467	122.612

Timms in press (Esp lakes paper)

P. extracta

Jurien Salt lake near Perenjori	30deg 13'S; 115deg 03'E	BVT	24-Aug-05	J Davis	BVT	30.217	115.05
Perenjori	ca 29deg 27'; 116deg 22'E	BVT	26-Apr-97	A Savage	BVT	29.045	116.367
Minnivale	31deg 7'58"S; 117deg 10'58"E	WAM		R C Whitton	WAM	31.133	117.183
Moora	30deg 38'S; 116 deg 01'E	WAM	1961	Gordon	WAM	30.633	116.016
temp lake E of L Dowerin	31deg 14.87'S; 117deg 3.75'E	BVT	Aug-78	M Geddes	BVT	31.248	117.053
Wybla Rd	31deg 37.59'S; 117deg 21.70'E	DEC	26 Sep-08	ABP123	DEC	31.627	117.362
Saline lake at Kuender Road Nature Reserve	32deg 57.61'S; 118deg 25.96'E	DEC	8/09/2008	ABP101	DEC	32.96	118.433

P. informis

Lake Austin	27deg 36.35'S; 117deg 54.03'E	BVT	Aug-78	M Geddes	BVT	27.606	117.901
Salt Ck on Koojji Koojji	29deg 07.8'S; 116deg 21.1'E	BVT	Aug-01	BVT	BVT	29.13	116.252
Morawa	29deg 13" 1'S; 116deg E	WAM		M Switzer	WAM	29.217	116
Lake Mongers	29deg 30'S; 117deg 15.89'E	WAM		SR Walli	WAM	29.5	117.266
Three Springs Taic mine	29deg 31'S; 115deg 55'E	WAM	Aug-78	M Geddes	WAM	29.517	115.917
Mongers Lake at Wanarra Xing	29deg 32.5'S; 116deg 42.6'E	BVT	1923	S Oliver	BVT	29.542	116.71
L De Coursey	29deg 37.18'S; 121deg 07.82'E	BVT	1975		BVT	29.619	121.13
lake west side of De Coursey	30deg 14.7'S; 117deg 04.7'E	BVT	30-Jul-08	BVT	BVT	30.233	117.067
Battaglia Rd	30deg 15.4'S; 117deg 11.0'E	BVT	1-Apr-08	Veronica	BVT	30.245	117.078
lake sw of De Coursey	30deg 17.4'S; 117deg 05.9'E	BVT	31-Jul-08	BVT	BVT	30.257	117.183
Lake Moore	30deg 20.42'S; 117deg 29.07'E	BVT	18-Aug-78	M Geddes	BVT	30.29	117.098
lake 6.5 km E of Kalannie	30deg 21.9'S; 117deg 12.2'E	BVT	14-Sep-03	BVT	BVT	30.34	117.484
Lake Samphire	30deg 27.06'S; 117deg 29.68'E	BVT	29-Aug-04	BVT	BVT	30.365	117.203
lake on Wackay Rd	30deg 27.8'S; 116deg 44.6'E	BVT	4-Oct-08	BVT	BVT	30.451	117.495
pool in L Cowcowing	30deg 56.48'S; 117deg 17.32'E	BVT	4-Oct-08	BVT	BVT	30.463	116.743
lake nr L Koombekine	31deg 04.05'S; 117deg 00.93'E	BVT	Aug-78	M Geddes	BVT	30.941	117.299
L Koolanooka	no such lake	BVT	Aug-78	M Geddes	BVT	31.068	117.016
Cornish Road d/s Lake Brown	31deg 03.9'S; 118deg 11.5'E	DEC	Aug-78	A Savage	BVT	31.065	118.192

29° 37' 11" 121° 07' 49"



Doodlakine Kununopping Road	31deg 13.1'S; 117deg 52.2'E	20/09/2008	ABP006	DEC	31.218	117.87
Un-named claypan (Wooramel)	via Wooramel Roadhouse	27/08/1984	SPS025	DEC	26.035	114.33
Lake Goony at Glanoff Causeway	30deg 09.0'S; 117deg 02.0'E	18/08/1989	SPS144	DEC	30.15	117.033
Kelly Road Salt Flat	28deg 44.2'S; 115deg 48.5'E	26/07/1989	SPS184	DEC	28.737	115.808
Geobulla Creek	29deg 26.8'S; 115deg 47.8'E	12/10/2007	YAR008	DEC	29.446	115.796
P. longicaudata						
Lake Darrindella	33deg 39'S; 123deg 49'E	Aug-78	BVT	BVT	33.65	123.817
Lake Warden, Esperance	33deg 49.6'S; 121deg 53.29'E	Aug-78	M Geddes	WAM	33.827	121.888
Lake Warden, Esperance						
Pink Lake Esp	33deg 51.22'S; 121deg 49.88'E		AKL		33.854	121.831
			M Geddes			
Nth Speedingup Lake	33deg 30.94'S; 121deg 52.20'E		BVT	BVT	33.516	121.87
Esperance hinterland:	2 sites in hinterland, Inc 1 above		Timms (in press ESP)			
34 Kau Nat Res	33deg 28'S; 122deg 22'E		BVT		33.467	122.367
29 km S of Lake King	33deg 18.8'S; 119deg 48.7'E	5-Aug-06	BVT	BVT	33.313	119.812
Sugg Lake	32deg 57.8'S; 119deg 39.6'E	1-Aug-05	BVT	BVT	32.963	119.66
Lake King, near town	33deg 05.42'S; 119deg 34.78'E	Aug-78	M Geddes	not here now	33.09	119.58
lake NE of Hurlstone	32deg 05'S; 119deg 25.7'E	17-Sep-05	BVT	BVT	32.083	119.428
Lake S of L Carmody	32deg 32.7'S; 119deg 22.7'E	16-Jul-02	BVT	BVT	32.545	119.378
Lake Carmody	32deg 33'S; 119deg 21'E	12-Aug-08	BVT	BVT	32.55	119.35
lake cmr Sharps/Carmody Rd	32deg 27.2'S; 119deg 5.3'E	24-Sep-04	BVT	BVT	32.453	119.088
Lake Burkett	33deg 05.13'S; 119deg 02.90'E	Aug-78	M Geddes		33.086	119.048
Lake Stubbs	33deg 03.52'S; 119deg 01.43'E	Aug-78	M Geddes		33.059	119.024
1 km from L Biddy Hmst	33deg 00.82'S; 118deg 55.28'E		M Geddes		33.014	118.921
Kuender Rd Nature Reserve	32deg 57.61'S; 118deg 29.95'E	24-Aug-78	ABP101	BVT	32.96	118.499
19 km S of Lake Grace	33deg 16'S; 118deg 28.2'E	8-Sep-08	BVT	DEC	33.267	118.47
Lake Grace, north basin	32deg 06.48'S; 118deg 24.03'E	28-Jul-08	BVT	BVT	33.108	118.405
lake N of Kurren Kuiten	32deg 14.3'S; 118deg 6.5'E	Aug-78	M Geddes		32.238	118.108
near Yarra Yarra Lake	29deg 46.2'S; 115deg 54.6'E		BVT	BVT	29.77	115.876
Tyrols Rd Lake						
Culham Inlet	33deg 54'S; 120deg 04'E		WAM		33.9	120.067
Dempster Inlet	34deg 04'S; 119deg 39'E	15-Jul-70	R Prince	WAM	34.067	119.065
Un-named Lake at Dumhart Rd, Lake Cairncop NRP	33deg 42.42'S; 118deg 41.29'E	13/09/2007	ABP043	DEC	33.707	118.688
Un-named Lake at Pinguip-Lake Grace Rd, Pinguip	33deg 18.19'S; 118deg 28.59'E	17/10/2007	ABP074	DEC	33.303	118.476
Un-named wetland E of Norwood road	33deg 26.54'S; 121deg 49.24'E	17/10/2007	ESP027	DEC	33.442	121.821
Lake Varley	32deg 42.38'S; 119deg 21.38'E	23/08/1988	SPS019	DEC	32.706	119.356
Pickershill Lake	32deg 19.35'S; 118 deg 01.70'E	7/10/1997	SPS066	DEC	32.372	118.028
Lake King	33deg 05.42'S; 119deg 35.53'E	21/08/1988	SPS071	DEC	33.09	119.592
Magenta Salt Lake	33deg 34.65'S; 119deg 12.32'E	26/08/1988	SPS080	DEC	33.577	119.205
Gundydi Lake East	30deg 07.62'S; 116deg 13.52'E	17/09/1989	SPS157	DEC	30.127	116.225
Yarra Yarra Lake	29deg 34.99'S; 115deg 45.50'E	12/08/1989	SPS162	DEC	29.583	115.758
Nullewa Lake	29deg 06.90'S; 116deg 12.03'E	15/08/1989	SPS164	DEC	29.115	116.2
Mongers Lake	29deg 32.58'S; 116deg 42.35'E	16/08/1989	SPS166	DEC	29.543	116.706
Tardun CBC Salt Lake	28deg 45.19'S; 115deg 51.32'E	25/07/1989	SPS186	DEC	28.753	115.855
Lake Altham	33deg 24.52'S; 118deg 26.72'E	4/11/1988	SPM006	DEC	33.409	118.445
Lake Ronneup	33deg 15.13'S; 119deg 37.13'E	20/10/1989	SPM025	DEC	33.252	119.619
			SPM025	DEC		
Isthmus Lake	33deg 19.50'S; 118deg 27.08'E	25/10/2003	SPM025	DEC	33.325	118.451
Anderson Lake	34deg 11.03'S; 117deg 57.62'E	25/08/1988	SPS058	DEC	34.184	117.96
			SPS106	DEC		
P. minuta						
L Buchanan Qld	21deg 35'S; 145 deg 52'E	15-Apr-71	T House	BVT	21.583	145.867
Mogga Ck into L Buchanan	21deg 30'S; 145deg 55'E	15-Apr-71	P18918-20	AM	21.5	145.917
	21deg 29.4 S; 145deg 49.8 E	1-Jul-08	BVT	BVT	21.49	145.83

Pink lake, V	38deg 06'E; 143deg 40'E	1973-1975	1970	Geddes, 1976 Marchant & Williams 77 Geddes, 1976	38.1	143.67
L Weerang	38deg 05.4'S; 143deg 42'E		1970		38.09	143.7
Duck Lake South	35deg 39.2'S; 143deg 48.2'E		20-Apr-89	NMV	35.653	143.803
L Corangamite	38deg 05'S; 143deg 23'E		25-Jun-05		38.15	143.38
small lake near Centre Lake, V	37deg 02'E; 141deg 46'E			Timms 2004	37.033	141.766
Bookmark Ck	34.03'S; 140.726 E			1965 Bayly & Williams 1966		
brackish water	36deg 58'S; 140deg 49'E		18-Nov-03	Vlad		
Coorong SA				SAM	36.967	140.817
site 21	35deg 14.60'S; 139deg 15.47'E				35.243	139.258
site 22	36deg 08.97'S; 139deg 28.45'E				36.149	139.474
site 23	35deg 35.20'S; 135deg 22.52'E				35.587	139.375
Coorong, 5km S of Salt Ck	36deg 16'S; 139deg 42'E			SAM	36.267	139.7
near Lake Alexandrina, SA	32deg 25'S; 139deg 10'E			SAM/NMV	32.417	139.167
Pond 1.S. Kilda	34deg 42.5'S; 138deg 32'E			SAM	34.708	138.533
St. Kilda pond 4	34deg 43'S; 138deg 31'E				34.717	138.517
Dry CK Saltfields	34deg 48'S; 138deg 34'E				34.8	138.567
a salt lake 5.5 km NE of Lochiel	33deg 54' 50"S; 138deg 12' 45"E			Mitchell & Geddes 1977	33.914	138.212
Lake Voight	34deg 18'S; 138deg 01'E			P. Hudson P. Hudson	34.3	138.002
Deep L, Yorke Pen	35deg 15.9'S; 135deg 51.3'E		26-Jul-05	BVT	35.265	135.855
pond in a gypsum lake NW of Innesston	35deg 14'E; 136deg 51.6'E			SAM	35.233	136.86
a gypsum lake, Innesston	35deg 16.5'S; 136deg 53.5'E			SAM	35.275	136.892
a salt lake ca 10 km E of Old Paney Homestead	32deg 35.5'S; 135deg 23.5'E			Aerfeldt	32.592	135.392
lake between Wirrulla & Hiltaba	32deg 19'S; 135deg 01'E			SAM	32.317	135.001
Tregolara Lake	32deg 51'S; 137deg 37'E			P Hudson	32.85	137.617
lower western Eyre Pen. SA		2004-06		SAM		
10 Spring Overflow	33° 23'S; 134° 50'E			Timms (in press) EP	33.383	134.833
11 Lake Newland nrH	33° 21'S; 134° 51'E				33.35	134.85
24 Lake Hamilton	34° 00'S; 135° 17'E				34	135.833
27 lake nrh of Malata L	34° 10'S; 135° 32'E				34.167	135.853
29 Malata Lake	34° 13'S; 134° 59'E				34.217	135.533
34 Lake Baird	34° 21'S; 135° 40'E				34.35	135.667
36 Pellana Lagoon centre	34° 18'S; 135° 37'E				34.3	135.617
saline ponds at Penong	32deg 01'S; 133deg 03'E			SAM	32.016	133.005
new species a						
unnamed near Scaddan, nrh	33deg 28'S; 121deg 49'E		2-Aug-05	BVT	33.467	121.817
unnamed near Scaddan, sth	33deg 28'S; 121deg 49'E		2-Aug-05	BVT		
Burdett Rd	33deg 30'S; 122deg 16'E		5-Sep-04	BVT	33.5	122.267
Norwood	33deg 25'S; 122deg 02'E		5-Sep-04	BVT	33.417	122.033
Dempster Ck	33deg 34'4"S; 121deg 59' 5"E		5-Sep-04	BVT	33.573	121.992
Speddingup Sth	33deg 32'S; 121deg 53'E		10-Aug-08	BVT		
Kau Nat Res 58a	33deg 28'S; 122deg 22'E		8-Oct-08	BVT	33.533	121.883
Kau Rk Pond 2	33deg 25'S; 122deg 20'E		9-Oct-08	BVT	33.467	122.367
Esperance hinterland:			9-Oct-08	BVT	33.417	122.333
15 Lignite East	13 sites, inc 7 above		04-07	Timms (in press) Esp	33.317	121.983
22 Styles Sth	33deg 19'S; 121deg 59'E				33.417	121.917
30 Eld Rd	33deg 25'S; 121deg 55'E				33.55	122.36
32 Kau Rk	33deg 33'S; 122deg 21'E				33.533	122.333
38 Kau Rd nrh	33deg 25'S; 122deg 20'E				33.533	122.433
41 Berg Rd	33deg 32'S; 122deg 26'E				33.5	122.65
Beaumont NR Salt Lake	33deg 30'S; 122deg 39'E				33.466	122.612
new species b			4/09/98	SP5130		
FHNP 2.8 km S of road	32deg 57.83'S; 120deg 21.68'E		7-Oct-08	BVT	32.964	120.361
split lake L Carmody Rd	32deg 27.75'S; 119deg 10.5'E		13-Oct-08	BVT		
300m w of above site	32deg 27.85'S; 119deg 10.4'E		20-Aug-98	SP5089	32.462	119.175
		12-Sep-08		BVT		
		12-Sep-08		BVT	32.463	119.173
new species c						

L. Carey, 1 km into lake (51)	via Laverton	28deg 53.54'S; 122deg 21.75'E	27-Jan-07	Bindy	Bindy	28.892	122.362
L. Carey, mouth of Standpipe Ck	via Laverton	28deg 53.55'S; 122deg 22.47'E	Mar-04	BVT	BVT	28.892	122.374
L. Carey, Red October Cause(48)	via Laverton	29deg 14.13'S; 122deg 24.82'E	27-Jan-07	Bindy	Bindy	29.235	122.413
L. Carey southern causeway	via Laverton	29deg 18.72'S; 122deg 34.18'E	Mar-04	BVT	BVT	29.312	122.56
SA species 1	Great Victoria Desert	28deg 01.11'S; 129deg 01.37'E	30-Jul-06	J. Forrest	SAM	28.017	129.027
SA species 2	Great Victoria Desert	29deg 09.00'S; 130deg 14.30'E	19-Dec-94	Hudson	SAM	29.15	130.242
SA species 3	via Maralinga	30deg 15.10'S; 131deg 18.00'E	16-Sep-79	J Glover	SAM	30.253	131.3
Lake Yarle	via Woomera	31deg 42'S; 137deg 13.5'E	1-Feb-07	PH & GT	SAM	31.7	137.225
Ironstone Lagoon	via Kimba	33deg 1.25'S; 136deg 36.7'E	6-Aug-05	Hudson	SAM	33.023	136.602
Lake Gillis	via Kingoonya	30deg 41.30'S; 135deg 11.55'E	12-Jun-04	PH & GT	SAM	30.693	135.198
Lake Labyrinth	via Kingoonya	31deg 08.51'S; 135deg 18.30'E	19-Mar-03	PH & GT	SAM	31.147	135.308
Lake Harris	via Tarcoola	30deg 51.01'S; 134deg 58.35'E	13-Jun-04	PH & GT	SAM	30.85	134.976
"Carters Well Lake"							



M Geddes 18-Aug-78 Parartemia informis record (allegedly)

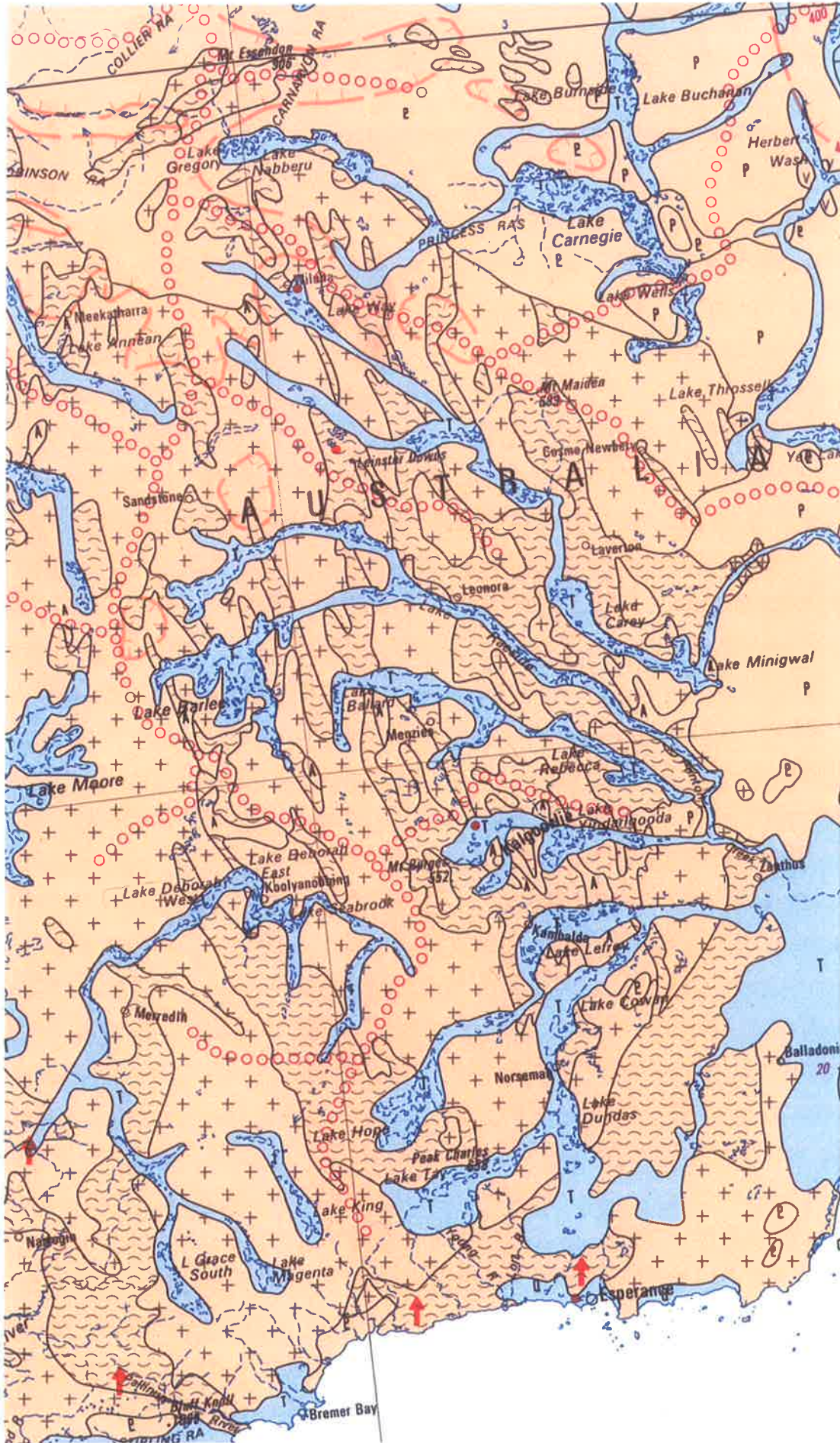
Image © 2014 CNES / Astrium
Image © 2014 DigitalGlobe
© 2014 Google

Google earth

Map headed 'Hydrogeology of Australia', downloaded from internet on 06/6/2014 by JL. Also an enlargement of the Eastern Goldfields (of WA) area of this map. Palaeochannels are shown.

"Extract from Hydrogeology of Australia map - pdf"

Printed 06/6/2014



**Map headed 'WASANT [WA, SA, NT] PALAEOVALLEY MAP',
downloaded from internet on 04/6/2014 by JL. Palaeochannels are shown.**

**JL was unable to easily print an enlargement of the Eastern Goldfields
(of WA) area of this map.**

Fax (20/5/1997) from JL to GBP asking if he had 'one or two good quality photos from / of Lake Marmion'. 'They are needed to accompany a WWF report recommending that Marmion be on [the] Register of [the?] National Estate'. Consider checking the WWF report or the Register for any new information relating to Banded Stilt breeding in WA.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
BUSSELTON DISTRICT

FAX NO: (097) 521 432

FAXED

TO: GRANT PEARSON URGENT: YES / NO

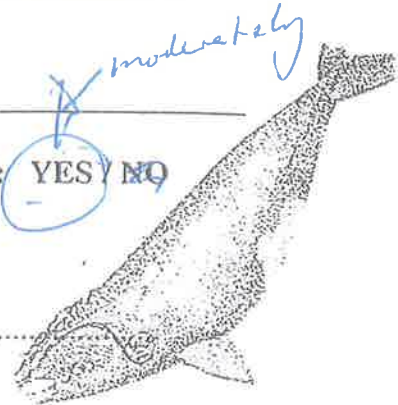
AT: WRC

Fax No. _____

FROM: J.L.

DATE: 20/5/97 Your Ref: _____

Local Ref: _____



Do ~~you~~ you have one or two good quality
photo from / of Lake Murrumbidgee ?? They
are needed to accompany a WWP report recommending

No. of pages inc. this page: 1 that Murrumbidgee be on Register of National Lakes.
Please call us on (097) 521 677 if this message was incomplete or illegible

Copy of a memo (undated) from ACI to GBP headed 'Creery Lagoon Waterbird Survey 16/5/96'. This was probably in response to JL's fax of 04/8/1997 below. The species and numbers recorded during this survey are listed.

The note 'Additional birds seen in Harvey River: Pink-eared Duck 1; Darter 4' suggests that ACI visited the lower Harvey River on the same day, probably to conduct salinity profiling of it and the Harvey estuary south of Herron Point Ford. That was one of several projects conducted by JL, GBP & ACI looking at some of the impacts of the recently-constructed Dawesville Channel on Peel-Harvey Estuary, particularly its waterbirds.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

132

Form CLM 80A

To: GRANT

From:

19

Your Ref:
Our Ref:
Enquiries:
Phone:

Subject: CREWERY LAGOON WATERBIRD SURVEY 16/5/96

Australian White Heron	12
Little Egret	6
Black Swan	148
Greenshank	2
Grey Seal	269 645
Pacific Black Duck	20
Great Egret	6
Black Wing Stilt	142
White-faced Heron	11
Yellow-billed Spoonbill	18
Aust. Pelican	1
Little Black cormorant	1
Little Pied cormorant	1
Shelduck (AUST)	16
avocet (Aust)	20
Banded Stilt	6
Hoary-headed Grebe	8

Additional birds seen in Harvey River

Pink-eared Duck	1
Darter	4

A collection of photocopies of field notes supplied to JL by GBP in response to JL's request of 04/8/1997 below. These field notes detail observations made by GBP during visits to Boundary Island and/or Creery Lagoon on 16/8/1994, 02/11/1995 (with BaSt numbers on 'Pearce Lake' on 05/11/1995, 23/4/1996, 01/12/1995, 28/8/1996 & 13/8/1996.

10/18/94

Banders 150
ca 150 birds in southern area on
long sand area of sand.
Some with presumed breeding spots.
not seen ~~in~~ near all roads.

2 birds on edge of sand on a
corner. Not in their spots.
Some on sand on edge of sand
on SE corner of sand.

On SE corner of sand
+ several other spots of sand.
They are very close to
each other. We came in
from west side of the valley.
Missing birds on sand.

11/15

10/18/94
Survey began

Main pod. Bust 20. 50-6 feeding in
pod + around way in.

PT Spent 8 feeding in pod.
Saw 124. 21 feeding
Bust 15. feeding + roosting
like young bird + calling
Sight 1. roosting
Sight 1. roosting

Western pods
Bust 11 feeding in sand area + pod
Sight 3 feeding at edge of pod
Sight 1 feeding

Jain dom
Prox
Gert Kemner
Woodward

7/18/97

153

2/11/95

Creed

Shel 321 ~~321~~

Swan 14

Swan 9

Walter 1 + 11 feeding on pods

Russ 2 + 50

Walt 32

Foster Curlew 1

Whimbrel 2

5/1/95

Gordon Lake

Shel 2

Horseshell

Rust 1, 2, 1, 3, 10

Curr 2

Turnstone 1, 1

Sisk 2, 1, Common

Shel 2, 1

Pearse Lake

Best 160 + 190 + 20

20 with dull plumage + grey legs

700 with chest band will double

Rust 42

Birds nesting - feeding occasionally

Walter is with 10 m

2514 Creery

0:11
~~0:11~~ Depth 29/4/96
 1345 hrs. Skiff clear

NBSB	53
SACI	1 + 6 + 10
Wlth	6
Swan	88 + 16 + 6
Shel	40
Gyft	1
PABO	1
Bush	40 + 63
2 Curlew	1
Gyft	6 + 4
Lite	1 + 4
Gyft	6
BA94	250 on stn pad

	Herring	Edwing	Delta
Swan	142		Roosky widely dispersed
Road	83		feeding at mouth
Shel	28		Roosky
Gyft	1		Roosky
APel	31		Roosky
Gyft C.	6		Roosky
Dart	4		"
Gyft	16		flyer into row
CAST	12		Roosky
SICI	4		Roosky
Gyft	1		feeding
MusD	2		
PABO	80		} at SW edge of mouth
Gyft	200		
Shel	1		

1/12/95

0900 to Reel. inlet

1205 Creevy lagoon

Sheid	.700 + 52 +	
Swam	1 + 4 + 1	
PaBD	90 + 256	1 brood 6 CII
eggs	30 + 125	
LITE	1	
GITE	1	
E. Curlew	6 + 7 + 7	
Whim	1	
Gank	1 + 9	
sigl	8	
uicorn	-	
u:dk	50	
u:wdk	200	
u:fh	1	

1245 finish

28/8/96

133 Clear still

Creary Lagoon

Gull 1.1

Shel 2.2.1

Swan 1.1

Syl. 6

Spurk 1

LUTE 1.1

PADD 1

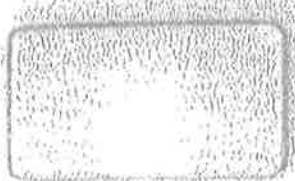
Shel 6

PADD 1

LUTE 1

Lit Gon Ad 1

2 Shel dabbling in shallow pools
on hard exposed tracks or



12-15 to Wke

Creery 13/8/20

- Wife 1
- Salt 2
- Swan 3
- Wife 1
- Sheep 2
- Seal 6
- Crab 1
- ~~With lagoon~~
- Wife 1
- Eggs 1
- Wife 1
- Whistler off
- Bel 2
- Wife 2
- Wife 1
- Wife 2

hunting in Scaup
 of and
 roosting in Scaup
 in Scaup
 in Scaup

Copies (B&W and colour) of a one page fax (04/8/1997) from JL to GBP saying: 'I am preparing a report on the Peel-Harvey work to meet an EPA requirement of monitoring agencies [monitoring impacts of recently-constructed Dawesville Channel]'. I have copies of most of your reports on Boundary Island [north side of Peel Inlet] visits but have no reports for: ... [a long list of dates (months only) from January 1995 to January 1997 follows]. 'Please ... fax to me any reports I don't have. Photocopies of field notes will suffice.

GBP has annotated this list with actual dates of visits [by him, and possibly also some by ACI] to Boundary Island and summary details of pelican numbers and nesting activity.

The significance of this list is that GBP & ACI were to survey nearby Creery Lagoon for BaSt numbers when visiting Boundary Island to check on pelican nesting activity.

At some stage it will be desirable to collate all of the Creery Lagoon (BaSt and other waterbirds) survey reports & notes and look for timing / patterns / probable causes of BaSt movements to and from Creery Lagoon.

142

To: Grant Pearson@WOOD.SID, Alan Clarke@WOOD.SID
From: Jim Lane@buss.sid
Cc:
Bcc:
Subject: Boundary I. pelican colony records
Attachment:
Date: 4/08/97 2:33 PM

I am preparing a report on the Peel-Harvey work to meet an EPA requirement of monitoring agencies.

I have copies of most of your reports on Boundary Island visits but have no reports for:

29/6/95	Jun 95	40 Ad at Colony	80 Ad on beach	No eggs or nesting
	Jan 95			
9/2/95	Feb 95	250 Adults	20+ JUV at wharves	91 Ad onshore
15/6/95	Jun 95	30 Ad on beach	53 Ad on Colony	35 JUV 6 dead squabs
	Jul 95			
30/8/95	Aug 95	1 did Creamy	- No record of Boundary Isd report - empty	
22/9/95	Sep 95	32 Ad on beach	no breeding	
6/10/95	Oct 95	18 Ad on beach	1 JUV being fed on beach	
17/11	Nov 95	Creamy - No boundary	Alamy?	
11/2	Dec 95	140 Adults	No breeding 29	
2/6/96	Jun 96	250 at nesting site	150 large chicks	25 Ad on young 75 Ad in Colony
27/12/96	Dec 96	300 Adults at Colony	60 on nests	eggs seen
	May 97			
	Jul 97			

I have reports of one visit only for:

17/11/94	Nov 94	28+	32 Ad on beach w/ 17 JUV	15 medium Yng	2 small Yng	6 downy dead	43 Squabs
7/10/94	Oct 94						
17/11/94	Nov 94	(3rd)	114 Ad at Colony	54 JUV			
9/3/95	Mar 95	(21st)	100-120 Chicks med-large	20 Squabs	2-3 wks	80-100 Ad in Colony	Chicks } 2-Jwks = 20 4-6 wks = 50 7-9 wks = 60
17/5/95	May 95	(17th)					
	Feb 96	(22nd)					
	Mar 96	(12th)					
4/4/96	Apr 96	(30th)	160 Ad on beach, 103 at Colony	8 JUV at Colony	5-10 wks old		
16/5/96	May 96	(16th)					
	Sep 96	(4th)					
14/10	Oct 96	(15th)	17 JUV 18 = 25	6 Ad at Colony + several squabs	+ 2 JUV Squabs		
23/4/96	Apr 96		84 Ad on beach	40 on Colony	12 on nests w/ eggs	131 JUV + 20 squabs	
	Jan 97	(29th)					

Please search your records for all of the above months and fax to me any reports I don't have. Photocopies of field notes will suffice.

This is urgent.

Jim
Mon 4.8.97

To: Grant Pearson@WOOD.SID, Alan Clarke@WOOD.SID
 From: Jim Lane@buss.sid
 Cc:
 Bcc:
 Subject: Boundary I. pelican colony records
 Attachment:
 Date: 4/08/97 2:33 PM

I am preparing a report on the Peel-Harvey work to meet an EPA requirement of monitoring agencies.

I have copies of most of your reports on Boundary Island visits but have no reports for:

29/6/95 Jun 95 40 Ad at Colony 50 Ad on beach No eggs or nesting
 Jan 95
 9/2/95 Feb 95 250 Adults 20+ JUV at 4 weeks 91 Ad on shore
 15/6/95 Jun 95 30 Ad on beach 53 Ad on Colony 35 JUV 6 dead squabs
 Jul 95
 30/8/95 Aug 95 1 did Creamy - No record of Boundary Isd report - empty
 22/9/95 Sep 95 32 Ad on beach No breeding
 6/10/95 Oct 95 15 Ad on beach 1 JUV being fed on beach
 17/11 Nov 95 Creamy - No boundary Allay?
 11/12 Dec 95 140 Adults Pel No breeding / 29
 2/6/96 Jun 96 250 at nesting site = 150 large chicks 25 Ad on young 75 Ad in Colony
 27/12/96 Dec 96 300 Adults at Colony 60 on nests eggs seen
 May 97
 Jul 97

29/12/95 Dec 95 220
 I have reports of one visit only for:

7/11/95 Nov 95 28+ 32 Ad on beach w/ 17 JUV 15 medium Yng 2 small Yng 6 downy dead 43 Squabs
 17/11/94 Nov 94 (3rd) 114 Ad at Colony 54 JUV
 9/3/95 Mar 95 (21st) 100-120 Chicks med-large 20 Squabs 2-3 wks 80-100 Ad in Colony Chicks } 2-3 wks = 20
 Apr 95 (26th) } 4-6 wks = 50
 } 7-9 wks = 60
 17/5/95 May 95 (17th)
 Feb 96 (22nd)
 Mar 96 (12th)
 4/4/96 Apr 96 (30th) 160 Ad on beach, 103 at Colony 8 JUV at Colony 5-10 wks old
 16/5/96 May 96 (16th)
 Sep 96 (4th)
 14/10 Oct 96 (15th) 17 JUV + P = 25 6 Ad at Colony + several squabs + 2 JUV Squabs
 23/4/96 Apr 96 84 Ad on beach 40 on Colony inc 12 on nests w/ eggs 131 JUV + 20 Squabs
 Jan 97 (29th)

Please search your records for all of the above months and fax to me any reports I don't have. Photocopies of field notes will suffice.

This is urgent.

Jim
 Mon 4.8.97

Photocopies of a collection of 'ACRES ImageNet Preview Image and Metadata' pages with previews and metadata of the Lakes Barlee – Ballard (and beyond, sometimes including Lake Marmion) area on 28/2, 12/2 & 20/1/1996 and 26/12, 10/12, 23/10, 04/08, 19/7, 10/6, 16/5, 06/3, 09/2, 08/1/1995 and 07/12/1994. These indicate how much of / which parts of each lake were inundated on these dates.

102.



ACRES ImageNet Preview Image and Metadata



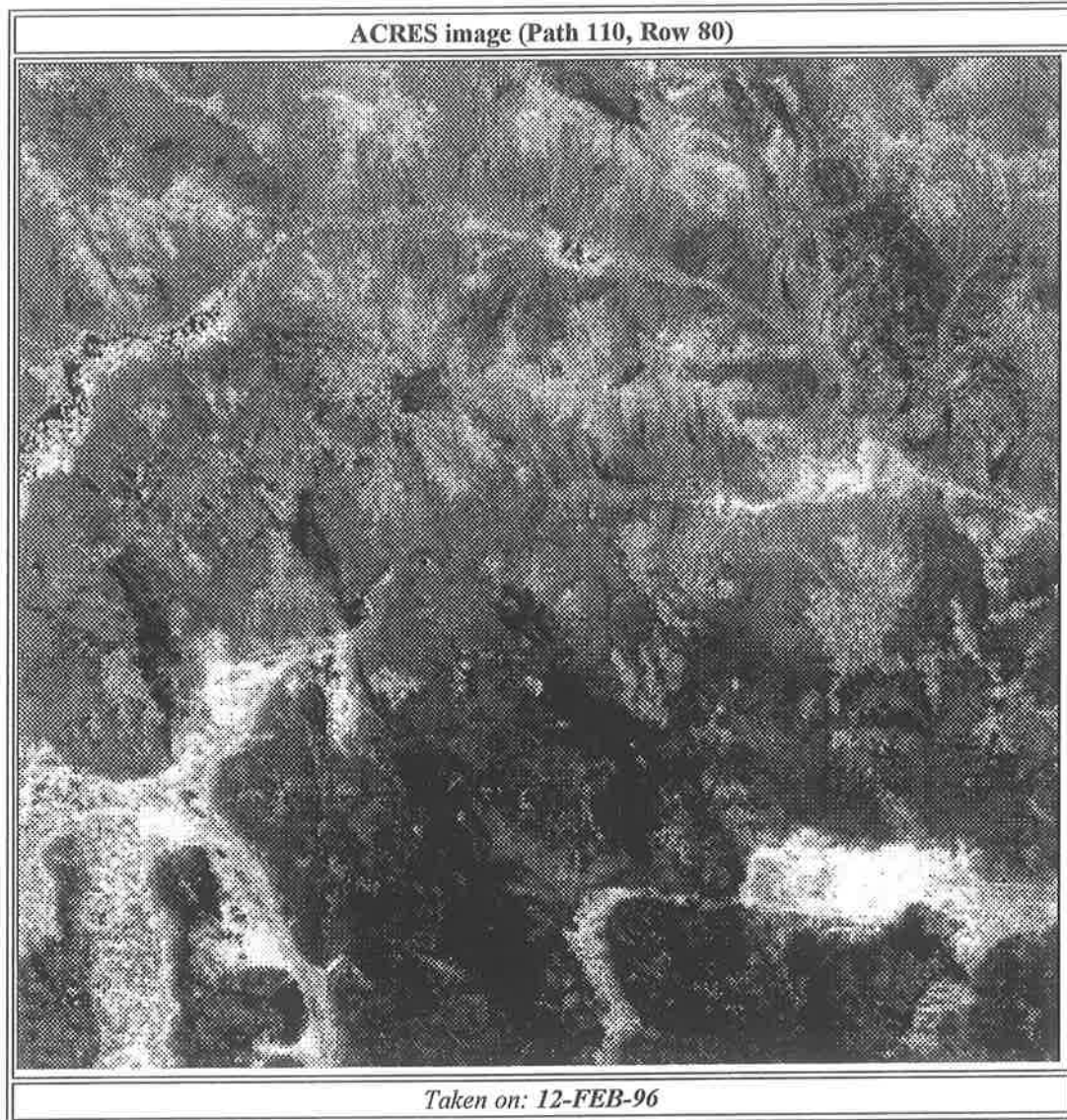
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Sensor	TM
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Cloud Cover % LL,LR	00 20
Path / Row	110 / 080
Latitude Centre	28d 51' 10" S
Longitude Centre	120d 22' 08" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	234
Sun Elevation	41.25 degrees
Sun Azimuth	75.06 degrees
Cloud Cover Average %	5
UL Latitude	27d 56' 00" S
UL Longitude	119d 36' 10" E
UR Latitude	28d 13' 08" S
UR Longitude	121d 32' 16" E
LL Latitude	29d 28' 53" S
LL Longitude	119d 11' 05" E

106



ACRES ImageNet Preview Image and Metadata



Metadata:

Satellite	LS5
Sensor	TM
UT (Date)	12-FEB-96
Cloud Cover % UL,UR	00 00
Cloud Cover % LL,LR	00 00
Path / Row	110 / 080
Latitude Centre	28d 51' 04" S
Longitude Centre	120d 22' 33" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	234
Sun Elevation	43.54 degrees
Sun Azimuth	82.51 degrees
Cloud Cover Average %	0
UL Latitude	27d 55' 55" S
UL Longitude	119d 36' 25" E
UR Latitude	28d 13' 05" S
UR Longitude	121d 32' 45" E
LL Latitude	29d 28' 45" S
LL Longitude	119d 11' 20" E



ACRES ImageNet Preview Image and Metadata



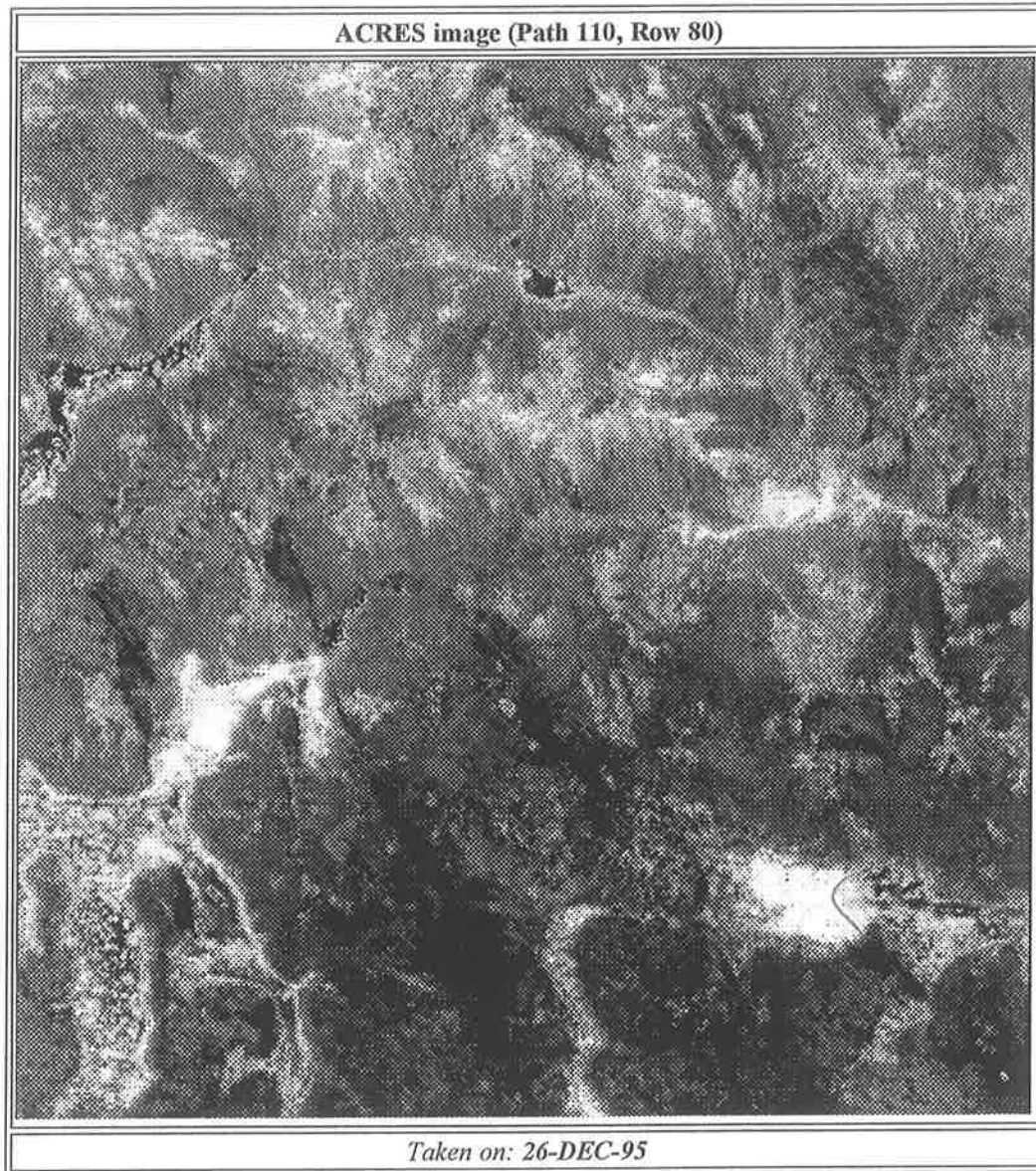
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Satellite	LS5
Sensor	TM
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Cloud Cover % LL,LR	00 00
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Latitude Centre	30d 08' 11" S
Longitude Centre	121d 33' 03" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	234
Sun Elevation	46.41 degrees
Sun Azimuth	88.81 degrees
Cloud Cover Average %	0
UL Latitude	29d 22' 50" S
UL Longitude	120d 46' 19" E
UR Latitude	29d 40' 33" S
UR Longitude	122d 44' 27" E
LL Latitude	30d 55' 32" S
LL Longitude	120d 20' 38" E

C3A



ACRES ImageNet Preview Image and Metadata

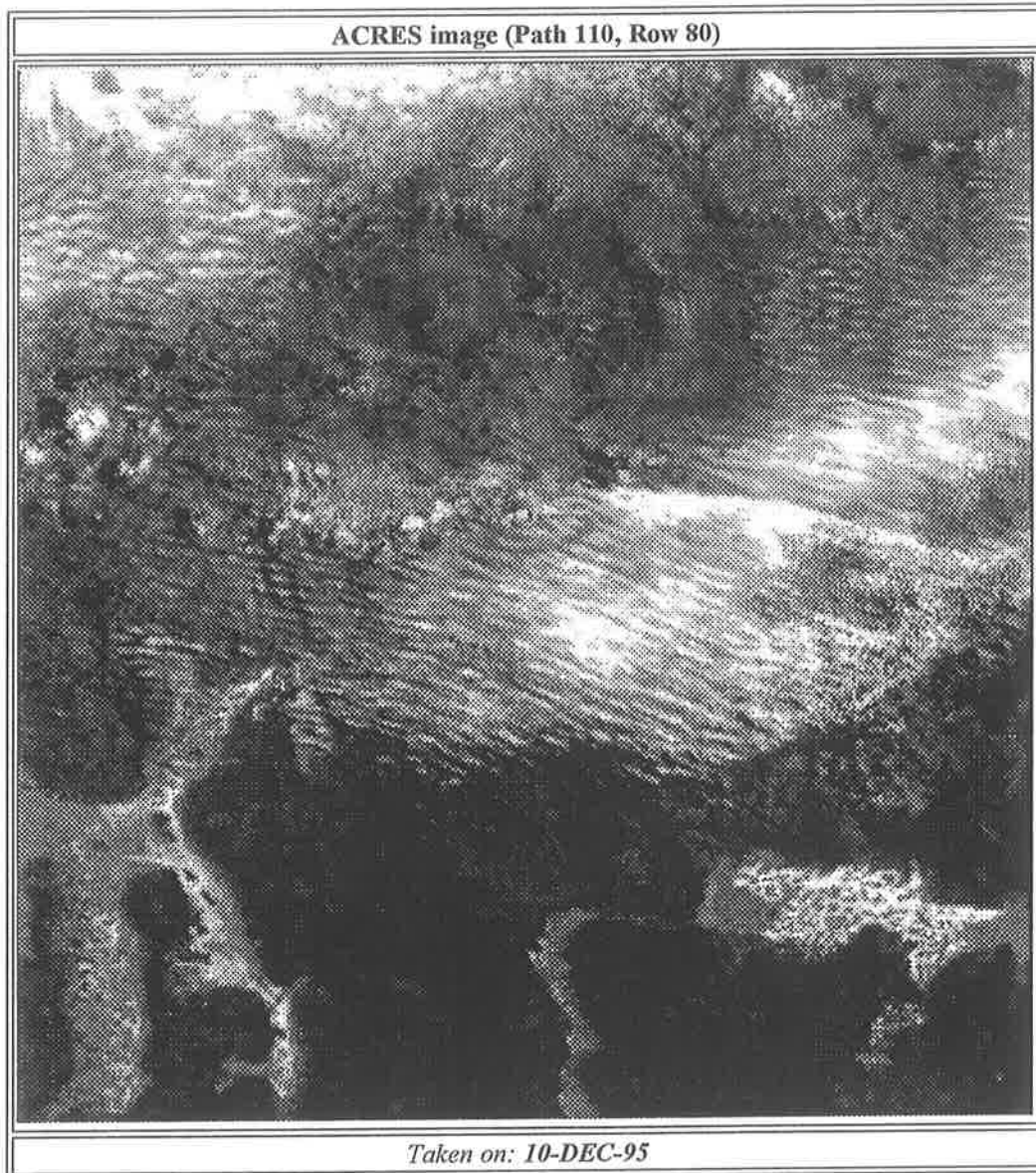


Metadata:

Satellite	LS5
Sensor	TM
UT (Date)	26-DEC-95
Cloud Cover % UL,UR	00 00
Cloud Cover % LL,LR	00 00
Path / Row	110 / 080
Latitude Centre	28d 41' 32" S
Longitude Centre	120d 24' 03" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	
Sun Elevation	49.27 degrees
Sun Azimuth	93.39 degrees
Cloud Cover Average %	0
UL Latitude	27d 52' 27" S
UL Longitude	119d 39' 00" E
UR Latitude	28d 09' 53" S
UR Longitude	121d 35' 09" E
LL Latitude	29d 32' 18" S



ACRES ImageNet Preview Image and Metadata



Metadata:

Satellite	LS5
Sensor	TM
UT (Date)	10-DEC-95
Cloud Cover % UL,UR	80 80
Cloud Cover % LL,LR	50 30
Path / Row	110 / 080
Latitude Centre	28d 41' 38" S
Longitude Centre	120d 24' 57" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	
Sun Elevation	50.42 degrees
Sun Azimuth	91.67 degrees
Cloud Cover Average %	60
UL Latitude	27d 52' 32" S
UL Longitude	119d 40' 01" E
UR Latitude	28d 09' 57" S
UR Longitude	121d 35' 56" E
LL Latitude	29d 32' 25" S



ACRES ImageNet Preview Image and Metadata

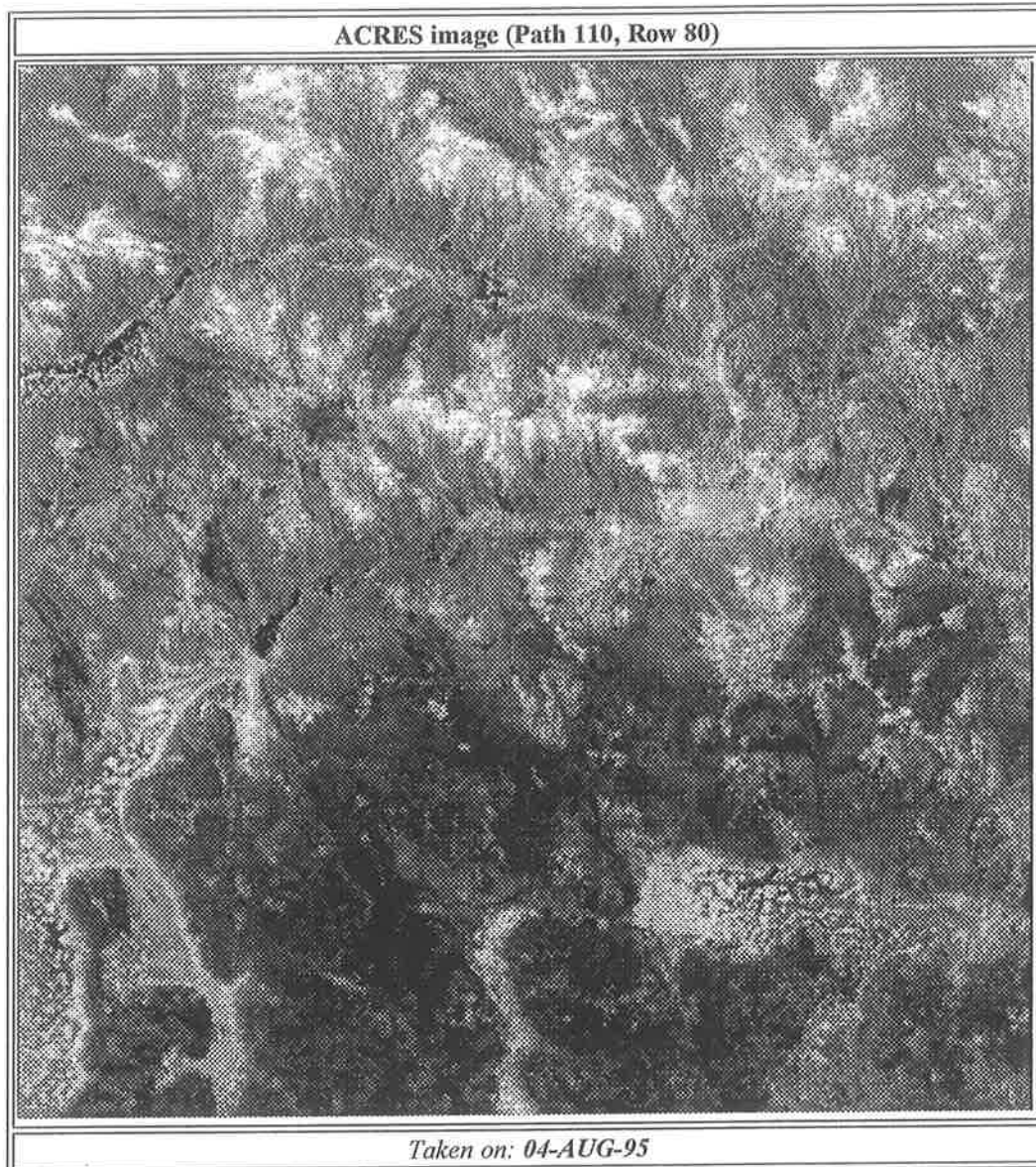


Metadata:

Satellite	LS5
Sensor	TM
UT (Date)	23-OCT-95
Cloud Cover % UL,UR	00 00
Cloud Cover % LL,LR	10 00
Path / Row	110 / 080
Latitude Centre	28d 42' 33" S
Longitude Centre	120d 30' 32" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	
Sun Elevation	46.98 degrees
Sun Azimuth	73.91 degrees
Cloud Cover Average %	2
UL Latitude	27d 53' 43" S
UL Longitude	119d 45' 25" E
UR Latitude	28d 10' 33" S
UR Longitude	121d 41' 09" E
LL Latitude	29d 33' 41" S

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ACRES ImageNet Preview Image and Metadata



Metadata:

Satellite	LS5
Sensor	TM
UT (Date)	04-AUG-95
Cloud Cover % UL,UR	20 10
Cloud Cover % LL,LR	10 10
Path / Row	110 / 080
Latitude Centre	28d 42' 40" S
Longitude Centre	120d 31' 55" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	
Sun Elevation	25.78 degrees
Sun Azimuth	49.27 degrees
Cloud Cover Average %	12
UL Latitude	27d 53' 50" S
UL Longitude	119d 46' 19" E
UR Latitude	28d 10' 49" S
UR Longitude	121d 42' 57" E
LL Latitude	29d 33' 39" S

95.



ACRES ImageNet Preview Image and Metadata

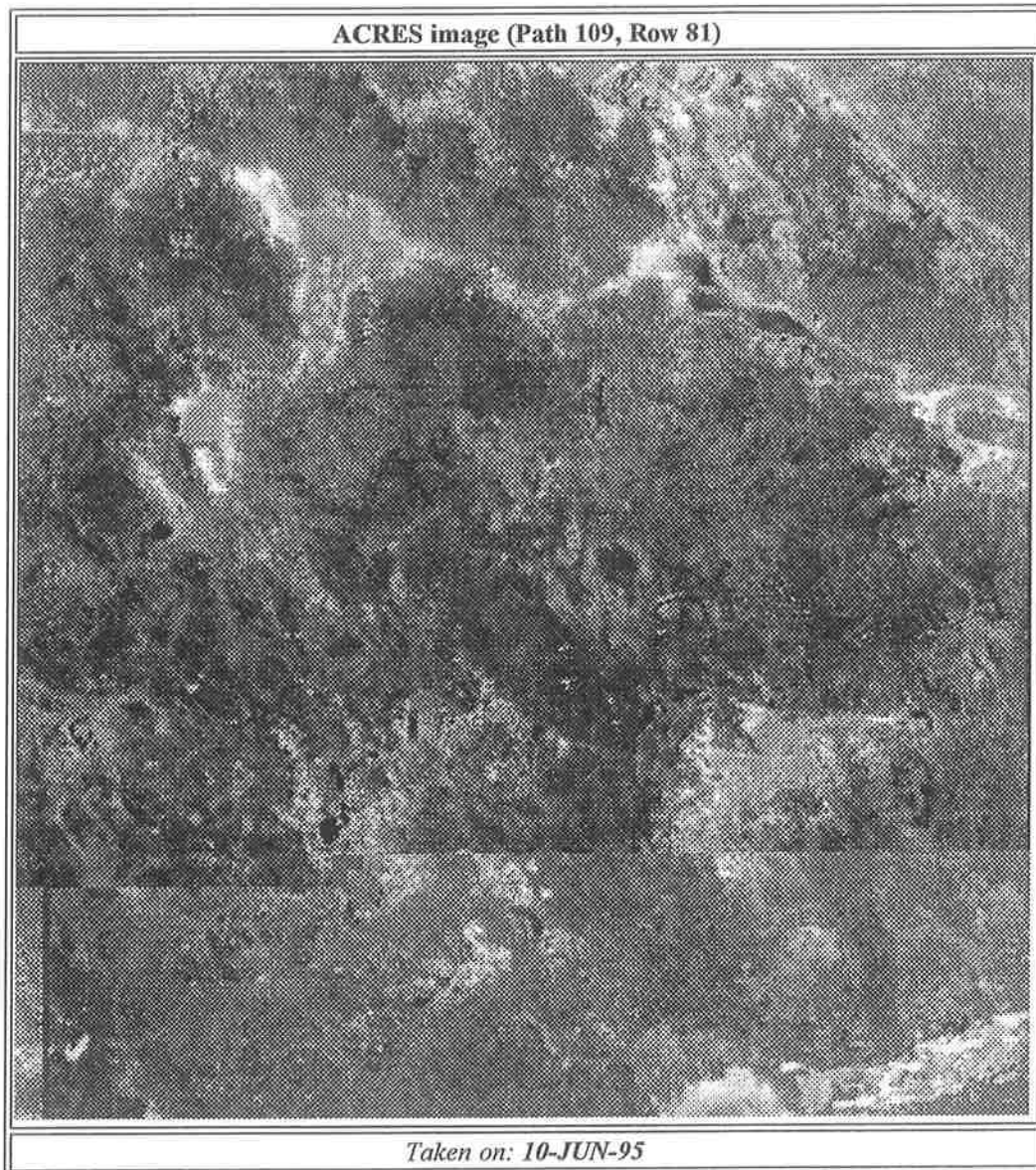


Metadata:

Satellite	LS5
Sensor	TM
UT (Date)	19-JUL-95
Cloud Cover % UL,UR	00 00
Cloud Cover % LL,LR	10 20
Path / Row	110 / 080
Latitude Centre	28d 42' 55" S
Longitude Centre	120d 32' 42" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	
Sun Elevation	23.49 degrees
Sun Azimuth	46.98 degrees
Cloud Cover Average %	7
UL Latitude	27d 54' 05" S
UL Longitude	119d 47' 20" E
UR Latitude	28d 11' 00" S
UR Longitude	121d 43' 33" E
LL Latitude	29d 33' 58" S



ACRES ImageNet Preview Image and Metadata



Metadata:

Satellite	LS5
Sensor	TM
UT (Date)	10-JUN-95
Cloud Cover % UL,UR	00 00
Cloud Cover % LL,LR	00 00
Path / Row	109 / 081
Latitude Centre	30d 09' 38" S
Longitude Centre	121d 43' 55" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	
Sun Elevation	22.35 degrees
Sun Azimuth	43.54 degrees
Cloud Cover Average %	0
UL Latitude	29d 21' 00" S
UL Longitude	120d 58' 19" E
UR Latitude	29d 38' 05" S
UR Longitude	122d 55' 37" E
LL Latitude	31d 00' 54" S



ACRES ImageNet Preview Image and Metadata



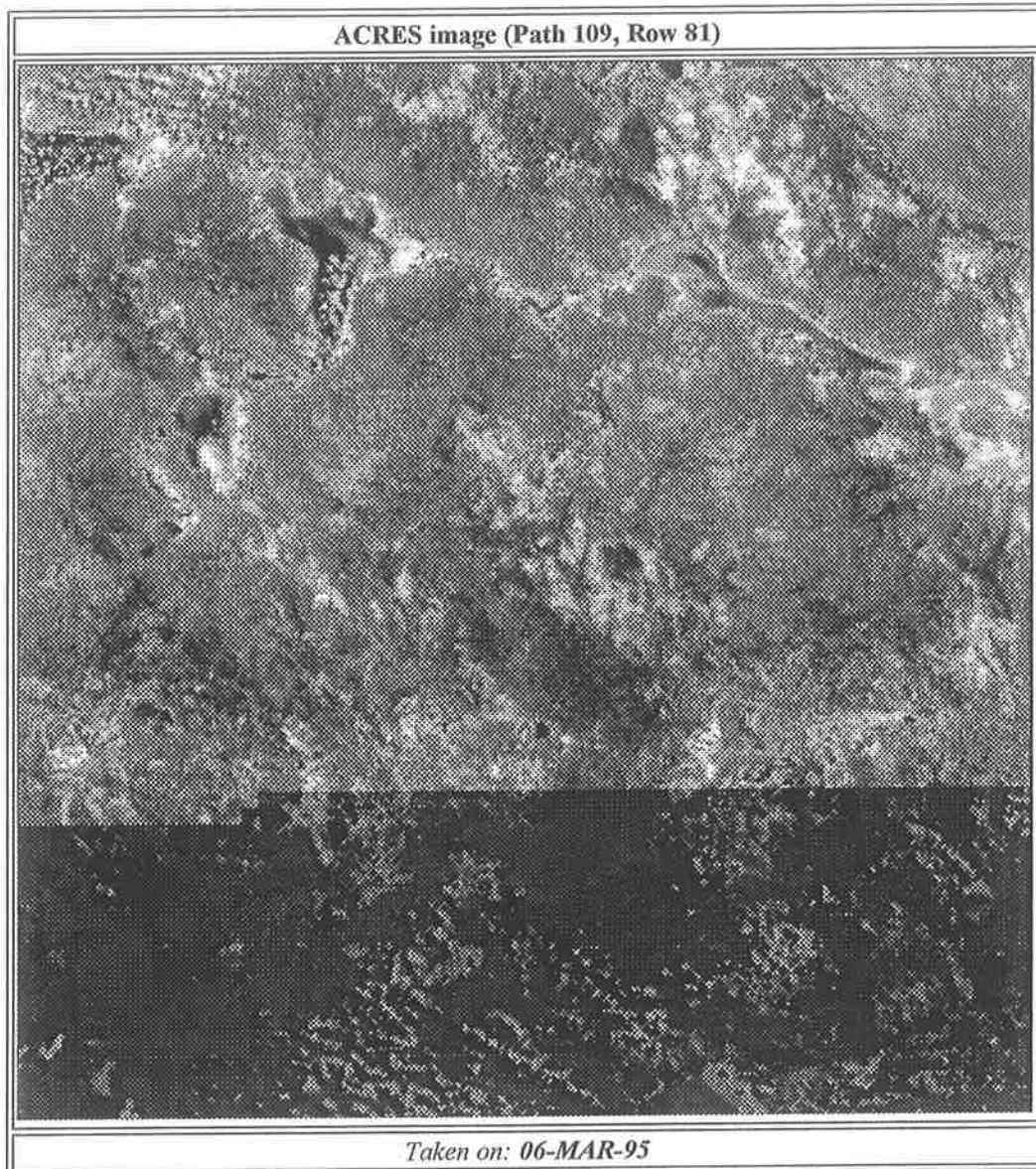
Metadata:

Satellite	LS5
Sensor	TM
UT (Date)	16-MAY-95
Cloud Cover % UL,UR	10 00
Cloud Cover % LL,LR	00 00
Path / Row	110 / 080
Latitude Centre	28d 42' 51" S
Longitude Centre	120d 33' 03" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	
Sun Elevation	27.50 degrees
Sun Azimuth	45.84 degrees
Cloud Cover Average %	2
UL Latitude	27d 54' 01" S
UL Longitude	119d 47' 38" E
UR Latitude	28d 10' 57" S
UR Longitude	121d 43' 55" E
LL Latitude	29d 33' 53" S

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ACRES ImageNet Preview Image and Metadata

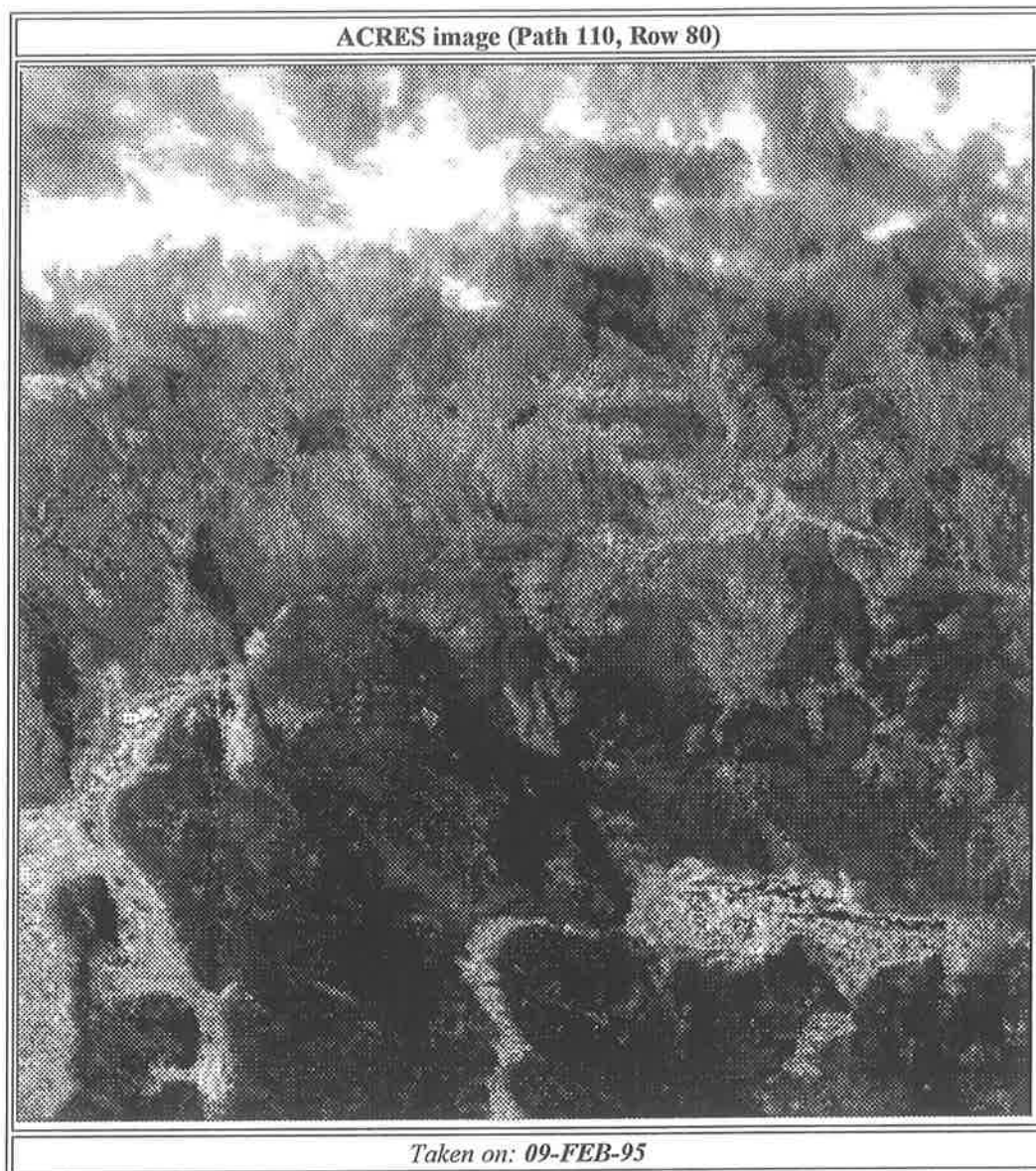


Metadata:

Satellite	LS5
Sensor	TM
UT (Date)	06-MAR-95
Cloud Cover % UL,UR	00 10
Cloud Cover % LL,LR	10 10
Path / Row	109 / 081
Latitude Centre	30d 09' 37" S
Longitude Centre	121d 43' 22" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	
Sun Elevation	40.68 degrees
Sun Azimuth	70.47 degrees
Cloud Cover Average %	7
UL Latitude	29d 21' 00" S
UL Longitude	120d 57' 43" E
UR Latitude	29d 38' 08" S
UR Longitude	122d 55' 08" E
LL Latitude	31d 00' 50" S



ACRES ImageNet Preview Image and Metadata



Metadata:

Satellite	LS5
Sensor	TM
UT (Date)	09-FEB-95
Cloud Cover % UL,UR	50 60
Cloud Cover % LL,LR	00 00
Path / Row	110 / 080
Latitude Centre	28d 42' 51" S
Longitude Centre	120d 32' 42" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	
Sun Elevation	45.26 degrees
Sun Azimuth	82.51 degrees
Cloud Cover Average %	27
UL Latitude	27d 54' 01" S
UL Longitude	119d 47' 38" E
UR Latitude	28d 10' 55" S
UR Longitude	121d 43' 19" E
LL Latitude	29d 33' 54" S



ACRES ImageNet Preview Image and Metadata



Metadata:

Satellite	LS5
Sensor	TM
UT (Date)	08-JAN-95
Cloud Cover % UL,UR	00 00
Cloud Cover % LL,LR	00 00
Path / Row	110 / 080
Latitude Centre	28d 42' 43" S
Longitude Centre	120d 31' 22" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	
Sun Elevation	50.42 degrees
Sun Azimuth	91.10 degrees
Cloud Cover Average %	0
UL Latitude	27d 53' 53" S
UL Longitude	119d 45' 53" E
UR Latitude	28d 10' 55" S
UR Longitude	121d 42' 25" E
LL Latitude	29d 33' 39" S



ACRES ImageNet Preview Image and Metadata



Metadata:

Satellite	LS5
Sensor	TM
UT (Date)	07-DEC-94
Cloud Cover % UL,UR	00 00
Cloud Cover % LL,LR	00 00
Path / Row	110 / 080
Latitude Centre	28d 42' 35" S
Longitude Centre	120d 31' 58" E
Off Nadir Angle	0.00 degrees E (of Sat.)
Bands Displayed	
Sun Elevation	53.86 degrees
Sun Azimuth	89.38 degrees
Cloud Cover Average %	0
UL Latitude	27d 53' 45" S
UL Longitude	119d 46' 30" E
UR Latitude	28d 10' 46" S
UR Longitude	121d 42' 57" E
LL Latitude	29d 33' 31" S