

## **Monarch Tagging Programme Analysis in New Zealand**

### **Report to the Moths and Butterflies of New Zealand Trustees – Nov 2020**

Attached to this document is an analysis of the tagging data available on the MBNZT website along with accompanying notes.

Tagging of monarchs in New Zealand first occurred in 2005 and 2006 as a trial. From 2007 widespread tagging has taken place with the number tagged ranging from 5489 to 10916. Each tag has a discrete number prefixed by two or three letters which relate to a particular year (eg T series = 2020) When participants order tags their postal details are recorded on the tagging database site. When a person recovers a tagged butterfly they enter the number from the tag on the website along with the postal location of where it was recovered and a description of the site.

The main purpose of the tagging programme has been to establish whether there are any migration patterns within the monarch population in New Zealand. Based on the analysed data there appears to be no pattern of migration or any common destination. The majority of recoveries were made within the postcode area in which they were released. However, there were some significant gaps in the data (entry of postcodes) for some years making it impossible, in some cases, to establish where monarchs had travelled from and where they ended up.

Anecdotal records plus what tagging data there is would suggest that the majority of monarchs overwinter in the area around where they eclose. There would be some merit in identifying these overwintering sites (some are already known) and having volunteers living in the vicinity monitoring the populations. It is assumed that these populations go into diapause. A methodology should be established to enable these population counts to be undertaken. There could be observations made of flight patterns on warm, sunny winter days and any evidence of mating behaviour. This could be backed up with monitoring of swan plants for evidence of eggs and establishing whether they are fertile.

It would have to be questioned whether there is any purpose in continuing the tagging programme in its current form as it has become apparent there are no identified migration patterns in NZ. While it may engage a range of participants, some of whom have had no previous exposure to MBNZT, there may be other more useful tasks that could be introduced instead for interested butterfly enthusiasts. Promoting MLMP would provide a range of data that would help to establish breeding patterns as well as the impact of other factor such as climatic and predation. Sampling and testing for OE could be another research area.

If the tagging programme was to continue there would be benefit in targeting a breeding and release programme in colder locations (eg Taupo, Rotorua, Taihape, Palmerston North, Dunedin, Invercargill , Queenstown etc) to establish if there is a migration pattern from these locations that experience colder winters. It would also be important to have any data collected analysed on a regular basis. Ensuring the data input was complete in the future – postcodes entered for both release and recovery points – would be important.

There has been a cost to MBNZT in running the tagging programme though this has become largely self-funding in 2020 with participants paying for sheets of tags. This was probably the reason the number of tagged monarchs dropped in 2020 compared to the previous year (approx 3000 fewer).

### **Summary**

The data collected from tagging has established there is no pattern of migration of NZ monarch population. Further tagging will not serve any purpose in relation to migratory patterns unless there is a focus on tagging in locations with colder winters. Encouraging butterfly enthusiasts to become involved in the MLMP and the OE monitoring programme at Victoria University of Wellington. It is difficult to put a value on involving people in the tagging programme and how this raises knowledge and understanding of our natural environment.

Hugh Smith

## Monarch Tagging Data

year	Total tagged	Total recovered	% recovered	% of recoveries outside postal code of release	No. outside post code	Tag No of long flights	Distances
2020	7674	695	7%	2%	13	TAJ763(Shan-Titirangi), TAN487(Titi-Dun)	555km, 880km
2019	10517	1641	16%	2%	35	SAH796(Blen-Taupo), SAW014(ChCh -PN)	492km, 572km
2018	6731	1180	18%	1%	17	RAG483(Richmond-Lower H)	257km
2017	9083	704	8%	2%	16	PAB320(Palmerston-BHB), PAC707(Lower H-Nel), PAT320(Hast- BHB)	1375k,257k, 430k
2016	10916	939	9%	3%	24		
2015	10362	926	9%	3%	31	MAG413(Beth- Devonport)	170km
2014	6204	652	11%	2%	13	LAJ906(Whakamarama-Waimate Nth)	430km
2013	8797	513	6%	4%	20	JAG036(Browns Bay-Nelson) JAS093(ChCh-Well)	890km, 433km
2012	8773	197	2%	3%	6		
2011	8396	137	2%	4%	6	GAN123(Kawhia- Cen.Auck)	203km
2010	10137	240	2%	4%	10	EAB976(Puke-KKati)	129km
2009	5489	130	2%	10%	13	CAA351(Nel-Well)	250km
2008	6883	138	2%	14%	20	BL535)ChCh-Nel)	416km
2007	5684	198	3%	12%	24	AE207(Wang-Waitak),AA125(Nth Otago-Well),AE601(Manukau-Tim)	445k, 674k, 1211k
2006	64	5	8%				
2005	49	0	0%				

### Notes

- 1 When there was no postcode there were sometime locations stated (difficult to establish if moved outside postcodes eg Auckland/Titirangi)
- 2 Some tags were recorded multiple times
- 3 Some years had incomplete postcode information - sometimes either release or recoery and in some cases neither

- 4 No data on website for 2005 and 2006
- 5 Some postcodes entered are not valid codes
- 6 Obviously some taggers haven't recorded their tagging releases
- 7 2010, 2011 & 2012 had major gaps in postcode data. Other years had some missing postcode data
- 8 Road distances have been used. There may have been direct flights.
- 9 Were any tagged monarchs transported from one area to another?
- 10 There may have been other long flights that can't be identified because of the lack of postcode data
- 11 Some dates entered are incorrect. Release date after recovery date?? (eg PAB320). Could be time travellers.
- 12 Most flights were north but some were south.
- 13 There was no consistent pattern to the journeys the recovered monarchs took. No common destination.
- 14 There was no apparent reason why there was a greater percentage of recoveries that went beyond release postcode in 2007/8/9
- 15 there was no analysis of data related to within the greater Auckland area
- 16 There was a spike in recoveries in 2018 and 2019 though this was largely within the release postcodes
- 17 New postcode system was introduced in 2006