



# Mainland New Zealand sea lions

**Laura Boren**  
Science Advisor,  
Marine Species and Threats  
Department of Conservation

March 2015

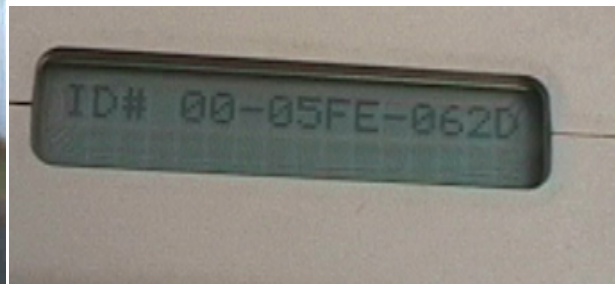


Monitoring on the  
Mainland of ID-able  
individuals,  
e.g. Bleaches, tags, chips,  
Photo ID

Scars



VHF Transmitters



Microchips



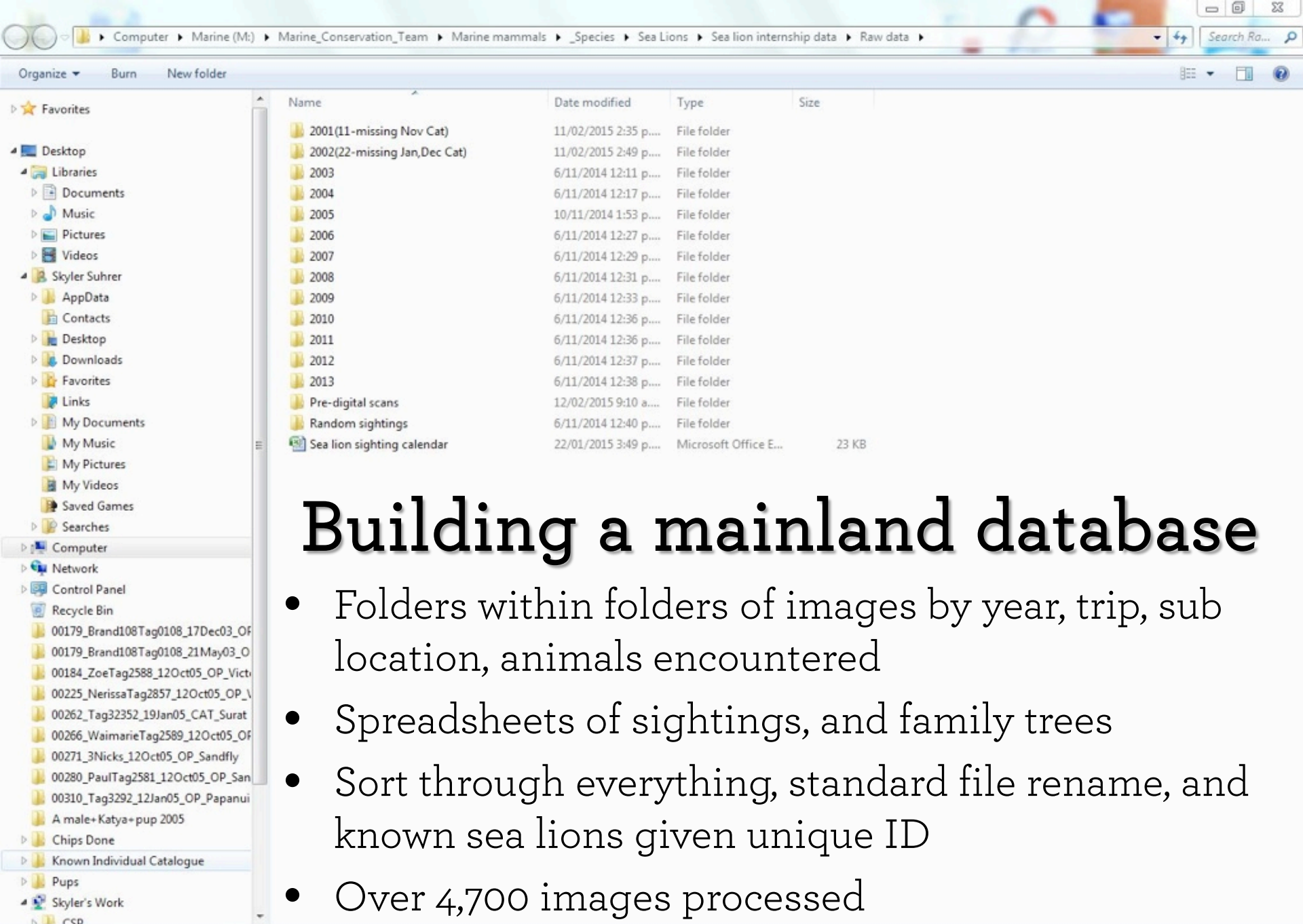
Tags

# Building a mainland database

- Surveys on the Otago Peninsula and Catlins since 1995
- Weekly, monthly, biannual
- Data through to 1999 has been analysed and published
- Over 10 years of data not worked up
- Intern to photo match, build a database for use in the risk assessment

# Building a mainland database

- To pull all the information into a database comparable to the Auckland Islands database
- Create Photo ID database and match as many unknowns as possible
- Cross reference known individuals with Stewart Island and Subantarctics databases



# Building a mainland database

- Folders within folders of images by year, trip, sub location, animals encountered
- Spreadsheets of sightings, and family trees
- Sort through everything, standard file rename, and known sea lions given unique ID
- Over 4,700 images processed

# Building a mainland database

- Aim of Photo matching put on backburner due to technical challenges and the time allowed for internship
- Focus on pulling the data of known individuals into a “resightings database”
- Data were from ~500 field visits between 1995-2013

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	Identifying Code	Individual Given Name	Shaun's Code	Sex	Date	Time of Survey	Region	Location	Date Tagged	Tag Number	Tag Present	Tag Lost	Tag Shape	Tag Color	Chip Number
1018	00184	Zoe		Female	26 March 2013	1015-1345	Otago Peninsula	Victory		2588					
1020	00185	Hiriwa		Female	26 March 2013	1015-1345	Otago Peninsula	Victory		9013	Left, Right		Coffin	Yellow	
1021	00186	Cookle		Female	8 October 2003	1100-1330	Otago Peninsula	Victory							
1022	00186	Cookle		Female	7 February 2008	1100-1430	Otago Peninsula	Victory							
1023	00186	Cookle		Female	3 April 2008	1115-1500	Otago Peninsula	Victory		3455	Left, Right		Coffin	Red	
1024	00186	Cookle		Female	4 June 2008	1045-1330	Otago Peninsula	Victory		3455	Left		Coffin	Red	
1025	00186	Cookle		Female	1 September 2008	1045-1315	Otago Peninsula	Victory		3455	Right	Left	Coffin	Red	
1026	00186	Cookle		Female	5 October 2008	1100-1400	Otago Peninsula	Victory		3455	Right	Left	Coffin	Red	
1027	00186	Cookle		Female	6 March 2010	1100-1430	Otago Peninsula	Victory		3455	Right		Coffin	Red	
1028	00186	Cookle		Female	9 April 2010	1030-1415	Otago Peninsula	Victory		3455	Right		Coffin	Red	
1029	00186	Cookle		Female			Otago Peninsula	Victory					Coffin	Red	
1030	00186													Red	
1031	00186													Red	
1032	00186													Red	
1033	00186													Red	
1034	00186														
1035	00186														
1036	00187													White	
1037	00188													White	
1038	00189													White	
1039	00189													White	
1040	00189													White	
1041	00189													White	
1042	00189													White	
1043	00189													White	
1044	00189													White	
1045	00189													White	
1046	00189													White	
1047	00189													White	
1048	00189													White	
1049	00189													White	
1050	00189													White	
1051	00189													White	
1052	00189													White	
1053	00189													White	
1054	00190													Yellow	
1055	00190													Bright Blue	
1056	00190													Skj Blue	
1057	00190													Bright Blue	
1058	00191													Bright Blue	
1059	00191													Bright Blue	
1060	00191													Bright Blue	00-06DD-510C
1061	00191													Bright Blue	
1062	00192													Yellow	
1063	00192													Yellow	
1064	00192													Yellow	
1065	00192	Tag 4767		Unknown	6 Jul 2009	1545-1715	Otago Peninsula	Sandfly		4767	Right		Coffin	Yellow	
1066	00192	Tag 4767		Unknown	19 August 2009	1530-1700	Otago Peninsula	Sandfly		4767	Left, Right		Coffin	White	
1067	00192	Tag 4767		Unknown	17 September 2009	1530-1730	Otago Peninsula	Sandfly		4767	Right		Coffin	Yellow	
1068	00192	Tag 4767		Unknown	12 November 2009	1530-1700	Otago Peninsula	Sandfly		4767	Left, Right		Coffin	Yellow	
1069	00192	Tag 4767		Unknown	14 May 2010	1645-1745	Otago Peninsula	Sandfly		4767					
1070	00192	Tag 4767		Unknown	11 June 2010	1345-1445	Catlins	Cannibal		4767	Left, Right		Coffin	Orange	
1071	00192	Tag 4767		Unknown	22 October 2010	1615-1730	Otago Peninsula	Sandfly		4767	Left		Coffin	Yellow	
1072	00192	Tag 4767		Unknown	10 October 2011	1400-1700	Otago Peninsula	Sandfly		4767					
1073	00192	Tag 4767		Unknown	26 March 2012	1715-1830	Otago Peninsula	Allens		4767	Left, Right		Coffin	Yellow	
1074	00192	Tag 4767		Unknown	28 September 2012	1445-1645	Otago Peninsula	Sandfly		4767	Right		Coffin	White or yellow?	
1075	00193	E006		Unknown	26 March 2012	1715-1830	Otago Peninsula	Allens		E006	Left, Right		Coffin	Skj Blue	00-06FE-250C
1076	00194	Gem		Female	14 March 2006	1100-1345	Otago Peninsula	Victory		2594	Left		Coffin	Pink	
1077	00194	Gem		Female	5 April 2006	1015-1315	Otago Peninsula	Victory		2594	Right		Coffin	Pink	
1078	00194	Gem		Female	10 May 2006	1030-1400	Otago Peninsula	Victory		2594	Right		Coffin	Pink	
1079	00194	Gem		Female	4 June 2007	1030-1345	Otago Peninsula	Victory		2594	Right		Coffin	Pink	
1080	00194	Gem		Female	13 September 2007	1115-1230	Otago Peninsula	Victory		2594	Right	Left	Coffin	Pink	
1081	00194	Gem		Female	10 January 2008	1030-1315	Otago Peninsula	Victory		2594	Right	Left	Coffin	Red	
1082	00194	Gem		Female	6 March 2008	1100-1330	Otago Peninsula	Victory		2594	Right		Coffin	Pink	
1083	00194	Gem		Female	14 July 2008	1330-1415	Otago Peninsula	Papanui		2594	Right		Coffin	Pink	

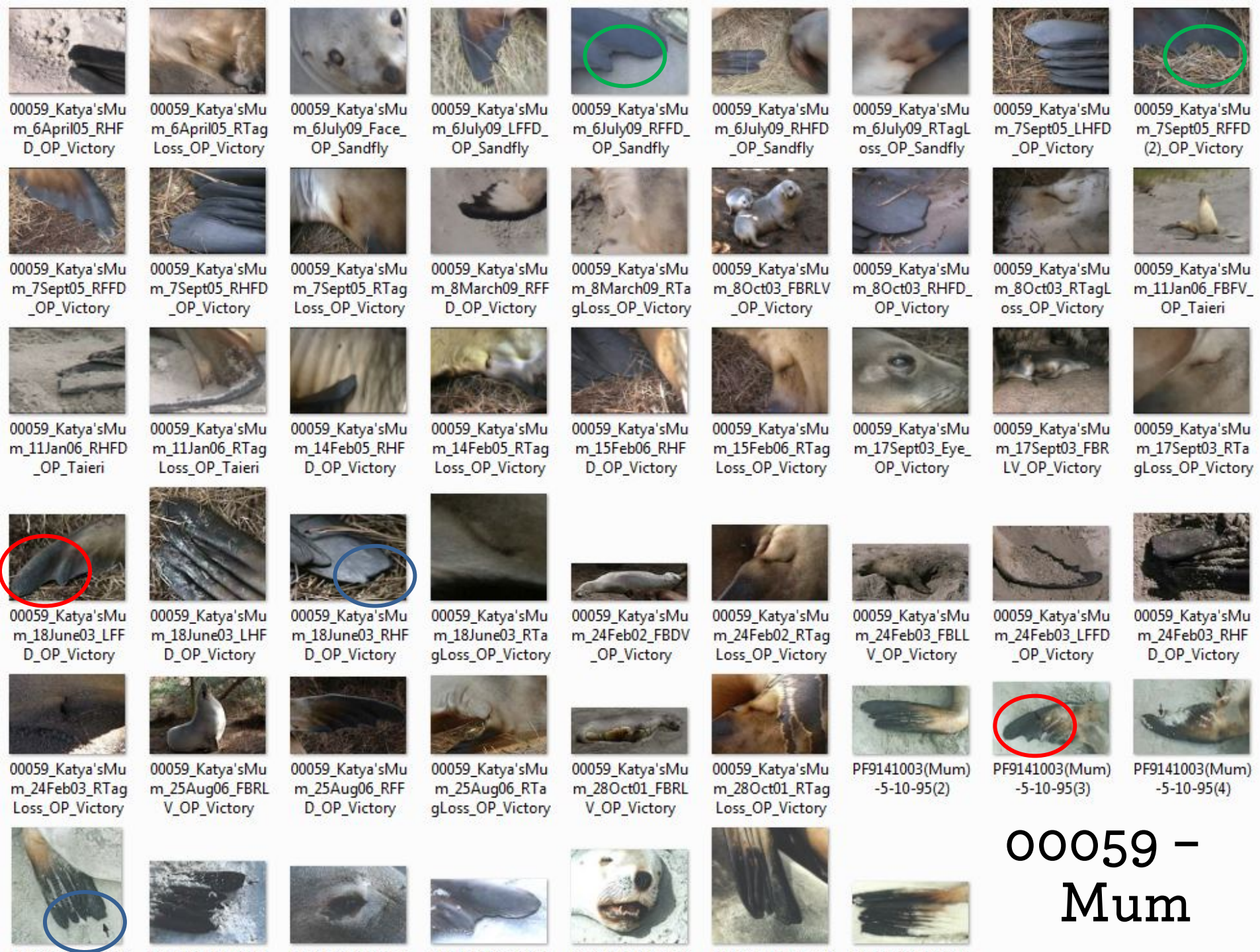
# Building a mainland database

- Modelled on the Subantarctics database
- With additional fields/sheets to accommodate the type of data
- X referenced with Dragonfly database – chip reads etc

# Building a mainland database

- Over 1700 individual sighting events from tag reads, PIT tags, and photos
- 321 unique individuals in the database
- 17 confirmed dead
- 53 individuals born in the Auckland Islands, sighted on the mainland, majority male, but a handful of females
- ~31 females born in Otago, 2 Catlins
- Some more verification still needed





00059\_Katya'sMum\_6April05\_RHFD\_OP\_Victory

00059\_Katya'sMum\_6April05\_RTagLoss\_OP\_Victory

00059\_Katya'sMum\_6July09\_Face\_OP\_Sandfly

00059\_Katya'sMum\_6July09\_LFFD\_OP\_Sandfly

00059\_Katya'sMum\_6July09\_RFFD\_OP\_Sandfly

00059\_Katya'sMum\_6July09\_RHFD\_OP\_Sandfly

00059\_Katya'sMum\_6July09\_RTagLoss\_OP\_Sandfly

00059\_Katya'sMum\_7Sept05\_LHFD\_OP\_Victory

00059\_Katya'sMum\_7Sept05\_RFFD(2)\_OP\_Victory

00059\_Katya'sMum\_7Sept05\_RFFD\_OP\_Victory

00059\_Katya'sMum\_7Sept05\_RHFD\_OP\_Victory

00059\_Katya'sMum\_7Sept05\_RTagLoss\_OP\_Victory

00059\_Katya'sMum\_8March09\_RFFD\_OP\_Victory

00059\_Katya'sMum\_8March09\_RTagLoss\_OP\_Victory

00059\_Katya'sMum\_8Oct03\_FBRLV\_OP\_Victory

00059\_Katya'sMum\_8Oct03\_RHFD\_OP\_Victory

00059\_Katya'sMum\_8Oct03\_RTagLoss\_OP\_Victory

00059\_Katya'sMum\_11Jan06\_FBFV\_OP\_Taieri

00059\_Katya'sMum\_11Jan06\_RHFD\_OP\_Taieri

00059\_Katya'sMum\_11Jan06\_RTagLoss\_OP\_Taieri

00059\_Katya'sMum\_14Feb05\_RHFD\_OP\_Victory

00059\_Katya'sMum\_14Feb05\_RTagLoss\_OP\_Victory

00059\_Katya'sMum\_15Feb06\_RHFD\_OP\_Victory

00059\_Katya'sMum\_15Feb06\_RTagLoss\_OP\_Victory

00059\_Katya'sMum\_17Sept03\_Eye\_OP\_Victory

00059\_Katya'sMum\_17Sept03\_FBR LV\_OP\_Victory

00059\_Katya'sMum\_17Sept03\_RTagLoss\_OP\_Victory

00059\_Katya'sMum\_18June03\_LFFD\_OP\_Victory

00059\_Katya'sMum\_18June03\_LHFD\_OP\_Victory

00059\_Katya'sMum\_18June03\_RHFD\_OP\_Victory

00059\_Katya'sMum\_18June03\_RTagLoss\_OP\_Victory

00059\_Katya'sMum\_24Feb02\_FBDV\_OP\_Victory

00059\_Katya'sMum\_24Feb02\_RTagLoss\_OP\_Victory

00059\_Katya'sMum\_24Feb03\_FBLLV\_OP\_Victory

00059\_Katya'sMum\_24Feb03\_LFFD\_OP\_Victory

00059\_Katya'sMum\_24Feb03\_RHFD\_OP\_Victory

00059\_Katya'sMum\_24Feb03\_RTagLoss\_OP\_Victory

00059\_Katya'sMum\_25Aug06\_FBR LV\_OP\_Victory

00059\_Katya'sMum\_25Aug06\_RFFD\_OP\_Victory

00059\_Katya'sMum\_25Aug06\_RTagLoss\_OP\_Victory

00059\_Katya'sMum\_28Oct01\_FBR LV\_OP\_Victory

00059\_Katya'sMum\_28Oct01\_RTagLoss\_OP\_Victory

PF9141003(Mum)-5-10-95(2)

PF9141003(Mum)-5-10-95(3)

PF9141003(Mum)-5-10-95(4)

00059\_Katya'sMum\_24Feb03\_RTagLoss\_OP\_Victory

PF9141003(Mum)-5-10-95(2)

PF9141003(Mum)-5-10-95(3)

PF9141003(Mum)-5-10-95(4)

00059 - Mum

Identifying Code	Individual Given Name	Shaun's Code	Sex	Date	Time of Survey	Region
00059	Mum	PF9141003	Female	6 July 2009	1545-1715	Peninsula Otago
00059	Mum	PF9141003	Female	5 April 2009	1015-1345	Peninsula Otago
00059	Mum	PF9141003	Female	8 March 2009	1100-1400	Peninsula Otago
00059	Mum	PF9141003	Female	3 April 2008	1115-1500	Peninsula Otago
00059	Mum	PF9141003	Female	25 August 2006	1400-1600	Peninsula Otago
00059	Mum	PF9141003	Female	5 April 2006	1015-1315	Peninsula Otago
00059	Mum	PF9141003	Female	15 February 2006	1030-1400	Peninsula Otago
00059	Mum	PF9141003	Female	11 January 2006	1030-0000	Peninsula Otago
00059	Mum	PF9141003	Female	7 September 2005	1015-1330	Peninsula Otago
00059	Mum	PF9141003	Female	2 August 2005	1030-1315	Peninsula Otago

**00059 - Mum**  
**Resights since 1995**  
**and pupping records**

00059	Mum	1986/87	00058	Katya	1993/94	Taieri River Mouth	Confirmed Tree	Mum's Family		
00059	Mum	1986/87	00075	Leone	1995/96	Taieri River Mouth	Confirmed Tree	Mum's Family		
00059	Mum	1986/87	00133	Suzie	1997/98	Taieri River Mouth	Confirmed Tree	Mum's Family	1737	Orange
00059	Mum	1986/87	00013	Bill (B1401/2)	1998/99	Taieri River Mouth	Confirmed Tree	Mum's Family	B1401/2	Orange
00059	Mum	1986/87	00293	Y2k	1999/00	Taieri River Mouth	Confirmed Tree	Mum's Family		
00059	Mum	1986/87	00301	Mum's 00/01 Pup	2000/01	Blackhead	Confirmed Tree	Mum's Family		
00059	Mum	1986/87	00288	Conor	2001/02	Taieri River Mouth	Confirmed Tree	Mum's Family	2570	Pink
00059	Mum	1986/87	00229	Honey	2002/03	Taieri River Mouth	Confirmed Tree	Mum's Family	2583	Pink
00059	Mum	1986/87	00231	Bruno	2003/04	Taieri River Mouth	Confirmed Tree	Mum's Family	2583	Pink
00059	Mum	1986/87	00261	Wovoka	2005/06	Taieri River Mouth	Confirmed Tree	Mum's Family	2595	Pink
00059	Mum	1986/87	00161	Whetu rere	2006/07	Taieri River Mouth	Confirmed Tree	Mum's Family		

# Building a mainland database

Name	Birth	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Katya	1994	P	1	0	3	B	5	6	B	8	B	B	B	B	B	B	B	B	0	0	0
Leone	1996	P	0	2	0	4	B	B	B	B	B	0	B	13	14	B	16	0			
Suzie	1998	P	0	2	0	B	5	6	B	0	0	0	0	0	0	0	0				
Y2K	2000	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Victoria	2001	P	1	2	3	B	B	0	0	0	0	0	0	0							
Teyah	2001	P	1	2	0	B	B	6	B	B	B	B	B	0							
Lorelie	2002	P	1	0	3	B	0	B	7	B	9	B	B								
Honey	2003	P	1	2	3	0	B	6	7	8	0	0									
Aroura	2004	P	1	2	3	B	5	0	0	0	0										
Waimarie	2004	P	1	2	3	0	0	0	0	0	0										
Nerissa	2005	P	1	2	3	B	B	6	0	0											
Zoe	2005	P	1	2	3	B	B	0	B	B											
Pani	2005	P	0	0	0	0	0	0	0	0											
Gem	2006	P	1	2	3	4	0	B	B												
Emma	2006	P	0	0	0	0	0	0	0												
Mia	2006	P	0	2	3	4	5	6	0												
Hine	2007	P	0	0	3	0	0	0													
Madeline	2007	P	1	2	3	4	0	0													
Lena	2008	P	1	2	3	4	0														
Douce	2008	P	1	0	0	0	0														
Cockle	2008	P	1	2	3	4	5														
Patti	2009	P	1	2	0	4															
Mana	2009	P	1	2	0	0															
Huru	2010	P	1	0	3																
Sandy	2010	P	1	2	0																
Becky	2010	P	1	2	0																
Pippa	2010	P	1	2	3																
Ngaio	2011	P	0	0																	
Hiriwa	2011	P	0	2																	
Joy	2011	P	1	2																	
Carleigh	2011	P	0	0																	
Marama	2012	P	0																		
Moana	2012	P	0																		
Female	2013	P																			

## The sort of data we can get

- Small sample of ~34 females born on OP since 1994
- ≤6/31 died prior to age 2 (≤19%)
- High proportion confirmed pupping at age 4
- Age at first pupping potentially later in cohorts born post-2005
- Additionally a small number of females born at Auckland Islands sighted on Mainland

# Potential uses for risk assessment

- Demographic rates such as survival and resight probabilities
- **Preliminary** assessment
  - Survival of all age classes except 15+ above 0.8
  - Resight rates 0.7 for pups, increasing to 0.9 for adults

# Example of male movements

## Brand 169



Identifying Code	Dragonfly Code	Date	Region
00174	20000115-0169	29 October 2010	Catlins
00174	20000115-0169	11 June 2010	Catlins
00174	20000115-0169	21 May 2010	Catlins
00174	20000115-0169	23 April 2010	Catlins
00174	20000115-0169	19 March 2010	Catlins
00174	20000115-0169	26 February 2010	Catlins
00174	20000115-0169	28 September 2009	Catlins
00174	20000115-0169	5 June 2009	Catlins
00174	20000115-0169	25 May 2009	Catlins
00174	20000115-0169	16 March 2009	Catlins
00174	20000115-0169	15 February 2009	Catlins
00174	20000115-0169	26 January 2009	Catlins
00174	20000115-0169	15 May 2008	Catlins
00174	20000115-0169	13 June 2007	Catlins
00174	20000115-0169	21 June 2006	Catlins
00174	20000115-0169	12 April 2006	Catlins
00174	20000115-0169	21 March 2006	Catlins
00174	20000115-0169	26 February 2006	Catlins
00174	20000115-0169	15 June 2005	Catlins
00174	20000115-0169	30 March 2005	Catlins
00174	20000115-0169	18 December 2003	Catlins
00174	20000115-0169	9 November 2003	Catlins
00174	20000115-0169	26 June 2003	Catlins
00174	20000115-0169	2 May 2003	Catlins
00174	20000115-0169	11 March 2003	Catlins
00174	20000115-0169	22 January 2003	Catlins
00174	20000115-0169	15 April 2002	Catlins
00174	20000115-0169	18 December 2001	Catlins
00174	20000115-0169	31 October 2001	Catlins
00174	20000115-0169	22 August 2001	Catlins
00174	20000115-0169	26 June 2001	Catlins

\*Sighted on Enderby 2007

\*\*This image Aug 2014 Cannibal Bay

# Building a mainland database

- More that could be done
  - Pull in resigh data from other sources and time periods this is NZSLT only at the moment
  - Photo catalogue and complete matching to potentially increase
  - Mark rates to improve resighting for tag losses
  - Male movements between sites

# QUESTIONS