Joint Report of

[Redacted]

Digital Forensics CMP209

Case Against: Mr John Doe

Case ID: [redacted]

1 Contents

2 Summary 5

2.1 Executive Summary 5

3 Description of crime 5

3.1 Reconstruction of events 5
3.1.1 Incident 1 – 12/09/2001 & 16/12/2001 5
3.1.2 Incident 2 – 29/01/2003 6
3.1.3 Incident 3 – 23/03/2004 6
3.1.4 Incident 4 – 09/06/2004 -> 27/06/2004 6
3.1.5 Incident 5 02/02/2005 – 03/02/2005 6
3.1.6 Incident 6 – 03/02/2005 6
3.1.7 Incident 7 - 09/02/2005 6
3.2 Timeline 6
4 Description of Investigation 7
4.1 Job Description and Instructions 7
5 Methodology 7
5.1 Recovered physical evidence 7
5.2 Description of capturing forensic images 8
5.3 Anti-Virus Scan 9
5.4 Physical & logical searching 9
5.4.1 Physical Searching 9
5.4.2 Logical Searching 9
6 Analysis 9
6.1 Disk Analysis 9
6.2 Device identification 10
6.2.1 USB Drive 10
6.3 Camera Images 11
6.3.1 Sony Cybershot 11
6.3.2 Canon Powershot EOS-1DS 11
6.3.3 Canon PowerShot SD100 11
6.4 User Account analysis 11
6.5 Installed software 12
6.6 Recent Files and Prefetch 12
6.6.1 Prefetch 12
6.6.2 Recent Documents 13
6.7 GPG file 14
6.8 CrouchingKakapo.dll 15
6.9 FanTailFrontView.exe 15
6.10 Birds.zip & tx_birds.exe 15
6.11 ODBC.ini 15

6.12 Documents 16
6.12.1 stuf.doc 16
6.12.2 guide.doc 16
6.12.3 birdwatching.doc 16
6.12.4 Doc1.doc 16
6.12.5 nestboxtips.txt 16
6.13 Audio Files 16
6.13.1 aggressive_song.wav 16
6.13.2 kakapo.ram 16
6.13.3 dawn.ram 17
6.14 PDF Files 17
6.14.1 BirdingGuide.pdf 17
6.14.2 57ab_perth.pdf 17
6.14.3 news_sprg2001.pdf 17
6.15 Websites 17
6.15.1 aa01073a.htm 17
6.15.2 ostbkb2.htm 17
6.16 Emails 17
6.16.1 Email Addresses 17
6.16.2 Email Content 18
6.17 Browser Analysis 18
6.18 Bob's files 20
7 Production List and Associated Description 21
7.1 Whitelist 21
7.2 Virtual Machine 21
8 Conclusions 21
9 Contributions 22
10 Equipment Required for court proceedings. 22
11 Terms Used 23
12 Appendices 24
12.1 Unallocated Partition 24
12.2 Canon Powershot SD100 images 31
12.3 Carved images 60
12.4 Miscellaneous Images 72
12.5 GPG File Images 78
12.6 CrouchingKakapo.dll 80

12.7 Birds.zip 82
12.8 ODBC.INI 85
12.9 stuf.doc 86
12.10 guide.doc 87
12.11 birdwatching.doc 89
12.12 Doc1.doc 95
12.13 Doc1.doc image 95
12.14 nestboxtips.txt 96
12.15 aggressive_song.wav 96
12.16 kakapo.ram 96
12.17 Email Attachments 97
12.18 Browser History 99
12.18.1 Firefox 99
12.18.2 Internet Explorer 102
12.19 Firefox Gif Cache 106
12.20 FantailFrontView.exe 107
12.21 Virus Scanning 107
12.22 Images of Hard Drive 108
12.23 Clock skew comparison 109
12.24 BirdingGuide.pdf 109
12.25 57ab_perth.pdf 133
12.26 News_sprg2001.pdf 134
12.27 aa010703a.htm 145
12.28 ostbkb2.htm 148
12.29 Emails 149
12.29.1 Email 1 – “good pics” 149
12.29.2 Email 2 – “how to identify birds” 149
12.29.3 Email 3 – “some more good ones” 149
12.29.4 Email 4 – “expensive birds” 149
12.30 Database of files 150

2 Summary

2.1 Executive Summary

Pursuant to the request from Dr Ian Ferguson, a digital forensics analysis was carried out on the desktop computer belonging to Mr. John Doe. The necessity for a forensic examination of the computer media arose from suspicions surrounding Mr. Doe's participation in the dissemination of illicit materials, as well as his involvement in bird watching activities.

Key findings from the investigation consist of:

- The recovery of 215 items from the confiscated disk drive, encompassing images, documents, and email correspondences related to both birdwatching and the distribution of illicit content.
- Web browsing history that corroborates Mr. Doe's engagement in the aforementioned activities.
- Multiple email exchanges containing illicit images and text, indicating the sharing of these materials with at least one other party.

A comprehensive list of the files and their classifications can be found in Appendix 12.30. This executive summary has been prepared to provide the relevant authorities with an outline of the investigation's context and essential findings.

Investigation conducted by:

[names redacted]

3 Description of crime

3.1 Reconstruction of events

3.1.1 Incident 1 – 12/09/2001 & 16/12/2001

FIRST INSTANCE

A Botanical Gardens Newsletter, f0273688_Newsletter_Win_2001_q.pdf, with a section on birds was deleted from John Doe's computer. A similar event happens again on 16/12/2001 when a book on Birding Sites, f0180344.pdf, is deleted.

3.1.2 Incident 2 – 29/01/2003

FIRST PICTURE

The picture BellbirdJumpingOffBranch,jpg was taken on the Cannon camera and found dated 29/01/2003 which makes it the earliest photograph found taken on the camera.

3.1.3 Incident 3 – 23/03/2004

BIRDING GUIDE

A birdwatching guide was deleted from John Doe's computer, f0327896.pdf

3.1.4 Incident 4 – 09/06/2004 -> 27/06/2004

BIRDWATCHING TRIP

Between the dates of 09/06/2004 and 27/06/2004 51 different pictures were taken on the Cannon Powershot camera 14 of which are pictures of birds. The rest of the images include a group of people on what appears to be a birdwatching expedition as well as pictures of birdhouses and ornithology offices presumably used on the trip.

3.1.5 Incident 5 02/02/2005 – 03/02/2005

DOWNLOADS

Over these two days multiple files and images regarding birds were downloaded to John Doe's computer including 'aggressive_song.wav'. The 'birds.zip' file was downloaded a week later on 09/02/2005.

3.1.6 Incident 6 – 03/02/2005

OBCD

On 03/02/2005 at 15:52:01 the BirdingGuide.pdf file was accessed, shortly after at 15:54:58 the ODBC.ini file was modified with notepad.exe and changed – this seems to concur with the fact that the commented information of an ornithological nature within ODBC.ini is found within BirdingGuide.pdf. This suggests the data from the Birding Guide was added to the .ini file before it was deleted in an attempt to hide the file.

3.1.7 Incident 7 - 09/02/2005

EMAILS

On the 09/02/2005 five emails were sent to the email jdoe@example.com from two different people both of which include information on birds. The emails also indicate the suspect had a conversation with ben@example.org where they shared pictures of birds with each other, these emails can be found in Appendix 12.29, the email attachments can be found in appendix 12.17.

3.2 Timeline

Below is a graph showing the usage of John Doe's computer between 2003 and 2005. The red indicates changes to the file system, green indicates web activity and blue is anything else.

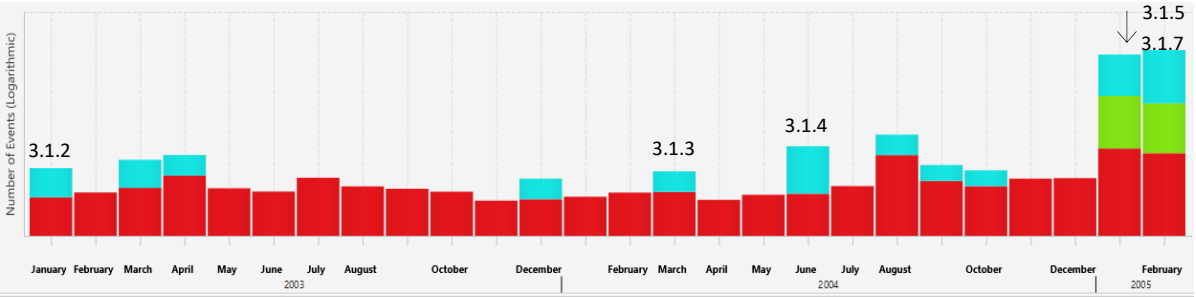


Figure 1 - Timeline of events on John Doe's computer

4 Description of Investigation

4.1 Job Description and Instructions

The team of investigators were assigned by Dr Ian Ferguson of Abertay Digital Forensics Department to seize hardware belonging to Mr John Doe for investigation. Mr Doe is suspected of possessing and distributing illicit material of an ornithological nature.

Following the collection of hardware at John Doe's property, a detailed forensic analysis was undertaken to gather any evidence of illicit activity. Evidence gathering techniques, as well as any evidence gathered has been outlined in the following report.

5 Methodology

5.1 Recovered physical evidence

Following entry into the suspect's home, various items were discovered. Among these items was a Desktop PC, which was powered off at the time of entry. This device was denoted as item JD-1. The fact that JD-1 was powered off meant that there would be no potential evidence lost by unplugging and removing the device from the premises. Along with item JD-1 was typical peripherals – a keyboard, mouse, monitor, and associated cables. All of these items were labelled and outlined in Table 1 below.

In addition to the devices stated above, a Canon Powershot SD100 camera was found near to the Desktop PC. At the time of discovery, this camera was found to be powered off, with no SD card or other storage device installed. This camera was denoted as JD-6.

Following this, the Hard Disk Drive (HDD) was removed from item JD-1 for analysis. This item was denoted as JD-7.

Table 1 - Items collected at the scene.

Evidence Log ID	Item Name	Item Description

JD-1	Desktop PC	Desktop PC believed to have been used by the suspect to engage in illicit behaviour
JD-2	Keyboard	Keyboard input device attached to item JD-1
JD-3	Mouse	Mouse input device attached to JD-1
JD-4	Monitor	Computer monitor attached to item JD-1
JD-5	Assorted Cables	Selection of cables attached to Items JD-1 and JD-4, including: -Power cable attached to JD-1. -Power cable attached to JD-4. -Display cable attaching JD-1 to JD-4
JD-6	Canon Camera	Canon Powershot camera discovered on scene, near to item JD-1
JD-7	Hard Disk Drive	Seagate Hard Disk Drive removed from Item JD-1, believed to contain illicit material of an ornithological nature.

5.2 Description of capturing forensic images

To ensure the integrity of the evidence was maintained, an MD5 hash checksum of the suspects hard drive was taken upon initial seizure. This unique string of characters was representative of contents of the hard drive, and should any changes occur to the contents, this string would also change. Therefore, by using this method, it could be assured that no files were altered or changed throughout the process of creation and that the drive was preserved exactly as it was at the point of seizure.

MD5 Checksum
d63dd1b8917ca28bac7c955fc3b6cd25

The device was not presented powered or connected to a computer and as such static imaging was the process used to create .dd forensic image of the drive. This was done using a write blocker to ensure no data could be modified between the investigators computer and seized drive. Once this forensic image was created, the MD5 checksum was compared against the drive itself to confirm its integrity and it was shown to be valid.

This forensic image allowed for investigation to occur without the involvement of the original drive, as it was an identical copy of all contents.

Further checks against the MD5 were performed periodically throughout the investigation to further confirm the forensic integrity of the evidence.

To ensure that date and time information was consistent with real time dates the clock skew was checked against the examiners current time and shown to be consistent. (Appendix 12.23)

5.3 Anti-Virus Scan

To ensure that the files were exclusively modified by the users and not modified by outside sources or malicious files, an antivirus scan was performed using the software ClamAV. Whilst a file, RealPlay.exe was initially flagged as being potentially malicious this was a false positive and was later confirmed to be virus free using the website VirusTotal. Therefore, no malicious software was detected as being present on the drive. Full details of the scan and results can be found in appendix 12.21

5.4 Physical & logical searching

5.4.1 Physical Searching

The tool foremost was used to recover all the .jpg image files in the system. Following this, metacam was used to gather all the metadata from these images. This metadata might allow the ability to identify the camera used to take the photo and give information such as date and time the photo was taken. Finally, the tool grep was used to gather only the images where the metadata indicated that they were taken using a Canon PowerShot Camera. This process was repeated for other possible image data types.

The windows utility Autopsy was used to perform various keyword searches on the drive in an attempt to find evidence. Any evidence found at this stage was stored for presentation. Following this, autopsy was further used to analyse images, as well as any other documents, for any evidence of illicit ornithological activity.

Many images were recovered from system through simple file searching such as finding them within folders such as John Doe's documents, being a screensaver etc or through file carving, a process which uses remnant information within the system to recover deleted files. A full collection of these can be found at Appendix 12.3 and 12.4.

5.4.2 Logical Searching

It was identified that the suspect was using a copy of Windows XP. Using a clean copy of windows XP, a file whitelist was created by hashing every file on the drive. Then, a file was created with the hashes of every file on the recovered hard drive. Through comparison of these lists, all the files that had been modified or created by the user could be identified. This technique was also used to remove files created by known software installations, to further narrow the search.

6 Analysis

6.1 Disk Analysis

To begin with the disk image was examined. Through the usage of MMLS, the partitions on the disk were analysed this showed only one allocated NTFS/exFAT partition at Volume 002, however the length of the allegedly unallocated Volume 003 was suspicious. And subsequent examination showed that when 003 was mounted, by setting the starting location of a mounting operation to the start of the unallocated partition, it in fact contained numerous hidden images of birds and a document pertaining to them (See appendix 12.1), demonstrating that it had been removed from the MBR (Manual boot record) manually.

Autopsy also showed this by default.

```
┌──(kali㉿kali)-[~/Desktop/jd]
└─$ mmls johnDoe.dd
DOS Partition Table
Offset Sector: 0
Units are in 512-byte sectors

      Slot      Start        End          Length       Description
000:  Meta      0000000000   0000000000   0000000001   Primary Table (#0)
001:  -------   0000000000   0000000062   0000000063   Unallocated
002:  000:000   0000000063   0006136829   0006136767   NTFS / exFAT (0x07)
003:  -------   0006136830   0011255327   0005118498   Unallocated
```

Figure 2 - MMLS Output

6.2 Device identification

From the registry it was determined that 5 devices had been assigned drive letters and thus were storage devices that had been connected to the PC.

By decoding the values accompanying the drive letters it was possible to determine a number of them in combination with other registry information

Table 2 - Devices with Drive Letters

Drive Letter	Identified device
A:	FDC Generic Floppy Drive
C:	Currently Formatted NTFS partition on main hard drive, aka 002.
D:	Cd Rom SONY_CDU4811 PY09
E:	USB storage removable device
F:	Where Partition 003 was mounted before it was removed manually, explaining how files were placed there.

6.2.1 USB Drive

Whilst no USB device was physically recovered, A USB storage device was identified as having been previously connected through the analysis of the registry. This device was given the drive letter E: within the system. From this we can identify that the device was used to store bird images and media at some point, as from 6.10 within the derived birdpics.zip the file structure was visible as being from E:. Firefox download files also show that audio files were downloaded to E:

```
<RDF:Description RDF:about="E:\birds\audio\aggressive_song.wav"
        NC:Name="aggressive_song.wav"
        NC:Transferred="716kB of 716kB">
  <NC:URL RDF:resource="http://whyfiles.org/shorties/104chick_sex/images/aggressive_song.wav"/>
  <NC:File RDF:resource="E:\birds\audio\aggressive_song.wav"/>
```

Figure 3- aggressive_song.wav downloaded to E:

Autopsy successfully identified the make and the possible model of the USB Drive from registry data as well as the serial number, allowing for identification should it be discovered:

Phison Electronics Corp.	PS1001/1011/1006/1026 Flash Disk	071A190F01DF

Figure 4 - USB make, model and serial number from Autopsy.

Subsequent searching discovered the initial setup of the USB stick which allowed for it to be determined that it was first plugged in on 02/02/2005 at 16:29:12

```
[2005/02/02 16:29:12 544.3 Driver Install]
#-019 Searching for hardware ID(s): usb\vid_0d7d&pid_0100&rev_0100,usb\vid_0d7d&pid_0100
#-018 Searching for compatible ID(s): usb\class_08&subclass_06&prot_50,usb\class_08&subclass_06,usb\class_08
```

Figure 5 - setup.log file showing USB first occurrence

6.3 Camera Images

From the images obtained on the machine it was determined that three cameras were used to obtain illicit images.

6.3.1 Sony Cybershot

A single image was identified as having been taken with a Sony Cybershot camera, called "BC7 feeding the birds.jpg" found at "C:\Documents and Settings/johndoe/Application Data/Thunderbird/Profiles/8jiqrt8v.default/Mail/Local Folders/Inbox/BC7 feeding the birds.jpg"

(Appendix 12.17)

This image was received as an email attachment from the user "Ben Forbes" and is of an ornithological nature.

6.3.2 Canon Powershot EOS-1DS

A single image was identified as having been taken with a Canon Powershot EOS-1DS called "BellbirdJumpingOffBranch.jpg" which was located on the hidden partition at "F:/BellbirdJumpingOffBranch.jpg" (image 22 in Appendix 12.1)

6.3.3 Canon PowerShot SD100

101 images were found on the system has having been taken by a Canon Powershot SD100.

A number of these images were visually identical. All of them were created the same day and come from the birdwatching trip mentioned in Incident 4. (appendix 12.2)

6.4 User Account analysis

Registry analysis of the SAM file (Security account manager) identified that there were three user accounts on the system

- johndoe
- bob
- jane

Both bob and jane were created on 2nd February 2005 within 3 hours of each other (12:30 – 15:30). Both accounts have only been logged into once, with the logins being within 2 hours of each other on the 3rd February 2005 between 10:00 – 12:00, a day after their creation.

johndoe by comparison was created on the 24th January 2005 and had been logged into 21 times, showing it was clearly the main account on the system.

This was further confirmed by registry entries that showed the computer was registered in the name "JOHN"

Key	Type	Value
ComputerName	REG_SZ	JOHN

Figure 6 - Computer name in registry

Given Mr Doe was a known user prior to their creation, their single login, and the fact that subsequent evidence shows that Bob was used to access bird images and files – the evidence suggests these are may not be real users.

6.5 Installed software

From the registry and system log files the installed programs were able to be determined. Out of those installed most were benign but some were potentially of relevance.

Table 3 - Noteworthy software on drive

Software	Description
Mozilla Thunderbird	Email client
Adobe Reader 7	PDF and file viewer and reader
Windows Privacy Tools	Used for encrypting and decrypting files
Realplayer	Multimedia player for audio/video used that can also stream from the internet
NetMeeting	Video calling
RealJukebox 1.0	Audio playback and file manager, also allows disc burning.
Mplayer	Movie player

6.6 Recent Files and Prefetch

6.6.1 Prefetch

When a program is first run, an entry is created within the prefetch folder of windows, this allows us to see which programs were used.

```
┌──(kali㉿kali)-[/media/kali/0C88413D88412714/WINDOWS/Prefetch]
└─$ ls
ACRORD32.EXE-13285B88.pf        MRT.EXE-0847AD6A.pf                    RUNDLL32.EXE-2AF77CC9.pf  UPDATE.EXE-035810C5.pf
ACRORD32INFO.EXE-013EA364.pf    MSHTA.EXE-331DF029.pf                  RUNDLL32.EXE-2F26E69F.pf  UPDATE.EXE-0DF31E49.pf
DEFENC.EXE-1347939B.pf          MSIEXEC.EXE-2F8A8CAE.pf                RUNDLL32.EXE-3632F4DF.pf  UPDATE.EXE-10B5B232.pf
DEFRAG.EXE-273F131E.pf          MSOHTMED.EXE-1BD4AAD2.pf               RUNDLL32.EXE-4499C56E.pf  UPDATE.EXE-10B75175.pf
DFRGNTFS.EXE-269967DF.pf        NOTEPAD.EXE-336351A9.pf                RUNDLL32.EXE-44EABCB3.pf  UPDATE.EXE-1428FC74.pf
DMADMIN.EXE-00BCB146.pf         NTOSBOOT-B00DFAAD.pf                   RUNDLL32.EXE-451FC2C0.pf  UPDATE.EXE-16AE1C01.pf
DMREMOTE.EXE-2F82CB90.pf        NTVDM.EXE-1A10A423.pf                  RUNDLL32.EXE-470F11BD.pf  UPDATE.EXE-1AF0D1BA.pf
DRWTSN32.EXE-2B4B52AC.pf        READER_SL.EXE-3614FA6E.pf              SCAN32.EXE-34BB0851.pf    UPDATE.EXE-2913E626.pf
DWWIN.EXE-30875ADC.pf           REALONEMESSAGECENTER.EXE-0F115151.pf   SETREG.EXE-32F24AA5.pf    UPDATE.EXE-299C11EA.pf
EXPLORER.EXE-082F38A9.pf        REALPLAY.EXE-1BF219BD.pf               SETUP50.EXE-362FF7C9.pf   UPDATE.EXE-2E63FB5E.pf
FIREFOX.EXE-17EE503B.pf         REALPLAY_MOUNTPOINTS.EXE-35C57E1D.pf   SHMGRATE.EXE-1BA69E68.pf  UPDATE.EXE-309A48CB.pf
FIREFOX.EXE-28641590.pf         REALSCHED.EXE-3282FD31.pf              SHSTAT.EXE-2A9CD834.pf    UPDATE.EXE-31ADDE21.pf
GPG.EXE-3205295F.pf             REFRESH.EXE-30802498.pf                SVCHOST.EXE-3530F672.pf   UPDATERUI.EXE-21775FB9.pf
HELPSVC.EXE-2878DDA2.pf         REGEDIT.EXE-1B606482.pf                TBMON.EXE-193BB9A5.pf     USERINIT.EXE-30B18140.pf
IE4UINIT.EXE-169A5A39.pf        REGSVR32.EXE-25EEFE2F.pf               THUNDE~1.EXE-2874618F.pf  WINDOWS-KB890830-V1.1-ENU.EXE-0860773E.pf
IMAPI.EXE-0BF740A4.pf           RNXPROC.EXE-1CD3A84F.pf                TX_BIRDS.EXE-24B103EC.pf  WINPT.EXE-258D0ABC.pf
Layout.ini                      RPHELPERAPP.EXE-33CB172B.pf            TX_BIRDS.EXE-2861E2BC.pf  WINPT-INSTALL-1.0RC2.EXE-1309F1BA.pf
LOGON.SCR-151EFAEA.pf           RUNDLL32.EXE-13CC3015.pf               TX_BIRDS.SCR-03FEBFC4.pf  WINWORD.EXE-37F6AE09.pf
MCSCRIPT_INUSE.EXE-04BEDF94.pf  RUNDLL32.EXE-169CA248.pf               UNREGMP2.EXE-07CACB61.pf  WMIAPSRV.EXE-1E2270A5.pf
MCUPDATE.EXE-361E6FD8.pf        RUNDLL32.EXE-18FE9799.pf               UPDATE.EXE-016555EF.pf    WMIPRVSE.EXE-28F301A9.pf
MMC.EXE-0A5AF4A1.pf             RUNDLL32.EXE-2576181F.pf               UPDATE.EXE-01F68CE8.pf    WUAUCLT.EXE-399A8E72.pf
MMC.EXE-3D93B3AE.pf             RUNDLL32.EXE-286A7F8C.pf               UPDATE.EXE-02F1FE9C.pf    XPINSTALL.EXE-1DAC9645.pf
```

Figure 7 - Prefetch folder contents

This showed a number of expected behaviours based on known installed programs such as running Realplayer which was used to listen to audio files with a specific format, Firefox which had cached information and history that was viewable etc. There are a couple of things of note.

Firstly, Regedit had been run – it is not possible to determine what registry entries were modified, however this does potentially point to an effort to hide or destroy possible evidence contained

within the registry given that it contains a lot of information typically reserved for system use only and that would be used in an investigation.

Secondly, tx_birds.exe, a file identified as a slideshow screensaver of bird images appears multiple times which suggests it was ran in multiple places on the system. For what purpose is unclear.

6.6.2 Recent Documents

The registry records documents that were accessed recently, a list of those documents is as follows:

```
┌──(kali㉿kali)-[/media/…/0C88413D88412714/Documents and Settings/johndoe/Recent]
└─$ ls
177.jpg.lnk                                birdtrans2.jpg.lnk          Killdeer.jpg.lnk      ostbk2b2.htm.lnk
aa010703a.lnk                              birdwatching.doc.lnk       'Local Disk (C).lnk'  'Prac4 (2).lnk'
aggressive_song.wav.lnk                    BookList.doc.lnk            MSN.lnk               Prac4.lnk
AlmondMarshGreatBlueHeronStalling.jpg.lnk  bookmarks.html.lnk         'My Music.lnk'        'Q3 Thread (Statechart).lnk'
audio.lnk                                  chicks2.jpg.lnk            'My Pictures.lnk'      ready2fledge.jpg.lnk
babyscot_2weeks1.jpg.lnk                   cookies.txt.lnk             nestboxtips.lnk      'Sample Music.lnk'
babyscot_vyoung.jpg.lnk                    Desktop.ini                 newbies2.jpg.lnk      stuf.doc.lnk
BirdingGuide.pdf.lnk                       Doc1.doc.lnk               'New Volume (F).lnk'   WINDOWS.lnk
birds.lnk                                  EvanstonWoodpecker.jpg.lnk 'non images.lnk'
birds.zip.lnk                              kakapo.lnk                  ODBC.INI.lnk
```

Figure 8 - Recent documents folder

Table 4 - Evaluation of recent documents

Document	Explanation
177.jpg	bird image
aa010703a.htm	Bird website (appendix 12.27)
aggressive_song.wav	Bird call audio file (appendix 12.15)
AlmondMarshGreatBlueHeronStalling.jpg	bird image
audio	Folder located on USB at “E:\birds\audio”
babyscot_2weeks1.jpg	bird image
babyscot_vyoung.jpg	bird image
BirdingGuide.pdf	PDF guide on birdwatching (appendix 12.24)
birds	Folder located on USB at “E:\birds”
birds.zip	Downloaded zip file containing screensaver tx_birds.exe (appendix 12.7)
birdtrans2.jpg	bird image
birdwatching.doc	Bird related word document (appendix 12.11)
BookList.doc	A word document located on the E: USB Drive. Strong evidence it contained information about bird related books given it was located at "E:\birds\non images\ BookList.doc”
bookmarks.html	Firefox bookmarks page (appendix 12.18.1.4)
chicks2.jpg	bird image
cookies.txt	A link to the Firefox cookies .txt file, possibly indicating tampering.
Doc1.doc	Word document containing bird image (appendix 12.12)
EvanstonWoodpecker.jpg	bird image
kakapo	.ram bird audio file
Killdeer.jpg	bird image
Local Disk (C:)	A link to the main NTFS partition
MSN	A link to the MSN exe file.
My Music	A link to John Doe’s Pictures Folder
My Pictures	A link to John Doe’s Pictures Folder

Nestboxtips.txt	Bird related text file (appendix 12.14)
newbies2.jpg	bird image
New Volume (F)	A link to the now hidden F: partition
non images	Folder located on USB at “E:\birds\non images”
ODBC.INI	File containing bird text hidden with comments (Appendix 12.8)
ostbk2b2.htm	Bird related website (appendix 12.28)
Prac4 (2)	Unknown. Located at D: meaning it was likely on a CD.
Prac4.gif	Unknown. Located at D: meaning it was likely on a CD.
Q3 Thread (Statechart).gif	Unknown. Located at D: meaning it was likely on a CD.
ready2fledge.jpg	bird image
Sample Music	Link to the sample music available to all users
stuf.doc	Document from John Doe to an unnamed man, unclear if bird related (appendix 12.8)
WINDOWS	The root WINDOWS folder shared by all users. Bird related material was discovered here.

6.7 GPG file

Located on the main partition inside the folder “C:/Documents and Settings/johndoe/My Documents” is the file birdpics.gpg This is a GNU Privacy Guard encrypted file that can only be decrypted using a corresponding password. The cryptographic keys necessary for decryption were located in the files “secring.gpg” and “pubring.gpg” located at “C:/Documents and Settings/johndoe/Application Data/GnuPG”

There are three methods available for obtaining the password for access:

- Brute force the password using password cracking tools such as JohnTheRipper, trying all possible combinations of letters and numbers.
- Create a targeted wordlist of all strings on the system them use this as a wordlist for password cracking
- Within the Mozilla thunderbird profile directory there is a file called “7947277.s” this file contains the base64 string “YXJyYW4” which when decoded translates to the password.

All three of these methods give the password, which is “arran”

When the password is entered and the file called “birdpics” is decrypted it has no known extension, the Linux “file” command identified this as a zip file in which can be opened and viewed. Extracting this ZIP archive traditionally results in all but one of the images being corrupted. The use of foremost on the ZIP file allows for recovery of all 5 images therein, albeit information relating to their names was lost as a result. These names have been inferred from the information visible within the archive pre-recovery. All 5 were birds (shown in appendix 12.5)

Name	Size	Type	Date Modified
E:\birds\birdpics\WhiteFacedHeronFlying.jpg	181.3 kB	JPEG image	02 February 2005, 16:25
E:\birds\birdpics\WhiteFrontedParrot.jpg	188.9 kB	JPEG image	02 February 2005, 16:25
E:\birds\birdpics\WhiteThroatedSparrowInTree.jpg	247.0 kB	JPEG image	02 February 2005, 16:25
E:\birds\birdpics\WhoopingCranes.jpg	305.5 kB	JPEG image	02 February 2005, 16:25
E:\birds\birdpics\yellow-wag-cover-nb.jpg	61.6 kB	JPEG image	02 February 2005, 16:25

Figure 9 9 - birdpics.zip post-decryption

6.8 CrouchingKakapo.dll

Within the "C:\WINDOWS" directory there was a suspicious .dll file named after the "Kakapo" bird – "CrouchingKakapo.dll" which when evaluated with the Linux "file" command was shown to be a .zip archive with the extension changed. When changed back to a .zip file or viewed within Autopsy there were 7 bird images contained within the archive (See appendix 12.6). Due to this location, it cannot be said that this was categorically downloaded by John Doe as the directory was accessible by all users.

6.9 FanTailFrontView.exe

Within autopsy it was highlighted that there was a suspicious .exe file located at "C:/WINDOWS/mui/FantailFrontView.exe" with a suspected extension mismatch. This was the case and when the extension was changed to '.jpg' an image of a bird was visible. (See appendix 12.20)

6.10 Birds.zip & tx_birds.exe

Multiple references are made to a "birds.zip" file within various locations including in the recent files which contains a birds.zip.lnk file to it. The file existed at the location "C:\Documents and Settings\johndoe\My Documents\birds.zip" but is no longer there. Within the Firefox downloads file, downloads.rdf, we can see that it was downloaded from:
"http://www.traveltex.com/downloads/screensavers/birds.zip" This link is no longer active however archived versions can be accessed, from which it is possible to download birds.zip. Inside is an executable file, tx_birds.exe. tx_birds.exe exists on John Doe's system located in the C:\WINDOWS directory as well as an unnamed zip file identifiable within the cached files of Mozilla Firefox, further confirming this.

When the file on the system and the archived file are compared however the two files have different hashes:

Table 5 - Comparison of archived file to existing file

Exhibit	MD5 Checksum
Host PC tx_birds.exe	178928fc03e3c6ee8ab686e81844f957
Downloaded tx_birds.exe	8c2f830e2b0bd7b175e5ead25e9375fd

Thus these are not identical which can be explained by the discrepancy of dates. The earliest available archive link is dated November 15th 2005 whereas as the file was downloaded on February 9th 2005.

However, the two files contained the same images of birds - Using JPEXS free flash decompiler all images could be extracted from both .exe files and were shown to be identical. This essentially proves that birds.zip was the file from which the tx_birds.exe file was obtained.

Initially running tx_birds.exe installs 4 files to the C:/WINDOWS directory of a PC that set a screensaver of a flash slideshow containing 9 illicit bird images that seem to be tied to the American state of Texas, this slideshow was visibly installed within the virtual machine of John Doe's computer. (For images see appendix 12.7)

6.11 ODBC.ini

This is a standard windows configuration file that has been modified to contain information about birds in the Lake Michigan area of America hidden using commenting (shown in appendix 12.8).

Interestingly the text pertaining to birds is taken from a PDF's that can be recovered on the system, specifically "BirdingGuide.pdf" (Appendix 12.24)

It seems likely that this text was copied from the PDF.

6.12 Documents

6.12.1 stuf.doc

A Microsoft word document located at "C:/Documents and Settings/johndoe/My Documents/stuf.doc"

Stuf.doc does not discuss any explicitly illicit material, it is document intended for a male recipient implying that the accused did something following a conversation they had. This could imply the sharing or creation of bird images but cannot be categorically proven. (See appendix 12.9)

6.12.2 guide.doc

A Microsoft word document located within the unallocated partition (F:/) called guide.doc that gives detailed advice on how to perform a first-time birdwatching trip. The file contents describe it as being written by a birdwatcher called "Pete Dunne". (See appendix 12.10)

6.12.3 birdwatching.doc

A Microsoft word document located in the root directory (C:/) called birdwatching.doc that discusses detailed instructions on conducting birdwatching in the country of Thailand. The text states the author is "Antony Lynam" (See appendix 12.11)

Due to the location of this file, it cannot accurately be identified as tied to any of the users as it would be accessible by all. This could be an attempt to implicate others or to hide the image in a location it would not occur.

6.12.4 Doc1.doc

A Microsoft word document located at "C:/Documents and Settings/johndoe/My Documents/My Music/Doc1.doc" - Whilst this is a genuine word document, the only content contained is a single image of ornithological nature stretched across the document. When resized the image of the bird is fully visible (See appendix 12.12, 12.13)

Of note is that this image is identical to the one shown in "FanTailFrontView.exe" – with it having the same MD5 checksum.

6.12.5 nestboxtips.txt

a .txt file located at "C:/Documents and Settings/johndoe/My Documents/nestboxtips.txt" that details information on positioning and maintaining a bird nesting box. (See appendix 12.14)

6.13 Audio Files

6.13.1 aggressive_song.wav

An 8 second long .wav audio file located at "C:/Program Files/MSN/aggressive_song.wav" was found which contains a birdsong. (See appendix 12.15)

6.13.2 kakapo.ram

a .ram file located at "C:/Documents and Settings/johndoe/My Documents/kakapo.ram"- this is a file intended to stream video and audio over the internet using the Realplayer software installed on the machine, but the link is no longer functional. A modern variation of the page kakapo.ram was downloaded from can be accessed but it lacks the ability to stream this file . Through examining the

Firefox download log it was possible to find the download location, and the root page which contains a hyperlink reading "Listen to the kakapo" that links to the download, showing that this was likely the birdsong of the Kakapo bird and thus of an ornithological nature. (See appendix 12.16)

6.13.3 dawn.ram

Multiple references exist to another .ram file not currently found on the system, dawn.ram – specifically within the Firefox downloads.rdf file which provides a link as well as a location it was downloaded to that is not accessible. dawn.ram can be downloaded using an archived page, but the file it linked to is inaccessible. Based on the archive page we can see there was a hyperlink that said "Listen to the dawn bird song" that when clicked took a user to the link shown in download.rdf, showing that dawn.ram was of an ornithological nature.

6.14 PDF Files

Autopsy successfully carved three relevant PDF files that had been deleted, we can see evidence of this deletion within John Doe's recycling bin from the file located at "C:/RECYCLER/S-1-5-21-725345543-854245398-1202660629-1003/INFO2" due to the file carving the names were lost and were inferred from the evidence of deletion.

6.14.1 BirdingGuide.pdf

A 23-page PDF birding guide extensively describing how to birdwatch in Porter County, Indiana in the United States - including types of birds, sites and weather conditions. (See appendix 12.24)

6.14.2 57ab_perth.pdf

A single page PDF detailing birding sites around Perth, Western Australia. (See appendix 12.25)

6.14.3 news_sprg2001.pdf

A 12-page newsletter from the University of California Botanical gardens published in spring 2001 detailing the bird life in the garden. (See appendix 12.26)

6.15 Websites

6.15.1 aa01073a.htm

Located within the documents of John Doe is a downloaded webpage called "aa00173a.htm". This webpage from a site called "birding.about.com" and is a guide on how to construct a bluebird nest box written by a woman called "Christine Tarski". (See appendix 12.27)

6.15.2 ostbkb2.htm

Located within the documents of John Doe is a downloaded webpage called "ostbkb2.htm". This webpage is very basic and describes creating housing and facilities for birds including chicks, juveniles, and adults. (See appendix 12.28)

6.16 Emails

6.16.1 Email Addresses

Many emails were discovered on the system, those potentially pertinent to the case are displayed below:

johndoe@example.com	jdoe@example.com
johndoe@microsoft.com	jdoe@mail.example.com
johndoe@netscape.net	jdoe@netscape.net
johndoe@office.microsoft.com	ben@example.org
johndoe@real.com	mailinglist@birds.example.com
johndoejohndoe@example.com	mail@orientalbirdclub.org

Of these, evidence of correspondence with the following emails can be proven from the inbox of John Doe:

- ben@example.org
- mailinglist@birds.example.com
- jdoe@example.com

6.16.2 Email Content

There were 4 emails found in the account jdoe@example.com from two different senders; mailinglist@birds.example.com which sent a short email about how to identify different birds, Appendix 12.29, and shows that John Doe was subscribed to a mailing list dedicated to ornithology.

The other sender was ben@example.org who sent photos of birds over multiple emails as well as a story about a bird being cooked, see Appendix 12.29. The message in one of the emails thanks John Doe for the 'pics you sent me' which references pictures that John Doe may have sent to ben@example.org however there is no evidence to prove this. All these messages were received at exactly 11:08:01 on 09/02/2005 which likely indicates the date and time of the emails are not accurate. (Full emails shown in Appendix 12.29)

6.17 Browser Analysis

During this investigation, the suspect's web browsing activities were analysed across the two primary web browsers on his device: Internet Explorer and Mozilla Firefox. Both browsers were found to be used by the suspect, albeit for different purposes. Internet Explorer's usage was primarily limited to downloading and viewing a limited set of files. On the other hand, Mozilla Firefox was used more extensively, revealing a pattern of activities centred around ornithologically related interests.

The browser history analysis revealed that the suspect visited numerous websites containing bird-related content, including tutorials, images, and information on bird watching (see appendix 12.18). In particular, the suspect accessed a tutorial on building bird nests and viewed upwards of 10 bird-related images while browsing these sites as well as some .strath extensions on files possibly showing a connection to Strathclyde which may be desirable to investigate further. Furthermore, cookies from several bird-related websites were discovered, indicating a pattern of frequent visits to such websites on multiple sessions

Additionally, the suspect's Mozilla Firefox browsing history revealed instances of accessing and downloading illicit material such as "babyscot_vyoung.jpg," and "newbies.jpg" among others as referenced in appendix 12.18 -Firefox history. Most of these entries were file paths to locations on the suspect's drive containing said material. It is noteworthy that the suspect appeared to use Mozilla Firefox to browse and download the illicit content, while using Internet Explorer to view the material.

During the investigation, various file types associated with the suspect's online activities were recovered and analysed. The recovered files included images, documents, and web page files, among others, referenced in detail in appendix 12.18. These files were found in the user accounts and folders corresponding to the suspect's online activities, further corroborating the suspect's interest in bird-related content and the presence of illicit material on his device.

In conclusion, the suspect's browser history analysis provides valuable insights into his online behaviour and interests, particularly the engagement with bird-related content and the acquisition of illicit material. This information shows a pattern of behaviour centred concretely around specific

dates during sessions and can be instrumental in building a comprehensive profile of the suspect and understanding his motivations and actions in a broader context. The detailed findings of the browser history analysis can be found for reference in appendix 12.18, subtitled “Firefox” and “Internet Explorer.”

6.17.1.1 Cache

At the location “/Documents and Settings/johndoe/Application Data/Mozilla/Firefox/Profiles/w4nf3obl.default/Cache/EC899C60d01” are Mozilla Firefox cache files, contained within are a number of recoverable .gif files containing slideshows pertaining to the state of Texas stored whilst browsing. Within these slideshows are a number of ornithological images.

It was determined that these cache files are the thumbnails from the URL (archived) http://www.traveltex.com/downloads/screensavers as one of the .gif files was identical to the tx_birds.exe screensaver, with the website having a heading “birds” with an accompanying download link to birds.zip, where the suspected tx_birds.exe file was downloaded.

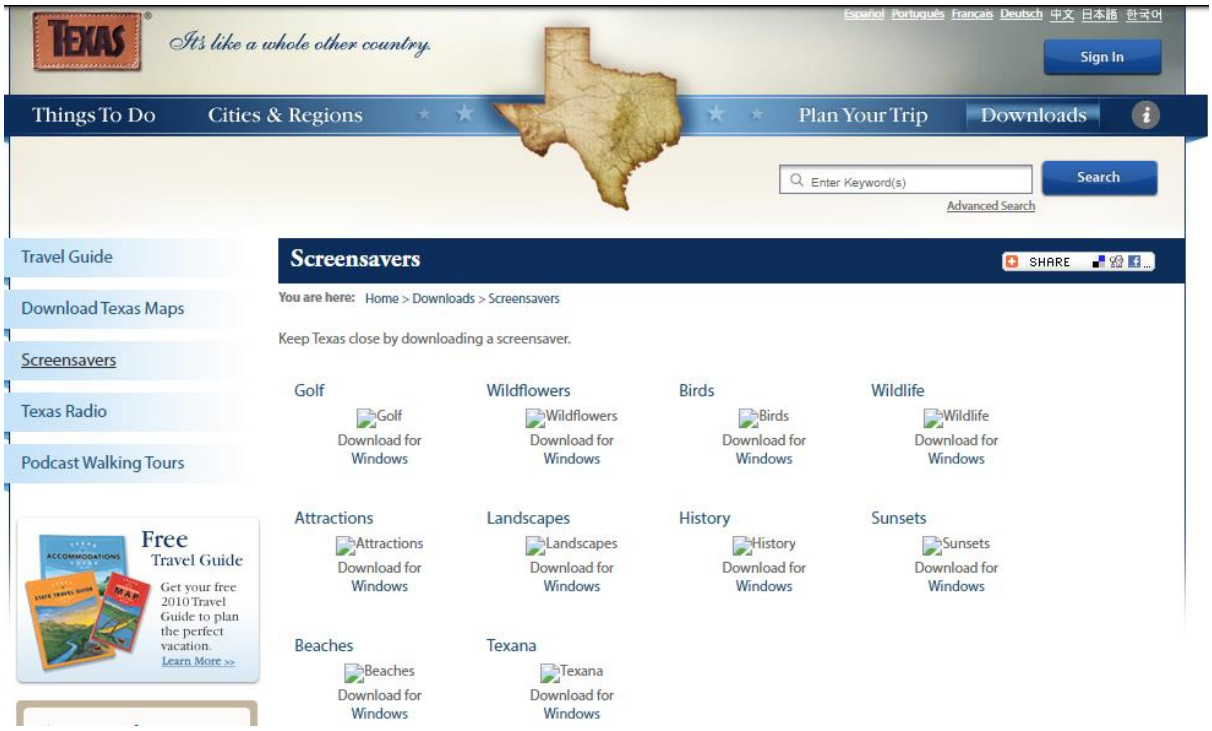


Figure 10 - Wayback machine of screensavers page

To confirm this a screensaver archive from the heading “sunset” was downloaded and compared to images shown in the gif files and matched.

4 unique images were found within the Firefox cache.

There is also a recoverable .zip file with no recoverable name that contains the tx_birds.exe file, showing it was downloaded from Firefox.

6.17.1.2 Cookies & Bookmarks

The investigation led the investigators to a detailed search of the suspect's cookies and bookmarks activity which was conducted to gain further insights into his online activities and interests. The cookies analysis, as documented in Appendix 12.18.1, revealed several visits to bird-related websites such as "haiths.com" and "birding.about.com." These visits occurred on separate occasions, implicating the suspect in potentially suspicious activities that correlate with other documented, illicit actions.

It is important to note that in the context of other illicit activities which took place around this time, the legal birdwatching activity could be connected to the illegal activities, however those conclusions are not drawn here. The suspect's frequent visits to these websites suggest a possible connection to other individuals or groups who may be involved in similar activities. The analysis of the suspect's cookies may serve as crucial evidence, helping to establish links between the suspect and potential accomplices, as well as further solidifying the suspect's involvement in illegal bird-related activities.

In addition to the cookies analysis, an examination of the suspect's bookmarks revealed a collection of links that are also related to bird-themed activities. Bookmarks such as "free bird wallpaper" and "alphabetical index of birds" may further strengthen the suspicion that the suspect is involved in illicit birdwatching activities. The presence of these bookmarks suggest that the suspect actively sought out and saved resources related to birds, potentially connecting them to other activities and/or suspects who may have colluded and used these sites for similar purposes.

The correlation between the suspect's browser history, cookies, and bookmarks demonstrates a consistent pattern of interest and engagement in bird-related content, particularly in the context of illegal and illicit birdwatching activities. These findings have significant implications for the investigation, as they contribute to building a comprehensive profile of the suspect and may provide essential leads in identifying and apprehending other individuals who may have been or may still be involved in similar activities.

In conclusion, the analysis of the suspect's cookies and bookmarks offers valuable insights into his online behaviour and interests, revealing a clear pattern of engagement with bird-related content and the potential involvement of the suspect in illegal birdwatching activities. A detailed layout of the findings of the cookies and bookmarks analysis can be found in appendix 12.18.1.

6.18 Bob’s files

Of note is that whilst the main target of this investigation was John Doe and his user account was clearly the main suspect – Bob’s user account did contain one image of a bird, located at “C:/Documents and Settings/bob/My Documents/My Music/ready2fledge.jpg” (Picture 110).

Within John Doe’s Firefox download data was a record that indicated that John Doe had been responsible for this download, meaning that user “Bob” was likely unaware of this.

```
<RDF:Description RDF:about="C:\Documents and Settings\bob\My Documents\My Music\ready2fledge.jpg"
          NC:Name="ready2fledge.jpg"
          NC:Transferred="77kB of 77kB">
  <NC:URL RDF:resource="http://people.cornell.edu/pages/sah67/ready2fledge.jpg"/>
  <NC:File RDF:resource="C:\Documents and Settings\bob\My Documents\My Music\ready2fledge.jpg"/>
  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:06:42 GMT Standard Time 2005 +379937</NC:DateStarted>
  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:06:42 GMT Standard Time 2005 +440024</NC:DateEnded>
  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>
```


Figure 11 - Evidence from John Doe's Firefox downloads showing the image download.

7 Production List and Associated Description

7.1 Whitelist

An expansive whitelist was produced to be used throughout searching to ensure that known good files were eliminated. This whitelist was constructed from a variety of sources:

- The National Institute of Standards and Technology NSRL hashlist, an expansive list of known good software available online converted to a .txt file for use within Autopsy
- The hashes of a clean Windows XP Install identical in version to John Doe's operating system
- The hashes of files installed from the following available software on a clean Windows XP System using MD5Deep: Adobe Acrobat Reader 7, RealPlayer, Microsoft Office 2003, Windows Media Player
- Manual elimination of files evaluated by an examiner.

7.2 Virtual Machine

A virtual machine of John Doe's computer was produced from a copy of the forensic image, this allowed for browsing the machine as John Doe did. This was an assessment method only for finding hidden evidence/viewing working examples as operation of the machine would result in file changes, thus any suggested evidence was then subsequently examined on the forensic image to ensure integrity of evidence.

8 Conclusions

In the analysis of Item JD-7, the hard drive belonging to Mr John Doe, the analysts have recovered 215 images of an ornithological nature or appearing to show multiple subjects engaging in illicit behaviour regarding birds. A full list of these images can be found in appendix 12.30 There was also images of the subjects engaging with other creatures, primarily insects. There were 101 images found on the drive that have metadata indicating that they were taken on a Canon Powershot SD100, which was also found in the possession of Mr John Doe. All these images were taken over the course of three weeks, appearing to show multiple subjects on a birdwatching expedition.

In addition, multiple documents and web pages were found containing advice, information, and discussions on successful birdwatching. The suspect's browser history indicates that he visited various sites on the topic of birdwatching on multiple occasions, so the suspect has knowingly gone onto the internet to find images of birds on multiple occasions.

Some of the files found on the Hard Drive had been hidden. Some of these were hidden on an unallocated partition of the Hard Drive, while others were hidden by changing the file extension. This suggests that the suspect has knowingly attempted to hide these illicit files for fear of being caught.

The suspect's email history shows conversations between the suspect and multiple other addresses, including mailinglist@birds.example.com, indicating the suspect signed up to a mailing list dedicated to images and information of birds, and ben@example.org, identified as a Mr Ben Forbes, who thanks Mr Doe for images that he is alleged to have sent. This information indicates that Mr Doe is complicit in the distribution of bird images.

Following an antivirus scan of the Hard drive, no malicious software that could have gathered the evidence was found to be on the drive, indicating that the suspect placed these files on the drive himself.

In conclusion, there is a significant amount of evidence that demonstrates the suspect did participate in the creation, possession, and distribution of images of an ornithological nature.

9 Contributions

Examiner	Area of Focus
[Name redacted]	File examination, production list and Analysis
[Name redacted]	Methodology and Report Management
[Name redacted]	Summary, Browsing Data and Downloads
[Name redacted]	Timeline Reconstruction, Appendix Organisation

10 Equipment Required for court proceedings.

JOHN DOE EVIDENCE – Needed from evidence:

- Cannon Camera JD-6
- Hard Drive JD-7

HARDWARE – Will be brought by the digital forensic team:

- Computer with Ubuntu OS
- Computer with Windows OS
- Monitor
- Keyboard
- Mouse
- USB Cable
- SATA Cable
- Power Cable
- Television Screen to show court

SOFTWARE – The software used on the Ubuntu:

- Autopsy 4.20.0 Windows – Forensic Analysis program combining many features essential for effective evidence obtainment.
- MD5Deep/MD5 – Used to get MD5 hash of files to ensure forensic integrity and to verify checksums.
- GPG – Necessary to decrypt the GPG file found on the system.
- MMLS – Viewing partition information.
- Internet Archive: Wayback Machine (https://archive.org/web/) – access webpages that were formerly accessible but currently are not.

- JPEXS free flash decompiler – Used to obtain images contained within screensaver files.

11 Terms Used

Image – A file representing an operating system or complete hard drive.

Partition – A sub-section of the hard drive

File system – the way files are organized and categorized within an operating system.

Mount – To allow the filesystem to be accessed by the computer.

Unallocated partition – A portion of the hard drive that is not currently accessible by the file system.

Clock Skew – The amount of difference between the system time and the current actual time

Encryption – Securely making a file unreadable unless one has the corresponding decryption method.

GPG File – A specific type of file created with GnuPG included within windows privacy tools, opened using a password and a corresponding "key"

MD5 Hash or MD5 checksum – A 32 character (128 bit) long string of numbers and letters that represents a given file. If the file is modified in any way, the MD5 hash will be different due to the way the algorithm works.

Whitelist – A list of files known to be good or okay that can be eliminated from a search.

Virtual Machine – A computer that can be ran from inside another computer using software.

Carved file – A carved file is a file reconstructed from the data remaining on the system when it was deleted.

Cache – Files downloaded or obtained through standard browsing or operation of a computer.

Metadata – Data and information attached to a file when it is created including things such as the date, who created it, last edited time.

12 Appendices

12.1 Unallocated Partition

Picture 1 – BlackVultureSunningOnPost.jpg

Picture 2 - blue_bird2.jpg

Picture 3 - brd_Ornithologist_TWG.jpg

Picture 4 – BarnOwl.jpg

Picture 5 – GreatBlueHeronWithFish.jpg

Picture 6 – GreatEgretInVoloBog.jpg

Picture 7 – GreenHeronCloseup.jpg

Picture 8 – GreenHeronOnChicagoLakeshore.jpg

Picture 9 – ImmatureSnowyEgretTakingOff.jpg

Picture 10 - june03screen.jpg

Picture 11 - junescreen01.jpg

Picture 12 – KeaAndMountain.jpg

Picture 13 - KeaAtTopOfMacKinnonPass0930.jpg

Picture 14 – KeaEatingRentalCar.jpg

Picture 15 - KeaRetrievingBakedBeansCanFromTarn.jpg

Picture 16 - Df1.jpg

Picture 17 - BaldEagle7oClock.jpg

Picture 18 - GreatEgretOverflyingRoseateSpoonbills.jpg

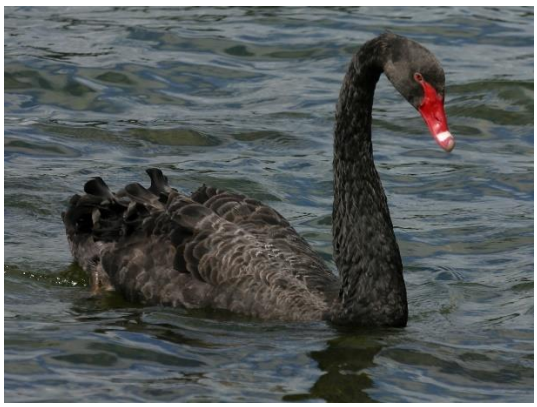
Picture 19 - AlmondMarshGreatBlueHeronStalling.jpg

Picture 20 - AmericanAvocetWinterPlumage.jpg

Picture 21 - AmericanWhitePelicansCircling.jpg

Picture 22 – BellbirdJumpingOffBranch.jpg

Picture 23 - BlackNeckedStiltsFromBehind.jpg



Picture 24 - BlackSwan.jpg

12.2 Canon Powershot SD100 images

Picture 25 - 37026-f0432032.jpg

Picture 26 - 37035-f0438640.jpg

Picture 27 - 37036-f0438992.jpg

Picture 28 - 37037-f0439400.jpg

Picture 29 - 37039-f0440944.jpg

Picture 30 - 37044-f0441536.jpg

Picture 31 - 37051-f0443520.jpg

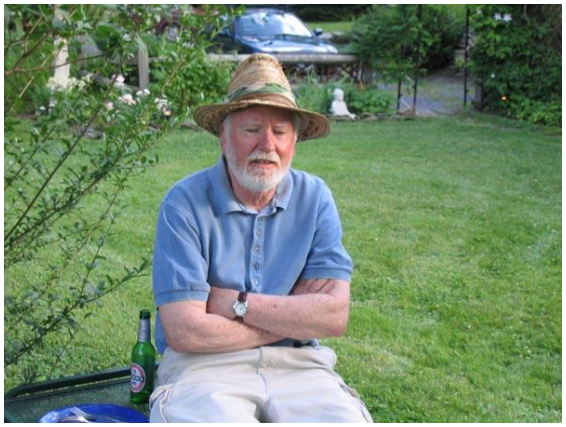
Picture 32 - 37062-f0457096.jpg

Picture 33 - 37080-f0464568.jpg

Picture 34 - 37139-f0493176.jpg

Picture 35 - 37141-f0494144.jpg

Picture 36 - 37164-f0501184.jpg



Picture 37 - 37177-f0508024.jpg

Picture 38 - 37188-f0520464.jpg

Picture 39 - 37189-f0522304.jpg

Picture 40 - 37193-f0525016.jpg

Picture 41 - 37194-f0525496.jpg

Picture 42 - 37197-f0526232.jpg

Picture 43 - 37199-f0526960.jpg

Picture 44 - 37200-f0527448.jpg

Picture 45 - 37204-f0529544.jpg

Picture 46 - 37208-f0533600.jpg

Picture 47 - 37228-f0544152.jpg

Picture 48 - 37232-f0545184.jpg

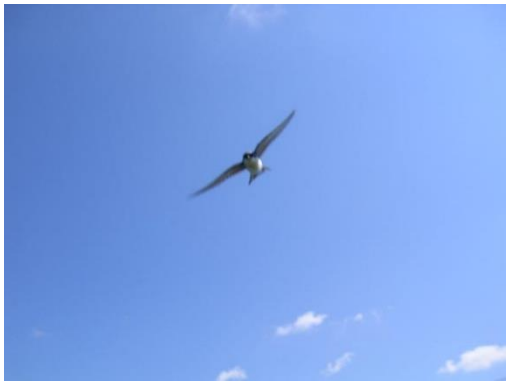
Picture 49 - 37242-f0552688.jpg

Picture 50 - 37278-f0561264.jpg

Picture 51 - 37329-f0592136.jpg

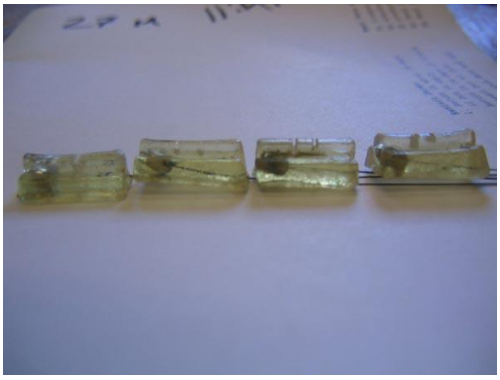
Picture 52 - 3207-chicks2.jpg

Picture 53 - 3223-newbies2.jpg



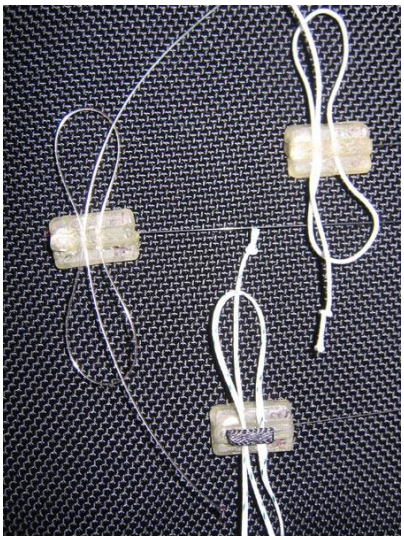
Picture 54 - 31930-A3D4DDDDd01.jpg

Picture 55 - 31936-BF5BE9D9d01.jpg

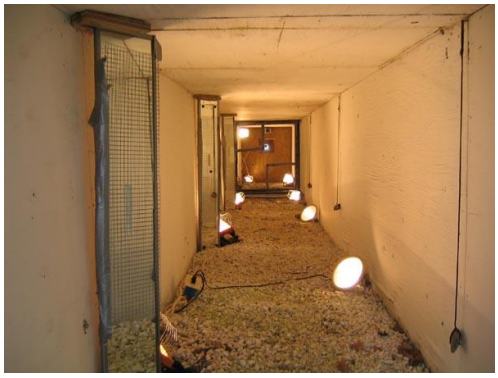


Picture 56 - 31942-D5FDCB9Ad01.jpg

Picture 57 - 31944-5E5570B4d01.jpg



Picture 58 - 31946-848752E7d01.jpg (devices to be attached to birds, as shown in other images)



Picture 59 - 31948-502FE69Dd01.jpg

Picture 60 - 31950-19E9BA69d01.jpg

Picture 61 - 31952-D6A649A8d01.jpg

Picture 62 - 31954-426147D8d01.jpg

Picture 63 - 31956-1CE0A8AEd01.jpg

Picture 64 - 31958-884B7041d01.jpg

Picture 65 - 36376-f0045880.jpg

Picture 66 - 36892-f0345656.jpg

Picture 67 - 36894-f0345832.jpg

Picture 68 - 36896-f0348056.jpg

Picture 69 - 36906-f0360392.jpg

Picture 70 - 36924-f0378088.jpg

Picture 71 - 36934-f0382464.jpg

Picture 72 - 36960-f0391728.jpg

Picture 73 - 36974-f0395576.jpg

Picture 74 - 36976-f0395928.jpg

Picture 75 - 36979-f0399464.jpg

Picture 76 - 36992-f0413632.jpg

Picture 77 - 36994-f0415008.jpg

Picture 78 - 36995-f0415616.jpg

Picture 79 - 36997-f0416072.jpg

Picture 80 - 36998-f0417336.jpg

Picture 81 - 31842-A0016363d01.jpg

Picture 82 - 31844-3E8462AFd01.jpg

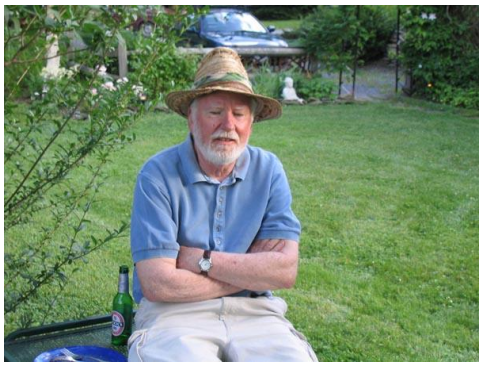
Picture 83 - 31846-3E8762AFd01.jpg

Picture 84 - 31848-3E8662AFd01.jpg

Picture 85 - 31850-3E8162AFd01.jpg

Picture 86 - 31852-3E8262AFd01.jpg

Picture 87 - 31854-3E8C62AFd01.jpg



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Picture 93 - 31868-4C3E89C6d01.jpg

Picture 94 - 31870-61C27B40d01.jpg

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Picture 100 - 31894-D192AAB2d01.jpg

Picture 101 - 31896-B9D470B5d01.jpg

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Picture 104 - 31914-A8331696d01.jpg

Picture 105 - 31916-FC6938FDd01.jpg

Picture 106 - 31918-B76BD0AEd01.jpg

Picture 107 - 31922-D8829E69d01.jpg

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Picture 109 - 31928-D19FCBF6d01.jpg

Picture 110 - 1154-ready2fledge.jpg

Picture 111 - 2484-birdtrans2.jpg

Picture 112 - 31818-A9E5105Ad01.jpg

Picture 113 - 31820-7013F58Dd01.jpg

Picture 114 - 31822-6F61F39Dd01.jpg

Picture 115 - 31824-D1D1775Fd01.jpg

Picture 116 - 31826-FA73DB84d01.jpg

Picture 117 - 31828-3FB68809d01.jpg

Picture 118 - 31830-42626CDDd01.jpg

Picture 119 - 31832-E319CFC2d01.jpg

Picture 120 - 31834-5C1E7D60d01.jpg

Picture 121 - 31836-404BF387d01.jpg

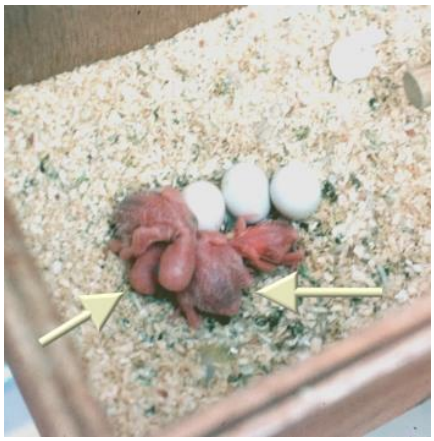
Picture 122 - 31838-4043F387d01.jpg

Picture 123 - 31840-4058F387d01.jpg

Picture 124 - 31938-BF4BE9D9d01.jpg (Corrupted)

Picture 125 - 31940-8F5F3282d01.jpg (Corrupted)

12.3 Carved images



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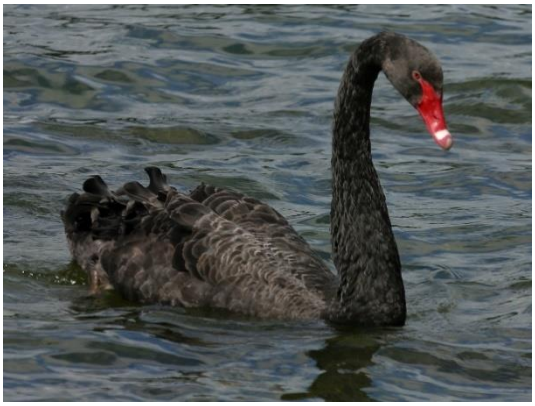
Picture 129 - 37337-f0597584.jpg

Picture 130 - 35978-f0002368.jpg

Picture 131 - 35979-f0003752.jpg



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Picture 135 - 35983-f0005424.jpg

Picture 136 - 35985-f0005640.jpg

Picture 137 - 35986-f0006264.jpg

Picture 138 - 35987-f0006704.jpg

Picture 139 - 35988-f0007432.jpg

Picture 140 - 35989-f0007896.jpg

Picture 141 - 35990-f0008424.jpg

Picture 142 - 35991-f0009048.jpg

Picture 143 - 35992-f0009168.jpg

Picture 144 - 35993-f0009552.jpg

Picture 145 - 35994-f0009976.jpg

Picture 146 - 35995-f0010568.jpg

Picture 147 - 35996-f0011192.jpg

Picture 148 - 36347-f0033904.jpg

Picture 149 - 36348-f0033912.jpg

Picture 150 - 36350-f0033928.jpg

Picture 151 - 36394-f0056912.jpg (Louisiana state emblem, a pelican on a nest of three chicks)

Picture 152 - 36395-f0056920.jpg

Picture 153 - 36396-f0056928.jpg

Picture 154 - 36397-f0056936.jpg

Picture 155 - 36398-f0056944.jpg

Picture 156 - 36399-f0056952.jpg

Picture 157 - 36401-f0056976.jpg

Picture 158 - 36716-f0189136.gif (Snippet of page shown at http://www.pbs.org/lifeofbirds/index.html)

Picture 159 - 36860-f0310480.jpg

Picture 160 - 35973-f0000536.jpg

Picture 161 - 35974-f0000888.jpg

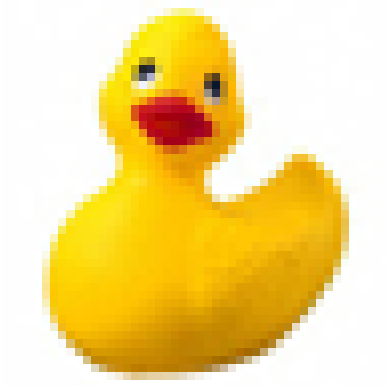
Picture 162 - 35975-f0001224.jpg

Picture 163 - 35976-f0001624.jpg

Picture 164 - 35977-f0002088.jpg

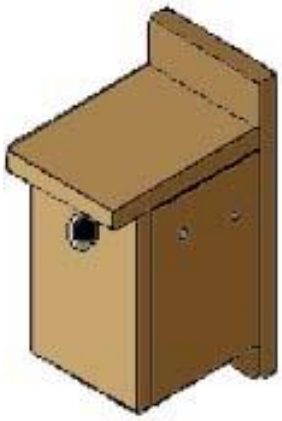
12.4 Miscellaneous Images

Picture 165 - 67BAEB46d01.jpg



Picture 166 - 171-johndoe.bmp

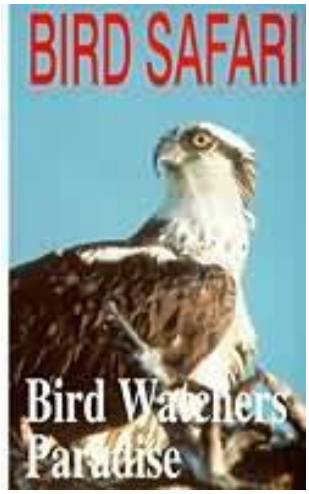
Picture 167 - 1238C212d01.jpg



Picture 168 - 3096-bluebirdhousepic.jpg

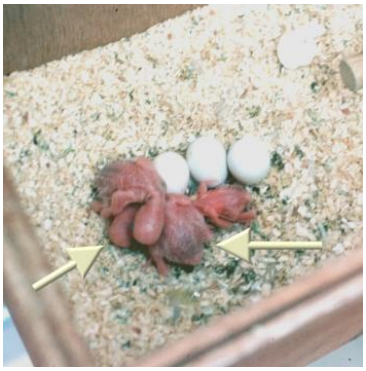
Picture 169 - 3197-177.jpg

Picture 170 - 3199-40m.jpg



Picture 171 - 3201-7107298.jpg

Picture 172 - 3203-babyscot_2weeks1.jpg



Picture 173 - 3205-babyscot_vyoung.jpg

Picture 174 - 3212-snow_geese.jpg

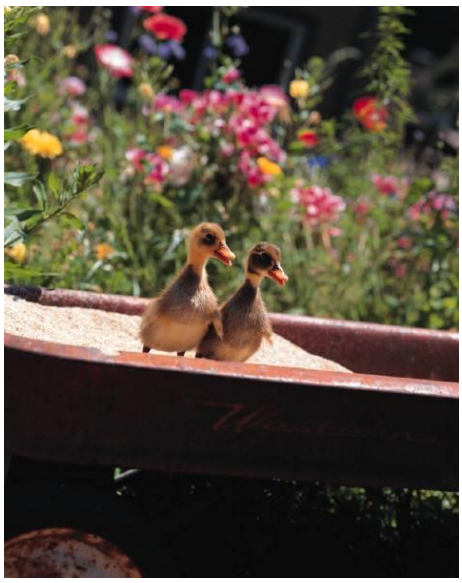
Picture 175 - 3217-tn_duck_3.jpg

Picture 176 - 3219-wbpremium_s.jpg

Picture 177 - 5275-frankbeecostume_1827_34457581.jpg

Picture 178 - 5277-frankbeecostume_1827_84985892.jpg

Picture 179 - 5279-frankbeecostume_1827_96360352.jpg



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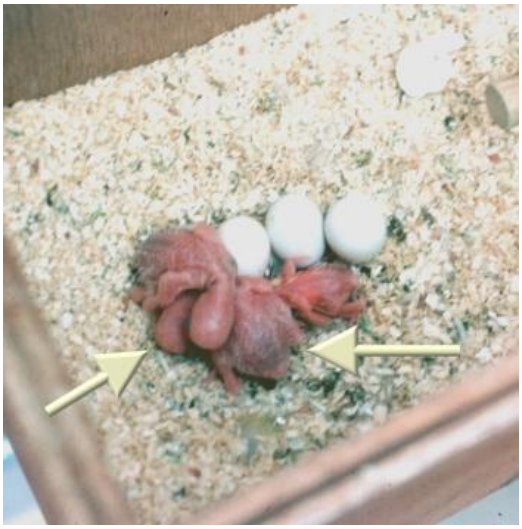
Picture 181 - 26092-Firefox Wallpaper.bmp



Picture 182 - E1663DDEd01.jpg

12.5 GPG File Images

Picture 183 – WhiteFrontedParrot.jpg

Picture 184 - WhoopingCranes.jpg

Picture 185 - yellow-wag-cover-nb.jpg

Picture 186 - WhiteThroatedSparrowInTree.jpg

Picture 187 - WhiteFacedHeronFlying.jpg

12.6 CrouchingKakapo.dll

Picture 188 - CrouchingKokako.jpg

Picture 189 - brd_WoodDuck.jpg

Picture 190 - Brolga.jpg

Picture 191 - BrushTurkeyPerching.jpg

Picture 192 - CanadaGoose.jpg

Picture 193 - CanadaGooseWashing.jpg

Picture 194 - ChestnutMandibledToucan.jpg

12.7 Birds.zip

Picture 195 - 1.jpg

Picture 196 - 6.jpg

Picture 197 - 8.jpg

Picture 198 - 10.jpg

Picture 199 - 12.jpg

Picture 200 - 14.jpg

Picture 201 - 16.jpg

Picture 202 - 18.jpg

Picture 203 - 20.jpg

12.8 ODBC.INI

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MS Access Database=Microsoft Access Driver (*.mdb) (32 bit)
Excel Files=Microsoft Excel Driver (*.xls) (32 bit)
dBASE Files=Microsoft dBase Driver (*.dbf) (32 bit)
[MS Access Database]
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[Excel Files]
Driver32=C:\WINDOWS\system32\odbcjt32.dll
[dBASE Files]
Driver32=C:\WINDOWS\system32\odbcjt32.dll
;ìWithout doubt the presence of Lake Michigan affects the
;movement and distribution of birdlife in the Dunes more than
;any other single factor. The shores of this enormous lake provide
;leading lines that control flight paths of numerous migrants, and
;the vast open waters draw legions of transitory and wintering birds.
;During autumn the elongate north-south boundaries of the lake become
;airways along which thousands of migrants navigate toward
;wintering areas. Southbound birds following the shores are ultimately
;guided into the
;Dunes Area, at the toe of
;the lake. This avian convergence
;at the bottom of
;Lake Michigan is termed
;the funneling effect.î
;The funneling effect explains
;the unusually high
;diversity of autumn birds
;in northwest Indiana.
;ìLake Michigan also provides
;two important avian habitats that are otherwise quite rare in the
;Midwest: the deep lake and the beach. Waters of the lake attract
;large numbers of bay and sea ducks, many of which are virtually
;unrecorded at inland sites in the Midwest. Additionally, the lake
;attracts a number of rare periodic transients, including the Purple
;Sandpiper, Red Phalarope, Pomarine Jaeger, Parasitic Jaeger, Great
;Black-backed Gull, Glaucous Gull, Iceland Gull, Thayerís Gull,
;Sabineís Gull, Little Gull, Black-legged Kittiwake. Extensive beaches
;provide resting and feeding areas for shorebirds, especially those
```

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;species preferring sand rather than mudflats, e.g., Sanderling, Red
;Knot, and Bairdís Sandpiper.
;ìThe deep waters of Lake Michigan also constitute a significant
;obstacle to migrants. During nocturnal flights many north-bound
;passerines overfly landís end and daybreak finds them over the lake.
;When landfall is visible, they often fly directly to the shore, where
;they immediately land for rest and feeding.
;This effect generates an anomalously high concentration of passerines
;in parks and woodlands immediately adjacent to the lakeî
;(Brock 5).
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12.9 stuf.doc

Dear Sir

Further to our conversation everything we have discussed has been done

Yours faithfully

John Doe

12.10 guide.doc

An Insider's Guide to Enjoying Your First Birding Field Trip
by Pete Dunne

Field trips are a lot like going to a dance, and there are two schools of thought. You can just waltz onto the dance floor and let the other person lead or you can learn a few basic dance steps beforehand. Here, for those who want to get a jump on etiquette, are some of the basic rules of the birding field trip. Learn them, and you'll spend more time birding and less time tripping over your feet.

• Rule 1 - Never miss an opportunity to use a restroom.
Your capacity for birding may be limitless but your bladder is not. Some leaders are generous with their planned rest stops; some are miserly. Whenever the group arrives at a planned rest stop, take full advantage {and mind your coffee consumption between stops).

• Rule 2 - Familiarize yourself with whatever pre-trip information is sent.
Most organized field trips come with instructions. In the pre-trip material, you will almost certainly find the answers to your most pressing questions: dress, equipment needs, time commitment, lunch plans. Being prepared is the first step toward having a great time.

Re: Clothing. Rule of thumb: In winter, if in doubt, just bring it. In hot weather, cover up for sun protection-this means hat, long-sleeved cotton shirt, long pants. At any time of year, avoid bright colors, particularly white. In the universal language of wild creatures, white means "Danger! Watch Out! Hide ! It's not the message you want to send.

• Rule 3 - Don't be late.
When you join a group, you sacrifice a measure of self-determination. One of the quickest ways to annoy the group leader and everyone else, is to arrive late and delay the group's departure.

• Rule 4 - Don't wander off.
The second quickest way to annoy the group leader is to wander off. You don't want to be left behind and you don't want to be the focus of an unnecessary search. If you plan to leave the group, for a short time or for the balance of the day, be certain you inform the leader.

It is in your interest to stay close to the leader and the more experienced members of the group so that you can rely on their knowledge and bird-finding skills.

Staying close applies to car caravanning, too. The rule of thumb is one car length back for every ten miles per hour of velocity. Thirty miles per hour; three car lengths behind the bumper ahead of you. Sixty miles per hour; six lengths. Don't trust yourself to keep the pace? Don't drive. Car-pool with someone else.

• Rule 5 - Come prepared.
If the trip involves driving, make sure you have enough fuel to see you through. If the instructions state "bring lunch," don't assume that you'll be able to stop at a convenience store to pick up a sandwich. Do that, and you'll likely be eating alone.

• Rule 6 - Check out your equipment before the trip.
The single greatest frustration first-time trip goers face in not inexperience, but rather the lousy or malfunctioning equipment - usually optics.

If your binoculars aren't working, ask whether a loaner is available. It you don't own binoculars, do not rush out to the nearest discount store and buy some for the trip. People who do this usually end up with instruments they soon replace. Borrow binoculars for the trip. Use your field trip experience to see what instruments experienced birders are using in order to make an educated purchase later.

• Rule 7 - Speak Softly.
Human voices put wildlife on alert. Talking may also prevent a leader from hearing songs or calls and keep you from hearing instructions. Field trips are social and conversation is part of the field trip experience. If you want to converse, do so in whispers or stand away from the group.

• Rule 8 - Keep motion to a minimum.
More than sound, birds react to motion. In close proximity to birds, don't move quickly and above all do not advance until the leader gives the word. Want to draw the ire of a group? Walk toward "the bird of the day" and scare it away.

• Rule 9 - Don't monopolize the leader.
Sure you have questions. Sure you want to get to know the leader, and you want them to come to recognize your wonderful qualities, too. One of those qualities should be deference, because everyone in the group shares your ambition. Deference extends to use of the spotting scopes, too.

When the leader trains his scope on an interesting bird, and you were first to get a glimpse last time, defer to others the next several times. No matter what your place in line, first looks through a scope are quick looks. After you get an identifying glimpse, step quickly aside for the next person. If the bird is moving, reposition the scope so the next user won't have to pan back and forth. After everyone has had their glimpse, more leisurely viewing is possible.

• Rule 10 - Do ask questions.
Leaders want to share their knowledge, and questions are the catalyst that unlocks it. Don't be intimidated by what you don't know or what you presume that others know. Chances are your question is shared by others in the group. You may not be the leader, but if you trigger the answer to a question that some other member of the group was too shy to utter, you'll be their hero. That's it. All you need to know to get the most out of your first field trip experience. If it seems like too much to remember, just remember Rule #1. At any other time, there will be someone else around to ask for assistance.

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12.11 birdwatching.doc

BIRDWATCHING IN THAILAND
Feathered Magic from Mangroves to Mountaintops by Antony Lynam

One of the great attractions for nature tourists visiting Thailand is the diversity of environments extending across mountain peaks, lowland rainforests, mangroves, coral reefs, farmland and urban jungles. Within a day, or even a few hours travel, one can easily make the transition between these places and witness natural marvels large and small.

For wildlife enthusiasts no group maintains interest and pleasure more than birds. While special efforts are required to see in the wild charismatic species such as elephants and primates, birds are found across the entire spectrum of environments from pristine to severely degraded areas.

Part of the attraction for birds lies in their diversity. Nine hundred and seventy eight bird species have been recorded in Thailand, approximately 10% of the world's total. At the Isthmus of Kra between latitudes 11° and 13°N, a major biogeographic transition between Indochinese and Sundaic forests produces a special diversity of birds with a total of 152 species of birds reaching the northern or southern range limits of their geographic ranges.

Two-thirds of Thai birds are residents, the remainder are seasonal visitors. Locations where migrants congregate, often in large numbers, are highly accessible making Thailand a special destination for birdwatchers.

Many birds are susceptible to human disturbance because they have small geographic ranges, a result of specific habitat requirements. For example, Deignan's babbler - a non-descript forest bird is found on Doi Chiang Dao and nowhere else in the world. Gurney's pitta are only found in lowland rainforests. Fewer than 30 birds remain in the last known population in Thailand at Khao Nor Chuchi, Krabi. Efforts by local and international conservation agencies strive to increase protection efforts and reafforest areas encroached by rubber farmers, though time is running out. With approximately 20% of the birds found in Thailand being globally or regionally endangered species, this makes the country a birdwatching haven for bird enthusiasts.

IDENTIFYING BIRDS
Birds are distinguished first by their size and shape. They range from diminutive flowerpeckers, sunbirds and white-eyes, about the size of your index finger, to lanky storks and egrets that stand almost a metre tall, and Green peafowl with its spectacular 2m tail. The form of the beak offers vital clues about the bird's diet. For example a thin curved tube for sipping nectar or a sharp hook for tearing flesh. The pattern and colour of plumage can tell apart the sexes as in pheasants where males are bright and striking, and females are drab and dowdy. By far the most useful character for identification is a bird's voice. This is especially true in forests where on average 90% of birds are hidden from view. The most experienced birdwatchers in the tropics know their songs and calls.

BEST TIMES TO SEE BIRDS
The nesting season is a good time to be watching birds. During this most active time in a bird's life a variety of vocalizations and behaviours are exhibited. In Thailand, as in other tropical countries, the nesting season coincides with the period when food is in abundant supply. A bird expends much energy in courting, mating, incubating eggs, defending a nest and feeding offspring. Most birds nest during the transition between dry and wet seasons when new leaves and grass

shoots sprout. This occurs from February to June. Certain birds depend on the availability of water and nest throughout the rainy season.

Migrants are best observed during their passage into or out of the country, or as they pass through on their way to other places. Most conspicuously, half a million ducks spend their winter in Thailand, feeding and resting in watery roosts from Chiang Saen to Thale Noi. Thousands of garganey and Lesser treeduck flock during January and February.

Shorebirds like sandpipers, stints and plovers migrate long-distances between nesting grounds in Eurasia and tropical Asia and wintering grounds in Australasia. They stop to feed in Thailand's mudflats and mangroves during September to May where they stock up on invertebrates and crustaceans. During October, the southward migration of hawks over peninsular Thailand is an avian spectacle. Chinese goshawks, Japanese sparrowhawks, crested honey buzzards, black bazas, and others are seen coasting on thermals in their thousands daily. Less conspicuous is the blue-winged pitta, a ground dwelling bird that arrives with the rains to nest in deciduous and bamboo forests, and escapes the hot season for the wetter forests of Malaysia and Sumatra.

WHERE TO FIND BIRDS
Given that many birds are denizens of certain times, places, habitats or seasons, the amateur naturalist can remember them by association.

PARKS, TEMPLES AND GARDENS
Some species like barn swallows, magpie robins, mynas and starlings can be found around Bangkok and environs. *Lumphini Park,* a heavily-used green area in the city centre supports a variety of birds with over 90 species having been recorded there. Temples near Bangkok and Ayutthaya preserve pockets of the natural landscape including birds such as black kites, parakeets and woodland birds that are characteristic of the habitats.

RICE PADDIES, MARSHES AND PONDS
Rice paddies, marshes and ponds away from built-up areas support breeding populations of Asian openbill stork and many other waterbirds.
Key sites: *Suphan Buri-Ayutthaya* and *Beung Boraphet.*

PEAT SWAMP FORESTS
Almost the last vestige of Thailand's peat swamp forest at *Phru To Daeng or Chalerm Phrakiat Wildlife Sanctuary* in Narathiwat supports Lesser adjutants, a kind of stork, along with several birds characteristic of Sundaic forests.

LAKES, RIVER SANDBANKS AND REEDBEDS
Lakes, river sandbanks and reedbeds preserve unique assemblages of wintering waterfowl and perching birds.
Key sites: *Chiang Saen, Fang Hot Springs,* and *Thaton.*

AGRICULTURAL LANDSCAPES
Agricultural landscapes across the country support species that tolerate human presence and include kites, rollers, bee-eaters, coucals, weavers and bulbuls.

SANDY BEACHES, MANGROVE AND TIDAL FLATS
Sandy beaches are attractive to tourists but are barren habitats for birds, while little-visited mangroves and tidal flats that are rich in nutrients and microorganisms, are favoured feeding haunts for migrant waders. Some birds like the Brown-winged kingfisher and Mangrove pitta, are entirely restricted to

mangroves while Mangrove whistlers and flyeaters rarely leave the area.
Key sites: *Samut Sakhon, Ban Laem in Petchburi,* and *Krabi*.

OFFSHORE ISLANDS
Offshore islands such as *Phi Phi, Libong, Surin* and the *Similans* support fewer species than similar sized mainland habitats but some such as Nicobar and Pied Imperial pigeon are entirely restricted to these refuges.

SEASCAPES
While there are fewer seabirds in the warm Thai waters compared with those in the northern and southern hemispheres, frigate birds, skuas, boobies, and terns are among the rewards for marine birders.

FORESTS
Most resident Thai birds depend upon forests for their survival. Rainforests in the extreme south support the greatest avian diversity, while seasonally dry dipterocarp, mixed deciduous and evergreen forests in the centre and north.
Key sites: *Khao Yai National Park, Kaeng Krachan National Park, Khao Soi Dao, Nam Nao National Park, Khao Nor Chuchi, Ban Nai Chong,* and *Hala Bala Wildlife Sanctuary.*

MOUNTAINS
Sibias, minlas, and laughing thrushes are relatives of species found in the Himalayas and southern China, and can only be found in mountain forests. Following surveys of high mountain peaks in the last decade, at least 20 new species or 2% of the total have been added to the lists for Thailand.
Key sites: *Doi Pha Hom Pok, Doi Chiang Dao, Doi Inthanon, Doi Ang Khang,* and *Doi Suthep.*

By visiting these enchanting destinations, travellers can appreciate the avian wonders that Thailand offers and better understand the importance of the wild and not so wild areas that preserve them.

Contact information:
Bird Conservation Society of Thailand (BCST)*
69/12 Soi Ramindra 24, Joorakaebau, Ladprao, Bangkok 10230, Thailand
Email: bcst@box1.a-net.net.th
Tel: 66-(0)-2943-5965
Web sites:
www.bcst.org/index_ebird.html
www.thai.net/bcst
* The Bird Conservation Society of Thailand (BCST) is a BirdLife Partner

Oriental Bird Club (OBC)
c/o Uthai Treesucon, 723/1 Mu 2 Soi Ram Intra, Joorakhaebua, Bangkok 10230.
E-mail:
utree@loxinfo.co.th
mail@orientalbirdclub.org
Web site: www.orientalbirdclub.org

Wildlife Conservation Society - Thailand Programme
P.O. Box 170, Laksi, Bangkok 10210
Tel: +662-503 4478, +662-503 4479
Fax: +662-503 4096
Email: thailand@wcs.org

Reference information:
Field guide
Robson, C. 2002.
A field guide to the birds of Thailand.
Asia Books, Bangkok. 272pp.

TAT PUBLICATIONS ON NATURE TOURISM
For more information on birdwatching in Thailand, please refer to the following nature tourism guide books in the "National Park" series published by the Tourism Authority of Thailand as part of the Tourism and Employment Creation Plan implemented under the Social Investment Project.

- KHAO YAI: DONG PHAYA YEN FOREST RANGE
  ISBN 974-8252-70-1
- KAENG KRACHAN:
  Amazing Forest of Phetchburi River
  ISBN 974-8252-72-8
- KHAO SOK
  Fascinating Limestone Mountains Amid The Verdant Forest of Surat Thani, Thailand
  ISBN 974-679-099-4
- DOI INTHANON - DOI SUTHEP
  The Himalayan Springs of Thailand
  SBN 974-8252-67-1
- PHU LUANG
  The Kingdom of Plants
  ISBN 974-8252-73-6

BIRDWATCHING TIPS

- Consult field guides, checklists, and maps prior to arriving at the birdwatching destination.
- Dress in colours that blend in with the surroundings.
- Bring appropriate equipment such as telescope, bird guide, and a notebook.
- Plan to arrive at the destination at sunrise when birds are first out in search for food and are most active.
- Walk slowly stopping at intervals to listen for calling birds.
- Look for the birds in thickets, on the branches of trees, and on the ground.
- Avoid talking, smoking, or walking on dry leaves, all of which will scare birds away.

CONSERVING BIRD DIVERSITY
Across the world, humans coexist with birds but human activities often affect the survival prospects for birds. Forty-eight species of birds found in Thailand (5% of the total) are globally threatened by the loss or disturbance of their habitats, food resources, and breeding areas, and by other human actions, and so require special conservation attention. A further 97 species (10%) are potentially threatened if current trends persist.

In Thailand, 101 species (10% of the total) are hunted as pests, for food or for the pet trade and are directly threatened by humans. The list of hunted species includes waterbirds, birds of prey, pheasants, parakeets, pigeons, hornbills, pittas weavers, bulbuls, and other forest birds. Worldwide the trade in birds includes 2,600 species and several million birds each year. Ten percent of threatened birds worldwide are affected by the bird trade.

There are a number of ways in which the numbers and distribution of threatened birds are being restored. Habitat conservation programmes are an important mechanism. Feeding habitats for seasonal migrants are being preserved by incorporating mangroves and coastal tidal areas in marine protected areas. Lowland forests that support Gurney's pitta and other diversity are being protected and a reafforestation programme planned. Preventing encroachment around the edges of parks maintains the integrity of forest blocks used by the majority of native birds, including migrant raptors and songbirds.

In most cases, preserving and protecting natural habitats can bring back even highly endangered populations of rare birds. These measures are relatively cost effective to implement. As an example, a 3-year Khao Yai Conservation Project preserved over 2,000 sq km of wildlife habitat, discouraged poaching, and provided employment alternatives for local forest resource users, at an annual cost of 7 million baht (US$171,000).

For critically endangered species, whose populations are extremely small, and whose survival in the wild is uncertain due to factors that simply cannot be controlled, other more costly measures such as captive breeding, are being considered. Captive breeding is risky because birds need to be recovered from the wild to establish breeding populations, and injury is possible. Some species do not breed well in captivity because their natural courting and nesting behaviours are no longer possible. Strict controls on who is allowed to breed endangered species, registration of individuals, and enforcement of laws so that commercial sale is not possible, need to be adopted. Without these controls, captive breeding programmes cannot succeed.

HOW YOU CAN HELP IN THE CONSERVATION OF BIRDS

Visitors to Thailand can assist efforts to preserve and maintain the diversity of birds and their habitats simply by visiting national parks and other wilderness areas. Bird enthusiasts can report the species they observe to authorities. Checklists are now available at many popular national parks. Tourists can report evidence of suspicious activity that might lead to the arrest of unscrupulous individuals trapping or hunting birds and can also participate as volunteers in habitat conservation programmes. In these ways, tourists can help reduce the threats to birds, and at the same time enjoy Thailand's birdwatching paradise.

Contact information:

TO REPORT BIRD SPECIES OBSERVED

- **TO REPORT BIRD SPECIES OBSERVED**
  Please contact the Park Visitor Centre of the National Park
  or
  Bird Conservation Society of Thailand (BCST)*
  69/12 Soi Ramindra 24, Joorakaebau, Ladprao, Bangkok 10230, Thailand
  Email: bcst@box1.a-net.net.th
  Tel: 66-(0)-2943-5965
  Web sites:
  www.bcst.org/index_ebird.html
  www.thai.net/bcst
  * The Bird Conservation Society of Thailand (BCST) is a BirdLife Partner

- **TO REPORT EVIDENCE OF SUSPICIOUS ACTIVITY**
  Please contact

Willdife Protection and Suppression Office
Department of National Parks, Wildlife, and Plant Conservation
61 Paholyothin Road, Chatuchak, Bangkok 10900
Tel: 66-(0)-2579-5266

- **HABITAT CONSERVATION VOLUNTEER PROGRAMMES**
  Please contact
  Wildlife Conservation Society - Thailand Programme
  P.O. Box 170, Laksi, Bangkok 10210
  Tel: +662-503 4478, +662-503 4479
  Fax: +662-503 4096
  Email: thailand@wcs.org

FAMILIES OF BIRDS IN THAILAND UNDER THREAT
The following bird species are under threat because there is a high demand for them and they are hunted for the local, regional and global bird trade. To help preserve the species, please refrain from purchasing any of the following birds as pets, and if you happen to witness any of the following birds being sold or traded, or note any suspicious activities involving them, please contact:
The Willdife Protection and Suppression Office
Department of National Parks, Wildlife, and Plant Conservation
61 Paholyothin Road, Chatuchak, Bangkok 10900
Tel: 66-(0)-2579-5266

1. Phasianidae (wood partridges and pheasants) - 4 species
2. Anatidae (White-winged duck) - 1 species
3. Picidae (woodpeckers and barbets) - 3 species
4. Bucerotidae (hornbills) - 7 species
5. Upupidae (Common hoopoe) - 1 species
6. Cuculidae (Coral-billed ground cuckoo) - 1 species
7. Psittacidae (parrots and parakeets) - 4 species
8. Columbidae (pigeons) - 12 species
9. Accipitridae (birds of prey) - 9 species
10. Threskiornithidae (White-shouldered ibis) - 1 species
11. Ciconiidae (Lesser adjutant) - 1 species
12. Pittidae (pittas) - 3 species
13. Irenidae (Asian fairy bluebird and leafbirds) - 6 species
14. Corvidae (jays, crows, magpies, orioles and minivets) - 14 species
15. Muscicapidae (thrushes, robins, and sharmas) - 3 species
16. Sturnidae (starlings and mynas) - 3 species
17. Paridae (Yellow-cheeked tit) - 1 species
18. Pycnonotidae (bulbuls) - 7 species
19. Zosteropidae (Japanese white-eye) - 1 species
20. Sylvidae (laughing thrushes, mesias, minlas and sibias) - 8 species
21. Nectariniidae (Scarlet-backed flowerpecker) - 1 species
22. Passeridae (weavers and munias) - 7 species
23. Fringillidae (grosbeaks and buntings) - 3 species

About The Author
ANTONY LYNAM
Antony Lynam (Ph.D.), Wildlife Conservation Society (WCS)- Thailand Programme Director and conservation scientist, works with the Thailand Department of National Parks, Wildlife and Plants to develop programmes for the conservation of the country's endangered species, park resources management, and the design and conduct of training curriculum for park rangers.

An Australian citizen, he has authored a number of technical papers and popular articles concerning conservation issues in Australia, North America, and Thailand, and was a contributor to the seminal volume on habitat fragmentation "Tropical Forest Remnants: Ecology, Conservation and Management". He writes frequently on natural history for magazines, journals and newspapers including Wildlife Conservation, The Nation, The Bangkok Post, and The Natural History Bulletin of The Siam Society.

12.12 Doc1.doc

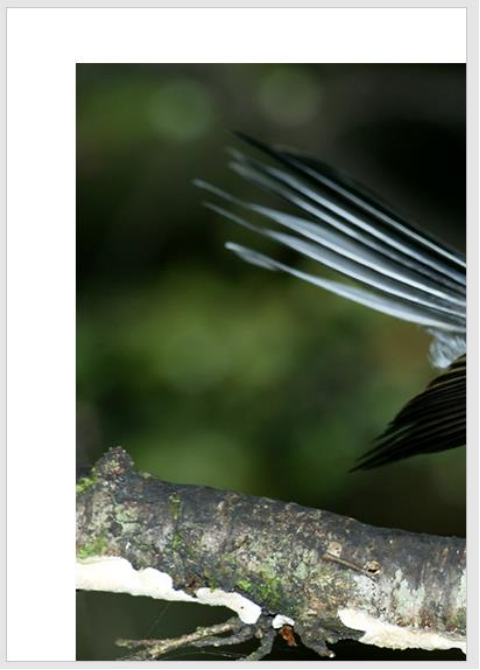

Figure 12 - Doc1.doc as it appears within word

12.13 Doc1.doc image

Picture 204 - image_0

12.14 nestboxtips.txt

Tips for Nest Boxes this spring/summer

If you have old boxes in your garden, clean out any of last years nesting material or any old bits of food that may have been stored in there.

If you are putting up new nest boxes make sure that they are out of the reach of cats and Squirrels.

Check that the box isn't in full sun otherwise young birds may literally bake in the heat.

Experiment with different kinds of bird boxes – the open-fronted "Robin" boxes may even attract Spotted Flycatchers.

Make sure any boxes are at least 15mm in thickness.

Face boxes away from prevailing winds.

Don't put nest boxes to close together in a small area as this will only lead to territorial fights.

Always make sure that there is enough food and fresh water made available close by.

Do not but bird boxes with perches attached – the birds do not need them and it may only invite predators.

Never buy a bird table with a nest box built in, as nesting birds will only come into conflict with feeding ones.

12.15 aggressive_song.wav

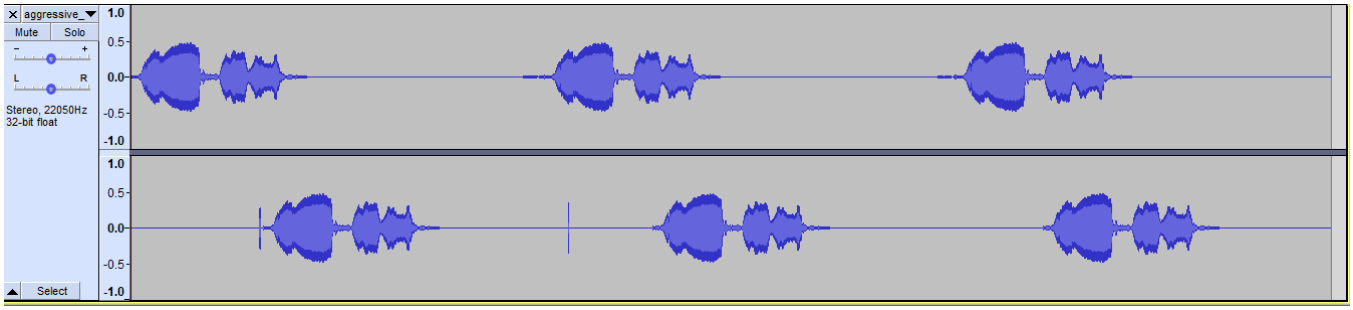

Figure 13 - Waveform representation of aggressive_song.wav

12.16 kakapo.ram

```
┌──(kali㉿kali)-[~/Desktop/jd]
└─$ cat kakapo.ram
pnm://audio.pbs.org/songs/kakapo.rmd
```

Figure 14 - URL contents of kakapo.ram

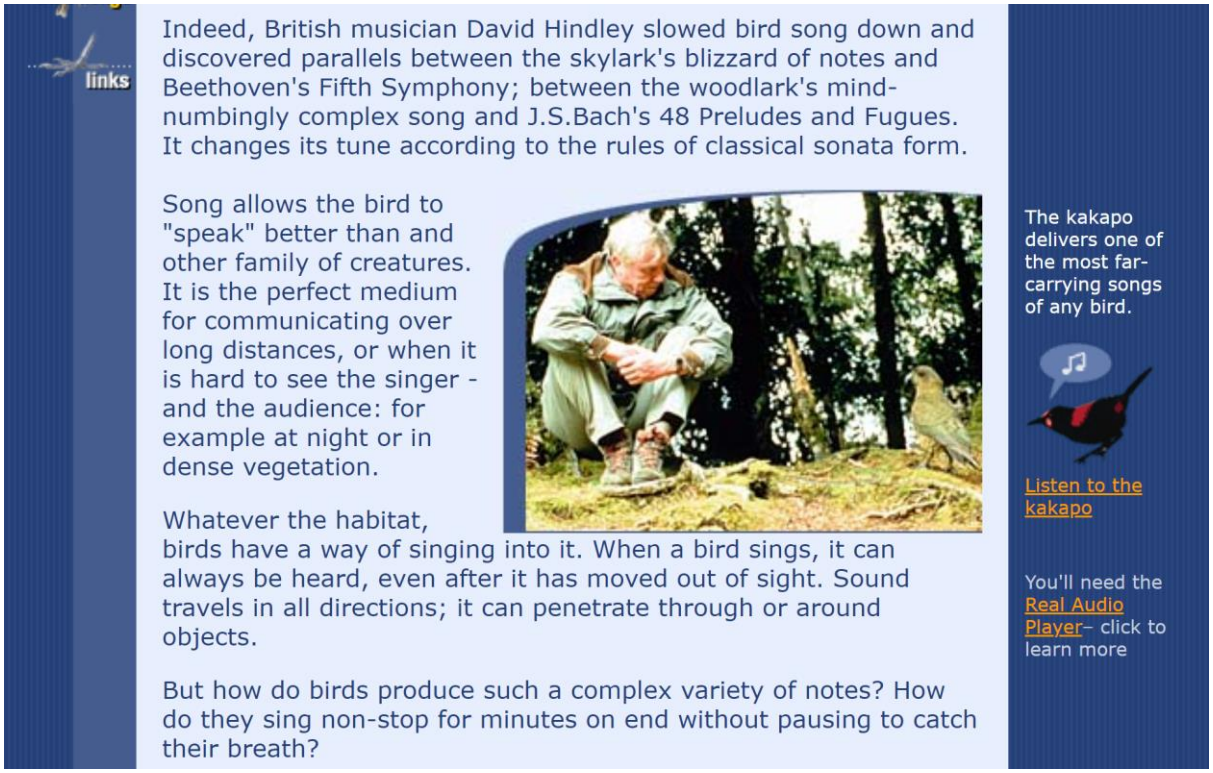

Figure 15 - Wayback machine page where kakapo.ram was downloaded from

12.17 Email Attachments

Picture 205 - 7EYBTELF1KAN.jpg

Picture 206 - IMG_3937_filtered.jpg

Picture 207 - cute_penguin.jpg

Picture 208 - BC7 feeding the birds.jpg

Nesting red-winged blackbird/
Carouge à épaulettes en cours de nidification
Mike Hopiak / Cornell Lab of Ornithology

Picture 209 - glfs-storm-birds.jpg

Picture 210 - colorful-birds.jpg

Picture 211 - gawall8.jpg

12.18 Browser History

12.18.1 Firefox

12.18.1.1 bookmarks

Firefox and Mozilla Links

Firefox Start Page
Firefox Central
Themes and Extensions
Firefox Product Page
The Mozilla web site
MozillaZine
Mozilla Store
Get Involved - Help spread Firefox!

Free Bird Wallpaper - Bald Eagle Albatross Owl Falcon 1024x768
Alphabetical Index of Birds
Chickadee Karaoke

Figure 16 - Bookmarks .html

12.18.1.2 History

4	URL,Visited: johndoe@about:Home,01/24/2005 15:57:10,01/24/2005 15:57:10,,, ,
5	URL,Visited: johndoe@http://office.microsoft.com/officeupdate/maincatalog.aspx?lc=en-gb,01/25/2005 11:26:04,01/25/2005 11:26:04,,, ,
6	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/Desktop/birdtrans2.jpg,02/03/2005 15:04:48,02/03/2005 15:04:48,,, ,
7	URL,Visited: johndoe@file:///C:/birdwatching.doc,02/03/2005 15:49:39,02/03/2005 15:49:39,,, ,
8	URL,Visited: johndoe@http://www.mozilla.org/products,01/24/2005 16:23:15,01/24/2005 16:23:15,,, ,
9	URL,Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/default.aspx,01/24/2005 16:40:02,01/24/2005 16:40:02,,, ,
10	URL,Visited: johndoe@file:///C:/Program%20Files/Real/RealPlayer/Firstrun/context.htm,02/02/2005 15:04:48,02/02/2005 15:04:48,,, ,
11	URL,Visited: johndoe@http://download.mozilla.org/?product=firefox&os=win&lang=en-GB,01/24/2005 16:21:43,01/24/2005 16:21:43,,, ,
12	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/aa010703a.htm,02/02/2005 14:25:59,02/02/2005 14:25:59,,, ,
13	URL,Visited: johndoe@http://office.microsoft.com/en-gb/officeupdate/default.aspx,01/25/2005 11:16:45,01/25/2005 11:16:45,,, ,
14	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/babyscot_vyoung.jpg,02/03/2005 15:00:19,02/03/2005 15:00:19,,, ,
15	URL,Visited: johndoe@file:///E:/birds/Killdeer.jpg,02/03/2005 14:49:29,02/03/2005 14:49:29,,, ,
16	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/177.jpg,02/03/2005 15:01:38,02/03/2005 15:01:38,,, ,
17	URL,Visited: johndoe@file:///C:/Program%20Files/Real/RealPlayer/Firstrun/1.htm,02/02/2005 15:04:47,02/02/2005 15:04:47,,, ,
18	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/ostbk2b2.htm,02/03/2005 15:02:45,02/03/2005 15:02:45,,, ,
19	URL,Visited: johndoe@file:///D:/Prac5/Q3%20Thread%20(Statechart).gif,02/02/2005 15:10:48,02/02/2005 15:10:48,,, ,
20	URL,Visited: johndoe@res://C:\Program%20Files\Real\RealPlayer\rpplugins\rpmn3260.dll/black.html,02/02/2005 15:04:43,02/02/2005 15:04:43,,, ,
21	URL,Visited: johndoe@javascript:parent.fnScan(),,01/24/2005 16:40:26,01/24/2005 16:40:26,,,
22	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/snow_geese.jpg,02/02/2005 14:18:53,02/02/2005 14:18:53,,, ,
23	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/Application%20Data/Mozilla/Firefox/Profiles/w4nf3obl.default/bookmarks.html,02/03/2005 12:20:20,02/03/2005 12:20:20,,,
24	URL,Visited: johndoe@res://C:\WINDOWS\system32\shdoclc.dll/dnserror.htm,01/24/2005 16:13:02,01/24/2005 16:13:02,,, ,
25	URL,Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/resultslist.aspx?ln=en-us&id=0,01/24/2005 16:40:43,01/24/2005 16:40:43,,, ,
26	URL,Visited: johndoe@file:///E:/birds/non%20images/BirdingGuide.pdf,02/03/2005 15:52:01,02/03/2005 15:52:01,,, ,
27	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/newbies2.jpg,02/03/2005 15:05:44,02/03/2005 15:05:44

Firef downloads | Firef cookies | **Firef History** | InternetE cacheIndex | InternetE index.dat | InternetE History

37	URL,Visited: johndoe@http://office.microsoft.com/en-gb/FX010329501033.aspx,01/25/2005 11:16:56,01/25/2005 11:16:56,,, ,
38	URL,Visited: johndoe@http://office.microsoft.com/search/redir.aspx?AssetID=ES790020331033&CTT=5&Origin=HA010492041033,01/25/2005 11:26:00,01/25/2005 11:26:00,,, ,
39	URL,Visited: johndoe@javascript:parent.fnExpressScan(),,01/24/2005 16:15:54,01/24/2005 16:15:54,,,
40	URL,Visited: johndoe@http://www.mozilla.org/products/firefox,01/24/2005 16:21:42,01/24/2005 16:21:42,,, ,
41	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/bob/My%20Documents/My%20Music/ready2fledge.jpg,02/03/2005 15:06:42,02/03/2005 15:06:42,,, ,
42	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/stuf.doc,02/09/2005 16:57:49,02/09/2005 16:57:49,,, ,
43	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/tn_duck_3.jpg,02/02/2005 14:18:13,02/02/2005 14:18:13,,, ,
44	URL,Visited: johndoe@http://64.12.168.243/pub/mozilla.org/thunderbird/releases/1.0/win32/en-US/Thunderbird%20Setup%201.0.exe,01/24/2005 16:24:56,01/24/2005 16:24:56,,, ,
45	URL,Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/resultslist.aspx?ln=en-us&id=1&LinkId=SOFTWARE&TocIndex=,01/24/2005 16:41:10,01/24/2005 16:41:10,,, ,
46	URL,Visited: johndoe@http://office.microsoft.com/en-gb/FX010355751033.aspx,01/25/2005 11:25:56,01/25/2005 11:25:56,,, ,
47	URL,Visited: johndoe@file:///C:/Program%20Files/Real/RealPlayer/DataCache/Login/index.html,02/02/2005 14:57:13,02/02/2005 14:57:13,,, ,
48	URL,Visited: johndoe@file:///E:/birds/audio/aggressive_song.wav,02/03/2005 12:22:51,02/03/2005 12:22:51,,, ,
49	URL,Visited: johndoe@file:///F:/AlmondMarshGreatBlueHeronStalling.jpg,02/09/2005 17:06:28,02/09/2005 17:06:28,,, ,
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51	URL,Visited: johndoe@file:///C:/WINDOWS/ODBC.INI,02/03/2005 15:54:06,02/03/2005 15:54:06,,, ,
52	URL,Visited: johndoe@file:///C:/Program%20Files/MSN/aggressive_song.wav,02/09/2005 17:00:50,02/09/2005 17:00:50,,, ,
53	URL,Visited: johndoe@file:///C:/WINDOWS/system32/oobe/actshell.htm,01/24/2005 16:13:56,01/24/2005 16:13:56,,, ,
54	URL,Visited: johndoe@https://account.real.com/acct/intro/msg.html?msg=frweur,02/02/2005 15:04:34,02/02/2005 15:04:34,,, ,
55	URL,Visited: johndoe@file:///C:/EvanstonWoodpecker.jpg,02/03/2005 14:14:59,02/03/2005 14:14:59,,, ,
56	URL,Visited: johndoe@file:///E:/birds/non%20images/BookList.doc,02/03/2005 15:51:54,02/03/2005 15:51:54,,, ,
57	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/nestboxtips.txt,02/02/2005 14:29:30,02/02/2005 14:29:30,,, ,
58	URL,Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/default.aspx?ln=en-us,01/24/2005 16:40:12,01/24/2005 16:40:12,,, ,
59	URL,Visited: johndoe@http://download.mozilla.org/?product=thunderbird&os=win&lang=en-US,01/24/2005 16:23:26,01/24/2005 16:23:26,,, ,
60	URL,Visited: johndoe@http://www.real.com/intro/index_upsell_manager.html?DC=NSP01D&optin=true&country=gb&language=en-gb&icon=tiscali&LI=en&PBR=10485800,02/02/2005 15:04:28,02/02/2005 15:04:28,,, ,

Firef downloads | Firef cookies | **Firef History** | InternetE cacheIndex | InternetE index.dat | InternetE History

58	URL,Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/default.aspx?ln=en-us,01/24/2005 16:40:12,01/24/2005 16:40:12,,, ,
59	URL,Visited: johndoe@http://download.mozilla.org/?product=thunderbird&os=win&lang=en-US,01/24/2005 16:23:26,01/24/2005 16:23:26,,, ,
60	URL,Visited: johndoe@http://www.real.com/intro/index_upsell_manager.html?DC=NSP01D&optin=true&country=gb&language=en-gb&icon=tiscali&LI=en&PBR=10485800,02/02/2005 15:04:28,02/02/2005 15:04:28,,, ,
61	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/babyscot_2weeks1.jpg,02/03/2005 15:00:27,02/03/2005 15:00:27,,, ,
62	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/kakapo.ram,02/02/2005 15:11:51,02/02/2005 15:11:51,,, ,
63	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/Application%20Data/Mozilla/Firefox/Profiles/w4nf3obl.default/cookies.txt,02/03/2005 12:19:07,02/03/2005 12:19:07,,, ,
64	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/chicks2.jpg,02/03/2005 15:05:03,02/03/2005 15:05:03,,, ,
65	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/40m.jpg,02/02/2005 14:43:36,02/02/2005 14:43:36,,, ,
66	URL,Visited: johndoe@file:///C:/Program%20Files/Adobe/Acrobat%207.0/Reader/Legal/Adobe%20Reader/7.0.0/en_US/license.html,02/02/2005 17:03:40,02/02/2005 17:03:40,,, ,
67	URL,Visited: johndoe@http://windowsupdate.microsoft.com,01/24/2005 16:39:59,01/24/2005 16:39:59,,, ,
68	URL,Visited: johndoe@http://www.linorg.usp.br/mozilla//firefox/releases/1.0/win32/en-GB/Firefox%20Setup%201.0.exe,01/24/2005 16:20:34,01/24/2005 16:20:34,,, ,
69	URL,Visited: johndoe@http://mozilla.mirrors.tds.net/pub/mozilla.org/firefox/releases/1.0/win32/en-GB/Firefox%20Setup%201.0.exe,01/24/2005 16:22:25,01/24/2005 16:22:25,,, ,
70	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/All%20Users/Documents/My%20Music/Sample%20Music/Doc1.doc,02/03/2005 14:17:48,02/03/2005 14:17:48,,, ,
71	
72	
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Firef downloads | Firef cookies | **Firef History** | InternetE cacheIndex | InternetE index.dat | InternetE History

12.18.1.3 Cookies

28	videodetective.com	FALSE	/	FALSE	1138891329	videokbrate
29	www.haiths.com	FALSE	/	FALSE	1609372654	session
30	www.haiths.com	FALSE	/	FALSE	1108166254	session%5Fsrc
31	.about.com	TRUE	/	FALSE	1107958967	Amnc
32	.about.com	TRUE	/	FALSE	1107959203	gs
33	.about.com	TRUE	/	FALSE	7107440743	zFD
34	.about.com	TRUE	/	FALSE	1138890403	referrer
35	.about.com	TRUE	/	FALSE	1138890403	trailblazer
36	.about.com	TRUE	/	FALSE	116956189	TID
37	.about.com	TRUE	/	FALSE	1707354099	jsc
38	.about.com	TRUE	/	FALSE	2145916799	TMog
39	.birding.about.com	TRUE	/	FALSE	7107440743	zFS
40	.audiencematch.net	TRUE	/	FALSE	1138458167	TID
41	.doubleclick.net	TRUE	/	FALSE	1201962166	id
42	.atdmt.com	TRUE	/	FALSE	1264982398	AA002
43	.shop.com	TRUE	/	FALSE	2145916801	AMID
44	.casalemedia.com	TRUE	/	FALSE	1109927756	CMX2
45	.casalemedia.com	TRUE	/	FALSE	1138094156	CMID
46	www.relmaxtop.com	FALSE	/	FALSE	1422713927	visitor_id
47	.amazon.co.uk	TRUE	/	FALSE	2082758401	ubid-acbuk
48	www.googleadservices.com	FALSE	/pagead/c	FALSE	1109945507	Conversion
49	.office.microsoft.com	TRUE	/	FALSE	1138274120	awsuserguid
50	office.microsoft.com	FALSE	/	FALSE	1422184524	_DetectCookies
51	.microsoft.com	TRUE	/	FALSE	1159854800	MC1

28	
29	first%5Fvisited%5Freferer%5Fid=BIRDING%2EABOUT%2ECOM&referer%5Fid=BIRDING%2EABOUT%2ECOM&date%5Fcreated=2%2F2%2F2005+2
30	src=
31	N
32	birding
33	
34	http://about.com
35	referrer=http://birding.about.com/library/weekly/aa010703a.htm
36	0mfh7s21101oie
37	
38	522EMf0O20SA1B0c
39	
40	0mfh7s21101pog
41	8000004c8c97582
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43	
44	40842&1107353757%53524%43608
45	41WW9kU5iDMAAGZqItgAAAAN
46	
47	432-0491950-8565500
48	CnxCVzJyMG85OEFRdktBREx1dVFi5Gs5SndIaHRXRkNNck5zcXNCdDdiQOJhQ05CaEFFR0FRZ3RsUW9CVGdBUUlvV1NMczVvQUlvWdE1EX0E2b0JIRzI5
49	guid=45a3ad6c-4fa0-4e1b-b6a4-ecd3400df84c
50	Y
51	GUID=31d3ee23c79ae3408abfc8f8b8e2754b&HASH=23ee&LV=20051&V=3

12.18.1.4 Downloads


```
1  <?xml version="1.0"?>
2  <RDF:RDF xmlns:NC="http://home.netscape.com/NC-rdf#"
3      xmlns:RDF="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
4  <RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\birds.zip"
5          NC:Name="birds.zip"
6          NC:Transferred="1028kB of 1028kB">
7   <NC:URL RDF:resource="http://www.traveltex.com/downloads/screensavers/birds.zip"/>
8   <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\birds.zip"/>
9   <NC:DateStarted NC:parseType="Date">Wed Feb 09 11:28:00 GMT Standard Time 2005 +345172</NC:DateStarted>
10  <NC:DateEnded NC:parseType="Date">Wed Feb 09 11:28:00 GMT Standard Time 2005 +415273</NC:DateEnded>
11  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
12  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
13 </RDF:Description>
14 <RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\My Pictures\babyscot_2weeks1.jpg"
15          NC:Name="babyscot_2weeks1.jpg"
16          NC:Transferred="33kB of 33kB">
17  <NC:URL RDF:resource="http://freespace.virgin.net/cobber.budgies/images/babyscot_2weeks1.jpg"/>
18  <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\My Pictures\babyscot_2weeks1.jpg"/>
19  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:00:27 GMT Standard Time 2005 +761262</NC:DateStarted>
20  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:00:27 GMT Standard Time 2005 +811334</NC:DateEnded>
21  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
22  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
23 </RDF:Description>
24 <RDF:Description RDF:about="C:\Documents and Settings\bob\My Documents\My Music\ready2fledge.jpg"
```

... | Firef downloads | Firef cookies | Firef History | InternetE cacheIndex | InternetE index.dat | InternetE History

```
34 <RDF:Seq RDF:about="NC:DownloadsRoot">
35  <RDF:li RDF:resource="C:\Documents and Settings\johndoe\My Documents\birds.zip"/>
36  <RDF:li RDF:resource="C:\Documents and Settings\bob\My Documents\My Music\ready2fledge.jpg"/>
37  <RDF:li RDF:resource="C:\Documents and Settings\johndoe\My Documents\newbies2.jpg"/>
38  <RDF:li RDF:resource="C:\Documents and Settings\johndoe\My Documents\My Pictures\chicks2.jpg"/>
39  <RDF:li RDF:resource="C:\Documents and Settings\johndoe\Desktop\birdtrans2.jpg"/>
40  <RDF:li RDF:resource="C:\Documents and Settings\johndoe\My Documents\ostbk2b2.htm"/>
41  <RDF:li RDF:resource="C:\Documents and Settings\johndoe\My Documents\My Pictures\177.jpg"/>
42  <RDF:li RDF:resource="C:\Documents and Settings\johndoe\My Documents\My Pictures\babyscot_2weeks1.jpg"/>
43  <RDF:li RDF:resource="C:\Documents and Settings\johndoe\My Documents\My Pictures\babyscot_vyoung.jpg"/>
44  <RDF:li RDF:resource="E:\birds\audio\aggressive_song.wav"/>
45  <RDF:li RDF:resource="C:\Documents and Settings\johndoe\Desktop\AdbeRdr70_enu_full.exe"/>
46  <RDF:li RDF:resource="C:\DOCUME~1\JOHNDOE\LOCALS~1\TEMP\dawn.ram"/>
47 </RDF:Seq>
48 <RDF:Description RDF:about="C:\Documents and Settings\johndoe\Desktop\birdtrans2.jpg"
49          NC:Name="birdtrans2.jpg"
50          NC:Transferred="58kB of 58kB">
51  <NC:URL RDF:resource="http://people.cornell.edu/pages/sah67/birdtrans2.jpg"/>
52  <NC:File RDF:resource="C:\Documents and Settings\johndoe\Desktop\birdtrans2.jpg"/>
53  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:04:48 GMT Standard Time 2005 +235806</NC:DateStarted>
54  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:04:48 GMT Standard Time 2005 +285878</NC:DateEnded>
55  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
56  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
57 </RDF:Description>
```

... | Firef downloads | Firef cookies | Firef History | InternetE cacheIndex | InternetE index.dat | InternetE History

```
58 <RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\My Pictures\177.jpg"
59          NC:Name="177.jpg"
60          NC:Transferred="9kB of 9kB">
61  <NC:URL RDF:resource="http://www.insaneanimals.com/items/177.jpg"/>
62  <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\My Pictures\177.jpg"/>
63  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:01:38 GMT Standard Time 2005 +983675</NC:DateStarted>
64  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:01:39 GMT Standard Time 2005 +033747</NC:DateEnded>
65  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
66  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
67 </RDF:Description>
68 <RDF:Description RDF:about="C:\DOCUME~1\JOHNDOE\LOCALS~1\TEMP\dawn.ram"
69          NC:Name="dawn.ram"
70          NC:Transferred="1kB of 1kB">
71  <NC:URL RDF:resource="http://www.pbs.org/lifeofbirds/songs/dawn.ram"/>
72  <NC:File RDF:resource="C:\DOCUME~1\JOHNDOE\LOCALS~1\TEMP\dawn.ram"/>
73  <NC:DateStarted NC:parseType="Date">Wed Feb 02 15:12:09 GMT Standard Time 2005 +573635</NC:DateStarted>
74  <NC:DateEnded NC:parseType="Date">Wed Feb 02 15:12:09 GMT Standard Time 2005 +593664</NC:DateEnded>
75  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
76  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
77 </RDF:Description>
78 <RDF:Description RDF:about="C:\Documents and Settings\johndoe\Desktop\AdbeRdr70_enu_full.exe"
79          NC:Name="AdbeRdr70_enu_full.exe"
80          NC:Transferred="20311kB of 20311kB">
81 <NC:URL RDF:resource="http://ardownload.adobe.com/pub/adobe/reader/win/7x/7.0/enu/AdbeRdr70_enu_full.exe"/>
```

... | Firef downloads | Firef cookies | Firef History | InternetE cacheIndex | InternetE index.dat | InternetE History

```
87  </RDF:Description>
88  <RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\My Pictures\babyscot_vyoung.jpg"
89          NC:Name="babyscot_vyoung.jpg"
90          NC:Transferred="38kB of 38kB">
91   <NC:URL RDF:resource="http://freespace.virgin.net/cobber.budgies/images/babyscot_vyoung.jpg"/>
92   <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\My Pictures\babyscot_vyoung.jpg"/>
93   <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:00:19 GMT Standard Time 2005 +779785</NC:DateStarted>
94   <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:00:19 GMT Standard Time 2005 +819843</NC:DateEnded>
95   <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
96   <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
97  </RDF:Description>
98  <RDF:Description RDF:about="E:\birds\audio\aggressive_song.wav"
99          NC:Name="aggressive_song.wav"
100         NC:Transferred="716kB of 716kB">
101  <NC:URL RDF:resource="http://whyfiles.org/shorties/104chick_sex/images/aggressive_song.wav"/>
102  <NC:File RDF:resource="E:\birds\audio\aggressive_song.wav"/>
103  <NC:DateStarted NC:parseType="Date">Thu Feb 03 12:22:52 GMT Standard Time 2005 +164782</NC:DateStarted>
104  <NC:DateEnded NC:parseType="Date">Thu Feb 03 12:23:00 GMT Standard Time 2005 +466720</NC:DateEnded>
105  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
106  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
107 </RDF:Description>
108 <RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\ostbk2b2.htm"
109         NC:Name="ostbk2b2.htm"
110         NC:Transferred="4kB of 4kB">
```

... | **Firef downloads** | Firef cookies | Firef History | InternetE cacheIndex | InternetE index.dat | InternetE History

```
111  <NC:URL RDF:resource="http://www.cvm.okstate.edu/instruction/kocan/ostrich/ostbk2b2.htm"/>
112  <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\ostbk2b2.htm"/>
113  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:02:45 GMT Standard Time 2005 +499320</NC:DateStarted>
114  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:02:45 GMT Standard Time 2005 +579435</NC:DateEnded>
115  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
116  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
117 </RDF:Description>
118 <RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\newbies2.jpg"
119         NC:Name="newbies2.jpg"
120         NC:Transferred="54kB of 54kB">
121  <NC:URL RDF:resource="http://people.cornell.edu/pages/sah67/newbies2.jpg"/>
122  <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\newbies2.jpg"/>
123  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:05:44 GMT Standard Time 2005 +376532</NC:DateStarted>
124  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:05:44 GMT Standard Time 2005 +456648</NC:DateEnded>
125  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
126  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
127 </RDF:Description>
128 <RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\My Pictures\chicks2.jpg"
129         NC:Name="chicks2.jpg"
130         NC:Transferred="38kB of 38kB">
131  <NC:URL RDF:resource="http://people.cornell.edu/pages/sah67/chicks2.jpg"/>
132  <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\My Pictures\chicks2.jpg"/>
133  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:05:03 GMT Standard Time 2005 +698040</NC:DateStarted>
134  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:05:03 GMT Standard Time 2005 +748112</NC:DateEnded>
```

... | **Firef downloads** | Firef cookies | Firef History | InternetE cacheIndex | InternetE index.dat | InternetE History

12.18.2 Internet Explorer

12.18.2.1 History

History File: index.dat Version: 5.2

TYPE	URL	MODIFIED TIME	ACCESS TIME
URL	Visited: johndoe@about:Home	01/24/2005 15:57:10	01/24/2005 15:57:10
URL	Visited: johndoe@http://office.microsoft.com/officeupdate/maincatalog.aspx?lc=en-gb	01/25/2005 11:26:04	01/25/2005 11:26:04
URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/Desktop/birdtrans2.jpg	02/03/2005 15:04	02/03/2005 15:04
URL	Visited: johndoe@file:///C:/birdwatching.doc	02/03/2005 15:49	02/03/2005 15:49
URL	Visited: johndoe@http://www.mozilla.org/products	01/24/2005 16:23:15	01/24/2005 16:23:15
URL	Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/default.aspx	01/24/2005 16:40:02	01/24/2005 16:40:02
URL	Visited: johndoe@file:///C:/Program%20Files/Real/RealPlayer/Firstrun/context.htm	02/02/2005 15:04	02/02/2005 15:04
URL	Visited: johndoe@http://download.mozilla.org/?product=firefox&os=win&lang=en-GB	01/24/2005 16:21:43	01/24/2005 16:21:43
URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/aa010703a.htm	02/02/2005 14:25	02/02/2005 14:25
URL	Visited: johndoe@http://office.microsoft.com/en-gb/officeupdate/default.aspx	01/25/2005 11:16:45	01/25/2005 11:16:45
URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/babyscot_vyoung.jpg	02/03/2005 15:00	02/03/2005 15:00
URL	Visited: johndoe@file:///E:/birds/Killdeer.jpg	02/03/2005 14:49	02/03/2005 14:49
URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/177.jpg	02/03/2005 15:01	02/03/2005 15:01
URL	Visited: johndoe@file:///C:/Program%20Files/Real/RealPlayer/Firstrun/1.htm	02/02/2005 15:04	02/02/2005 15:04
URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/ostbk2b2.htm	02/03/2005 15:02	02/03/2005 15:02
URL	Visited: johndoe@file:///D:/Prac5/Q3%20Thread%20(Statechart).gif	02/02/2005 15:10	02/02/2005 15:10
URL	Visited: johndoe@res://C:\Program%20Files\Real\RealPlayer\rpplugins\rpmn3260.dll/black.html	02/02/2005 15:04	02/02/2005 15:04
URL	Visited: johndoe@javascript:parent.fnScan();	01/24/2005 16:40:26	01/24/2005 16:40:26
URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/snow_geese.jpg	02/02/2005 14:18	02/02/2005 14:18
URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/Application%20Data/Mozilla/Firefox/Profiles/w4nf3obl.def	02/03/2005 12:20	02/03/2005 12:20
URL	Visited: johndoe@res://C:\WINDOWS\system32\shdoclc.dll/dnserror.htm	01/24/2005 16:13:02	01/24/2005 16:13:02

... | Firef downloads | Firef cookies | Firef History | InternetE cacheIndex | InternetE index.dat | **InternetE History**

26	URL	Visited: johndoe@file:///E:/birds/non%20images/BirdingGuide.pdf	02/03/2005 15:52	02/03/2005 15:52
27	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/newbies2.jpg	02/03/2005 15:05	02/03/2005 15:05
28	URL	Visited: johndoe@http://office.microsoft.com/en-gb/FX010354621033.aspx	01/25/2005 11:33:46	01/25/2005 11:33:46
29	URL	Visited: johndoe@javascript:catchEvent('continue');	02/02/2005 15:04	02/02/2005 15:04
30	URL	Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/resultslist.aspx?ln=en-us&id=6	01/24/2005 16:16:10	01/24/2005 16:16:10
31	URL	Visited: johndoe@http://www.mozilla.org/products/thunderbird	01/24/2005 16:23:25	01/24/2005 16:23:25
32	URL	Visited: johndoe@http://office.microsoft.com/search/redir.aspx?AssetID=ES790020331033&Origin=HH010704921033&CTT=5	01/25/2005 11:16:47	01/25/2005 11:16:47
33	URL	Visited: johndoe@file:///D:/Prac4/Prac4.gif	02/02/2005 15:10	02/02/2005 15:10
34	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/7107298.jpg	02/02/2005 14:20	02/02/2005 14:20
35	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/wbpremium_s.jpg	02/02/2005 14:28	02/02/2005 14:28
36	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/birds.zip	02/09/2005 11:28	02/09/2005 11:28
37	URL	Visited: johndoe@http://office.microsoft.com/en-gb/FX010329501033.aspx	01/25/2005 11:16:56	01/25/2005 11:16:56
38	URL	Visited: johndoe@http://office.microsoft.com/search/redir.aspx?AssetID=ES790020331033&CTT=5&Origin=HA010492041033	01/25/2005 11:26:00	01/25/2005 11:26:00
39	URL	Visited: johndoe@javascript:parent.fnExpressScan();	01/24/2005 16:15:54	01/24/2005 16:15:54
40	URL	Visited: johndoe@http://www.mozilla.org/products/firefox	01/24/2005 16:21:42	01/24/2005 16:21:42
41	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/bob/My%20Documents/My%20Music/ready2fledge.jpg	02/03/2005 15:06	02/03/2005 15:06
42	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/stuf.doc	02/09/2005 16:57	02/09/2005 16:57
43	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/tn_duck_3.jpg	02/02/2005 14:18	02/02/2005 14:18
44	URL	Visited: johndoe@http://64.12.168.243/pub/mozilla.org/thunderbird/releases/1.0/win32/en-US/Thunderbird%20Setup%201.0.e	01/24/2005 16:24:56	01/24/2005 16:24:56
45	URL	Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/resultslist.aspx?ln=en-us&id=1&LinkId=SOFTWARE&Toc	01/24/2005 16:41:10	01/24/2005 16:41:10
46	URL	Visited: johndoe@http://office.microsoft.com/en-gb/FX010355751033.aspx	01/25/2005 11:25:56	01/25/2005 11:25:56
47	URL	Visited: johndoe@file:///C:/Program%20Files/Real/RealPlayer/DataCache/Login/index.html	02/02/2005 14:57	02/02/2005 14:57
48	URL	Visited: johndoe@file:///E:/birds/audio/aggressive_song.wav	02/03/2005 12:22	02/03/2005 12:22
49	URL	Visited: johndoe@file:///F:/AlmondMarshGreatBlueHeronStalling.jpg	02/09/2005 17:06	02/09/2005 17:06

Firef downloads | Firef cookies | Firef History | InternetE cacheIndex | InternetE index.dat | **InternetE History**

50	URL	Visited: johndoe@about:blank	01/25/2005 11:16:36	01/25/2005 11:16:36
51	URL	Visited: johndoe@file:///C:/WINDOWS/ODBC.INI	02/03/2005 15:54	02/03/2005 15:54
52	URL	Visited: johndoe@file:///C:/Program%20Files/MSN/aggressive_song.wav	02/09/2005 17:00	02/09/2005 17:00
53	URL	Visited: johndoe@file:///C:/WINDOWS/system32/oobe/actshell.htm	01/24/2005 16:13:56	01/24/2005 16:13:56
54	URL	Visited: johndoe@https://account.real.com/acct/intro/msg.html?msg=frweur	02/02/2005 15:04	02/02/2005 15:04
55	URL	Visited: johndoe@file:///C:/EvanstonWoodpecker.jpg	02/03/2005 14:14	02/03/2005 14:14
56	URL	Visited: johndoe@file:///E:/birds/non%20images/BookList.doc	02/03/2005 15:51	02/03/2005 15:51
57	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/nestboxtips.txt	02/02/2005 14:29	02/02/2005 14:29
58	URL	Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/default.aspx?ln=en-us	01/24/2005 16:40:12	01/24/2005 16:40:12
59	URL	Visited: johndoe@http://download.mozilla.org/?product=thunderbird&os=win&lang=en-US	01/24/2005 16:23:26	01/24/2005 16:23:26
60	URL	Visited: johndoe@http://www.real.com/intro/index_upsell_manager.html?DC=NSP01D&optin=true&country=gb&language=en-g	02/02/2005 15:04	02/02/2005 15:04
61	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/babyscot_2weeks1.jpg	02/03/2005 15:00	02/03/2005 15:00
62	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/kakapo.ram	02/02/2005 15:11	02/02/2005 15:11
63	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/Application%20Data/Mozilla/Firefox/Profiles/w4nf3obl.def	02/03/2005 12:19	02/03/2005 12:19
64	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/chicks2.jpg	02/03/2005 15:05	02/03/2005 15:05
65	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/40m.jpg	02/02/2005 14:43	02/02/2005 14:43
66	URL	Visited: johndoe@file:///C:/Program%20Files/Adobe/Acrobat%207.0/Reader/Legal/Adobe%20Reader/7.0.0/en_US/license.html	02/02/2005 17:03	02/02/2005 17:03
67	URL	Visited: johndoe@http://windowsupdate.microsoft.com	01/24/2005 16:39:59	01/24/2005 16:39:59
68	URL	Visited: johndoe@http://www.linorg.usp.br/mozilla//firefox/releases/1.0/win32/en-GB/Firefox%20Setup%201.0.exe	01/24/2005 16:20:34	01/24/2005 16:20:34
69	URL	Visited: johndoe@http://mozilla.mirrors.tds.net/pub/mozilla.org/firefox/releases/1.0/win32/en-GB/Firefox%20Setup%201.0.exe	01/24/2005 16:22:25	01/24/2005 16:22:25
70	URL	Visited: johndoe@file:///C:/Documents%20and%20Settings/All%20Users/Documents/My%20Music/Sample%20Music/Doc1.doc	02/03/2005 14:17	02/03/2005 14:17
71				
72				
73				

Firef downloads | Firef cookies | Firef History | InternetE cacheIndex | InternetE index.dat | **InternetE History**

12.18.2.2 Index.dat

```
4  URL,Visited: johndoe@about:Home,01/24/2005 15:57:10,01/24/2005 15:57:10,,, ,
5  URL,Visited: johndoe@http://office.microsoft.com/officeupdate/maincatalog.aspx?lc=en-gb,01/25/2005 11:26:04,01/25/2005 11:26:04,,, ,
6  URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/Desktop/birdtrans2.jpg,02/03/2005 15:04:48,02/03/2005 15:04:48,,, ,
7  URL,Visited: johndoe@file:///C:/birdwatching.doc,02/03/2005 15:49:39,02/03/2005 15:49:39,,, ,
8  URL,Visited: johndoe@http://www.mozilla.org/products,01/24/2005 16:23:15,01/24/2005 16:23:15,,, ,
9  URL,Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/default.aspx,01/24/2005 16:40:02,01/24/2005 16:40:02,,, ,
10 URL,Visited: johndoe@file:///C:/Program%20Files/Real/RealPlayer/Firstrun/context.htm,02/02/2005 15:04:48,02/02/2005 15:04:48,,, ,
11 URL,Visited: johndoe@http://download.mozilla.org/?product=firefox&os=win&lang=en-GB,01/24/2005 16:21:43,01/24/2005 16:21:43,,, ,
12 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/aa010703a.htm,02/02/2005 14:25:59,02/02/2005 14:25:59,,, ,
13 URL,Visited: johndoe@http://office.microsoft.com/en-gb/officeupdate/default.aspx,01/25/2005 11:16:45,01/25/2005 11:16:45,,, ,
14 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/babyscot_vyoung.jpg,02/03/2005 15:00:19,02/03/2005 15:00:19,,, ,
15 URL,Visited: johndoe@file:///E:/birds/Killdeer.jpg,02/03/2005 14:49:29,02/03/2005 14:49:29,,, ,
16 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/177.jpg,02/03/2005 15:01:38,02/03/2005 15:01:38,,, ,
17 URL,Visited: johndoe@file:///C:/Program%20Files/Real/RealPlayer/Firstrun/1.htm,02/02/2005 15:04:47,02/02/2005 15:04:47,,, ,
18 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/ostbk2b2.htm,02/03/2005 15:02:45,02/03/2005 15:02:45,,, ,
19 URL,Visited: johndoe@file:///D:/Prac5/Q3%20Thread%20(Statechart).gif,02/02/2005 15:10:48,02/02/2005 15:10:48,,, ,
20 URL,Visited: johndoe@res://C:\Program%20Files\Real\RealPlayer\rpplugins\rpmn3260.dll/black.html,02/02/2005 15:04:43,02/02/2005 15:04:43,,, ,
21 URL,Visited: johndoe@javascript:parent.fnScan(),,01/24/2005 16:40:26,01/24/2005 16:40:26,,,
22 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/snow_geese.jpg,02/02/2005 14:18:53,02/02/2005 14:18:53,,, ,
23 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/Application%20Data/Mozilla/Firefox/Profiles/w4nf3obl.default/bookmarks.html,02/03/2005 12:20:20,02/03/2005 12:20:20,,, ,
24 URL,Visited: johndoe@res://C:\WINDOWS\system32\shdoclc.dll/dnserror.htm,01/24/2005 16:13:02,01/24/2005 16:13:02,,, ,
25 URL,Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/resultslist.aspx?ln=en-us&id=0,01/24/2005 16:40:43,01/24/2005 16:40:43,,, ,
26 URL,Visited: johndoe@file:///E:/birds/non%20images/BirdingGuide.pdf,02/03/2005 15:52:01,02/03/2005 15:52:01,,, ,
27 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/newbies2.jpg,02/03/2005 15:05:44,02/03/2005 15:05:44
```

Firef downloads | Firef cookies | Firef History | InternetE cacheIndex | **InternetE index.dat** | InternetE History

```
31 URL,Visited: johndoe@http://www.mozilla.org/products/thunderbird,01/24/2005 16:23:25,01/24/2005 16:23:25,,, ,
32 URL,Visited: johndoe@http://office.microsoft.com/search/redir.aspx?AssetID=ES790020331033&Origin=HH010704921033&CTT=5,01/25/2005 11:16:47,01/25/2005 11:16:47,,, ,
33 URL,Visited: johndoe@file:///D:/Prac4/Prac4.gif,02/02/2005 15:10:16,02/02/2005 15:10:16,,, ,
34 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/7107298.jpg,02/02/2005 14:20:33,02/02/2005 14:20:33,,, ,
35 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/wbpremium_s.jpg,02/02/2005 14:28:19,02/02/2005 14:28:19,,, ,
36 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/birds.zip,02/09/2005 11:28:00,02/09/2005 11:28:00,,, ,
37 URL,Visited: johndoe@http://office.microsoft.com/en-gb/FX010329501033.aspx,01/25/2005 11:16:56,01/25/2005 11:16:56,,, ,
38 URL,Visited: johndoe@http://office.microsoft.com/search/redir.aspx?AssetID=ES790020331033&CTT=5&Origin=HA010492041033,01/25/2005 11:26:00,01/25/2005 11:26:00,,, ,
39 URL,Visited: johndoe@javascript:parent.fnExpressScan(),,01/24/2005 16:15:54,01/24/2005 16:15:54,,,
40 URL,Visited: johndoe@http://www.mozilla.org/products/firefox,01/24/2005 16:21:42,01/24/2005 16:21:42,,, ,
41 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/bob/My%20Documents/My%20Music/ready2fledge.jpg,02/03/2005 15:06:42,02/03/2005 15:06:42,,, ,
42 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/stuf.doc,02/09/2005 16:57:49,02/09/2005 16:57:49,,, ,
43 URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/tn_duck_3.jpg,02/02/2005 14:18:13,02/02/2005 14:18:13,,, ,
44 URL,Visited: johndoe@http://64.12.168.243/pub/mozilla.org/thunderbird/releases/1.0/win32/en-US/Thunderbird%20Setup%201.0.exe,01/24/2005 16:24:56,01/24/2005 16:24:56,,, ,
45 URL,Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/resultslist.aspx?ln=en-us&id=1&LinkId=SOFTWARE&TocIndex=,01/24/2005 16:41:10,01/24/2005 16:41:10,,, ,
46 URL,Visited: johndoe@http://office.microsoft.com/en-gb/FX010355751033.aspx,01/25/2005 11:25:56,01/25/2005 11:25:56,,, ,
47 URL,Visited: johndoe@file:///C:/Program%20Files/Real/RealPlayer/DataCache/Login/index.html,02/02/2005 14:57:13,02/02/2005 14:57:13,,, ,
48 URL,Visited: johndoe@file:///E:/birds/audio/aggressive_song.wav,02/03/2005 12:22:51,02/03/2005 12:22:51,,, ,
49 URL,Visited: johndoe@file:///F:/AlmondMarshGreatBlueHeronStalling.jpg,02/09/2005 17:06:28,02/09/2005 17:06:28,,, ,
50 URL,Visited: johndoe@about:blank,01/25/2005 11:16:36,01/25/2005 11:16:36,,, ,
51 URL,Visited: johndoe@file:///C:/WINDOWS/ODBC.INI,02/03/2005 15:54:06,02/03/2005 15:54:06,,, ,
52 URL,Visited: johndoe@file:///C:/Program%20Files/MSN/aggressive_song.wav,02/09/2005 17:00:50,02/09/2005 17:00:50,,, ,
53 URL,Visited: johndoe@file:///C:/WINDOWS/system32/oobe/actshell.htm,01/24/2005 16:13:56,01/24/2005 16:13:56,,, ,
54 URL,Visited: johndoe@https://account.real.com/acct/intro/msg.html?msg=frweur,02/02/2005 15:04:34,02/02/2005 15:04:34
```

Firef downloads | Firef cookies | Firef History | InternetE cacheIndex | **InternetE index.dat** | InternetE History

54	URL,Visited: johndoe@https://account.real.com/acct/intro/msg.html?msg=trweur,02/02/2005 15:04:34,02/02/2005 15:04:34,,, ,
55	URL,Visited: johndoe@file:///C:/EvanstonWoodpecker.jpg,02/03/2005 14:14:59,02/03/2005 14:14:59,,, ,
56	URL,Visited: johndoe@file:///E:/birds/non%20Images/BookList.doc,02/03/2005 15:51:54,02/03/2005 15:51:54,,, ,
57	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/nestboxtips.txt,02/02/2005 14:29:30,02/02/2005 14:29:30,,, ,
58	URL,Visited: johndoe@http://v5.windowsupdate.microsoft.com/v5consumer/default.aspx?ln=en-us,01/24/2005 16:40:12,01/24/2005 16:40:12,,, ,
59	URL,Visited: johndoe@http://download.mozilla.org/?product=thunderbird&os=win&lang=en-US,01/24/2005 16:23:26,01/24/2005 16:23:26,,, ,
60	URL,Visited: johndoe@http://www.real.com/intro/index_upsell_manager.html?DC=NSP01D&optin=true&country=gb&language=en-gb&icon=tiscali&LI=en&PBR=10485800,02/02/2005 15:04:28,02/02/2005 15:04:28,,, ,
61	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/babyscot_2weeks1.jpg,02/03/2005 15:00:27,02/03/2005 15:00:27,,, ,
62	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/kakapo.ram,02/02/2005 15:11:51,02/02/2005 15:11:51,,, ,
63	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/Application%20Data/Mozilla/Firefox/Profiles/w4nf3obl.default/cookies.txt,02/03/2005 12:19:07,02/03/2005 12:19:07,,, ,
64	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/chicks2.jpg,02/03/2005 15:05:03,02/03/2005 15:05:03,,, ,
65	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/johndoe/My%20Documents/My%20Pictures/40m.jpg,02/02/2005 14:43:36,02/02/2005 14:43:36,,, ,
66	URL,Visited: johndoe@file:///C:/Program%20Files/Adobe/Acrobat%207.0/Reader/Legal/Adobe%20Reader/7.0.0/en_US/license.html,02/02/2005 17:03:40,02/02/2005 17:03:40,,, ,
67	URL,Visited: johndoe@http://windowsupdate.microsoft.com,01/24/2005 16:39:59,01/24/2005 16:39:59,,, ,
68	URL,Visited: johndoe@http://www.linorg.usp.br/mozilla//firefox/releases/1.0/win32/en-GB/Firefox%20Setup%201.0.exe,01/24/2005 16:20:34,01/24/2005 16:20:34,,, ,
69	URL,Visited: johndoe@http://mozilla.mirrors.tds.net/pub/mozilla.org/firefox/releases/1.0/win32/en-GB/Firefox%20Setup%201.0.exe,01/24/2005 16:22:25,01/24/2005 16:22:25,,, ,
70	URL,Visited: johndoe@file:///C:/Documents%20and%20Settings/All%20Users/Documents/My%20Music/Sample%20Music/Doc1.doc,02/03/2005 14:17:48,02/03/2005 14:17:48,,, ,
71	
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... | Firef downloads | Firef cookies | Firef History | InternetE cacheIndex | InternetE index.dat | InternetE History

12.18.2.3 Cache index

1	History File:					
2						
3	TYPE	URL	MODIFIED TIME	ACCESS TIME	FILENAME	DIRECTORY
4	URL	http://i.real.com/g/pics/space.gif	02/09/2001 23:44	02/02/2005 15:04	space[1].gif	456NWTMR
5	URL	http://windowsupdate.microsoft.com/redirect.js	10/21/2004 04:14:49	01/24/2005 16:39:59	redirect[1].js	4963KDYV
6	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/toc.js	06/15/2004 21:48:24	01/24/2005 16:40:10	toc[1].js	CLABK1AB
7	URL	http://office.microsoft.com/global/images/default.aspx?assetID=ZA011357811033	06/24/2004 03:50:55	01/25/2005 11:16:55	ZA011357811033[1].gif	456NWTMR
8	URL	http://v5.windowsupdate.microsoft.com/SelfUpdate/wuident.cab?0501241615	08/04/2004 00:05	01/24/2005 16:15:40	wuident[1].cab	CLABK1AB
9	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/News_bg_RightTop.gif	06/11/2004 02:51	01/24/2005 16:40:18	News_bg_RightTop[1].gif	456NWTMR
10	URL	http://office.microsoft.com/en-gb/FX010354621033.aspx	01/25/2005 11:33:38	01/25/2005 11:33:45	FX010354621033[1].htm	OH6F8TA3
11	URL	http://realguide.real.com/4plus/main_.js	04/18/2002 20:08:34	02/02/2005 15:04	main_[1].js	OH6F8TA3
12	URL	http://v5.windowsupdate.microsoft.com/v5consumer/mstoolbar.aspx?ln=en-us	01/24/2005 16:40:08	01/24/2005 16:40:08	mstoolbar[1].htm	OH6F8TA3
13	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_bg_LeftTop_Green.gif	06/11/2004 02:51	01/24/2005 16:40:18	AU_bg_LeftTop_Green[1].gif	4963KDYV
14	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/News_bg_LeftBottom.gif	06/11/2004 02:51	01/24/2005 16:40:18	News_bg_LeftBottom[1].gif	CLABK1AB
15	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/News_bg_BottomMiddle.gif	06/11/2004 02:51	01/24/2005 16:40:18	News_bg_BottomMiddle[1].gif	456NWTMR
16	URL	http://v5.windowsupdate.microsoft.com/v5consumer/news.aspx?ln=en		01/24/2005 16:40:18	news[1].htm	456NWTMR
17	URL	http://v5.windowsupdate.microsoft.com/v5consumer/resultslist.aspx?ln=en-us&id=1&LinkId=SOFTWARE&TocIndex=e4f1a	01/24/2005 16:41:09	01/24/2005 16:41:09	resultslist[2].htm	4963KDYV
18	URL	http://office.microsoft.com/officeupdate/disk.gif	11/12/2004 02:46	01/25/2005 11:26:23	disk[1].gif	OH6F8TA3
19	URL	http://office.microsoft.com/_Services/Ont/images/ONTLogo.gif	03/20/2003 04:52:52	01/25/2005 11:33:45	ONTLogo[1].gif	456NWTMR
20	URL	http://office.microsoft.com/_Services/Ont/images/topnav3r.gif	12/03/2003 22:23	01/25/2005 11:33:45	topnav3r[1].gif	456NWTMR
21	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_bg_TopMiddle.gif	06/11/2004 02:51	01/24/2005 16:40:17	AU_bg_TopMiddle[1].gif	OH6F8TA3
22	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_bg_BottomMiddle.gif	06/11/2004 02:51	01/24/2005 16:40:18	AU_bg_BottomMiddle[1].gif	CLABK1AB
23	URL	http://office.microsoft.com/_Services/Ont/images/WWGlobe.gif	01/14/2004 21:37:32	01/25/2005 11:33:45	WWGlobe[1].gif	4963KDYV
24	URL	http://office.microsoft.com/global/images/default.aspx?assetid=ZA011035021033	01/13/2005 01:57:31	01/25/2005 11:16:45	ZA011035021033[1].jpg	456NWTMR

... | Firef downloads | Firef cookies | InternetE cacheIndex | Firef History | InternetE index.dat | InternetE History

25	URL	http://office.microsoft.com/_Services/Ont/images/ONLPlCellSpcr2.gif	12/30/2002 21:13:48	01/25/2005 11:33:45	ONLPlCellSpcr2[1].gif	4963KDYV
26	URL	http://office.microsoft.com/officeupdate/bang.gif	11/12/2004 02:46	01/25/2005 11:26:23	bang[1].gif	456NWTMR
27	URL	http://www.mozilla.org/images/product-calendar.png	08/31/2004 22:36:50	01/24/2005 16:23:13	product-calendar[1].png	456NWTMR
28	URL	http://64.12.168.243/pub/mozilla.org/thunderbird/releases/1.0/win32/en-US/Thunderbird%20Setup%201.0.exe	12/06/2004 15:37	01/24/2005 16:24:24	Thunderbird%20Setup%201.0[1].exe	456NWTMR
29	URL	http://office.microsoft.com/global/images/1ptrans_ZA06047535.gif	12/20/2004 20:29:52	01/25/2005 11:16:44	1ptrans_ZA06047535[1].gif	4963KDYV
30	URL	http://v5.windowsupdate.microsoft.com/v5consumer/default.aspx	01/24/2005 16:39:21	01/24/2005 16:40:01	default[2].htm	CLABK1AB
31	REDIR	http://v5.windowsupdate.microsoft.com/				
32	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_bg_TopMiddle_Green.gif	06/11/2004 02:51	01/24/2005 16:40:18	AU_bg_TopMiddle_Green[1].gif	4963KDYV
33	URL	http://i.real.com/pics/real/intro/bttn_down.gif	08/31/2001 20:49:34	02/02/2005 15:04	bttn_down[1].gif	CLABK1AB
34	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/css/content.css	06/11/2004 02:51	01/24/2005 16:41:09	content[1].css	456NWTMR
35	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/Banners/en/Hdr_Welcome.jpg	06/11/2004 02:51	01/24/2005 16:40:17	Hdr_Welcome[1].jpg	4963KDYV
36	URL	http://office.microsoft.com/officeupdate/check.gif	11/12/2004 02:46	01/25/2005 11:26:23	check[1].gif	CLABK1AB
37	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/Hdr_Tall_Middle.gif	06/11/2004 02:51	01/24/2005 16:40:17	Hdr_Tall_Middle[1].gif	CLABK1AB
38	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_ShieldGreen.gif	06/11/2004 02:51	01/24/2005 16:40:18	AU_ShieldGreen[1].gif	456NWTMR
39	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_bg_RightMiddle.gif	06/11/2004 02:51	01/24/2005 16:40:18	AU_bg_RightMiddle[1].gif	OH6F8TA3
40	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/resultslist.js?1/24/2005%208:41:09%20AM	08/06/2004 00:03	01/24/2005 16:41:09	resultslist[2].js	OH6F8TA3
41	URL	http://v5.windowsupdate.microsoft.com/library/toolbar/3.0/text.aspx?t=TQ%3d%3d&f=FFFFFF&b=6487DB&font=Microsof	01/24/2005 16:19:23	01/24/2005 16:40:10	text[2].jpg	CLABK1AB
42	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/warning.gif	06/11/2004 02:51	01/24/2005 16:22:57	warning[1].gif	OH6F8TA3
43	URL	http://office.microsoft.com/_Services/Ont/en-US/Menu.css	11/12/2004 02:18	01/25/2005 11:26:23	Menu[1].css	456NWTMR
44	URL	http://office.microsoft.com/_Services/Ont/images/cg2057.gif	01/02/2004 20:21	01/25/2005 11:33:45	cg2057[1].gif	CLABK1AB
45	URL	http://v5.windowsupdate.microsoft.com/library/toolbar/3.0/css.aspx?c=/v5consumer/Config/en/shell.config	01/24/2005 15:59:48	01/24/2005 16:40:09	css[1].css	456NWTMR
46	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/content.js	08/03/2004 07:00	01/24/2005 16:41:09	content[1].js	OH6F8TA3
47	URL	http://www.mozilla.org/css/base/content.css	01/10/2005 19:47	01/24/2005 16:23:23	content[1].css	4963KDYV
48	URL	http://office.microsoft.com/_Services/Ont/images/WWGlobe.gif	01/14/2004 21:37:32	01/25/2005 11:26:02	WWGlobe[1].gif	CLABK1AB

... | Firef downloads | Firef cookies | InternetE cacheIndex | Firef History | InternetE index.dat | InternetE History

49	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/tgar.js	06/11/2004 02:51	01/24/2005 16:41:09	tgar[1].js	4963KDYV
50	URL	http://office.microsoft.com/global/images/default.aspx?assetid=ZA011708901033	01/13/2005 01:57:43	01/25/2005 11:16:45	ZA011708901033[1].jpg	CLABK1AB
51	URL	http://www.mozilla.org/css/cavendish/template.css	12/08/2004 03:02	01/24/2005 16:23:23	template[1].css	CLABK1AB
52	URL	http://office.microsoft.com/_Services/Ont/images/topnav2m.gif	12/03/2003 22:22	01/25/2005 11:33:45	topnav2m[1].gif	CLABK1AB
53	URL	http://office.microsoft.com/en-gb/FX010355571033.aspx	01/25/2005 10:26:37	01/25/2005 11:25:53	FX010355571033[1].htm	4963KDYV
54	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/survey.js?6324215279707380 72	12/02/2004 03:52	01/24/2005 16:40:12	survey[2].js	CLABK1AB
55	URL	http://v5.windowsupdate.microsoft.com/v5consumer/resultslist.aspx?ln=en-us&id=060cadd56	01/24/2005 16:40:14	01/24/2005 16:40:41	resultslist[1].htm	4963KDYV
56	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/resultslist.js?1/24/2005%208:40:14%20AM	08/06/2004 00:03	01/24/2005 16:40:42	resultslist[1].js	OH6F8TA3
57	URL	http://office.microsoft.com/officeupdate/maincatalog.aspx?lc=en-gb	01/25/2005 10:34:59	01/25/2005 11:26:01	maincatalog[1].htm	CLABK1AB
58	URL	http://office.microsoft.com/_Services/Ont/images/bullet1.gif	03/05/2003 04:42	01/25/2005 11:27:44	bullet1[1].gif	4963KDYV
59	URL	http://c.microsoft.com/trans_pixel.aspx?TYPE=SSPV&SOURCE=OFFICE&guid=1f4fc18c-f71e-47fb-8fc9-612f8ee59c61&URI=/en-GB/home/office/F	01/25/2005 11:25:56		trans_pixel[1].gif	456NWTMR
60	URL	http://i.real.com/pics/real/intro/bttn_over.gif	08/31/2001 20:49:34	02/02/2005 15:04	bttn_over[1].gif	OH6F8TA3
61	URL	http://images.real.com//pics/space.gif	05/24/2001 21:25:56	02/02/2005 15:04	space[2].gif	456NWTMR
62	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/arrow.gif	06/11/2004 02:51	01/24/2005 16:40:17	arrow[1].gif	OH6F8TA3
63	URL	http://office.microsoft.com/_Services/Ont/images/topnav2r.gif	12/03/2003 22:27	01/25/2005 11:33:45	topnav2r[1].gif	OH6F8TA3
64	URL	http://office.microsoft.com/_Services/Ont/images/RghtArrBlt.gif	09/18/2003 20:08:22	01/25/2005 11:16:45	RghtArrBlt[1].gif	456NWTMR
65	URL	?CodeDownloadErrorLogIname={00EF2092-6AC5-47C0-BD25-CF2D5D657FEB}	02/02/2005 14:57	02/02/2005 14:57	CAKP6RKT.HTM	OH6F8TA3
66	URL	http://v5.windowsupdate.microsoft.com/v5consumer/splash.aspx?page=0&ln=en-us	01/24/2005 16:39:57	01/24/2005 16:40:09	splash[3].htm	4963KDYV
67	URL	http://c.microsoft.com/trans_pixel.asp?source=v5.windowsupdate&TYPE=PV&p=v5consumer_resultslist.aspx&r=http%3A//v5.windowsupdate.mi	01/24/2005 16:41:12		trans_pixel[3].gif	CLABK1AB
68	URL	http://www.mozilla.org/css/print.css	11/21/2004 11:02:30	01/24/2005 16:23:23	print[1].css	4963KDYV
69	URL	http://www.mozilla.org/images/key-point_back.gif	08/31/2004 22:36:50	01/24/2005 16:23:24	key-point_back[1].gif	456NWTMR
70	URL	http://office.microsoft.com/_Services/Ont/images/footerl.gif	12/16/2003 21:30:42	01/25/2005 11:33:45	footerl[1].gif	456NWTMR
71	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/News_bg_LeftTop.gif	06/11/2004 02:51	01/24/2005 16:40:18	News_bg_LeftTop[1].gif	456NWTMR
72	URL	http://www.mozilla.org/images/product-mozilla.png	08/31/2004 22:36:50	01/24/2005 16:23:13	product-mozilla[1].png	4963KDYV

... | Firef downloads | Firef cookies | InternetE cacheIndex | Firef History | InternetE index.dat | InternetE History

73	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/webcomtop.js?1/24/2005%208:15:21%20AM	08/06/2004 00:03	01/24/2005 16:15:29	webcomtop[1].js	CLABK1AB
74	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/News_bg_RightBottom.gif	06/11/2004 02:51	01/24/2005 16:40:18	News_bg_RightBottom[1].gif	4963KDYV
75	URL	http://www.mozilla.org/images/header_logo.gif	08/31/2004 22:36:50	01/24/2005 16:23:24	header_logo[1].gif	CLABK1AB
76	URL	http://office.microsoft.com/global/images/default.aspx?assetid=ZA011153081033	12/29/2004 01:54:19	01/25/2005 11:33:45	ZA011153081033[1].gif	4963KDYV
77	URL	http://office.microsoft.com/officeupdate/arrowright.gif	11/12/2004 02:46	01/25/2005 11:26:02	arrowright[1].gif	CLABK1AB
78	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/resultslist.js?1/24/2005%208:16:07%20AM	08/06/2004 00:03	01/24/2005 16:16:10	resultslist[1].js	456NWTMR
79	URL	http://office.microsoft.com/global/images/default.aspx?assetid=HX010492821033		01/25/2005 11:16:45	MTJ03095010000[1].gif	OH6F8TA3
80	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/Banners/en/Hdr_ExpressInstall.jpg	06/11/2004 02:51	01/24/2005 16:41:10	Hdr_ExpressInstall[1].jpg	4963KDYV
81	URL	http://www.mozilla.org/images/download_back.gif	08/31/2004 22:36:50	01/24/2005 16:23:24	download_back[1].gif	OH6F8TA3
82	URL	http://office.microsoft.com/_Services/Ont/images/ONLHorzSpcrTail.gif	12/05/2002 16:10	01/25/2005 11:33:45	ONLHorzSpcrTail[1].gif	456NWTMR
83	URL	http://c.microsoft.com/trans_pixel.aspx?TYPE=SSPV&SOURCE=OFFICE&guid=1f4fc18c-f71e-47fb-8fc9-612f8ee59c61&URI=/en-GB/officeupdate/	01/25/2005 11:16:45		trans_pixel[1].gif	OH6F8TA3
84	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/toc_endnode.gif	06/11/2004 02:51	01/24/2005 16:40:41	toc_endnode[1].gif	456NWTMR
85	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_Button_Left.gif	06/11/2004 02:51	01/24/2005 16:40:17	AU_Button_Left[1].gif	456NWTMR
86	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/ok.gif	06/11/2004 02:51	01/24/2005 16:22:57	ok[1].gif	4963KDYV
87	URL	http://office.microsoft.com/officeupdate/timer.gif	11/12/2004 02:46	01/25/2005 11:26:23	timer[1].gif	456NWTMR
88	URL	http://office.microsoft.com/officeupdate/catalog/xml/1033/SP1_11_1033.xml?63242217299521 4127	01/06/2005 15:56	01/25/2005 11:17:40	SP1_11_1033[1].xml	OH6F8TA3
89	URL	http://office.microsoft.com/officeupdate/catalog/xml/1033/INFPXSN11_1033.xml?63242217299521 4127	01/06/2005 15:56	01/25/2005 11:26:14	INFPXSN11_1033[1].xml	CLABK1AB
90	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/commontop.js?1/24/2005%208:15:21%20AM	11/22/2004 19:21:08	01/24/2005 16:15:27	commontop[1].js	OH6F8TA3
91	URL	http://www.mozilla.org/images/ff_shirt.jpg	09/21/2004 15:20:44	01/24/2005 16:21:41	ff_shirt[1].jpg	OH6F8TA3
92	URL	http://v5.windowsupdate.microsoft.com/v5consumer/InstallStatus.aspx?page=0&ln=en-us		01/24/2005 16:22:56	InstallStatus[1].htm	456NWTMR
93	URL	http://www.mozilla.org/products/firefox/featuring-flash.gif	11/08/2004 01:18	01/24/2005 16:21:41	featuring-flash[1].gif	4963KDYV
94	URL	http://c.microsoft.com/trans_pixel.asp?source=v5.windowsupdate&TYPE=PV&p=v5consumer_InstallStatus.aspx&r=http%3A//v5.windowsupdate.	01/24/2005 16:22:58		trans_pixel[1].gif	CLABK1AB
95	URL	http://office.microsoft.com/global/images/default.aspx?assetid=ZA011158451033	01/13/2005 01:57:45	01/25/2005 11:16:44	ZA011158451033[1].jpg	456NWTMR
96	URL	http://office.microsoft.com/officeupdate/wizardUpdate.aspx	01/25/2005 11:10:47	01/25/2005 11:26:22	wizardUpdate[1].htm	OH6F8TA3

... | Firef downloads | Firef cookies | InternetE cacheIndex | Firef History | InternetE index.dat | InternetE History

97	URL	http://v5.windowsupdate.microsoft.com/v5consumer/resultslist.aspx?ln=en-us&id=612e66c8b	01/24/2005 16:16:07	01/24/2005 16:16:07	resultslist[1].htm	CLABK1AB
98	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/News_bg_TopMiddle.gif	06/11/2004 02:51	01/24/2005 16:40:18	News_bg_TopMiddle[1].gif	CLABK1AB
99	URL	http://www.mozilla.org/products/firefox/	01/24/2005 08:32:24	01/24/2005 16:21:41	firefox[1].htm	456NWTMR
100	URL	http://www.mozilla.org/images/product-firefox.png	11/16/2004 21:32:27	01/24/2005 16:23:13	product-firefox[1].png	4963KDYV
101	URL	http://office.microsoft.com/global/images/default.aspx?assetid=ZA010499831033	01/21/2005 01:57:05	01/25/2005 11:16:44	ZA010499831033[1].gif	OH6F8T A3
102	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/css/toc.css	06/11/2004 02:51	01/24/2005 16:40:11	toc[1].css	4963KDYV
103	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/icon_wu_installnow_16x.gif	06/11/2004 02:51	01/24/2005 16:40:11	icon_wu_installnow_16x[1].gif	OH6F8T A3
104	URL	http://v5.windowsupdate.microsoft.com/v5consumer/blank.aspx		01/24/2005 16:41:10	blank[1].htm	OH6F8T A3
105	URL	http://office.microsoft.com/en-gb/FX010329501033.aspx	01/25/2005 09:23:41	01/25/2005 11:16:54	FX010329501033[1].htm	CLABK1AB
106	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/survey.js?632421512871551603	12/02/2004 03:52	01/24/2005 16:15:46	survey[1].js	CLABK1AB
107	URL	http://www.mozilla.org/images/body_back.gif	08/31/2004 22:36:50	01/24/2005 16:23:23	body_back[1].gif	456NWTMR
108	URL	http://home.real.com/signin/3.0/loader.html?cd=firstrun_acct&loader=2.0&LI=en&PV=6.0.12.1053	02/02/2005 14:57	02/02/2005 14:57	loader[1].htm	456NWTMR
109	URL	http://l.real.com/pics/real/intro/bttn_disabled.gif	08/31/2001 20:49:34	02/02/2005 15:04	bttn_disabled[1].gif	CLABK1AB
110	URL	http://v5.windowsupdate.microsoft.com/v5consumer/toc.aspx?ln=en-us	01/24/2005 16:39:57	01/24/2005 16:40:09	toc[1].htm	4963KDYV
111	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_bg_LeftBottom.gif	06/11/2004 02:51	01/24/2005 16:40:17	AU_bg_LeftBottom[1].gif	4963KDYV
112	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/Hdr_Shrt_Right.jpg	06/11/2004 02:51	01/24/2005 16:41:10	Hdr_Shrt_Right[1].jpg	456NWTMR
113	URL	http://www.mozilla.org/products/firefox/featuring-java.gif	11/08/2004 01:18	01/24/2005 16:21:41	featuring-java[1].gif	4963KDYV
114	URL	http://www.mozilla.org/images/product-firefox-screen.png	01/13/2005 22:47:25	01/24/2005 16:21:41	product-firefox-screen[1].png	OH6F8T A3
115	URL	http://www.mozilla.org/images/product-camino.png	08/31/2004 22:36:50	01/24/2005 16:23:13	product-camino[1].png	456NWTMR
116	URL	http://office.microsoft.com/_Services/Ont/images/BulletLN.gif	03/05/2003 05:45	01/25/2005 11:16:45	BulletLN[1].gif	CLABK1AB
117	URL	http://l.real.com/pics/real/intro/bttn_enabled.gif	08/31/2001 20:49:34	02/02/2005 15:04	bttn_enabled[1].gif	456NWTMR
118	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/News_bg_LeftMiddle.gif	06/11/2004 02:51	01/24/2005 16:40:18	News_bg_LeftMiddle[1].gif	OH6F8T A3
119	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/toc_collapsed.gif	06/11/2004 02:51	01/24/2005 16:40:41	toc_collapsed[1].gif	OH6F8T A3
120	URL	http://office.microsoft.com/global/images/default.aspx?AssetID=ZA011352821033	06/24/2004 03:50:55	01/25/2005 11:16:55	ZA011352821033[1].gif	456NWTMR

Firef downloads | Firef cookies | **InternetE cacheIndex** | Firef History | InternetE index.dat | InternetE History

121	URL	http://www.mozilla.org/images/moz_shirt.jpg	08/31/2004 22:36:50	01/24/2005 16:23:24	moz_shirt[1].jpg	4963KDYV
122	URL	?CodeDownloadErrorLogIname={3E6BE405-C6DE-49FF-83AE-41EE9F4C36CE}	01/25/2005 11:16:54	01/25/2005 11:16:54	CAKEGBCS.HTM	4963KDYV
123	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/Hdr_Tall_Right.jpg	06/11/2004 02:51	01/24/2005 16:40:17	Hdr_Tall_Right[1].jpg	456NWTMR
124	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/Hdr_Shrt_Middle.jpg	06/11/2004 02:51	01/24/2005 16:41:10	Hdr_Shrt_Middle[1].jpg	CLABK1AB
125	URL	http://www.mozilla.org/images/product-thunderbird.png	08/31/2004 22:36:50	01/24/2005 16:23:13	product-thunderbird[1].png	CLABK1AB
126	URL	http://www.mozilla.org/images/product-bugzilla.png	08/31/2004 22:36:50	01/24/2005 16:23:13	product-bugzilla[1].png	OH6F8T A3
127	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/redirect.js?1/24/2005%208:40:03%20AM	10/21/2004 04:14:49	01/24/2005 16:40:03	redirect[1].js	OH6F8T A3
128	URL	http://v5.windowsupdate.microsoft.com/v5consumer/footer.aspx?ln=en-us	01/24/2005 16:39:23	01/24/2005 16:40:09	footer[1].htm	OH6F8T A3
129	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_bg_RightTop.gif	06/11/2004 02:51	01/24/2005 16:40:17	AU_bg_RightTop[1].gif	456NWTMR
130	URL	http://office.microsoft.com/global/images/default.aspx?AssetID=ZA010499831033	01/21/2005 01:57:05	01/25/2005 11:33:45	ZA010499831033[1].gif	CLABK1AB
131	URL	http://home.real.com/signin/common/log/log.html?configcount=1&distcode=NSP01D&build=6.0.12.1053&overinstall=&LI=	06/07/2004 16:26	02/02/2005 14:57	log[1].htm	4963KDYV
132	REDR	http://switchboard.real.com/player/mktg.html?DC=NSP01D&optin=true&country=gb&language=en-gb&icon=tiscali				
133	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/News_Info.gif	06/11/2004 02:51	01/24/2005 16:40:18	News_Info[1].gif	456NWTMR
134	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/spupdateids.js?1/24/2005%208:40:03%20AM	09/01/2004 00:33	01/24/2005 16:40:07	spupdateids[1].js	4963KDYV
135	URL	http://office.microsoft.com/officeupdate/catalog/xml/1033/OLKFTR_0.xml?632422172995214127	01/06/2005 15:56	01/25/2005 11:17:42	OLKFTR_0[1].xml	456NWTMR
136	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/spupdateids.js?1/24/2005%208:15:21%20AM	09/01/2004 00:33	01/24/2005 16:15:29	spupdateids[1].js	456NWTMR
137	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_bg_LeftTop.gif	06/11/2004 02:51	01/24/2005 16:40:17	AU_bg_LeftTop[1].gif	CLABK1AB
138	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_bg_LeftMiddle.gif	06/11/2004 02:51	01/24/2005 16:40:18	AU_bg_LeftMiddle[1].gif	4963KDYV
139	URL	http://v5.windowsupdate.microsoft.com/SelfUpdate/AU/x86/XP/en/wusetup.cab?0501241640	08/04/2004 00:14	01/24/2005 16:40:15	wusetup[1].cab	CLABK1AB
140	URL	http://office.microsoft.com/_Services/Ont/Menu.js	11/12/2004 02:18	01/25/2005 11:26:23	Menu[1].js	4963KDYV
141	URL	http://office.microsoft.com/_Services/Ont/images/ONLItemBk.gif	09/15/2003 19:51:54	01/25/2005 11:33:45	ONLItemBk[1].gif	OH6F8T A3
142	URL	http://office.microsoft.com/officeupdate/content/opuc.cab	08/29/2003 20:59:02	01/25/2005 11:17:25	opuc[1].cab	OH6F8T A3
143	URL	http://www.mozilla.org/products/firefox/featuring-shockwave.gif	11/08/2004 01:18	01/24/2005 16:21:41	featuring-shockwave[1].gif	OH6F8T A3
144	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/commontop.js?1/24/2005%208:40:03%20AM	11/22/2004 19:21:08	01/24/2005 16:40:05	commontop[1].js	CLABK1AB

Firef downloads | Firef cookies | Firef History | **InternetE cacheIndex** | InternetE index.dat | InternetE History

145	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/toc_expanded.gif	06/11/2004 02:51	01/24/2005 16:41:09	toc_expanded[1].gif	OH6F8T A3
146	URL	http://www.real.com/intro/index.html?DC=NSP01D&optin=true&country=gb&language=en-gb&icon=tiscali	03/12/2003 22:26	02/02/2005 15:04	index[1].htm	456NWTMR
147	URL	http://v5.windowsupdate.microsoft.com/SelfUpdate/AU/x86/XP/en/wusetup.cab?0501241615	08/04/2004 00:14	01/24/2005 16:15:41	wusetup[1].cab	456NWTMR
148	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/info_16x.gif	06/11/2004 02:51	01/24/2005 16:22:57	info_16x[1].gif	OH6F8T A3
149	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/survey.js?632421528169176842	12/02/2004 03:52	01/24/2005 16:40:17	survey[2].js	4963KDYV
150	URL	http://office.microsoft.com/_Services/Ont/en-US/Ont.css	11/12/2004 02:18	01/25/2005 11:33:44	Ont[1].css	OH6F8T A3
151	URL	http://v5.windowsupdate.microsoft.com/v5consumer/default.aspx?ln=en-us	01/24/2005 16:40:03	01/24/2005 16:40:03	default[1].htm	OH6F8T A3
152	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_bg_RightTop_Green.gif	06/11/2004 02:51	01/24/2005 16:40:18	AU_bg_RightTop_Green[1].gif	OH6F8T A3
153	URL	http://www.mozilla.org/images/shop_back.gif	09/21/2004 15:20:44	01/24/2005 16:23:24	shop_back[1].gif	CLABK1AB
154	URL	http://www.linorg.usp.br/mozilla//firefox/releases/1.0/win32/en-GB/Firefox%20Setup%201.0.exe	11/11/2004 19:26	01/24/2005 16:19:35	Firefox%20Setup%201.0[1].exe	4963KDYV
155	URL	http://office.microsoft.com/_Services/Ont/images/ONTLogoLt.gif	03/20/2003 04:52:52	01/25/2005 11:26:22	ONTLogoLt[1].gif	OH6F8T A3
156	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_Button_Right.gif	06/11/2004 02:51	01/24/2005 16:40:17	AU_Button_Right[1].gif	4963KDYV
157	URL	http://www.mozilla.org/products/	01/01/2005 05:17	01/24/2005 16:23:13	products[1].htm	CLABK1AB
158	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/tgar.js?1/24/2005%208:40:03%20AM	06/11/2004 02:51	01/24/2005 16:40:03	tgar[1].js	CLABK1AB
159	URL	http://office.microsoft.com/en-gb/officeupdate/default.aspx	01/25/2005 10:54:20	01/25/2005 11:16:42	default[1].htm	4963KDYV
160	URL	http://office.microsoft.com/_Services/Ont/images/ONLBulCol.gif	12/30/2002 21:13:48	01/25/2005 11:33:45	ONLBulCol[1].gif	CLABK1AB
161	URL	http://office.microsoft.com/_Services/Ont/images/TBGradient.gif	12/05/2002 16:10	01/25/2005 11:27:44	TBGradient[1].gif	CLABK1AB
162	URL	http://images.real.com//pics/real/common/bull_tri.gif	12/01/2001 23:25	02/02/2005 15:04	bull_tri[1].gif	4963KDYV
163	URL	http://www-config.strath.ac.uk/proxy.config		02/03/2005 11:50	proxy[2].config	CLABK1AB
164	URL	http://www.mozilla.org/images/header_br.gif	08/31/2004 22:36:50	01/24/2005 16:23:23	header_br[1].gif	456NWTMR
165	REDR	http://office.microsoft.com/search/redir.aspx?AssetID=ES790020331033&Origin=HH010704921033&CTT=5				
166	URL	http://www.real.com/intro/index_upsell_manager.html?DC=NSP01D&optin=true&country=gb&language=en-gb&icon=tiscal	01/20/2005 00:26:01	02/02/2005 15:04	index_upsell_manager[1].htm	4963KDYV
167	URL	https://account.real.com/acct/intro/msg.html?msg=fraueur	07/11/2002 00:43	02/02/2005 15:04	msg[1].htm	OH6F8T A3
168	URL	http://www.mozilla.org/images/header_tr.gif	08/31/2004 22:36:50	01/24/2005 16:23:23	header_tr[1].gif	456NWTMR

Firef downloads | Firef cookies | Firef History | **InternetE cacheIndex** | InternetE index.dat | InternetE History

169	URL	http://office.microsoft.com/_Services/Ont/oo.js	11/12/2004 02:18	01/25/2005 11:33:44	oo[1].js	OH6F8T A3
170	URL	http://l.i.com.com/cnwk.1d/i/cobd/ec/EC_nov04_39x72.gif	01/28/2004 23:37:28	01/24/2005 16:21:41	EC_nov04_39x72[1].gif	4963KDYV
171	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_ShieldYellow.gif	06/11/2004 02:51	01/24/2005 16:40:17	AU_ShieldYellow[1].gif	OH6F8T A3
172	URL	http://office.microsoft.com/officeupdate/catalog/xml/1033/FGC11_0.xml?632422172995214127	01/06/2005 15:56	01/25/2005 11:26:14	FGC11_0[1].xml	CLABK1AB
173	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/Banners/en/Hdr_InstallBasket.jpg	06/11/2004 02:51	01/24/2005 16:41:10	Hdr_InstallBasket[1].jpg	456NWTMR
174	URL	http://c.microsoft.com/trans_pixel.aspx?TYPE=SSPV&SOURCE=OFFICE&guid=1f4fc18c-f71e-47fb-8fc9-612f8ee59c61&URI=/en-GB/home/office/f	01/25/2005 11:16:56		trans_pixel[3].gif	4963KDYV
175	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/tgar.js?1/24/2005%208:15:21%20AM	06/11/2004 02:51	01/24/2005 16:15:25	tgar[1].js	456NWTMR
176	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/Banners/en/Hdr_CustomInstall.jpg	06/11/2004 02:51	01/24/2005 16:41:10	Hdr_CustomInstall[1].jpg	4963KDYV
177	URL	http://office.microsoft.com/officeupdate/catalog/SiteBaselines.xml?632422172995214127	01/06/2005 15:45	01/25/2005 11:26:03	SiteBaselines[1].xml	4963KDYV
178	URL	http://c.microsoft.com/trans_pixel.aspx?TYPE=SSPV&SOURCE=OFFICE&guid=1f4fc18c-f71e-47fb-8fc9-612f8ee59c61&URI=/en-GB/home/office/f	01/25/2005 11:33:46		trans_pixel[2].gif	OH6F8T A3
179	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_bg_RightBottom.gif	06/11/2004 02:51	01/24/2005 16:40:17	AU_bg_RightBottom[1].gif	CLABK1AB
180	URL	http://www.mozilla.org/images/product-thunderbird-screen.png	01/13/2005 22:47:25	01/24/2005 16:23:25	product-thunderbird-screen[1].png	CLABK1AB
181	REDR	http://mozilla.org/firefox				
182	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/webcomtop.js?1/24/2005%208:40:03%20AM	08/06/2004 00:03	01/24/2005 16:40:06	webcomtop[1].js	456NWTMR
183	URL	http://windowsupdate.microsoft.com/	11/07/2003 22:20	01/24/2005 16:39:57	windowsupdate.microsoft[1].htm	CLABK1AB
184	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/redirect.js?1/24/2005%208:15:21%20AM	10/21/2004 04:14:49	01/24/2005 16:15:26	redirect[2].js	4963KDYV
185	URL	http://v5.windowsupdate.microsoft.com/v5consumer/splash.aspx?page=3&cpuClass=x86&auenabled=false&ln=en-us	01/24/2005 16:40:16	01/24/2005 16:40:16	splash[1].htm	CLABK1AB
186	URL	http://c.microsoft.com/trans_pixel.asp?source=v5.windowsupdate&TYPE=PV&p=v5consumer_splash.aspx&r=http%3A//v5.windowsupdate.microso	01/24/2005 16:40:19		trans_pixel[1].gif	4963KDYV
187	URL	http://www.mozilla.org/css/base/template.css	09/24/2004 02:03:53	01/24/2005 16:23:23	template[2].css	CLABK1AB
188	URL	http://office.microsoft.com/_Services/Ont/images/topnav1m.gif	12/03/2003 22:21	01/25/2005 11:33:45	topnav1m[1].gif	4963KDYV
189	URL	http://home.real.com/signin/common/log/log.html?toolbar=Google&action=istoolbarregistered%20error&code=3&offer=2	06/07/2004 16:26	02/02/2005 14:57	log[1].htm	CLABK1AB
190	URL	http://c.microsoft.com/trans_pixel.asp?source=v5.windowsupdate&TYPE=PV&p=v5consumer_default.aspx		01/24/2005 16:40:16	trans_pixel[2].gif	CLABK1AB
191	REDR	http://download.mozilla.org/?product=thunderbird&os=win&lang=en-US				
192	URL	http://office.microsoft.com/_Services/Ont/images/footerMSlogo.gif	12/16/2003 20:59:22	01/25/2005 11:33:45	footerMSlogo[1].gif	4963KDYV

Firef downloads | Firef cookies | Firef History | **InternetE cacheIndex** | InternetE index.dat | InternetE History

193	URL	http://www.mozilla.org/products/firefox/featuring-realplayer.gif	11/08/2004 01:18	01/24/2005 16:21:41	featuring-realplayer[1].gif	CLABK1AB
194	URL	http://www.real.com/4plus/trinity_css	06/19/2004 01:05:48	02/02/2005 15:04	trinity_[1].htm	4963KDYV
195	URL	http://www.mozilla.org/css/cavendish/content.css	12/08/2004 03:02	01/24/2005 16:23:23	content[1].css	OH6F8T A3
196	URL	http://www.mozilla.org/images/header_bl.png	01/04/2005 17:02	01/24/2005 16:23:23	header_bl[1].png	456NWTMR
197	URL	http://www.mozilla.org/images/header_tl.gif	08/31/2004 22:36:50	01/24/2005 16:23:24	header_tl[1].gif	OH6F8T A3
198	REDR	http://download.mozilla.org/?product=firefox&os=win&lang=en-GB				
199	URL	http://www.mozilla.org/products/thunderbird/	01/01/2005 05:17	01/24/2005 16:23:23	thunderbird[1].htm	456NWTMR
200	URL	http://www.mozilla.org/products/thunderbird/award_softpediapick.gif	12/19/2004 22:17:24	01/24/2005 16:23:24	award_softpediapick[1].gif	OH6F8T A3
201	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/js/survey.js?632421512922307396	12/02/2004 03:52	01/24/2005 16:15:34	survey[1].js	4963KDYV
202	REDR	http://switchboard.real.com/player/?cd=firstrun_acct&loader=2.0&LI=en&PV=6.0.12.1053				
203	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/css/hcp.css	06/11/2004 02:51	01/24/2005 16:41:09	hcp[1].css	456NWTMR
204	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/AU_Button_Middle.gif	06/11/2004 02:51	01/24/2005 16:40:18	AU_Button_Middle[1].gif	OH6F8T A3
205	URL	http://v5.windowsupdate.microsoft.com/v5consumer/shared/images/News_bg_RightMiddle.gif	06/11/2004 02:51	01/24/2005 16:40:18	News_bg_RightMiddle[1].gif	CLABK1AB
206	URL	http://www.mozilla.org/images/header_tab.gif	08/31/2004 22:36:50	01/24/2005 16:26:10	header_tab[1].gif	OH6F8T A3
207	URL	http://c.microsoft.com/trans_pixel.aspx?TYPE=SSPV&SOURCE=OFFICE&guid=1f4fc18c-f71e-47fb-8fc9-612f8ee59c61&URI=/en-GB/officeupdate/r	01/25/2005 11:26:03		trans_pixel[4].gif	4963KDYV
208	URL	http://v5.windowsupdate.microsoft.com/library/toolbar/3.0/images/banners/windows_masthead_ltr.gif	06/11/2004 02:51	01/24/2005 16:40:08	windows_masthead_ltr[1].gif	OH6F8T A3
209	URL	http://v5.windowsupdate.microsoft.com/library/toolbar/3.0/subbanner.aspx?t=V2huZG93cy8VcGRhdGU%3d&f=FFFFFF&b=5	01/24/2005 15:44:51	01/24/2005 16:40:09	subbanner[1].jpg	OH6F8T A3
210	URL	http://mozilla.mirrors.tds.net/pub/mozilla.org/firefox/releases/1.0/win32/en-GB/Firefox%20Setup%201.0.exe	11/11/2004 19:26	01/24/2005 16:22:19	Firefox%20Setup%201.0[1].exe	CLABK1AB
211	URL	http://office.microsoft.com/officeupdate/mainsc.js?11,0,6412,0	08/11/2004 01:59	01/25/2005 11:26:02	mainsc[1].js	OH6F8T A3
212	URL	http://office.microsoft.com/officeupdate/catalog/ActiveBundles.xml?632422172995214127	01/06/2005 15:45	01/25/2005 11:26:04	ActiveBundles[1].xml	4963KDYV
213	URL	http://office.microsoft.com/officeupdate/wizardFrame.aspx	01/25/2005 10:57:25	01/25/2005 11:26:22	wizardFrame[1].htm	4963KDYV
214						
215						
216						

Firef downloads | Firef cookies | Firef History | **InternetE cacheIndex** | InternetE index.dat | InternetE History

12.19 Firefox Gif Cache

Picture 212 - 3328DD4Ed01.gif-6

Picture 213 - 83E8FA9Dd01.gif-5

Picture 214 - B2906B79d01.gif-1

Picture 215 - B2906B79d01.gif-2

12.20 FantailFrontView.exe

Picture 216 - FantailFrontView.jpg

12.21 Virus Scanning

```
/media/kali/0C88413D88412714/Program Files/Real/RealPlayer/realplay.exe: Win.Trojan.Tufik-100 FOUND

---------- SCAN SUMMARY ----------
Known viruses: 8655643
Engine version: 1.0.1
Scanned directories: 1431
Scanned files: 15666
Infected files: 1
Data scanned: 3089.49 MB
Data read: 2926.50 MB (ratio 1.06:1)
Time: 1839.126 sec (30 m 39 s)
Start Date: 2023:04:24 05:34:02
End Date:   2023:04:24 06:04:42
```

Figure 17 - Output of ClamScan on mounted drive

Ad-Aware	Undetected	AhnLab-V3	Undetected
Alibaba	Undetected	ALYac	Undetected
Antiy-AVL	Undetected	Arcabit	Undetected
Avast	Undetected	AVG	Undetected
Avira (no cloud)	Undetected	Baidu	Undetected
BitDefender	Undetected	BitDefenderTheta	Undetected
Bkav Pro	Undetected	CMC	Undetected
Comodo	Undetected	CrowdStrike Falcon	Undetected
Cybereason	Undetected	Cylance	Undetected
Cynet	Undetected	Cyren	Undetected
DrWeb	Undetected	Elastic	Undetected
Emsisoft	Undetected	eScan	Undetected

Figure 18 - Virustotal Examination of realplay.exe

12.22 Images of Hard Drive

Figure 19 -John Doe's Hard Drive

Figure 20 - John Doe's Hard Drive

12.23 Clock skew comparison

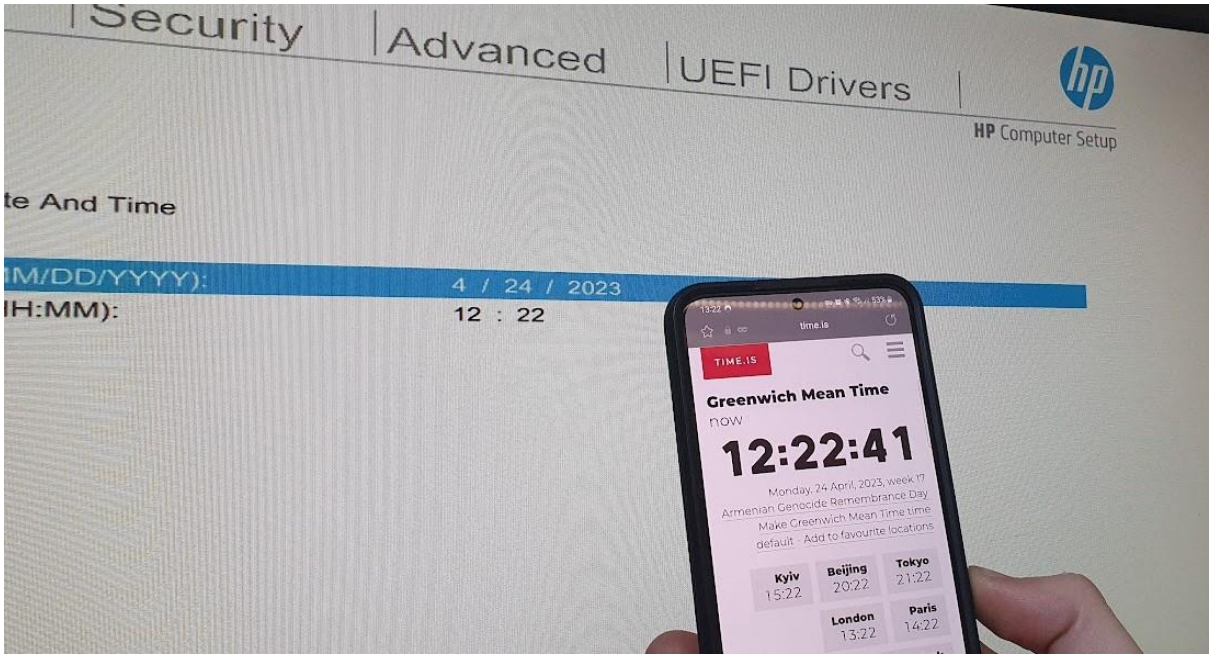


Figure 21 - Clock Skew of John Doe's Machine

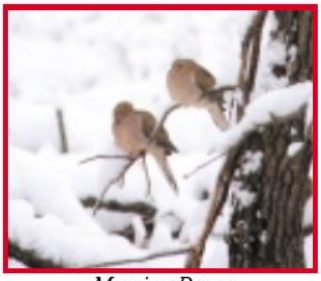
12.24 BirdingGuide.pdf

The Porter County

Birding Guide

Rose-breasted Grosbeak

Baltimore Oriole



Morning Doves

Welcome to the Casual Coast, along the southern shore of Lake Michigan. Home to the Indiana Dunes National Lakeshore, the Indiana Dunes State Park and the most diversified flora and fauna in the Midwest, the dunes are complemented by several nearby inland nature preserves. Together, they provide a unique haven for birds and birders that will make your stay on the Casual Coast both enjoyable and memorable.

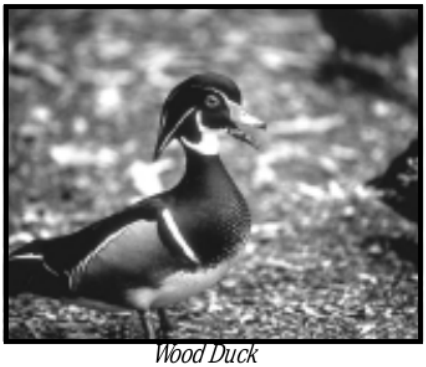
Table of Contents

Bird Migration to the Dunes 1
Weather Effects of Birding 2
Raptor Flights 2
Birding Sites 3-5
Accommodations Chart 6
Porter County Map 7
Welcome to Birding 12
Porter County Birders Checklist 13-19
Acknowledgements 20
Bibliography 20

Photography provided by David Oberst

Bird Migration to the Dunes

"Without doubt the presence of Lake Michigan affects the movement and distribution of birdlife in the Dunes more than any other single factor. The shores of this enormous lake provide leading lines that control flight paths of numerous migrants, and the vast open waters draw legions of transitory and wintering birds. During autumn the elongate north-south boundaries of the lake become airways along which thousands of migrants navigate toward wintering areas. Southbound birds following the shores are ultimately guided into the Dunes Area, at the toe of the lake. This avian convergence at the bottom of Lake Michigan is termed the funneling effect." The funneling effect explains the unusually high diversity of autumn birds in northwest Indiana.



Wood Duck

"Lake Michigan also provides two important avian habitats that are otherwise quite rare in the Midwest: the deep lake and the beach. Waters of the lake attract large numbers of bay and sea ducks, many of which are virtually unrecorded at inland sites in the Midwest. Additionally, the lake attracts a number of rare periodic transients, including the Purple Sandpiper, Red Phalarope, Pomarine Jaeger, Parasitic Jaeger, Great Black-backed Gull, Glaucous Gull, Iceland Gull, Thayer's Gull, Sabine's Gull, Little Gull, Black-legged Kittiwake. Extensive beaches provide resting and feeding areas for shorebirds, especially those species preferring sand rather than mudflats, e.g., Sanderling, Red Knot, and Baird's Sandpiper.

"The deep waters of Lake Michigan also constitute a significant obstacle to migrants. During nocturnal flights many north-bound passerines overfly land's end and daybreak finds them over the lake. When landfall is visible, they often fly directly to the shore, where they immediately land for rest and feeding.

This effect generates an anomalously high concentration of passerines in parks and woodlands immediately adjacent to the lake" (Brock 5).

Weather Effects of Birding

Photo by: David Oberst

Common Loon

"That most migrants fly during fair weather when trailing winds are available is well documented in ornithology textbooks. Along the shores of southern Lake Michigan this principle is most clearly evident during the fall. Bennett (1952) discovered that the number of fall passerine migrants along the Chicago lakefront tripled (compared to numbers on the day immediately prior to frontal passage) on the days immediately following passage of cold fronts.

"Similarly, the most exciting autumn birding in the Dunes occurs during or immediately following the passage of cold fronts. In addition to the passerine waves that follow the fronts, northerly winds stimulate a general longshore movement of water birds.

"On such occasions, an endless stream of loons, ducks, gulls, and terns often flows along the lakefront." (Brock 6).

Raptor Flights

Photo by: David Oberst

Cooper's Hawk

"Spring hawk flights along the High Dunes must be attributed to the presence of Lake Michigan. Northbound hawks, especially buteos, enjoy a leisurely spring migration, wafting effortlessly over the Midwest on balmy southerly winds. These soaring raptors, however, display a marked aversion to flying over large bodies of water. Consequently, upon encountering Lake Michigan the northward movement is abruptly truncated and the birds turn to a course paralleling the shoreline. Thus, the migrating hawks are concentrated in a belt immediately adjacent to the lake. In effect, therefore, the High Dunes rest directly below a narrow flight corridor that extends along the lake's southern margin." (Brock 8).

During March and April, the major flight months, good daily flights can consist of 100 to 300 birds. Fall flights are limited; the most notable species observed is the Peregrine Falcon, with flight peaks in early October.

Birding Sites

Beverly Shores A

Whether you drive or walk, Beverly Shores will produce a number of species, seen or heard, that will delight the birder. This "island" in the National Lakeshore supports habitats such as an interdunal marsh, lake, beach and wooded dune. The interdunal marsh offers excellent habitat for passerines as well as nesting species. Beverly Drive produces many opportunities to see and hear several species of birds. Best observation time is all year.

Types of migration birds seen are loons, waterfowl and gulls. Birds seen and heard in late spring and summer are Willow Flycatcher and warblers.

Coffee Creek Watershed Preserve B

Photo by: J.F. New & Associates

The preserve is a 167-acre home to over 500 native plants, trees, sedges and forbs as well as over 4 miles of trails. Wetlands can be found throughout the landscape including swamps, marshes, wet prairies and fens. Birds commonly seen at Coffee Creek include several species of woodpeckers such as the Red-bellied woodpecker, Downy and Hairy Woodpeckers. Herons, hawks, and wood ducks, as well as the state endangered marsh wren can be seen in their respective habitats throughout the preserve. Bridge 5, near the southern end of the corridor is a great place to see Cardinals, Indigo Bunting and the Tufted Titmouse. From the Water Plaza, at the northern area of the preserve, Belted Kingfishers can be seen fluttering near the wetlands. Don't miss the Killdeer who often nests near Phillips Pond.

Photo by: Robert Sirko

Cowles Bog C

Wooded edges, savannah, marshes and wooded swamp provide ideal habitats for Common Yellowthroat, Sora, Virginia Rail, American Woodcock, Swamp Sparrow, warblers, and wren. Named after the Father of Plant Succession, Professor Henry Cowles, this area is perfect for the nature lover in general. For more information call 219/926-7561 ext. 225.

PORTER BEACH HAWK WATCH D

Formerly known as the Johnson Beach hawk watch, this stabilized dune allows prime viewing of several hawk flights, especially in the spring.

WEST BEACH & LONG LAKE E

Following the West Beach trails which take you by the beach, an interdunal pond, and wooded dune, one may discover a Hairy Woodpecker or two and perhaps a Common Yellowthroat. Long Lake may grace one with the presence of Least Bitterns, warblers and scores of waterfowl. A parking fee is required in the summer.

INDIANA DUNES STATE PARK F

Photo by: Wendy Smith

Indiana Dunes State Park encompasses a variety of habitats: climax forest, savannah, marram grass covered dunes, blowouts, beaches and marshes. Several trails run through these areas, providing opportunities to view and hear field sparrows, fly-catchers, thrushes, warblers, hawks, owls and more. Optimal observation areas would include the forest and the marsh-wood boundary along with trails 2 and 10. Trail 9 allows for eye level bird watching because of its higher elevation. Wilson Shelter also attracts several birds during spring migration. Entrance fee.

PORT OF INDIANA G

During winter one can best observe the Horned Larks, Lapland Longspurs, Snow Buntings, Common Mergansers and bay ducks from the public access area of the Port of Indiana. On windy days, birds fly almost directly over the public access area.

SUNSET HILL FARM COUNTY PARK H

Photo by: Wayne Wodridge

Porter County's ongoing commitment to ecological restoration, this former 235-acre dairy farm is filled with woods, meadows, and three ponds. Part-time naturalists are available during three seasons of the year to offer a wide range of opportunities including: natural science projects on ponds, trees, birds, wildflowers or fields. With over ten miles of trails, bird watchers, nature photographers, or woods walk observers can enjoy endless outdoor opportunities. Birds commonly seen at Sunset Hill Farm include: field sparrows, flycatchers, thrushes, warblers, hawks, owls, ducks, geese and more.

TALTREE ARBORETUM & GARDENS I

Photo by: David Oberst

Taltree Arboretum & Gardens offers the birder a wide variety of habitats to explore. Prairie, Savanna, Woods, Wooded Edges, Swamp, Pond and open Wetland can all be easily observed at this 300+acre site. With over 4 miles of trail, Taltree is a special place to bird. For more information on special birding opportunities visit them at www.taltree.org. Entrance fee. (Closed Mondays)

ROGERS LAKEWOOD PARK J

A 122-acre facility of the Valparaiso Park Department, it is home to hiking trails, a beach, fishing, boating, and swimming. Birds commonly seen at Rogers-Lakewood Park include: native waterfowl such as Canada geese and mallard ducks, herons, hawks, and common songbirds. Daily entry fees are collected from Memorial Day through Labor Day and are charged by the carload.

JASPER-PULASKI FISH AND WILDLIFE AREA K

The Jasper-Pulaski Fish and Wildlife Area has long been the sight of the annual migration of Sandhill Cranes. View this awesome spectacle during the fall to see thousands of these birds as they rest from their journey and feed. Springtime also brings the cranes, but in a lesser amount. Don't forget the binoculars or a scope! During the spring and summer, the area boasts ducks, geese, and egrets that are viewable from the observation trail. Jasper-Pulaski Fish and Wildlife Area is also a public hunting area. Please check in at the headquarters to obtain information about the affected areas before setting out.

Photo by: National Lakeshore

HERON ROOKERY L

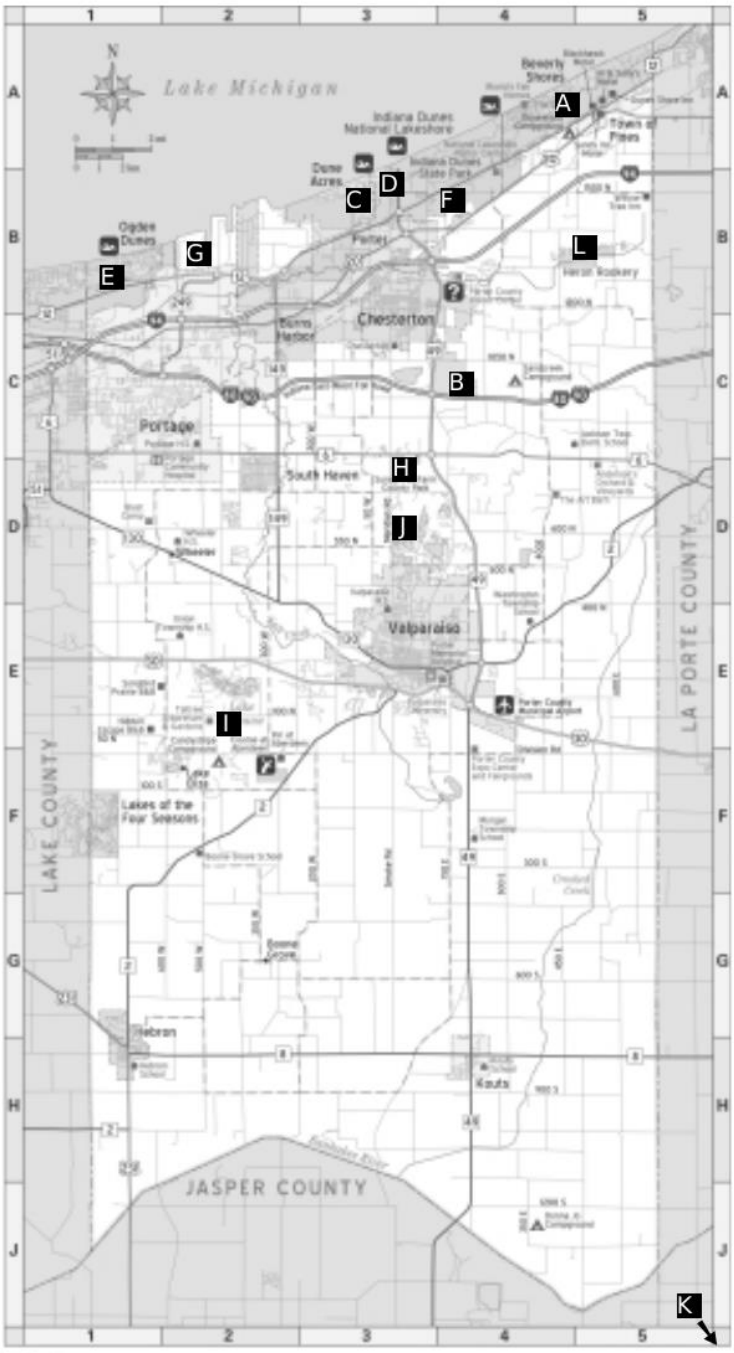
Observe the Great Blue Heron in the spring and summer at this mature woodland located along the Little Calumet River. Migrant warblers are present in the spring along the channel among other species.

Accommodations Chart

$$	**Econo Lodge** State Road 49 and Indian Boundary Road	219/929-4416 or 800-55-ECONO	Chesterton
$$$$	**Hilton Garden Inn** State Road 49 and I-80/90	219/983-9500 or 800-774-1500	Chesterton
$$$	**Indian Oak Resort & Spa** State Road 49 and Indian Boundary Road	219/926-2200 or 800-552-4232	Chesterton
$$	**Super 8 Motel** State Road 49 and Indian Boundary Road	219/929-5549 or 800-800-8000	Chesterton
$	**Castaway Motel** State Road 249 and U.S. Highway 20	219/762-4633	Portage
$$$	**Comfort Inn** State Road 249 and I-80/90	219/763-7177 or 800-228-5150	Portage
$$	**Days Inn** State Road 249 and U.S. Highway 20	219/762-2136 or 800-325-2625	Portage
$	**Dollar Inn** State Road 249 and U.S. Highway 20	219/763-6601	Portage
$	**Don's Motel** State Road 249 and U.S. Highway 20	219/762-3317	Portage
$$$	**Hampton Inn** State Road 249 and U.S. Highway 20	219/764-1919 or 800-HAMPTON	Portage
$$$	**Holiday Inn Express** State Road 249 and I-80/90	219/762-7777 or 800-HOLIDAY	Portage
$$	**Ramada Inn** State Road 249 and U.S. Highway 20	219/762-5546 or 800-437-5145	Portage
$$	**Super 8 Motel** State Road 249 and U.S. Highway 20	219/762-8857 or 800-800-8000	Portage
$$$	**Spring House Inn** U.S. Highway 20 and Mineral Springs Road	219/929-4600 or 800-DUNES-00	Porter
$$	**Al & Sally's Motel** U.S. Highway 12	219/872-9131	The Pines
$$	**Blackhawk Motel** U.S. Highway 12	219/872-8656 or 800-908-8656	The Pines
$	**Sands Inn Motel** U.S. Highway 20 and State Road 520	219/872-0717	The Pines
$$$$	**Courtyard by Marriott** State Road 49 and U.S. Highway 30	219/465-1700 or 800-321-2211	Valparaiso
$$$	**Fairfield Inn** State Road 49 and U.S. Highway 30	219/465-6225 or 800-228-2800	Valparaiso
$$$$	**Hampton Inn & Suites** State Road 49 and U.S. Highway 30	219/531-6424 or 800-HAMPTON	Valparaiso
$$$	**Holiday Inn Express** U.S. Highway 30 and State Road 2	219/464-8555 or 800-HOLIDAY	Valparaiso
$$	**Super 8 Motel** State Road 49 and State Road 2	219/464-9840 or 800-800-8000	Valparaiso
$	**Valparaiso Motel** U.S. Highway 30 and State Road 2	219/462-2752	Valparaiso
$$	**Dunes Shore Inn** U.S. Highway 12, Beverly Shores	219/879-9029	Bed & Breakfasts
$$$$	**Gray Goose Inn** State Road 49 and Indian Boundary Road, Chesterton	219/926-5781	Bed & Breakfasts
$$$$	**Hidden Escape** County Road 50 North, Valparaiso/Wheeler	219/759-4701	Bed & Breakfasts
$$$$	**The Inn at Aberdeen** State Road 2, Valparaiso/Boone Grove	219/465-3753	Bed & Breakfasts
$$$$	**Songbird Prairie** County Road 600 West, Valparaiso/Wheeler	219/759-4274 or 877-SONGBRD	Bed & Breakfasts
$$$	**Willow Tree Inn** County Road 1500 North, The Pines	219/879-6790	Bed & Breakfasts
$17+	**Candystripe Campground** Division Road, Valparaiso/Lake Eliza	219/462-0784	Campgrounds
$19+	**Donna Jo Campground** County Road 350 East, Kouts	219/766-2186	Campgrounds
$10+	**Dunewood Campground** U.S. Highway 12, Indiana Dunes National Lakeshore, Beverly Shores	219/926-7561 or 800-959-9174	Campgrounds
$17+	**Sand Creek Campground** County Road 350 East, Chesterton	219/926-7482	Campgrounds
$7+	**State Park Campground** State Road 49, Indiana Dunes State Park, Chesterton	219/926-4520	Campgrounds
$28	**Yogi Bear's Jellystone Camp Resort** Old Porter Road, Portage	219/762-7757	Campgrounds

$	$20-$40 price per room	$$	$40-$60 price per room
$$$	$60+ price per room	$$$$	$80+ price per room

Porter County Map



A	Beverly Shores	G	Port of Indiana
B	Coffee Creek Watershed Preserve	H	Sunset Hill Farm County Park
C	Cowles Bog	I	Taltree Arboretum & Gardens
D	Porter Beach	J	Rogers Lakewood Park
E	West Beach	K	Jasper-Pulaski Fish & Wildlife Area
F	Indiana Dunes State Park	L	Heron Rookery

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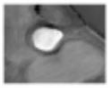

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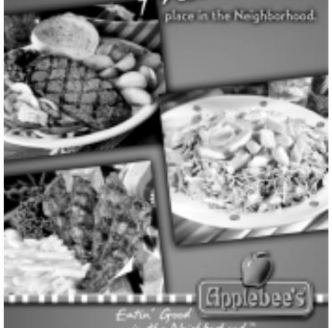

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Welcome to Birding

Welcome to the wonderful world of birding!
If you like watching birds in your backyard or you want to travel the world to see all 10,000 bird species, use these ten tips to get started! You might also want to visit WildBirds.com, a great site for newer birders!

Hint #1: *You need a field guide for your area. A field guide is a book with pictures of the birds and tips for identifying them.*
Hint #2: *You need a binocular to see the birds. (Hint: you'd need four eyes to use binoculars.)*
Hint #3: *You need to know what to expect in your area. Checklists of birds in your area will tell you this. See pages 13-19 for the Porter County Bird Checklist.*
Hint #4: *You need to be able to find the birds. To do this, you should learn about the habitat each species of bird prefers. See page 13 for Habitat information and the Bird Checklist for where to spot each species.*
Hint #5: *Join a group of other birders. Birders are very friendly and helpful. They are always willing to share their knowledge. We were all beginners once.*
Hint #6: *Try a birding trip or tour. Local bird trips are sometimes advertised in the newspapers. Check out the Birding Sites information on pages 3-5 for information on local bird treks.*
Hint #7: *Read about birds. There are many good magazines about birds and birding. For North American birds: Birder's World, Bird Watcher's Digest, Birding and WildBird are magazines you might like.*
Hint #8: *Bring the birds to you. You can attract birds to your yard with just a little work. Planting the right flowers will attract hummingbirds. Sunflower seeds will bring lots of new birds to your house. You might even want to build a bluebird house.*
Hint #9: *Record your bird sightings. You might want to keep a "diary" or list of the birds you see in your yard. You can also keep a list of birds you see in your town or on your vacation. Birders often keep lists for their county, state or country. The Porter County Bird Checklist can be found in this guide on pages …*
Hint #10: *HAVE FUN. ASK LOTS OF QUESTIONS.*
BE KIND TO BIRDS.

These hints are from the popular birding website - Birding.com

SEASONAL ABUNDANCE CODES:

A = ABUNDANT:	*Often observed and widespread throughout county*
C = COMMON:	*Frequent in appropriate habitat*
U = UNCOMMON:	*Infrequent in appropriate habitat*
R = RARE:	*Unlikely, but possible in county*

HABITAT TYPES & LOCATIONS

L-LAKE; B-BEACH: *Lake Michigan and its beachfront including: Beverly Shores, Indiana Dunes State Park, Indiana Dunes National Lakeshore*

D-DUNES: *Indiana Dunes State Park, Indiana Dunes National Lakeshore*

F-FIELDS: *Cultivated and roadside fields, open areas and prairies such as those found at Taltree Arboretum & Gardens, Indiana Dunes National Lakeshore, Sunset Hill Farm County Park and Coffee Creek Watershed Preserve*

FL-FLIGHT: *Observed in flight*

M-MARSH: *Areas regularly inundated by shallow water for much of the year: Interdunal marshes are found along Lake Michigan at Beverly Shores, Indiana Dunes National Lakeshore & Indiana Dunes State Park. Marshes are also found along county rivers, the most notable being the Kankakee River at the southern border of the county and at Kankakee Fish & Wildlife Area in neighboring Starke County*

P-PONDS: *Permanent bodies of water that include small lakes, ponds and wetlands: Long Lake, Taltree Arboretum & Gardens, Rogers Lakewood Park, Coffee Creek Watershed Preserve, Sunset Hill Farm County Park and Indiana Dunes National Lakeshore*

S-SWAMPS: *Wetlands that are poorly drained with trees growing throughout. There are numerous types of swamps in the county and they can be found at: Indiana Dunes State Park, Indiana Dunes National Lakeshore, Beverly Shores (along Beverly Drive), Coffee Creek Watershed Preserve, Taltree Arboretum & Gardens and the Kankakee River Floodplain*

W-WOODS: *Beverly Shores, Indiana Dunes National Lakeshore, Sunset Hill Farm County Park, Taltree Arboretum & Gardens, Indiana Dunes State Park, Coffee Creek Watershed Preserve*

WE-WOODED EDGES: *Coffee Creek Watershed Preserve, Taltree Arboretum & Gardens, Sunset Hill Farm County Park, Indiana Dunes National Lakeshore, and Indiana Dunes State Park*

U-URBAN: *Urban areas throughout the county*

Porter County Birders Checklist

Bird	SP	S	F	W	Habitat
	Seasons				
Loon & Grebes					
❑ Common Loon	C	R	C	R	L
❑ Pied-billed Grebe	C	C	C	R	M,P
❑ Horned Grebe	U		C	R	L,H
Cormorants					
❑ Double-crested Cormorant	C	U	C	R	L
Bitterns & Herons					
❑ American Bittern*	U	U	U	R	M
❑ Least Bittern*	R	R	R		M
❑ Great Blue Heron	A	A	A	R	M,P
❑ Great Egret	C	U	C	R	M
❑ Green Heron	C	C	C		M,P
❑ Black-crowned* Night Heron	U	U	U		M
❑ Yellow-crowned* Night Heron	U	U	U		M
Swans, Geese & Ducks					
❑ Mute Swan	C	C	C	C	L,P
❑ Tundra Swan	U		U	R	L
❑ Canada Goose	A	A	A	A	L,M,P
❑ Wood Duck	A	A	C	R	P,S
❑ Green-winged Teal	C	R	U	R	M,P
❑ Black Duck	C	R	C	U	L,M
❑ Mallard	A	A	A	C	L,P,M,
❑ Northern Pintail	U	R	U	R	M,P
❑ Blue-winged Teal	C	U	C	R	M,P
❑ Northern Shoveler	C	R	U	R	M,P
❑ Gadwall	C	R	C	R	M,P
❑ American Wigeon	C	R	C	R	M,P
❑ Canvasback	U	R	R	U	M,P
❑ Redhead	C	R	U	R	L,P
❑ Ring-necked Duck	C	R	C	R	M,P
❑ Greater Scaup	U	R	U	U	L,P
❑ Lesser Scaup	C	R	C	U	L,P
❑ Black Scoter	R	R	U	R	L
❑ White-winged Scoter	R	R	U	R	L
❑ Common Goldeneye	C	R	C	A	L
❑ Bufflehead	C	R	C	A	L
❑ Hooded Merganser	U	R	U	R	L
❑ Common Merganser	U	R	U	C	L
❑ Red-breasted Merganser	C	R	C	U	L,P
❑ Ruddy Duck	C	R	U	R	L,P
Vultures					
❑ Turkey Vulture	A	A	C	R	FL
Eagles & Hawks					
❑ Bald Eagle*	U	R	R	R	FL
❑ Northern Harrier*	U	R	U	R	F
❑ Sharp-shinned Hawk	C	C	C	C	WE,W
❑ Cooper's Hawk	C	C	C	C	WE,W
❑ Northern Goshawk	R	R	R	R	W
❑ Red-shouldered Hawk	U	R	U	R	WE
❑ Broad-winged Hawk	U	U	U	U	W

* State endangered

PORTER COUNTY BIRDERS CHECKLIST

Bird	SP	S	F	W	Habitat
	Seasons				
❑ Red-tailed Hawk	C	C	C	C	F,WE
❑ Rough-legged Hawk	U	U	U	U	F,M
Osprey & Falcons					
❑ Osprey*	U	R	U	R	L
❑ American Kestrel	C	C	C	C	F
❑ Peregrine Falcon*	U	U	U	U	FL
Quail, Pheasant, Turkey					
❑ Northern Bobwhite	U	U	U	U	F,WE
❑ Ring-necked Pheasant	U	U	U	U	F
❑ Wild Turkey	U	U	U	U	F,W
Rails & Coots					
❑ Virginia Rail*	U	U	U	U	M
❑ Sora Rail	C	U	U		M
❑ Common Moorhen	R	R	R		M
❑ American Coot	A	A	A	U	M,P,L
Crane					
❑ Sandhill Crane (Jasper-Pulaski Site)	C	U	C	U	F,M
Plovers					
❑ Black-bellied Plover	U	R	U		B,P
❑ American Golden Plover	C	R	U		B,P
❑ Semipalmated Plover	U	R	U		B,P
❑ Piping Plover*	R	R			B
❑ Killdeer	A	A	C	R	M,D,F
Sandpipers & other Shorebirds					
❑ GreaterYellowlegs	U	R	R		M,P
❑ Lesser Yellowlegs	U	U	U		M,P
❑ Solitary Sandpiper	C	U	U		M
❑ Spotted Sandpiper	C	C	U		M,S
❑ Semipalmated Sandpiper	U	R	C		B,P
❑ Least Sandpiper	U	U	U		B,P
❑ Pectoral Sandpiper	C	R	U		M,P
❑ Baird's Sandpiper		R	U		B
❑ Ruddy Tumstone	U	R	U		B
❑ Sanderling	R	C	C		B
❑ Dunlin	U	R	U		B,P
❑ Red Knot	R		R		B
❑ Purple Sandpiper	R		R		B
❑ Short-billed Dowitcher	R	R	R		P
❑ Red Phalarope			U		L,B
❑ Common Snipe	U	R	U	R	M,P
❑ American Woodcock	C	C	C	R	S,W
Jaegers					
❑ Parasitic Yaeger			U		L,B
❑ Pomarine Yeager			R		L,B
Gulls					
❑ Little Gull	R	R	U	R	L
❑ Bonaparte's Gull	C	R	C	U	L,B
❑ Laughing Gull	U	R	R	R	L
❑ Ring-billed Gull	A	C	A	C	L,B

* State endangered

Porter County Birders Checklist

Bird	SP	S	F	W	Habitat
	Seasons				
❑ Herring Gull	A	U	A	A	L,B
❑ Thayer's Gull	R		R	U	L,B
❑ Iceland Gull	U		R	R	L
❑ Glaucous Gull	R		R	U	L,B
❑ Great Black-backed Gull	U	R	R	U	L
❑ Sabine's Gull		U	R		L
❑ Black-legged Kittiwake	R	R	U	R	L
Terns					
❑ Caspian Tern	C	U	R	R	L,B
❑ Common Tern	C	R	U		L,B
❑ Forster's Tern	U	R	U		L,B
❑ Black Tern*	R	U	R		M,B
Doves					
❑ Rock Dove	C	C	C	C	U
❑ Mourning Dove	A	A	A	A	F,W
Cuckoos					
❑ Black-billed Cuckoo	U	U	U		WE
❑ Yellow-billed Cuckoo	U	U	U		WE
Owls					
❑ Short-eared Owl	R	R	R	U	F,M
❑ Great Horned Owl	C	C	C	C	W
❑ Snowy Owl			R	R	B
❑ Barred Owl	C	C	C	C	S
❑ Northern Saw-whet Owl	R			R	W
❑ Eastern Screech Owl	C	C	C	C	W
Goatsuckers					
❑ Common Nighthawk	C	A	C		WE,F
❑ Whip-poor-will	C	U	U		W
Swifts					
❑ Chimney Swift	A	A	A		U
Hummingbirds					
❑ Ruby-throated Hummingbird	C	C	C		F,WE
Kingfishers					
❑ Belted Kingfisher	C	C	C	R	M,P
Woodpeckers					
❑ Red-headed Woodpecker	C	C	C	C	W
❑ Red-bellied Woodpecker	C	C	C	C	W
❑ Yellow-bellied Sapsucker	C	R	U	R	W
❑ Downy Woodpecker	C	C	C	C	W,WE
❑ Hairy Woodpecker	U	U	U	U	W
❑ Northern Flicker	C	C	C	U	W
❑ Pileated Woodpecker	U	U	U	U	W

* State endangered

Porter County Birders Checklist

Bird	Seasons SP	S	F	W	Habitat
Flycatchers					
❑ Olive-sided Flycatcher	U	R	U		S
❑ Eastern Wood Pewee	C	C	C		W
❑ Yellow-bellied Flycatcher	U	R	R		W
❑ Acadian Flycatcher	C	C	R		W
❑ Alder Flycatcher	U	U	U		M
❑ Willow Flycatcher	C	U	R		M
❑ Least Flycatcher	C	R	C		W,WE
❑ Eastern Phoebe	C	C	U		F,W,WE
❑ Great-crested Flycatcher	C	C	U		W
❑ Eastern Kingbird	C	C	U		F,M
Larks					
❑ Horned Lark	C	U	U		F
Swallows					
❑ Purple Martin	C	C	C		F,P
❑ Tree Swallow	C	A	C		F,M
❑ Rough-winged Swallow	U	U	U		F,M
❑ Bank Swallow	C	C	C		B,D
❑ Cliff Swallow	R	R	R		F
❑ Barn Swallow	C	A	C		F
Jays & Crows					
❑ Blue Jay	A	A	A	A	W,WE
❑ American Crow	A	A	A	A	ALL
Titmice					
❑ Black-capped Chickadee	C	C	C	C	W
❑ Tufted Titmouse	C	C	C	C	W
Nuthatches					
❑ Red-breasted Nuthatch	U	R	U	U	W
❑ White-breasted Nuthatch	C	C	C	C	W
Creepers					
❑ Brown Creeper	C	R	C	U	W
Wrens					
❑ Carolina Wren	U	U	U	U	WE,U
❑ House Wren	C	C	C		WE,U
❑ Winter Wren	U	R	U	R	W
❑ Marsh Wren*	U	U	U		M
❑ Sedge Wren*	U	R	R		F,M
Old World Warblers, Thrushes & Allies					
❑ Golden-crowned Kinglet	C	R	C	R	W
❑ Ruby-crowned Kinglet	C	R	C	R	W
❑ Blue-gray Gnatcatcher	C	U	R		W
❑ Eastern Bluebird	C	C	C	U	F,WE
❑ Veery	U	U	U		W
❑ Gray-cheeked Thrush	U		U		W

* State endangered

PORTER COUNTY BIRDERS CHECKLIST

Bird	SP	S	F	W	Habitat
	Seasons				
❑ Swainson's Thrush	U		C		W
❑ Hermit Thrush	C		C	R	W
❑ Wood Thrush	U	U	U	R	W
❑ American Robin	A	A	A	U	F,W
Thrashers					
❑ Gray Catbird	C	C	C		WE
❑ Northern Mockingbird	U	U	U	R	F,WE
❑ Brown Thrasher	C	C	C	R	WE
Waxwings					
❑ Cedar Waxwing	C	U	C	U	W,M
Starlings					
❑ European Starling	A	A	A	A	ALL
Vireos					
❑ White-eyed Vireo	U	R	U		W
❑ Solitary Vireo	U	R	U		W
❑ Yellow-throated Vireo	C	U	U		W
❑ Warbling Vireo	C	C	U		WE,P
❑ Philadelphia Vireo	U	R	U		W
❑ Red-eyed Vireo	C	C	C		W
Warblers					
❑ Blue-winged Warbler	C	U	U		WE
❑ Golden-winged* Warbler	R	R	R		WE
❑ Tennessee Warbler	C	R	C		W
❑ Nashville Warbler	C	R	C		W
❑ Northern Parula Warbler	U	R	R		W
❑ Orange-crowned Warble	U	R	U		W
❑ Yellow Warbler	C	C	R		WE,M
❑ Chestnut-sided Warbler	C	R	U		W,WE
❑ Magnolia Warbler	C	R	C		W
❑ Cape May Warbler	C	R	C		W
❑ Yellow-rumped Warbler	C	R	C		W,M
❑ Black-throated Green Warbler	C	R	C		W
❑ Blackburnian Warbler	C	R	C		W
❑ Prairie Warbler	U	U	R		D
❑ Palm Warbler	C	R	C		WE,M
❑ Bay-breasted Warbler	C	R	C		W
❑ Blackpoll Warbler	C	R	C		W
❑ Cerulean Warbler	C	C	R		W
❑ Black and White Warbler	C	R	C		W
❑ American Redstart	C	U	C		W
❑ Ovenbird	C	C	U		W
❑ Northern Waterthrush	U	R	U		WE,M
❑ Louisiana Waterthrush	U	R	U		S
❑ Mourning Warbler	R	R	R		WE

* State endangered

Porter County Birders Checklist

Bird	Seasons SP	S	F	W	Habitat
❑ Common Yellowthroat	C	C	C		M
❑ Hooded Warbler	U	R	R		S
❑ Wilson's Warbler	C	R	C		W
❑ Canada Warbler	C	R	C		W
❑ Yellow-breasted Chat	U	R	R		M,WE
Tanagers					
❑ Scarlet Tanager	C	C	U		W
Cardinals & Buntings					
❑ Northern Cardinal	A	A	A	A	F,WE
❑ Rose-breasted Grosbeak	C	C	C		W
❑ Indigo Bunting	C	C	C		F,WE
❑ Dickcissel	U	U	U		F
Sparrows					
❑ Eastern Towhee	C	C	C	R	WE
❑ Tree Sparrow	C	C	C		F,WE
❑ Chipping Sparrow	C	C	C		F,WE,D
❑ Field Sparrow	C	C	C	U	F,D,M
❑ Vesper Sparrow	U	U	U		F,D
❑ Savannah Sparrow	U	U	U		F,D
❑ Grasshopper Sparrow	U	U	U		F
❑ Fox Sparrow	C		C	R	WE
❑ Song Sparrow	C	C	C	U	M,WE
❑ Lincoln's Sparrow	U		U		W
❑ Swamp Sparrow	C	C	C	U	M,S
❑ White-throated Sparrow	C		C	R	WE
❑ White-crowned Sparrow	C		C	R	WE
❑ Dark-eyed Junco	C		C	A	WE
❑ Lapland Longspur	R		R	R	B
❑ Snow Bunting	R		U	U	F,B
Blackbirds & Orioles					
❑ Bobolink	C	C	R		F
❑ Red-winged Blackbird	A	A	A	U	F,M,S
❑ Eastern Meadowlark	C	C	C		F
❑ Western Meadowlark	R	R	R		F
❑ Yellow-headed Blackbird*	R	R	R		M
❑ Rusty Blackbird	U	R	U	R	S
❑ Common Grackle	C	C	C	U	M,F
❑ Brown-headed Cowbird	C	C	C	U	W,WE
❑ Baltimore Oriole	C	C	U		W,WE
❑ Orchard Oriole	U	U	U		W,WE
Finches					
❑ Purple Finch	U	U	U	U	W
❑ House Finch	A	A	A	A	U
❑ Common Redpoll	R		R	U	WE
❑ Pine Siskin	R		R	U	WE
❑ American Goldfinch	A	A	A	A	F,WE,U
❑ Evening Grosbeak	R		R	U	WE
Old World Sparrows					
❑ House Sparrow	A	A	A	A	U

* State endangered

ACKNOWLEDGEMENTS

The Porter County Convention, Recreation & Visitors Commission (PCCRVC) would like to give special thanks to David Oberst, Director of Education and Naturalist at Taltree Arboretum & Gardens, and Taltree board member, Laurie Eberhardt, Ph.D., for their help in creating this guide. The PCCRVC is truly grateful for their help.

TALTREE ARBORETUM & GARDENS: "A SPECIAL PLACE TO BIRD"

Taltree offers the birder a wide variety of habitat at one location: Prairie, Savanna, Woods, Wooded Edges, Swamp, Pond and open Wetland, can all be easily observed at this 300+acre site. More than 60 species of birds have been identified on Taltree's property. The Bluebird Trail derives its name from the numerous Bluebird nesting boxes along its route, Eastern Bluebirds are a common site at Taltree. The trail directs visitors along the perimeter of the prairie in an effort to reduce disturbance to wildlife and restore habitat to natural nesting conditions. As a result grassland-nesting birds, such as the Bobolink, that need a large area of undisturbed habitat for survival have abundantly returned. This trail also traverses a 7-acre open wetland, which holds abundant migratory waterfowl in the spring. Wood Ducks are a common site as they utilize nesting boxes in the wetland. In 2002, a Hooded Merganser successfully nested at Taltree. Migrating spring warblers can be viewed in abundance along the Heron Pond Woodlands and Owl Trails. Taltree is an excellent site to view raptors. Red-tailed, Cooper's and Sharp-shinned Hawks are year round residents. During the winter and early spring months a pair of Northern Harrier Hawks regularly patrol the open space at the arboretum. Wild Turkey, Ring-necked Pheasant and Bobwhite Quail are also present. Other birds of particular interest are American Woodcocks, Eastern Meadowlarks, Dickcissels, Indigo Buntings, Rose-breasted Grosbeaks, Baltimore Orioles and the Savanna and Grasshopper Sparrows. Taltree Arboretum & Gardens: A Natural Inspiration… .

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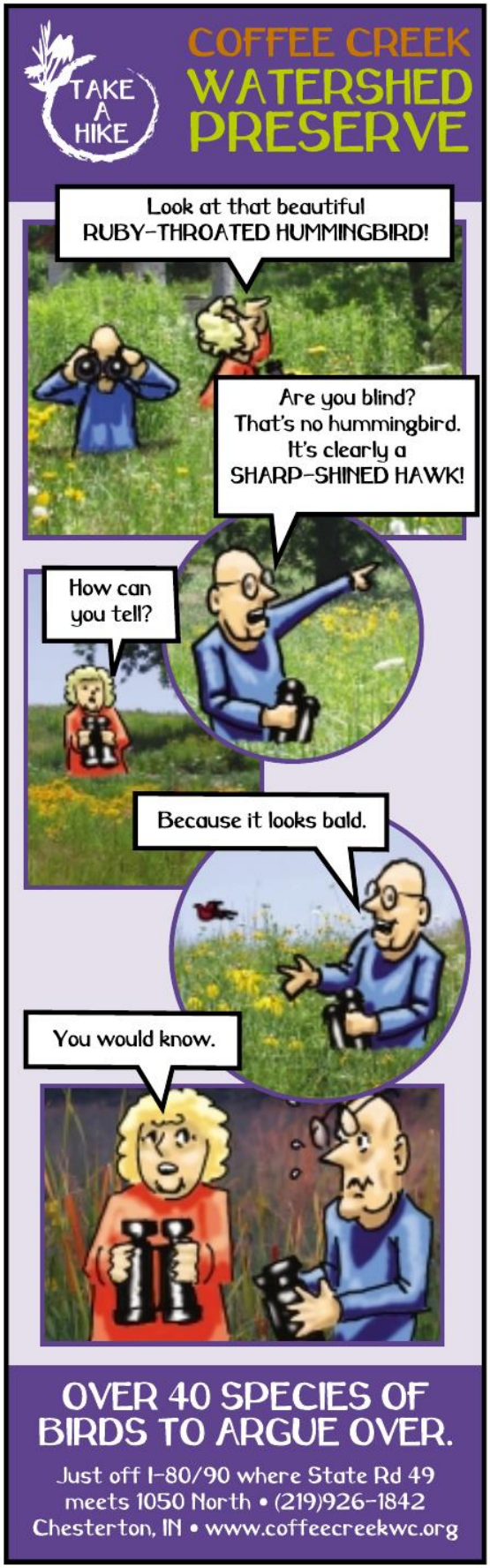
Special thanks to Ken Brock for permission to use information about birding in the Indiana Dunes directly from his book, ***Birds of the Indiana Dunes.***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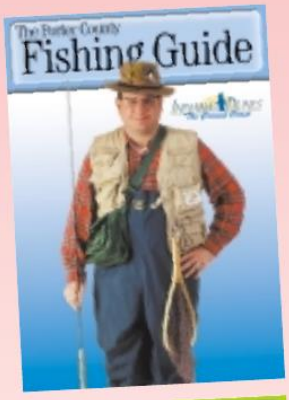

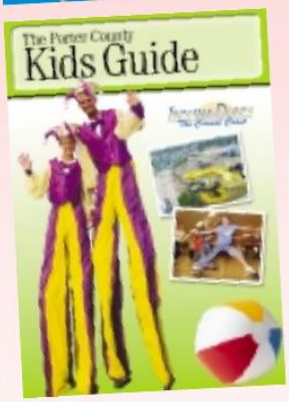

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The Casual Coast

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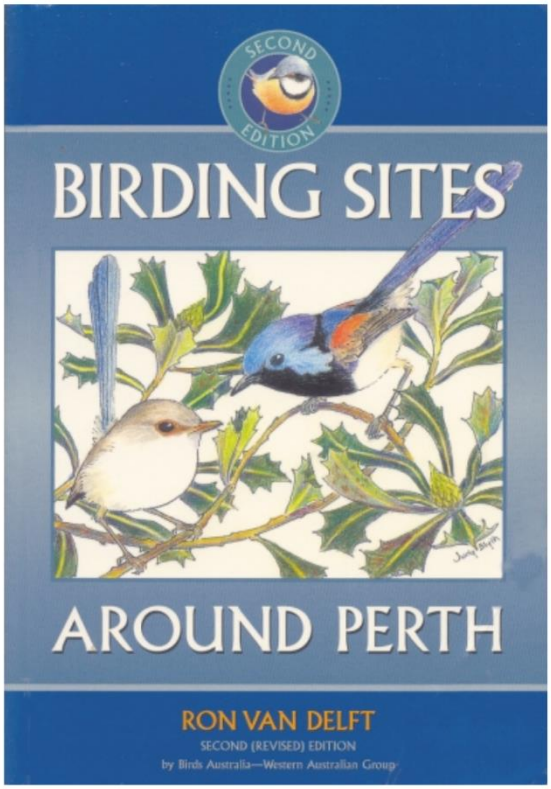

Number 57ab in a series of Bird Guides of Western Australia

Birding Sites Around Perth is a comprehensive guide to Perth's best bird watching sites, including Kings Park, John Forrest National Park and Rottnest Island.

This revised and enlarged edition describes forty-six sites within a 60 kilometre radius of the city, with excellent location maps, lists of birds regularly seen, and notes on species of special interest. Also provided are suggested bird watching tours for local enthusiasts and visitors, and a wealth of information on endemic species. Over 200 birds are featured in 165 pages.

Illustrated throughout with colour photographs and pencil drawings, *Birding Sites Around Perth* is an excellent introduction to bird watching and to Perth's wildlife heritage.

Copies of the book are available for purchase from the Birds Australia office during office hours or available by post.

WHAT IS BIRDS AUSTRALIA?

Birds Australia is a non-profit national organisation working for the enjoyment, study and conservation of Australia's birds. The WA group of Birds Australia has members statewide and offers a variety of activities for members, including conservation and research projects.

Activities and services include excursions, camp-outs, bird surveys and social activities. We also have a library, books for sale and information about birds.

To view our full range of bird guides and bird lists, visit our web site.

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UNIVERSITY of CALIFORNIA
BOTANICAL GARDEN
NEWSLETTER

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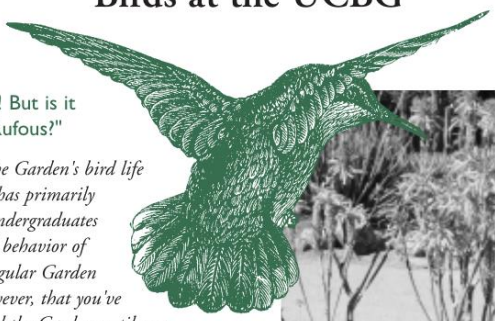
Birds at the UCBG



"It's a hummingbird! But is it Anna's, Allen's or Rufous?"

Academic interest in the Garden's bird life over the last few years has primarily been associated with undergraduates studying the territorial behavior of hummingbirds. Any regular Garden visitor can tell you however, that you've never really experienced the Garden until you have taken the time to sit and just watch the birds, listen to their songs and enjoy the way in which they use the Garden! Encouraged by the vast plant variety and habitat diversity, there are around seventy-six bird species regularly sighted here over the course of an average year. The hope of spotting one of the more rarely sighted birds, such as the Western Kingbird or the White-throated Swift, keeps our endless parade of avid birdwatchers in thrall.

Our resident birds, however, whether it's an audacious jay, a noisy woodpecker or a colorful finch, provide plenty of ongoing interest for the Garden community.

Photo by Janet Williams

Aloes in the Southern African Area attract hummingbirds and demonstrate how birds at the Garden enjoy the diversity of plants in this collection.

The diverse collections of the Garden support an equally diverse population of birds, as is apparent in the list from the recent Christmas Bird Count. In addition to providing general shelter for both resident and migrant species, our collection provides food and nesting sites for many different taxa. The Garden environment offers a range of habitats that are rather different from the native chaparral of the canyon. Some visitors to the Japanese Pool, such as belted kingfishers and green and blue herons, might not otherwise stop in Strawberry Canyon. Native chaparral species are found in parts of the Garden that more closely approximate their preferred habitat. Wren tits, California thrashers, and spotted towhees are most commonly found in the scrubby areas of the South American and Australasian sections. Similarly, native riparian species are found in the trees along Strawberry Creek, such as Wilson's and orange crowned warblers.

Many birds have identified new food sources among the many non-native plants in our collections. This is particularly obvious when watching hummingbirds feed on both native salvias and penstemons, and also on bird-pollinated plants from other parts of the world. Aloes in the Southern African Area are pollinated by sun birds in their native habitat. These small colorful nectivores perch on the rigid blossom stalks of the aloes. This is a distinct contrast to the hovering feeding habit of the hummingbirds, which as a group are restricted to North and South America. Nonetheless, as a walk through this area at this time of the year demonstrates, hummingbirds utilize aloes extensively and assertively defend their feeding resources against other intruding hummers.

—Chris Carmichael

Photo by Janet Williams

When not watching birds from the Elizabeth Hammond Interpretive Center, where he is pictured here, noted local ornithologist Dennis Wolff, regularly teaches popular birdwatching classes in the Garden.

From Killing to Counting

Before 1900, Americans engaged in a holiday tradition known as the Christmas "Side Hunt". People would choose sides and go afield with their guns; whoever brought in the biggest pile of feathered quarry won. On Christmas Day 1900, ornithologist Frank Chapman, an early officer in the Audubon Society, called for an end to the slaughter. Rather than shooting birds, he suggested counting them. From Toronto to Pacific Grove, California, the Christmas Bird Count began. In its first year, 27 people participated, counting 18,500 individual birds of ninety species.

On Christmas Day 2000, 52,000 people participated in 1800 counts in the United States and Canada. They sighted 78,636,382 individual birds of 676 species! A century of bird counts has amassed a wealth of data which scientists use to monitor the health of bird species, pinpoint and explain trends, and detect the rise of environmental threats.

Along with three other members of the Audubon Society, I came to the rich and varied habitats of the UC Botanical Garden for this annual count. We found a total of 226 individual birds of 38 species, including such rarities as hermit and black-throated warblers.

—Dennis Wolff

AUDUBON CHRISTMAS COUNT DECEMBER 17, 2000

American Robin	30
Anna's Hummingbird	25
Steller's Jay	21
Bushtit	16
Golden-Crowned Kinglet	14
Ruby-Crowned Kinglet	12
Yellow-Rumped Warbler	10
Townsend's Warbler	9
Western Scrub-Jay	9
Chestnut-Backed Chickadee	7
Hutton's Vireo	7
Song Sparrow	6
California Towhee	5
Golden-crowned Sparrow	5
Bewick's Wren	4
Fox Sparrow	4
Dark-eyed Junco	4
Turkey Vulture	3
Hermit Thrush	3
Allen/Rufous Hummingbird	3
Common Raven	3
Band-Tailed Pigeon	2
Northern Flicker	2
Black Phoebe	2
Red-breasted Nuthatch	2
Brown Creeper	2
California Thrasher	2
Spotted Towhee	2
White-crowned Sparrow	2
Cooper's Hawk	1
Sharp-shinned Hawk	1
Red-breasted Sapsucker	1
Nuttall's Woodpecker	1
Hairy Woodpecker	1
Wrentit	1
Black-throated Gray Warbler	1
Hermit Warbler	1

Dr. Chris Carmichael, UCBG Manager of Collections and Horticulture, is one of our noteworthy birders, a group which also includes Dr. Jennifer White, Associate Director for Education, and Curator Holly Forbes. Chris' academic background in verterbrate zoology equips him to effortlessly make the connections between the birds here in the Garden and their relationships to the plants.

SIBLEY'S GUIDE TO BIRDS

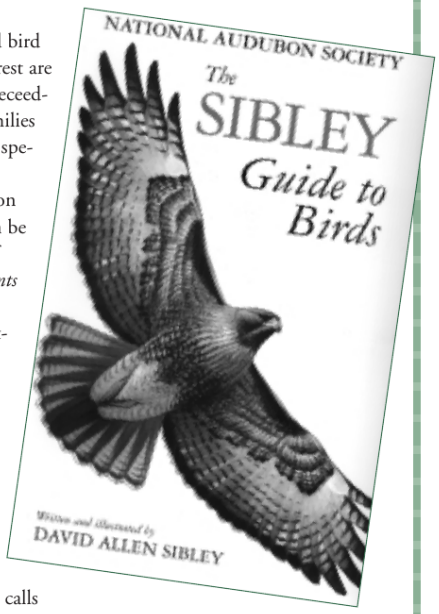
National Audubon Society: The Sibley Guide to Birds, written and illustrated by David Allen Sibley; A Chanticleer Press Edition, Alfred A. Knopf, NY, ©2000; 544pp. Flexible Binding. $35.00.

Most visitors to the Garden come to see and study our special plants, but a surprising number also come to see the animals and birds which feed and take shelter in the hospitable environment. We have newts which breed yearly in our Japanese Pool and monarch butterflies visiting our milkweed plants. Now and again we are surprised to learn that we are on the Audubon Society's Hotline, as we were several years ago when dozens of visitors came to see a rare bird sighted in the southwest corner of the Garden.

In past years, the Roger Tory Peterson *Field Guide to Western Birds*, or the National Geographic Society's *Field Guide to Birds of North America*, were seen tucked under the arms of our 'Garden Birders'. Now there is a new, up-to-date field guide these birders will want to own, although its size and weight make it awkward to carry in the field.

The Sibley Guide to Birds is a great user-friendly guide containing over 6600 wonderfully detailed watercolor paintings of 810 species and 350 populations of North American birds. Descriptions and remarks accompany the illustrations, removing the need to flip back and forth between text and pictures. The birds are shown in similar poses to make comparisons between species easy. All important plumages are depicted and range maps show migration routes, summer, winter, and breeding locations, and bird distribution. Of particular interest are the good introductory pages preceeding each family or group of families showing bird classification and speciation at a glance.

In many ways the publication of *The Sibley Guide to Birds* can be compared to the publication of *The Jepson Manual: Higher Plants of California* a few years ago. Both were preceeded by respected long-used references. It is likely that the *Sibley Guide* will become the current authority for birds, as the *Jepson Manual* has become for plants. But keep your worn, well-loved field guides handy. For this reader, at least, it is hard to think that the beloved California Quail in the Garden calls "put-way-do" rather than the familiar "chi-ca-go" of old, which we teach the touring school children.



The Garden Shop also carries the following books related to the above review:

■ *Birds of Northern California* by David Fix and Andy Bezener; range maps by Don Roberson and David Fix; Lone Pine Pub., Renton, WA,©2000; 384pp. Paper. $19.95.

■ *Birds of San Francisco and the Bay Area*, by Chris C. Fisher and Joseph Morlan; Lone Pine Pub., Renton, WA, ©1996; 159pp. Paper. $9.95.

■ *Common Dragonflies of California, A Beginner's Pocket Guide,* by Kathy Biggs; Azalea Creek Pub., Sebastopol, CA, ©2000. 96pp. Paper. $9.95.

■ *Newts and Salamanders, Everything about Selection, Care, Nutrition, Diseases, Breeding, and Behavior,* by Frank Indiviglio; with photos by Richard D. Bartlett; illus. by Michele Earl-Bridges; Barron's, Hauppauge, NY, ©1997; 128pp. Paper. $6.95.

Brochures:

■ *Birds of the UC Botanical Garden,* UC Botanical Garden Staff. $1.00.

■ *Butterflies of the San Francisco Bay Region, A County Species List,* 5th ed., by John Steiner; San Francisco Bay Wildlife Soc, 1988. $1.00.

—Elly Bade

DIRECTOR'S COLUMN

Celebrating the Garden

Spring is here again! The hills are green and spangled with flowers. The wind is whipping across the coastal bluffs, and anyone with even the slightest inclination toward gardening has their hands in the soil. As I watch the seasons march across the landscape and think back to the past year, I'm amazed at the amount of progress we have to celebrate here at the Garden.

The living collection is in superior condition. Over the years, the horticultural staff has done an inspired job of maintaining and building the collection. However, with leadership by Manager of Collections and Horticulture, Chris Carmichael, and better access to materials and supplies, they have added new shine to the Garden. I invite you to push past the construction sites in the entrance to get a better look!

Ah, yes, those construction sites. We were so excited when they started. Now, we look forward eagerly to their completion. The Garden has not been a peaceful place to work or visit this year. Staff and volunteers have been wonderful, carrying out their work over the din of jackhammers, dump trucks, cement mixers, and more. From all this dust, mud, and upset, the Garden is gaining many physical improvements. Some, like the utility upgrades, make our jobs easier but are invisible to visitors. Others, such as renovated bathrooms and FEMA restoration of pathways in the Mexican and Central American area, are essential but not sensational. Many projects, though, are downright sensational!

Master rock garden creator, Phil Johnson, has just completed a spectacular hardscape in the Southern African section, and horticulturist Lawrence Lee will soon begin planting it with material obtained during his collecting trips to South Africa. This garden will feature the natural beauty of bulbs and succulents from the winter rainfall areas of the Karoo and Fynbos semi-arid and desert habitats. It also provides an opportunity to inform visitors about the precarious situation of these habitats in the face of regional development and global climate change.

Our new Arid House is also nearing completion. The name has recently been changed to Arid House from Desert Greenhouse — Arid House being more appropriate for that collection, though we are still making the name transition. This structure will house a substantial number of the most biologically and scientifically valuable plants in our collection, including many living "type" specimens. Type specimens are the exemplar individuals a taxonomist uses to describe a new species. Other specimens belong to species that are now extinct in the wild, and are therefore irreplaceable. The new house provides the public with excellent visual access to the exciting and unusual plant forms in this collection while ensuring their security.

UC researchers are anxiously awaiting opening of the Center for the Study of Plant Conservation (CSPC) at the Garden. Although the lab is not yet finished, scientists associated with this center are already exploring a diversity of questions related to plant conservation. Richard Shefferson, a graduate student at the Center, writes in this issue about his research devoted to discovering the types of fungi that sustain terrestrial orchids. Another graduate student, Jessica Riquetti, recently established a major field experiment to determine whether soil-borne organisms can limit the spread of European beach grass, an invasive species that reduces native plant diversity in sand dunes along the Pacific coast of North America. Work by these students and other scholars will be greatly facilitated by the new Center.

In preparation for our next round of construction, we have just begun design of the Jane Gray Research Greenhouse, which will be an important adjunct of Garden research in plant conservation and ethnobotany. This house will be erected in the place currently occupied by the temporary arid house and will serve researchers from both the CSPC and elsewhere on the Cal campus.

Although construction is the most visible sign of progress that visitors can see, the Garden has many other achievements to celebrate as well. Our educational outreach programs are receiving national recognition. Many partners are joining our Math in the Garden initiative. Beginning this spring staff at the UC Davis Arboretum, Brooklyn Botanic Garden, Missouri Botanical Garden, Morris Arboretum, and Atlanta Botanical Garden become active partners in the development process of the 'Math in the Garden' project as they try out the activities in their own programs. San Francisco Girl Scout Council troops and 4-H programs across California are also partners in this effort. Over the next year their evaluations of the effectiveness of the project's activities will provide crucial information to ensure that the final published materials will fit into different informal settings and programs and work in gardens throughout the country. Collaborations with these, and other partners, provide audiences diverse program opportunities that strengthen this and other aspects of the Garden's Education Programs.

Cactus drawings by UCBG horticulturist, Judith Finn. Above: Gymnocalycium saglione *and at right:* Euphorbia cf. leuconeura.

Our collaboration with East Bay Munipal Utility District, which resulted in our spectacular and innovative contribution to last year's San Francisco Flower and Garden Show, is now producing exciting new Garden interpretation materials. Garden staff and dedicated volunteers worked with EBMUD staff to develop an extensive and well-received tour of Plants for Water-wise Gardening. (See the Education Director's column for more information about this tour.) The tour takes advantage of our diverse and outstanding collection to illustrate landscape uses of water-conserving plants. Most species highlighted in the tour are available in the horticultural trade, but some are not, which puts the tour on the leading edge of horticultural innovation.

Through all of these changes, the Garden continues to expand its primary mission of support for botanical research. New molecular tools are allowing exciting discoveries in evolutionary biology and plant systematics. These tools work best on DNA extracted from live tissues, which makes living collections such as ours ever more important scientifically. Important new studies that have used UC Botanical Garden specimens are finding exciting and sometimes disturbing results. For example, Olmstead, DePamphilis, Young, and colleagues report this spring in the *American Journal of Botany,* (Vol. 88: 348-361, 2001) that the snapdragon family (Scrophulariaceae) is not a natural evolutionary grouping. In their new interpretation, which was based in part on samples from the UC Botanical Garden, the only member of this family in the California flora that will remain in the Scrophulariaceae is the eponymous *Scrophularia californica*! Even the snapdragons *(Antirrhinum)* will no longer be in the "snapdragon" family.

Although living tissue is the *sine qua non* for molecular phylogenetics, it is still essential that every plant used in such research be vouchered. Vouchering, which involves removing a sample of the plant to produce a herbarium specimen, creates a permanent record that persists after death of the plant itself. It is essential that Garden material be vouchered so that future scientists can examine the specimens that today's botanists are using to classify plants and understand their evolutionary relationships. Thus, an important goal of the Garden is to voucher all accessioned plants in our collection. This academic year, our graduate student assistant, Rich Shefferson, has helped to voucher 274 plants in our collection.

With all this happening this year, one might ask whether Garden staff has had time to plan very far into the future. In fact, we have embarked on the early stages of strategic planning and, as the first round of construction nears completion, we will continue to move forward on this very important project.

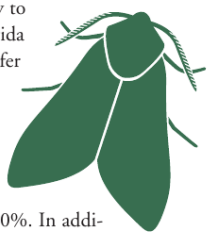
—Ellen Simms

Garden Visitors

(left to right): Horticulturist Elaine Sedlack accompanied Mark Flanagan, "Keeper of the Gardens" at Windsor Great Park, and William McNamara, director of Quarryhill Botanical Garden in Glen Ellen, CA, during their visit on April 16th. Mr. Flanagan was the April speaker for the California Horticultural Society meeting.

Gardening Tips

■ The larvae of the diamond back moth can be a serious pest for members of the cabbage family, including cabbage, broccoli, collards, kale and others. The insects are becoming resistant to Bt, which has been used widely to control the insect. A researcher in Florida found that the larvae of the moths prefer feeding on highly fertilized collards more than on any other members of the family. Fields of crucifers to be protected are surrounded by a crop of specially treated collards, resulting in a reduction of sprays from 75 to 100%. In addition, a naturally occuring parasitic insect of diamond backs built up in the collards, and this helped control them in the desired crop. *Agricultural Research* 47 (3): 26.



■ The old world fern, (*Lygodium microphyllum*), introduced into Florida in 1950, now covers over 40,000 acres. In the last 6 years, there has been a 100 fold increase. A single leaf can be 100 feet long. Fortunately, it is believed that the plant will not move farther north than central Florida. *American Nurseryman* 191 (3): 10.

■ *Euphorbia esula,* an introduced species in the northern midwestern states, has colonized vast areas of marginal and non-agricultural land, displacing many beneficial plant species. In addition, it is toxic to sheep, cattle and horses. Recently, a gall midge was released which produced galls on the stem tips resulting in their destruction, thus preventing flowering and seed production. The insect may produce 3 or 4 generations in a season though the first generation produces the largest number of adults. It is these that can be harvested and used for new releases. *Biological Control* 16(2): 128-132.

—Robert D. Raabe

The Overlooked Equation

When I was an undergraduate living in Chicago, I volunteered at local county nature preserves to help restore Illinois' endangered prairies, savannas, and wetlands. Very often, my work involved monitoring the endangered plants that grew in the area, especially the imperiled populations of native, wild lady's slippers.

The lady's slippers we all know and love *(Paphiopedilum spp.)* are tropical, and have been propagated and hybridized for many years. Should you ever see a lady's slipper of the genus *Cypripedium* on display at a nursery, be warned – it was most likely stolen from the wild. Cypripedioid lady's slippers grow on the wild lands of North and Central America, Europe, and Asia, and have not been propagated successfully at all. Yet, as we have seen in other endangered plants, propagation is very often integral to successful restoration.

Why has propagation been so unsuccessful? The biology of orchids, especially the rare terrestrial orchids that evolved in the temperate regions of the world, is very complex. In fruiting structures known as pods, they produce thousands to millions of seeds no longer than a single millimeter, and half that in width. These seeds very rarely survive to produce a mature plant, and this seems to be why they have evolved to produce so many seeds all at once. The seeds scatter in the wind and find a new place to settle in the soil. Once the winter snows and rains are over, they imbibe water, and then they just sit. Why? Because they cannot progress any further in their development without the aid of a soil-inhabiting fungus. The orchid family is one of the few plant families that depends completely on soil fungi for germination. This kind of interaction is called "mycorrhizal," and requires some more explanation.

Photo by Janet Williams

This Cypripedium californicum *in the Garden was collected by Garden horticulturist, Roger Raiche.*

A mycorrhiza is an interface of two organisms – a plant and a fungus. The fungus, which can be one of many different species, grows through the soil as a mass of tiny filaments known individually as hyphae, forming a hyphal network called a mycelium. The fungus grows outward, looking

GARDEN NOTES

SUDDEN OAK DEATH…Horticulturists **Judith Finn** and **Jerry Parsons** attended an all day symposium, "Combating the Sudden Oak Death *Phytopthora*: a new disease", in Marin County, hosted by UC Cooperative Extension on March 9th.

CHANNEL ISLAND VISIT…Horticulturist **Nathan Smith** accompanied **Steven Junak,** of the Santa Barbara Botanic Garden, on a three-day visit to San Nicolas Island in late March. This island is part of the southern group of Channel Islands off the coast of southern California. They were conducting plant surveys and removing exotic plants. Nathan was able to collect several plants for the Garden's Californian Area.

GARDEN SHARING…Curator **Holly Forbes**, distributed duplicates of the Garden's epiphytic cactus collection to the Huntington Botanical Gardens in San Marino and to Ganna Walska Lotusland in Santa Barbara. It is common practice among gardens to share duplicates of collections, providing some protection against loss in any one location. **John Trager**, Curator of Desert Collections at the Huntington, donated several collections of South African material for the Garden's African Area.

RESEARCH GRANT…We are pleased to report that the Genetic Resources Conservation Program at UC Davis funded a grant proposal by **Dr. Jason Koontz** and Holly Forbes to study the genetic variability of Baker's Larkspur, *Delphinium bakeri*. The research will seek to determine the genetic diversity of this species to obtain base-line data for future research and conservation efforts. The grant money will pay for the cost of DNA analyses to be performed by Dr. Koontz. Baker's

for new patches of resources to digest and absorb. Part of the mycelium grows into the root system of a plant, penetrating the root tissue itself, and "colonizes" it. Other parts of the same mycelium grow far beyond the range of the plant's root system, and collect nutrients such as phosphorus and calcium. Amazingly, the mycelium then gives the plant vast quantities of these nutrients, which are very often limiting to the plant's growth. But the fungus does not do this out of the goodness of its fungal heart! It gets a very valuable commodity from the plant: carbon. The plant produces sugar in its photosynthetic leaves, and it now appears that, on average, at least 20% of all the sugar produced by the plant goes to the fungus. This makes sense: the plant is limited much more by phosphorus, calcium, and other nutrients than carbon. Hence, the fungus and the plant seem to exist in a mutually beneficial system.

The importance of mycorrhizae is evident in the fossil record, which shows that the first land plants (now thought to be *Rhynia* species), growing roughly 500 million years ago, actually had mycorrhizal structures in their roots. Indeed, current estimates suggest that 90% of plants are mycorrhizal – a situation that clearly displays the importance of this unusual interaction.

Which brings us back to the orchid. Orchids are unlike any other plants. We are discovering that this is true in their biology as well as in their aesthetics. Orchids break all the rules. With most plants, germination and growth are possible without fungi, although the plant will generally be stunted throughout its life. But orchids do not appear to grow without these organisms. Although some orchids can be cultivatable in the lab under very specific conditions, these orchids generally grow poorly relative to their wild-grown kin. More and more we find that most orchids cannot even germinate without a fungus.

Why should this concern us? The kind of interaction that orchids exhibit with mycorrhizal fungi is very different from what we are used to, and this has important ramifications for propagation, and ultimately restoration. First of all, we have as yet not seen any evidence that orchids donate carbon to the fungus. Second, we have found that as seedlings, and in the case of the non-photosynthetic "ghost" and "phantom" orchids, orchids even extract sugar from the fungus! Third, orchids are very particular about which fungi they will associate with, and it appears that they choose fungi that are mycorrhizal, or sometimes even pathogenic, on local trees and other plants. So, these unusual plants indirectly acquire their sugar from other plants in the ecosystem. Fourth, orchids native to the northern temperate latitudes generally stay within the soil as seedlings for many years without developing any leaves, relying on mycorrhizae for complete nourishment. Finally, even mature, photosynthetic orchids choose not to break the surface and sprout leaves in some growing seasons. This happens particularly often in lady's slipper populations. In my Midwestern study sites, I have found that lady's slippers can stay belowground like this for many years without interruption, while still growing more root and rhizome tissue. Other researchers have found very solid evidence that this "dormant" condition can last for 25 years or more. Considering that lady's slippers have very low sugar reserves, this is an amazing feat.

The key, then, to understanding what can be done to restore native orchid populations, which are in decline all over the world, is to explore this overlooked equation: orchid + appropriate fungus + appropriate conditions = successful growth.

It is an exciting topic. We are now beginning to understand the nature of this puzzling interaction, and modern scientific methods and tools, including molecular techniques, genetic sequencing, carbon-isotopes, and mathematical and statistical theory, are helping us in tackling major environmental questions. My research is an example of the conservation issues which will be investigated by Cal scientists and graduate students at the Garden's new Center for the Study of Plant Conservation.

—Richard P. Shefferson

larkspur is one of several endangered and rare California native plants the Garden is committed to helping conserve through its participation in the Center for Plant Conservation. Dr. Koontz studied the genus *Delphinium* for his dissertation project. He is now at the Center for Biodiversity of the Illinois Natural History Survey.

NEW STAFF MEMBER…
We extend a warm welcome to **Ms. Leslie Wozniak** who has joined the staff at the Garden in the capacity of Visitor Services Specialist. Leslie is a long time fan of the Garden and brings a wealth of work skills to the new position.

Photo by Janet Williams

Water-Wise Gardening Tour

EDUCATION AT THE GARDEN

Photo by Barbara Lyss

The shining silver leaves of Leucadendron argenteum *make it an interesting choice for water conservative landscaping in the Bay Area. Threatened in its native habitat in South Africa it can be seen in the Garden in the Southern African Area, where it is just one of the 125 exciting plants in the new Water-Wise Gardening Tour.*

One goal of the Education Program is to encourage visitors to discover the Garden's magnificent collection and to look at plants from new perspectives. While our seasonal self-guided tours showcase different plants in their peak flowering or display seasons, other brochures focus on ethnobotanical (Chinese medicinal herbs) or special collections (serpentine plants). Building on the interest generated through our successful collaboration at last year's San Francisco Flower and Garden Show, the Botanical Garden and the East Bay Municipal Utility District (EBMUD) have teamed up again, this time to develop a self-guided tour in the Garden. This interpretive tour of the collection focuses on plants that grow successfully in the Bay Area, but use little water.

Most people have no idea how much water their garden needs. The typical Bay Area residential landscape is irrigated enough each year to flood it six feet deep. This is at least twice as much as plants need for healthy growth. Using water-efficient plants and creative design, local gardeners can create a garden that thrives on little more than natural rainfall. Properly designed, a water-efficient garden is easier to maintain than one that is over-watered. It requires less weeding, pruning, mowing, fertilizing, and pest control. It is better adapted to fluctuations in rainfall and seasonal changes. There is no one way to create a water-efficient garden. The Botanical Garden is filled with a plethora of exciting possibilities from around the world.

This walking tour of the Garden introduces you to some of these beautiful plants that thrive in the Bay Area. California's chaparral is our local community of drought tolerant plants. The climate and plant communities in Chile's mattoral, South Africa's fynbos, and the Mediterranean maquis, with their winter rains and summer drought, are but a few of the parts of the world that have water-conserving plants similar to California's chaparral. Most of the plants on this tour have been in our collection for many years. They will give you a good idea of what that seedling in the local nursery will look like once it gets established in your garden.

This new publication is the collaboration of the Garden's horticultural, educational and communications staff working with three knowledgeable and dedicated docents — Barbara Lyss, Kathryn Welch and Alison Mills. After hours of walking through the Garden and conversations with horticulturists, Barbara, Kathy and Alison wove fascinating plant histories, horticultural information, name derivations and ethnobotanical information into stories for more than 100 plants. A lot of give and take occurred as the Garden staff vetted the information from different perspectives. Weeding out some plants that we all loved but which did not fit all the criteria was one of our biggest problems. Plants included on the tour use little water, are available (or could be available) in the horticulture trade, and are not weedy or endangered.

Ten thousand preview versions of the tour are available this Spring: in the Garden, at this year's San Francisco Flower and Garden Show and at Earth Day events. Over the next several months, Education staff will be collecting evaluations from visitors. This information will be used to improve the final version of the brochure. I invite you to come to the Garden, go on the tour, and give us your feedback.

We are grateful for EBMUD's participation and support of the process and production of this new exciting self-guided tour of the Garden.

—Jennifer Meux White

Research at the Garden

The Garden recently provided research materials to these individuals:

Ms. **Eden Abram**, dissertation student with Prof. **Donald Kaplan,** UCB Dept. of Plant Biology launched her study of comparative morphology of succulent, drought-tolerant plants. She will be using the desert collections for illustration purposes.

Prof. **David D. Ackerly**, Stanford University, again visited to collect many species in the Rhamnaceae (buckthorn family). He is looking at the evolution of the "evergreen sclerophyll" strategy in California chaparral. The project is to examine each of the major taxa in comparison with their close relatives from non-chaparral habitats, employing a phylogenetic approach where possible.

Dr. **Stephen Burgess**, post-doc, UCB Dept. of Environmental Science, Policy, and Management, used the Mather Grove for an investigation of the basic physiological ecology of redwoods with the aim of relating climatic and hydrological factors with the growth and distribution of *Sequoia sempervirens* (Coast Redwood). They are particularly interested in quantifying direct foliar absorption of fog water by redwoods and determining its role in mitigating drought and allowing redwoods to grow to extreme heights. This study will principally involve the use of sensitive xylem sap flow meters to gauge patterns and amounts of water transport in branches and stems of redwoods.

Prof. **Todd Dawson's** class, Physiological Plant Ecology, used several Garden plants for measurements of photosynthesis under sun and shade conditions during the Spring Semester.

Prof. **James Eckenwalder,** University of Toronto, received leaf bases of *Zamia integrifolia.* These were plants used by Dr. Robert Ornduff for a study published in 1996: Gender performance in a cultivated cohort of the cycad *Zamia integrifolia* (Zamiaceae). *Amer. J. Bot.* 83: 1006-1015.

Mr. **Taylor Field**, dissertation student at Harvard, visited to take cuttings of primitive angiosperms for his project *(Chloranthus, Illicium mexicanum, Illicium simonsii, Schisandra henryi).*

Ms. **Ruth Kirkpatrick**, dissertation student with Prof. **Brent Mishler**, UCB Dept. of Integrative Biology, received fronds of several xerophytic ferns for a course project on dessication tolerance.

Ms. **Nancy Kiang**, dissertation student with Prof. **Dennis Baldocchi**, UCB Dept. of Environmental Science, Policy, and Management, tested a sap flow sensor on a Garden oak for several weeks prior to using it in the field.

Ms. **Jessica Messmer McAbee**, graduate student at UC Davis with Prof. **Charles Gasser,** visited to obtain cuttings of *Impatiens hookeriana* and *Impatiens balsaminifera* for her graduate studies in ovule diversification in the angiosperms.

Dr. **Susana Magallon**, UC Davis, post-doc with Profs. **Michael Sanderson** and **James Doyle**, received a wide range of species for their study of seed plant phylogeny, the age of angiosperms, and the evolution of pentamery among basal eudicots.

Ms. **Jodi McGraw**, dissertation student with Prof. **Wayne Sousa,** in Integrative Biology completed her soil seed bank study in the Garden's research greenhouse.

Prof. **Rei Rasmussen**, Oregon Graduate Institute in Beaverton, Oregon, visited the Garden to collect emissions from several oak species for his study on terpene release by oaks.

Mr. **Andrew Salywon**, dissertation student at Arizona State University, is working on the molecular systematics of the Myrtaceae family. He received cuttings of *Eugenia capuli, Austromyrtus dulicis, Myrceugenia chrysocarpa, Syzygium jambos,* and *Ugni molinae.*

Ms. **Caroline Stromberg,** dissertation student at UC Berkeley, Department of Integrative Biology, received dozens of specimens and associated herbarium vouchers for development of a phytolith reference collection.

Dr. **Nori Yoshikawa,** a post-doc at the University of Washington in Seattle, visited to collect *Hibbertia scandens, Dillenia,* and *Aextoxicon punctatum.* His main object is to find where in the phylogeny of angiosperms particular genes (the RPB2) are duplicated.

—Holly Forbes

Recognition

Contributions received from 2/01/2001 up to and including 4/15/2001.

New Members

The Garden wishes to thank our new Individual and Family Members:

Ms. Shellie Albright & Mr. Scott Emmett
Mrs. Monica Baldzikowski
Ms. Marge W. Barry
Mrs. Wendy S. Bergman & Mr. Robert G. Bergman
Ms. Barbara Boster
Ms. Suzanne M. Briley
Ms. Michaela Brockstedt
Dr. and Mrs. Daniel Callahan
Ms. Dwyn Daniels Robbie
Mr. and Mrs. Randy Davis
Mrs. Lois De Domenico
Mr. Bob Deloria
Ms. Carmel Drudy
Ms. Anna Eastwood
Ms. J. M. B. Edwards
Dr. and Mrs. Ray Ergas
Mr. Raymond Ford
Mr. Sam Foushee
Ms. Gloria Galindo
Ms. Judith E. Garvens
Mr. Kent N. Garvens
Mr. Patrick Gavin Duffy
Ms. Penelope E. Gordon
Ms. Anna Greenwood
Ms. Alix Greenwood
Ms. Jeane Hamilton-Lecky
Mr. and Mrs. Alan Hoben
Ms. Lynne Hosley
Mr. and Mrs. David Huang
Ms. Laura J. Kainik
Ms. Gretchen Kell
Ms. Sydney Kustu
Ms. Marie C. Lagarde
Ms. A. Lim & Mr. K. Henderson
Ms. Kiamara Ludwig
Ms. Caren Maghreblian
Ms.Pradeep & Mr. Karek Mathew
Ms. Helen McKinley
Mrs. Laura Miller & Mr. Dave Miller
Mr. Charles L. Moreau
Ms. Alexandra Moss
Ms. Phyllis Peacock
Ms. Phyllis Potter & Ms. Nora Underwood
Ms. Delaine Renard & Mr. Bruce Bedortha
Ms. Janet A. Rudolph
Ms. Jeanine Sidran
Mr. Steve Sivier
Ms. Jean Smith
Ms. Laura Sueoka
Ms. Anita L. Thomas
Mr. Dan Vierra
Ms. Virginia C. von Colditz
Mr. Whitney Vosburgh
Ms. Herta Weinstein
Ms. Karen Wesson
Ms. Charlotte Woody

Grateful Thanks

The Garden thanks these new members for their substantial gifts over and above membership:

Ms. Patti Barker
Mr. and Mrs. David Benning
Ms. Beth Burnside
Mr. and Mrs. Ronald Clendenen
Mr. and Mrs. Fred Dengler
Mr. and Mrs. Jack Dolhinow
Dr. and Mrs. A. Carl Helmholz
Ms. Fonda Kareliti
Mr. and Mrs. Ron Lai
Mr. Jim Lovekin & Prof. Iris Tommelein
Mr. and Mrs. Geoff Machin
Mr. and Mrs. Stuart McDonald
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Mr. Ron Morrison
Ms. Sally O'Connell
Ms. Ann Reynolds
Mr. and Mrs. Weldon Rucker
Mr. Bernard Taper & Ms. Gwen Head
Ms. Carol Thompson & Mr. Roderic Duncan
Mr. and Mrs. William D. Watkins
Mr. Stewart Winchester
Mr. Thomas (Rex) Wolf

In Appreciation

The Garden offers appreciation and thanks to these donors for their generous contributions:

Mr. and Mrs. Earl Hamlin
Dr. and Mrs. A. Carl Helmholz
Mr. Bernard Taper & Ms. Gwen Head
Mr. Stewart Winchester
(Ornduff Fund for Garden Interpretation & Docent Activities)

In Memory

The Garden offers appreciation and thanks for gifts from these donors in memory of:

Shih Ning Chern from:
Mr. & Mrs. Kenneth Palladino
(Chinese Medicinal Herb Garden)

Jean & Earl Hyde from:
Mr. and Mrs. Harry Heckman
(Myrtle Wolf Library)

Josephine Tonge Larson from:
Mr. and Mrs. Bill Bade
(Myrtle Wolf Library)
Ms. Ellen Felker
Ms. Elenor Mulkey
Ms. Mildred J. O'Connor
Ms. Jean Portello
Ms. Jacqueline Woodfill & Mr. John Woodfill
(Myrtle Wolf Library)

James Harrold Van Sicklen from:
Mr. and Mrs. Richard Amundsen
Mr. and Mrs. Bill Bade
(Entrance Improvement)
Mr. Michael Gilmore & Family
Mr. Bruce Hayes
Mr. & Mrs. R. Sheldon Milligan, Jr.
Mr. John P. Stock

Gifts In Kind

The Garden offers appreciation and thanks for gifts in kind:

Ms. B. Sonja Altena
Ms. Mary Lynn Cox
Ms. Louise Dutton
Mrs. Myrtle Wolf

WISHLIST

The Garden particularly thanks Dr. and Mrs. David Reiffel for their contributions of a sofa and a projector for the new Center for the Study of Plant Conservation.

This issue we are asking our readers if they could support us by donating:

- A "point and shoot" camera
- Card tables

If you can donate, please call (510) 643-2937—we would appreciate the help.

Pictured after receiving their awards from the Director at the recent ceremony are: (Back, left to right) John Domzalski, Judith Finn, Jerry Parsons, Peter Klement, Gerald Ford. (Front, left to right) Elaine Sedlack, Nancy Swearengen, Holly Forbes and Dr. Ellen Simms, Garden Director.

Staff Members Honored

Various members of the Garden staff were recently recognized and applauded for their many years of service. Director Ellen Simms commented that the Garden is the envy of many campus units for the longevity of its staff! University service award pins were given to **Holly Forbes, Gerald Ford, Jerry Parsons** and **Nancy Swearengen** for 10+ years of service; to **Elaine Sedlack** for 15+ years; to **Peter Klement** and **Roger Raiche** for 20+; and to **John Domzalski** for 25. **Judith Finn** had already received her 25-year pin! Congratulations to all you long-timers!

Noteworthy Donations…

The Garden Library received several donations of books and journals. **Mrs. Mary Lynn Cox** donated over 130 books on garden design, horticulture, and botanical subjects. **Mrs. Myrtle Wolf,** donated a complete run of *Pacific Horticulture Magazine*, many issues of the *Journal of the California Horticultural Society*, several volumes of the *Bulletin* of the American Rock Garden Society, the early issues of *The Four Seasons* (journal of the Regional Parks Botanic Garden), and *Fremontia* (journal of the California Native Plant Society), among others. Additional donations of books for the library were made by **Mrs. Sonja Altena** and **Ms. Louise Dutton.** Thank you very much indeed!

GARDEN STAFF

Dr. Ellen Simms, *Garden Director*

ADMINISTRATION
Afrooz Navid, *Administrative Assistant*
Margaret Richardson, *Tour & Rentals Coordinator*
Michael Rimar, *Administrative Assistant*
Candice Schott, *Business Operations Supervisor*
Nancy Swearengen, *Volunteer Services Coordinator*
Janet Williams, *Marketing & Development Officer*
Leslie Wozniak, *Visitor Services Specialist*

COLLECTIONS & HORTICULTURE
Dr. Christopher Carmichael, *Manager of Collections and Horticulture*
Holly Forbes, *Curator*
Barbara Keller, *Curatorial Assistant*
Anthony Garza, *Supervisor of Horticulture and Grounds*
John Domzalski, *Propagator*
Judith Finn, *Horticulturist*
Peter Klement, *Horticulturist*
Lawrence Lee, *Horticulturist*
Jerry Parsons, *Horticulturist*
Dr. Robert Raabe, *Garden Pathologist*
Roger Raiche, *Horticulturist*
Eric Schulz, *Horticulturist*
Elaine Sedlack, *Horticulturist*
Nathan Smith, *Horticulturist*
Gerald Ford, *Building and Grounds Maintenance*

EDUCATION
Dr. Jennifer White, *Associate Director for Education*
Christine Manoux, *Program Assistant*

FACULTY ADVISORY COMMITTEE
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Dr. Lewis Feldman, *Plant Biology*
Dr. Joe McBride, *Environmental Science, Policy, & Management*
Dr. Brent Mishler, *Integrative Biology*
Dr. Vincent Resh, *Environmental Science, Policy, & Management*
Dr. Alan Smith, *Herbarium*

NEWSLETTER
Janet Williams, *Editor*

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CALENDAR OF EVENTS

TREES AND SHRUBS OF CALIFORNIA
We are pleased to help launch a new book from University of California Press, Trees and Shrubs of California by two distinguished faculty members from Humboldt State University, John Stuart, Professor of Forestry and John Stewart, Professor of Botany. Both authors will be with us, to share highlights of their research, and to sign copies of their book. Also on hand will be their illustrator, Andrea Pickart, exhibiting samples of her work.
Wednesday, June 13, 7:30 pm
Free
Registration requested

TWILIGHT TOURS
Celebrate the long evenings of summer with us in the Garden. Members of our horticulture staff will share their favorite spots and special insights about the Garden on Wednesday evenings at 5:30 pm. Each walk will be different, so plan to come every week during July, beginning July 11, and every week during August.
Free with Garden admission.

University of California Botanical Garden

Second Annual Garden Party

Please Join Us!

Enjoy fabulous food, wine and music,
stroll around the Garden at the peak of its glory,
and tour the newly renovated South African Desert Habitat.
At 4 PM we'll celebrate the opening of
the new Desert Greenhouse!

Saturday, June 16, 2001, 3 - 6 PM

Your reservation will be acknowledged by postcard. Please bring postcard to the event.

To register for any program or event*, call 510-643-2755.

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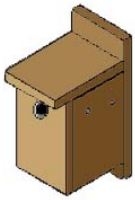
Birding / Wild Birds

Build a Bluebird Nest Box

Easy Box to Make

This bluebird nesting box is a great way to get started making birdhouses. You do not need to miter any edges and the entire project can be completed using one 6 foot length of of 1" x 6" lumber.



Since only simple materials and tools are required, this birdhouse is also a wonderful project for Scouts, youth groups, and beginning woodworking classes.

Click here for drawings of the pieces and dimensions you will need. (A)
Click here for a close up of the hole. (B)
Click here for a diagram of the pivot nails. (C)

See the box to the right for wood and tool recommendations

Related Resources
- Wood to Make Houses
- Tools to Make Houses
- Paints for Houses
- Bird House Specs
- Make Birdhouses
- Make Bird Feeders
- What to Feed Birds
- Nesting Materials

Materials needed:
Wood cut to the dimensions shown in A above
Finishing nails
1 eye screw
Wood screws

Directions:

1. Cut the wood to the dimensions in diagram A. All of the pieces can be cut from one 6' length of 1" x 6" lumber.
2. Cut the front entrance hole as in diagram B. This is an oval shaped hole that is 1 3/8" wide and 2 1/4" long. To begin cutting this hole, mark the dimensions on the front. Then drill one 1 3/8" circle at the top. Repeat at the bottom of the hole, overlapping the drilled holes.
3. Drill two small holes near the top of each side for ventilation.
4. Drill four small holes on the bottom for drainage.
5. Using finishing nails or wood screws, secure one of the sides to the bottom. Then secure the front and back to the same side.
6. Slip the 2nd side into place. Secure using two nails, one near the top on each side. These nails will be pivots so make sure they are across from each other.
7. Reach inside the box and push the bottom of the 2nd side outwards, making sure it can pivot outwards. If it is too tight, remove the nails and sand the edges so it is a bit smaller. Repeat until the 2nd side will pivot outwards. See diagram C for
8. Screw the eye screw near the bottom of the 2nd side. This screw is to make it easier for you to open the box occasionally to monitor it as well as to clean it out at the end of the season.
9. Drill a small hole through the front near the bottom into the 2nd side. Push a bent nail (I have a few by this point!) into the hole to keep the 2nd side closed. If you wish, use a small wood screw instead of the nail.
10. Nail or screw the roof to the nest box.
11. Mount the bluebird nest box to a pole, fence post, or tree. Be sure to use some type of predator guard to keep squirrels, snakes, racoons, and other creatures from harming the nestlings. See the Birdhouse Spec page for the correct mounting height.

May you always hear the whisper of wings...
Christine

From Christine Tarski,
Your Guide to Birding / Wild Birds.
FREE Newsletter. Sign Up Now!

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As featured in The Mail on Sunday View bird nest activity on our T.V.
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12.28 ostbkb2.htm

FACILITIES

CHICKS

Young chicks can be maintained in a variety of suitable facilities. A small portable pen, 12 feet long, 4 feet wide and 2 foot high can be adequate for a number of chicks. The pen is placed on short cut grass and moved daily. Chicks are brought out to the pen after the temperature reaches above 60 F and the sun is shining. Birds can be maintained in this type of facility until the temperature drops or until weather is prohibitive. Include some type of shade and wind break as young birds are sensitive to extreme sun and wind.

Young birds should be brought indoors in the evening and maintained in a heated environment until at least 2 to 3 months of age. Temperature in indoor shelters should be maintained at least 65 F and enough room to allow the birds to exercise should be provided. In areas where weather is more severe, this period may need to be extended.

Do not provide feed at night but available water is acceptable. Feed the young birds as outlined in CARE OF YOUNG BIRDS section, prior to turning them out in the morning.

JUVENILES

Juvenile birds between 3 and 10 months of age can be maintained in a similar, but larger facility as young birds. For convenience, access to the indoor facility should be available directly from the outdoor pens. However, shelter is not needed except in extremely cold areas. The amount of space per bird, for both indoor and outdoor facilities should be increased for this age bird as compared to that available for younger chicks. Outdoor pens can be of any type of substrate but ground cover such as grass, clover, or alfalfa is ideal. Grass should be kept at a closely mowed level, especially when grass begins to dry out or turn to seed, as impactions are more common at this time. Daily mowing may be necessary during some periods of the year.

ADULTS

Pens and facilities for adults vary considerably. Most ranchers maintain adult pairs or trios in facilities that range from five thousand square feet to an acre or more. In general, the more room that can be provided, the better the situation. Common fences and line of sight access to neighboring pairs is often desirable but may not be practicable with overly aggressive males.

Housing or shade is usually provided although not always utilized. If birds are accustomed to being fed and watered in a shed they will be more easily confined when necessary and may build the nest and lay indoors. Alley-ways for movement of birds from pen to pen, access for haling, and provisions for confinement for veterinary care should be considered at the time of construction. Although suprising, most ratites do not require indoor shelter once over 6 months of age and often refuse to use such structures, independent of weather.

Fencing is dependent on personal preference and economics. Chain link is good but may result in problems related to leg and foot injures and is not easily climbed if escape from the pen by egg gatherers is necessary. Tubular "cattle" type fence is suitable and offer some benefits and others types of woven wire fencing are routinely used.

Many ranchers are now utilizing group pens consisting of several males and numerous females in larger acreage. This appears to provide some benefits and is more nearly similar to a natural situation. Early results indicate that increased fertility, more egg numbers, and extended laying periods can be expected in this type of set up. Several acres of enclosed pasture are needed for this type of operation.

Difficulties with a group breeding situation include the inability to determine exactly the resultant chicks parentage.

Ostrich Book

12.29 Emails

12.29.1 Email 1 – "good pics"

From Ben Forbes <ben@example.org> Reply Forward Archive Junk Delete More

To jdoe@example.com 2/9/05, 06:08

Subject **good pics**

```
Hi thought you'd like these

enjoy
```

3 attachments 112 KB

7EYBTELF1KAN.jpg 18.0 KB | IMG_3937_filtered.jpg 75.1 KB | cute_penguin.jpg 18.8 KB

12.29.2 Email 2 – "how to identify birds"

From Bird Fanciers <mailinglist@birds.example.com> Reply Forward Archive Junk Delete More

To jdoe@example.com 2/9/05, 06:08

Subject **How to Identify Birds**

```
How to Identify Birds

Are you amazed at how quickly birders can identify birds? Actually, it's just like getting to know your human neighbors.
When you move into a new neighborhood everyone is a stranger, but soon you learn to tell people apart as you unconsciously
catalog their characteristics. Their habits, shape, styles of walking, and "habitats" become familiar enough that you can
recognize each neighbor immediately, even at a distance.


Paying attention to individual differences can help you identify birds, too. You can recognize many birds simply by noting
their shapes, even if seen only in silhouette. Other useful characteristics are a bird's posture, size (easiest to judge if
you use familiar birds as a size reference), flight pattern and/or head-on flight profile, and the kind of habitat in which
the bird was seen.


Start by learning to identify general groups of birds- warblers, flycatchers, hawks, owls, wrens- whose members all share
certain similarities. As your observation skills improve, familiarize yourself with the field marks- colored or patterned
areas on the bird's body, head, and wings- that help distinguish species.
```

12.29.3 Email 3 – "some more good ones"

From Ben Forbes <ben@example.org> Reply Forward Archive Junk Delete More

To jdoe@example.com 2/9/05, 06:08

Subject **some more good ones**

```
Thanks for the pics you sent me here are some I really like
```

5 attachments 386 KB

BC7 feeding the birds.jpg 107 KB | glfs-storm-birds.jpg 80.7 KB | colorful-birds.jpg 98.5 KB

IMG_3937_filtered.jpg 75.1 KB | gawall8.jpg 24.1 KB

12.29.4 Email 4 – "expensive birds"

From Ben Forbes <ben@example.org> Reply Forward Archive Junk Delete More

To jdoe@example.com 2/9/05, 06:08

Subject **expensive birds**

```
A young woman was walking past a pet shop and saw an exotic, white cockatoo for sale.  The price was $6000.  She entered the
store and asked the clerk why the bird was so expensive.   The clerk told her that the bird spoke 6 different languages.
"Does it speak English?" asked the woman.  "Of course it does!" said the clerk.
The woman thought about her mother who was multi-lingual, a bit of a recluse and lived  all alone.
She decided to purchase the bird and send it to her mother as a companion.  She paid for the bird and made arrangements for
it to be delivered. The following day, the woman telephoned her mother. "Mama, did you like the cockatoo that I sent you?"
"Oh it was delicious!" she replied."  "Mama, what do you mean delicious?" "I made soup out of it."
 "But mama, that bird spoke six different languages!"
 "Oh dear! Why didn't it say something?"
```

12.30 Database of files

ID	File Name	MD5 Checksum
Unallocated Partition images		
Picture 19	AlmondMarshGreatBlueHeronStalling.jp	ed2b7f661974455399f9d083f01c19fe
Picture 20	AmericanAvocetWinterPlumage.jpg	7addf538b2781a0d44d2ef0d4649e680
Picture 21	AmericanWhitePelicansCircling.jpg	9e637c4b39b94f2eb72a8ebc81684652
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Picture 4	BarnOwl.jpg	35c82564737216998e3d051f286bb728
Picture 22	BellbirdJumpingOffBranch.jpg	44d0a2dc29c52a8656bd4bdcb12d794c
Picture 23	BlackNeckedStiltsFromBehind.jpg	e08381661fdb2f06e0c15b599dcad571
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Picture 3	brd_Ornithologist_TWG.jpg	beaaf73518d8e49e58f116fbd834f537
Picture 5	GreatBlueHeronWithFish.jpg	5db35478fd169cf7487b1a62ec872ac4
Picture 6	GreatEgretInVoloBog.jpg	798a2db6f5695328bf8d116f2a76f99f
Picture 18	GreatEgretOverflyingRoseateSpoonbills.jpg	ca239de832cf2a1f6084a6939ee3d405
Picture 7	GreenHeronCloseup.jpg	acbcefd7efb3a148e050d6fe3340b4bd
Picture 8	GreenHeronOnChicagoLakeshore.jpg	f393ebd21e9f30d4a75e4db4bf10dc5b
Picture 9	ImmatureSnowyEgretTakingOff.jpg	eb09aea7a30842db52a3bb6acf23442b
Picture 10	june03screen.jpg	26ea3ed3b63821dd6ed5d0828696d741
Picture 11	junescreen01.jpg	b86ddb90a6902c83c0e516d0aaa32f31
Picture 12	KeaAndMountain.jpg	a46cef1fd7b9735372e7fa07d5f05457
Picture 13	KeaAtTopOfMacKinnonPass0930.jpg	6070cdc8e0c059ad72fd782ac8b7f161
Picture 14	KeaEatingRentalCar.jpg	3db5fb16b446ea0e92447cf6399709e9
Picture 15	KeaRetrievingBakedBeanCanFromTarn.jpg	cc51364cd95f021f7422ab2a219966ef
Picture 16	Df1.jpg	91e2843f48162ac7a12a777d5e4226f5
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Picture 68	f0348056.jpg	0f5a1ea46ba156b32f8113bf6f84a43c
Picture 69	f0360392.jpg	37d60053d5e9336516887a24bc735edc
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Picture 36	f0501184.jpg	44e820a7bad45f1e85ea67a38bf960f9
Picture 37	f0508024.jpg	fe1fd96d6e268a57fe2583f9d72481bd
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Picture 110	ready2fledge.jpg	25ba487aeb9ae11a3adb64e4fb32414b
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Picture 52	chicks2.jpg	5b3fa4e2e40a5b50e7563612725e19ea
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Picture 186	WhiteThroatedSparrowInTree.jpg	ae5099b0789f67b971e846ea3be71cef
Picture 184	WhoopingCranes.jpg	4d2c8828ae6ec294c9a234dcb1d7adab
Picture 185	yellow-wag-cover-nb.jpg	a3695fa7e971d3583083002107faa650
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Picture 190	Brolga.jpg	e44460b1be9072794611dbdd64d319c9
Picture 191	BrushTurkeyPerching.jpg	55bd5a13fd9663b481bce7f066cbb32c
Picture 192	CanadaGoose.jpg	b7a84aa1ed0763fbeb8d52b386c3d13e
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Picture 188	CrouchingKokako.jpg	fa463d5035f0ed111ac59c7f8856d404
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Email Attachments		
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Picture 210	colorful-birds.jpg	b1e81a5579338272936464668 0d51010
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Picture 211	gawall8.jpg	80bcd2179290c3e87c8505b1d1d991a5
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Misc. Images		
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Documents		
Document 1	stuf.doc	c8873d36266916c20bd2f3ebb89a800e
Document 2	guide.doc	08c4123261ed8ebb648ba7bcf25788aa
Document 3	birdwatching.doc	c6108e60db66aa588543657c4f656847
Document 4	Doc1.doc	9860f16826698f3c38f7486b16aa5e2e
Document 5	nestboxtips.txt	333fc58042a410d453c22984c4b55e3d
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PDF Files		
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PDF 2	57ab_perth.pdf	26a49cca77de541139f5ab718d672e99
PDF 3	News_sprg2001.pdf	1dd4549c1e514f35551449176fb0d82a
Websites		
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