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The distribution of Sloane's Froglet, *Crinia sloanei*, in southern NSW and northern Victoria: a review of historical distribution records and results from surveys undertaken from 2010 - 2013

Report No. 70

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The distribution of Sloane's Froglet, *Crinia sloanei*, in southern NSW and northern Victoria: a review of historical distribution records and results from surveys undertaken from 2010 to 2013.

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Kind friends and keen froggers helped me in my search, let me know about Sloane's Froglets they had found and encouraged me. My special thanks go to Natasha Lappin and Cassie Douglas for constant support and inspiration. Natasha's knowledge of Corowa wetlands was very valuable. My thanks goes to all the landholders who let me onto their properties and to Murray Littlejohn, James Maguire, Joanne Divers, Ian McNamara, Kate Hill, Joanne and Rick Hayes, Robyn Watts, Marion Anstis, and especially Lucy Lu who was always excited by the project and never minded getting her feet wet (even on pouring, very cold dark nights). A huge thanks goes to Simon McDonald from CSU's SPAN for all his help with project setup, GIS, data management and map production. My PhD supervisors Robyn Watts, Catherine Allan and David Hunter have been most supportive and encouraging.

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Executive Summary

Sloane's Froglet, *Crinia sloanei*, is a small frog with an historical distribution in north central Victoria and central western NSW from the Victorian to the Queensland border. It has been sparsely and infrequently recorded across its range, especially in the last 10 years. It is listed as Vulnerable (Hughes, 2008) under the *NSW Threatened Species Act* and as data deficient by the IUCN (IUCN, 2013).

Very little is known about the species. It was necessary to develop an understanding of the current distribution in order to gain an insight into the species and underpin the design of future research.

This report has two aims. Firstly, it examines the distribution of Sloane's Froglet from its time of discovery in 1957 (Littlejohn 1958) to the present time as made available in wildlife databases and in other records provided by herpetologists. Secondly, it presents the recent distribution information developed from surveys undertaken in 2010, 2011, 2012 and 2013 by the author as part of her PhD research programme.

Historical distribution records for Sloane's Froglet were obtained from two main sources. Firstly, records from NSW and Victorian wildlife atlas databases were accessed. Secondly, personal requests were made to herpetologists who have worked within the region where Sloane's Froglet is known to have occurred.

Historical records showed that Sloane's Froglet has been recorded from sites in NSW and Victoria, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes, Riverina and Victorian Midlands bioregions. The number of records in the last 20 years has declined.

Recent records from surveys undertaken by other herpetologists showed that Sloane's Froglet has been located in the Namoi catchment in northern NSW (Phil Sparks, pers. Com.).

For this project distribution surveys were undertaken in the winters of 2010, 2011 and 2012. A brief survey was also undertaken in 2013. Surveys focused on establishing the current presence of *Crinia sloanei* at sites where it had been previously found in southern NSW and northern Victoria. After its presence was established intensive survey work was undertaken in neighbouring areas to extend the known distribution. In addition, community input into finding the froglet was requested through popular media.

Significant populations of the species were located in the Albury and Corowa regions of NSW and the Wahgunyah/Rutherglen region of Victoria. These surveys were limited by the available resources and the unusually wet conditions. Further survey work would no doubt extend the current known distribution of this species.

1.0 Introduction

Sloane's Froglet, *Crinia sloanei*, is a small frog with a known historic distribution in north central Victoria and central western NSW as far north as the Queensland border. It has been rarely recorded across its range, especially in the last 20 years. Very little is known of the species. In order to gain an insight into the species and underpin the design of future research, knowledge of its distribution is essential.

This report has two aims. Firstly, it examines the distribution of Sloane's Froglet from its time of discovery in 1957 (Littlejohn, 1958) to the present time as made available in wildlife databases and in other records provided by herpetologists. Secondly, it presents the recent distribution information developed from surveys undertaken in 2010, 2011, 2012 and 2013 by the author as part of her PhD research programme.

2.0 Background

Sloanes Froglet, *Crinia sloanei*, is a small froglet, generally around 15 – 20 mm, belonging to the family Myobatrichidae. It has a brown or browny-grey back often with darker brown or olive markings and males may also have orange or ochre coloured spots (Figure 1).

Figure 1: Photograph of a male Sloane's Froglet calling at Albury in Winter. (David Hunter)

Very little is known about Sloane's Froglet and the only published literature is the original taxonomic description for the species (Littlejohn, 1958). Littlejohn found this species after distinguishing its call from that of two sympatric species, *Crinia signifera* and *Crinia parinisignifera,* in the Riverina region of NSW. Calls were recorded in the field (Figure 2) and compared with that of the two sympatric species using oscillograms. The difference in call between the species is distinctive, with Sloane's Froglet producing a short, high pitched chirp. Littlejohn (1958) also described morphological differences with an emphasis on the difference in throat and belly colour and markings among the three species.

Figure 2: Patsy Littlejohn recording frog calls. Murray was outside of the vehicle with the microphone. (Murray Littlejohn)

The species was formally described on the basis of specimens which were collected along the south bank of the Murray River opposite Tocumwal, NSW; and this site became the type locality for *Crinia sloanei.* The species was named after Patsy Littlejohn's uncle, Ian Sloane, of Savernake, NSW, in appreciation of his support of the Littlejohn's field studies (Murray Littlejohn, pers. Com).

Anstis (2002) reports that the very small eggs of Sloane's Froglet are laid "on substrate or attached to submerged vegetation" (Figure 3). Sloane's Froglet tadpoles are difficult to distinguish from those of *C. signfera* and *C. parinisignifera* and there is no information available on tadpole development to metamorphosis (Anstis, 2002).

Figure 3: Photograph of eggs of Sloane's Froglet (Alexandra Knight)

A phylogenetic analysis of all the known *Crinia spp.* (Read, Keogh, Scott, Roberts, & Doughty, 2001) found *C. sloanei* to be more closely related to species in Western Australian including *C. insignifera and pseudinsignifera* rather than the co-occurring *C. signifera* and *C. parinsignifera*.

Sloane's Froglet is very rare. When this project commenced in 2010 within NSW it had only been recorded 45 times, 18 of which have been in the last 10 years (Atlas of NSW Wildlife, May 2009). In NSW it is among the most infrequently recorded of all frogs. During recent survey work in NSW it has not been found in the northern part of the Murray-Darling Basin and at the start of the survey the only known extant population in NSW was at Thurgoona, a suburb of Albury (Anon, nd).

Records from Victoria (Museum Victoria) show that it has been rarely recorded there. The Victorian number of records has declined since the 1980's (Anon, nd). There have been no records for Sloane's Froglet entered into the Victorian Biodiversity Atlas since 2004.

There are no records for Sloane's Froglet in Queensland.

Sloane's Froglet was listed as Vulnerable on the *NSW Threatened Species Conservation Act* in 2008 (Hughes, 2008) and is considered Data Deficient by the IUCN (IUCN, 2013).

3.0 A review of existing records

In order to gain an understanding of the known historic distribution of Sloane's Froglet a review of all the existing records for Sloane's Froglet was undertaken.

3.1 Methodology

Two main approaches were undertaken to establishing the previous distribution of Sloane's Froglet. Firstly, state wildlife databases for Victoria, New South Wales and Queensland were accessed. Secondly, direct approaches to herpetologists with an interest in frogs working within the inland areas of NSW, Victoria and Queensland were made.

3.2 Results

3.2.1 Queensland records

Queensland fauna records are held by the Queensland Museum and the Queensland Department of Environment and Heritage Protection. Neither of these databases hold any records for Sloane's Froglet. Harry Hines, a frog expert based in south-eastern Queensland, was contacted and responded that there are no records for Sloane's Froglet in Queensland (Harry Hines, pers. Com.).

3.2.2 New South Wales records

The NSW Wildlife Atlas is the central repository for fauna records for the entire State of NSW. The Atlas shows 50 records for Sloane's Froglet (NSW Wildlife Atlas accessed 10 December 2012). Six of these records are from the 1950s and 1960s; seven records are from the 1970s and 1980s; 24 records from the 1990s; and, 13 records from 2000 onwards. The earliest records for New South Wales are from Tocumwal close to the known Victorian locations for the species. The two records from the 1960s are much further away at Round Hill and Nyngan in central NSW. More records from southern and central NSW were added in the 1970s, 80s and 90s including records from Griffith and Lake Cowal. The first record for the species in the far north of New South Wales is on the Culgoa River near Goodooga in 1992 and Sloane's Froglet was found at Mungindi in 1998. Other records from the 1990s and into the 2000s are mostly from southern NSW, in particular Albury, Corowa and Wagga Wagga. Figure 4 shows a map all of the NSW Wildlife Atlas records.

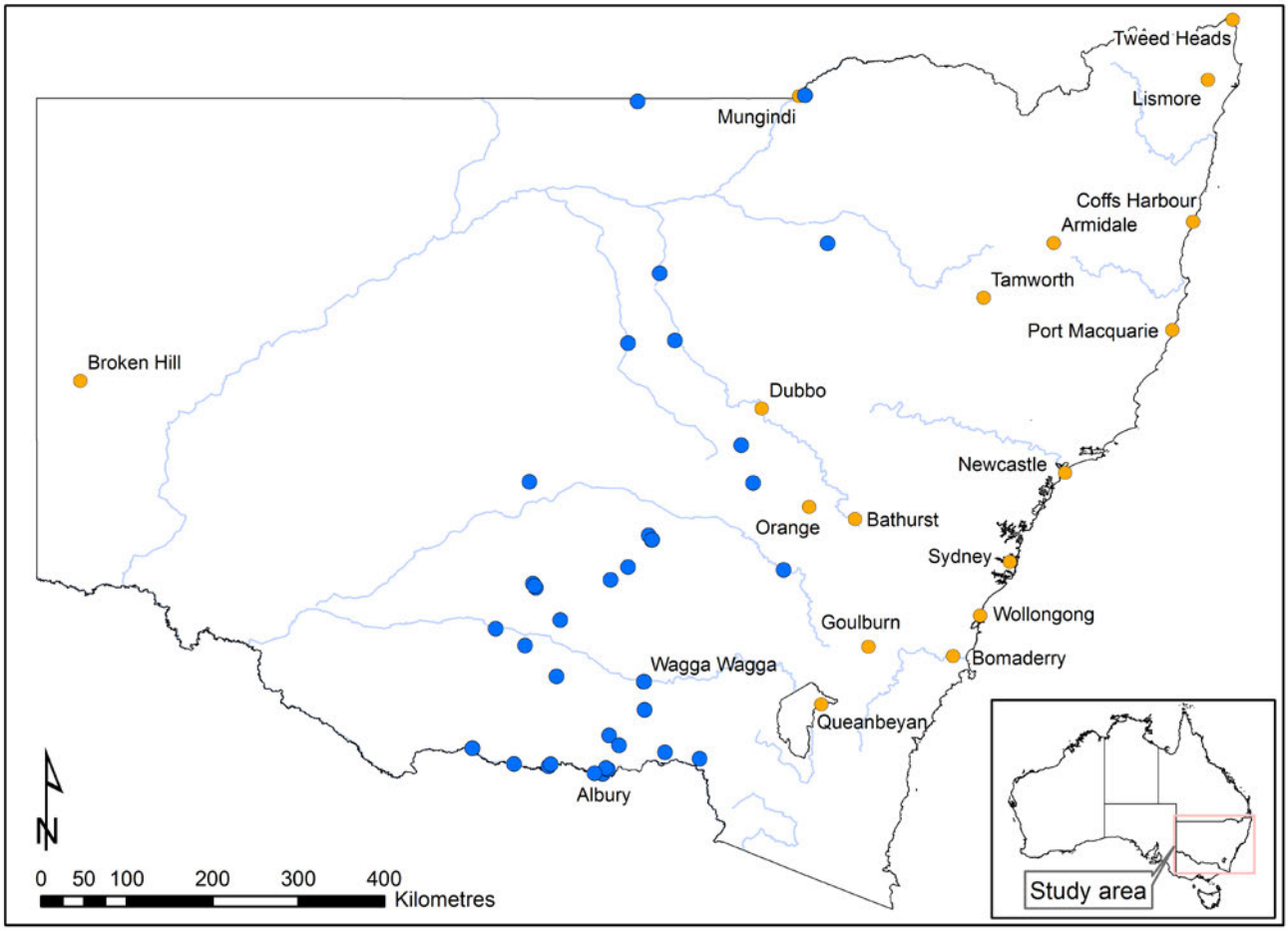

Figure 4: Map of all the records for Sloane's Froglet contained in the NSW Wildlife Atlas (accessed 10 December 2012). The blue dots indicate the location of the record. The orange dots are localities.

Three herpetologists that were directly contacted were able to provide further information on the distribution of Sloane's Froglet. Phil Spark (pers. Com.) provided information (that has also been provided to the Wildlife Atlas but does not yet appear) that in 2012 he found small populations of Sloane's Froglet at Walgett in northern NSW and had also previously found them at Walgett and at Toorale Station near Bourke. The Walgett records are presented in Figure 5.

Figure 5: Map of records collected by Phil Spark in northern NSW in 2012 (Phil Spark, pers. Com.)

In addition to the one site in the Murrumbidgee irrigation area recorded by Skye Wassens on the Wildlife Atlas, Wassens also heard Sloane's Froglet near Corowa in 2006 (Skye Wassens pers. Com.) in areas near the Murray River.

Damian Michael undertook a survey on the Albury Environmental Lands in Albury residential and rural residential areas in Winter 2012. He found Sloane's Froglet at 22 of the 38 sites surveyed (Damian Michael pers. Com). The sites where Sloane's Froglet was detected are shown in Figure 6.

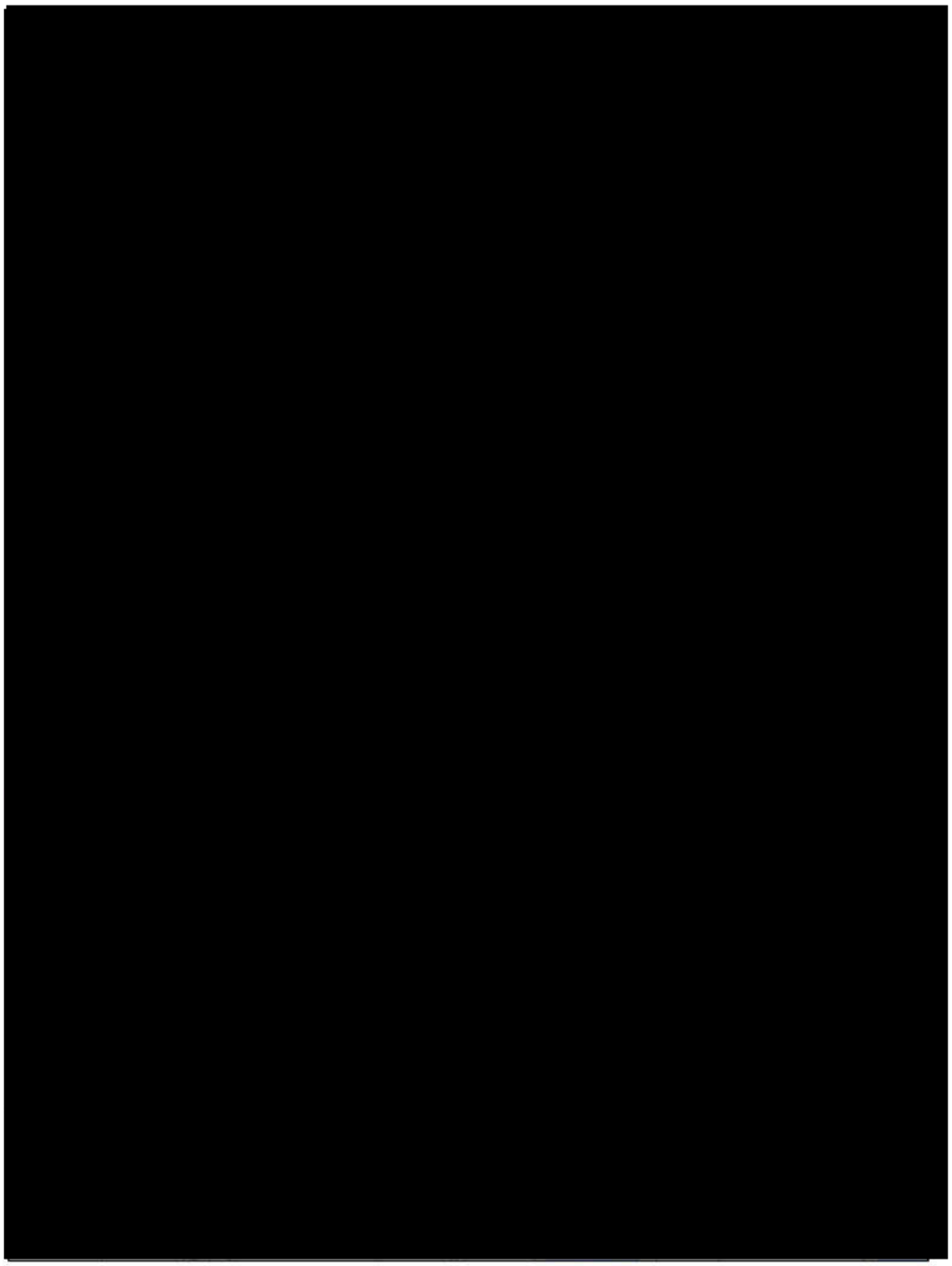

Figure 6: Map of records collected by Damian Michael in Albury NSW in 2012 (Damian Michael, pers. Com.)

3.2.3 Victorian records

When introducing Sloanes Froglet to the broader community Littlejohn (1958) described its distribution as in the Murray River Valley from Mulwala to Echuca up to five miles on either side of the larger rivers, but not north of Deniliquin and Finley, and in the plains country between Wangaratta and Whitfield in Victoria. The type specimen came from a temporary pond on the south bank of the Murray River near Tocumwal (Littlejohn, 1958).

Records for Sloane's Froglet in Victoria were obtained from the Victorian Museum and the Victorian Biodiversity Atlas. The Victorian Museum has 130 preserved specimens of Sloane's Froglet, 92 of which are from NSW. These 92 records are all from the Murray River region of NSW, in particular, Tocumwal, Lake Mulwala and 8 km west of Howlong and were collected in the late 1950s, 1960s and early 1970s. Of the remaining records, 16 Victorian specimens collected in the 50s, 60s and 70s are also from the Murray River Region. The remaining 22 specimens were collected from the Hume Weir, north-west of Nagambie and Doctor's Swamp near Murchison. The Victorian Biodiversity Atlas contains 70 records for Sloane's Froglet, 18 of which are Museum preserved specimens already mentioned. 25 of these records are from surveys undertaken in 1992 and 1993 in the Benalla, Murchison and Nagambie regions by Andrew Bennett. The remaining records which are from the 1990s are from the same or nearby places in north central Victoria. There is an isolated record in Chiltern. The most recent records in the Atlas are from 2003 and 2004 and are from Wangaratta. Figure 7 shows a map of the combined records from these two sources.

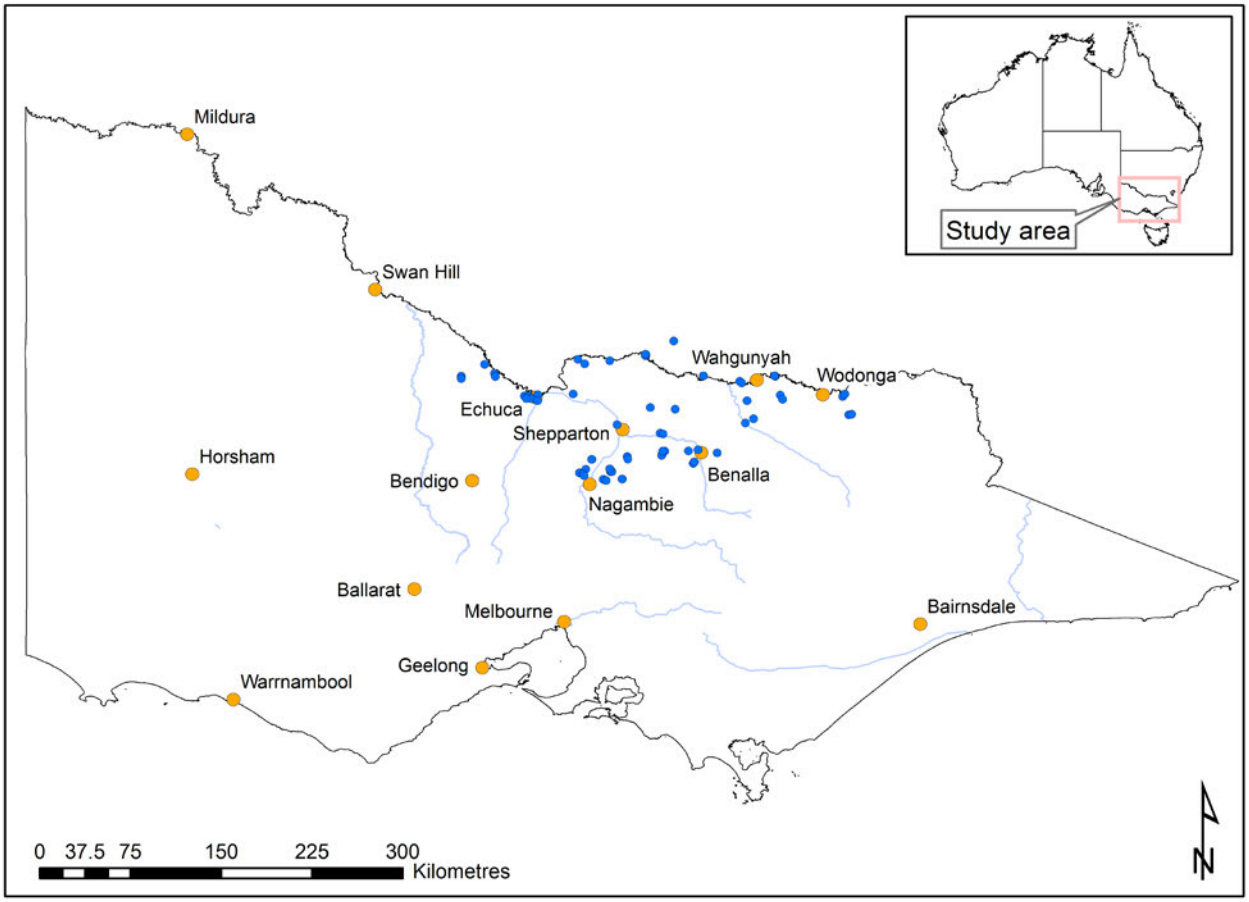

Figure 7: Map of the records for Sloane's Froglet contained in the Victorian Museum and the Victorian Biodiversity Atlas (accessed August 2012). Record locations are indicated in blue.

In addition to the records in the above sources, Professor Murray Littlejohn advised me that survey results from his own work and that of the two frog researchers working with him, Angus Martin and Graeme Watson (Littlejohn pers. Com.) were available in a Master's thesis by Arthur Brook entitled *The Zoogeography of Victorian Anura* (1989). The thesis also contains records gathered by Arthur himself. Field data for each species was spatially represented in 5 degree grid squares. The distribution data for Sloane's Froglet available in this thesis has been reproduced below (Figure 8).

Figure 8: Map of sites where Sloane's Froglet was recorded by Littlejohn, Martin, Watson and Brook. Field data for each species was spatially represented in 5 degree grid squares. (after Brook 1981)

Matt Looby from Vic DSE commented that he had heard Sloane's Froglet recently at the Wangaratta Common (Matt Looby, pers. Com.). Keith Ward, Environmental Water Resources Officer with the Goulburn Broken CMA advised that Sloane's Froglet had been recorded at Moodies's Swamp in NE Victoria. In addition Keith Ward advised me that there are records of four Sloane's Froglet occurring at two sites in the Barmah-Millewa Forest in 2003/04 (reported in Ward, 2004)) (Figure 9).

Survey work undertaken in 2006 and 2007 in north central Victoria (within its previous range) by the Australian Centre for Biodiversity at Monash University failed to detect Sloane's Froglet (Mac Nally et al., 2009).

Figure 9: Map of Sloane's Froglet records from the Barmah-Millewa Forest (after Ward, 2004)

4.0 Recent surveys

In order understand the species and underpin the design of future research on this species I undertook survey work targeting it in 2010, 2011 and 2012. Natasha Lappin and Cassie Douglas provided valuable field assistance during surveys. In 2013 a brief follow-up survey was undertaken by myself and PhD supervisor David Hunter.

4.1 Methodology

Sloanes Froglet is considered a winter-breeding species (Littlejohn 1958, Anstis 2002), becoming active in autumn and breeding throughout the winter months. I undertook survey work each year between 2010-2012 commencing in April and continuing until October.

Surveys focused along the Murray River region from Albury to Echuca. Surveys were predominantly undertaken at easy to access wetlands located on the edge of roadsides on public and private land, on public land such as Travelling Stock Reserves and in the newly established NSW River Redgum National Parks. Surveys were initially undertaken at known historic locations, particularly where the species had been recently recorded. Survey was undertaken in a vehicle and on-foot by travelling to the nearest waterbodies from confirmed sites to hear if the species was present there. Not all waterbodies in the regions were surveyed due to difficulty or restrictions on access.

Sloanes Froglet was detected by its distinctive call, a short chirp. At a few sites in NSW a few individuals were captured to confirm identification.

At some sites once the presence of Sloane's Froglet was ascertained the site was not revisited. Several sites were visited on multiple occasions as a detectability study occurred concurrently to this distribution survey. Where the sites were only visited once or twice, it was considered possible to record the presence of Sloane's Froglet but not possible to establish its absence. Sites have only been recorded as absent if the site has been visited three times in a season for a minimum of twenty minutes. An attempt at estimating abundance was undertaken at sites which were visited repeatedly by estimating the total number of frogs calling at each visit. Abundance was categorized into five categories based on an estimate of the number of individuals calling; <5, 6 – 10, 11 - 20, >20, >100. All waterbodies were approached quietly on foot and the perimeter of larger waterbodies was circumambulated. Location of the site was recorded using a GPS.

The Victorian sites were recorded as a result of call detection only in a once-only quick car survey with the assistance of a DSE employee. Location was recorded with a GPS at the vehicle rather than at the waterbody, so there is an error of up to 100 metres from the exact location.

In addition, in 2011, Australian Geographic funded a short survey in northern NSW which was undertaken in April. Sites around Yetman were surveyed following advice from field naturalist, David Egan. Sites around Mungindi were surveyed as there are records of the species from 1998. Each waterbody was visited three times and circumambulated during the survey period. A brief survey was undertaken in Winter 2013 at Albury, Corowa and

along the Murray River in NSW by myself and PhD supervisor Dr David Hunter. Sites were visited once only and, as with the Victorian sites location was recorded with a GPS at the car rather than at the waterbody, so there may be a distance to the exact location.

In the hope of finding additional records, several radio interviews were undertaken and informal conversations led to anecdotal information that Sloanes Froglet had been heard in other places. These sites were then visited to confirm that it was indeed Sloane's Froglet present.

4.2 Results

Sloane's Froglet was located around Albury and Corowa and at a few sites along the Murray River. Sloane's Froglet appeared to be absent from much of the landscape as indicated in the map in Figure 10.

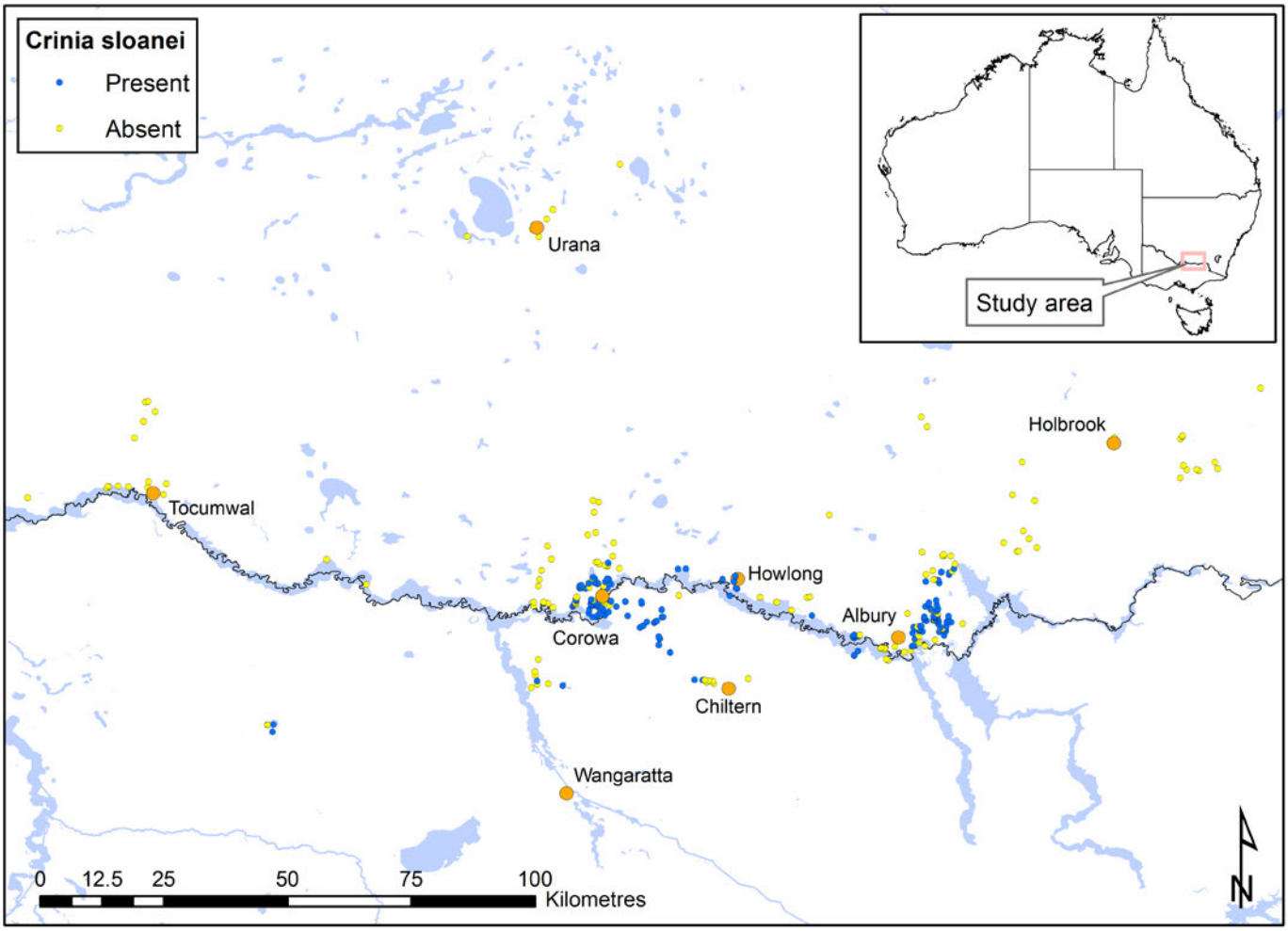

Figure 10: Map of all sites surveyed in 2010, 2011, 2012 and 2013 in southern NSW and northern Victoria. Yellow indicates that Sloane's Froglet was not detected (absent) at the site. Significant populations of Sloane's Froglet were located in the Corowa/Rutherglen and Albury regions.

Significant populations were found to occur in the Albury region (Figure 11) and the Corowa/ Wahgunyah/ Rutherglen Regions (Figure 12). Sites were clustered in the peri-urban areas of these two locations. Initially, two sites were also located at Howlong and the 2013 survey confirmed the presence of Sloane's Froglet at three further sites at Howlong and two sites just downstream in wetlands along the Murray River that had previously been dry.

What appear to be disjunct populations were located at [redacted] (Figure 10). No Sloane's Froglets were located in the Tocumwal region. Geographic coordinates for all survey sites are presented in Appendix A.

During the Australian Geographic funded survey in northern NSW, a small population of Sloane's Froglet (up to 20 individual males calling) was confirmed to still occur at Mungindi, but the species was not detected at any other sites surveyed (Figure 13).

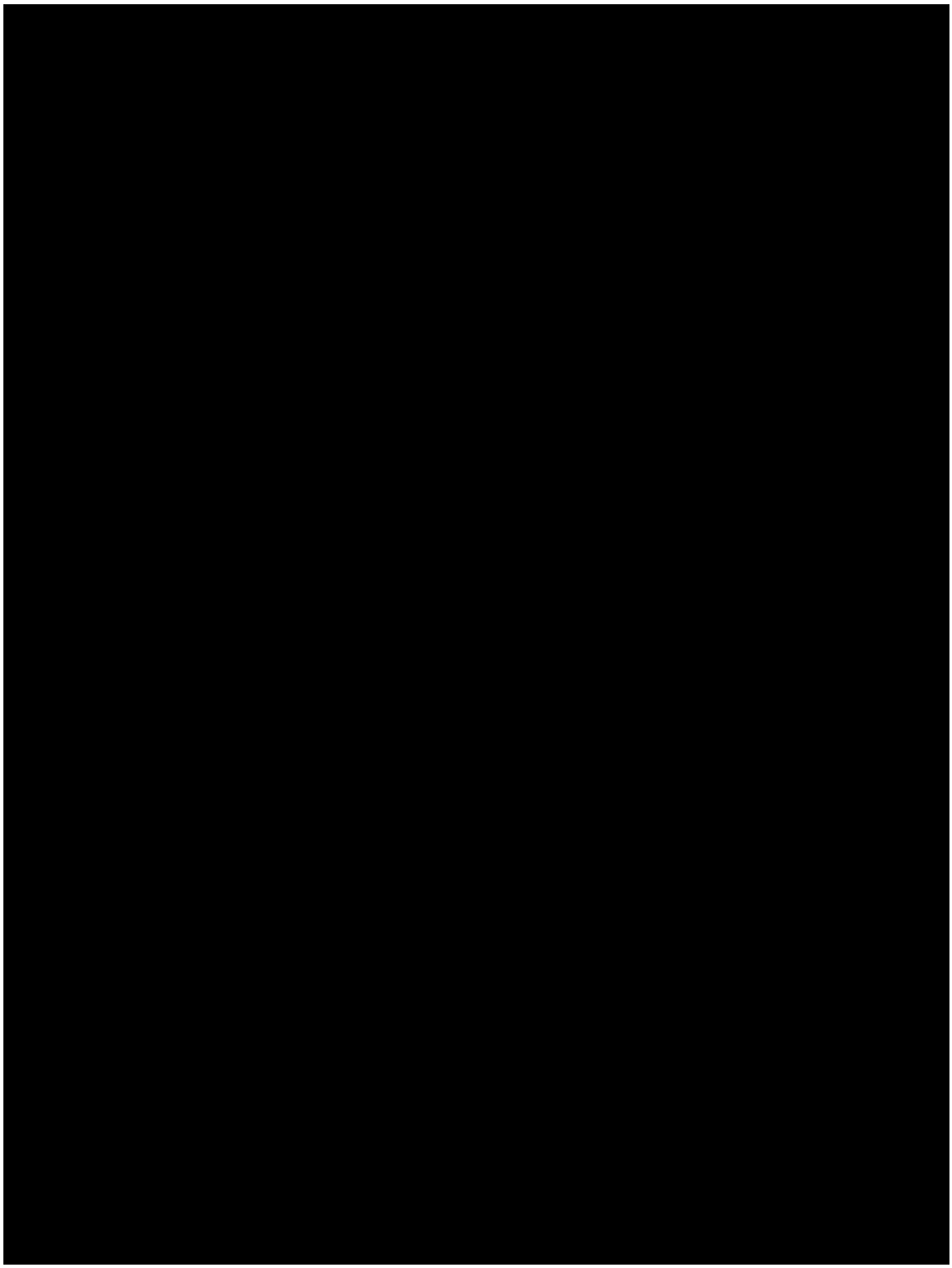

Figure 11: Map of Sloane's Froglet sites in the Albury Region. Sites where Sloane's Froglet was detected on at least 1 occasion (present) are marked in blue. Sites where Sloane's Froglet was not detected (absent) on any occasion despite multiple visits over three years are marked in yellow.

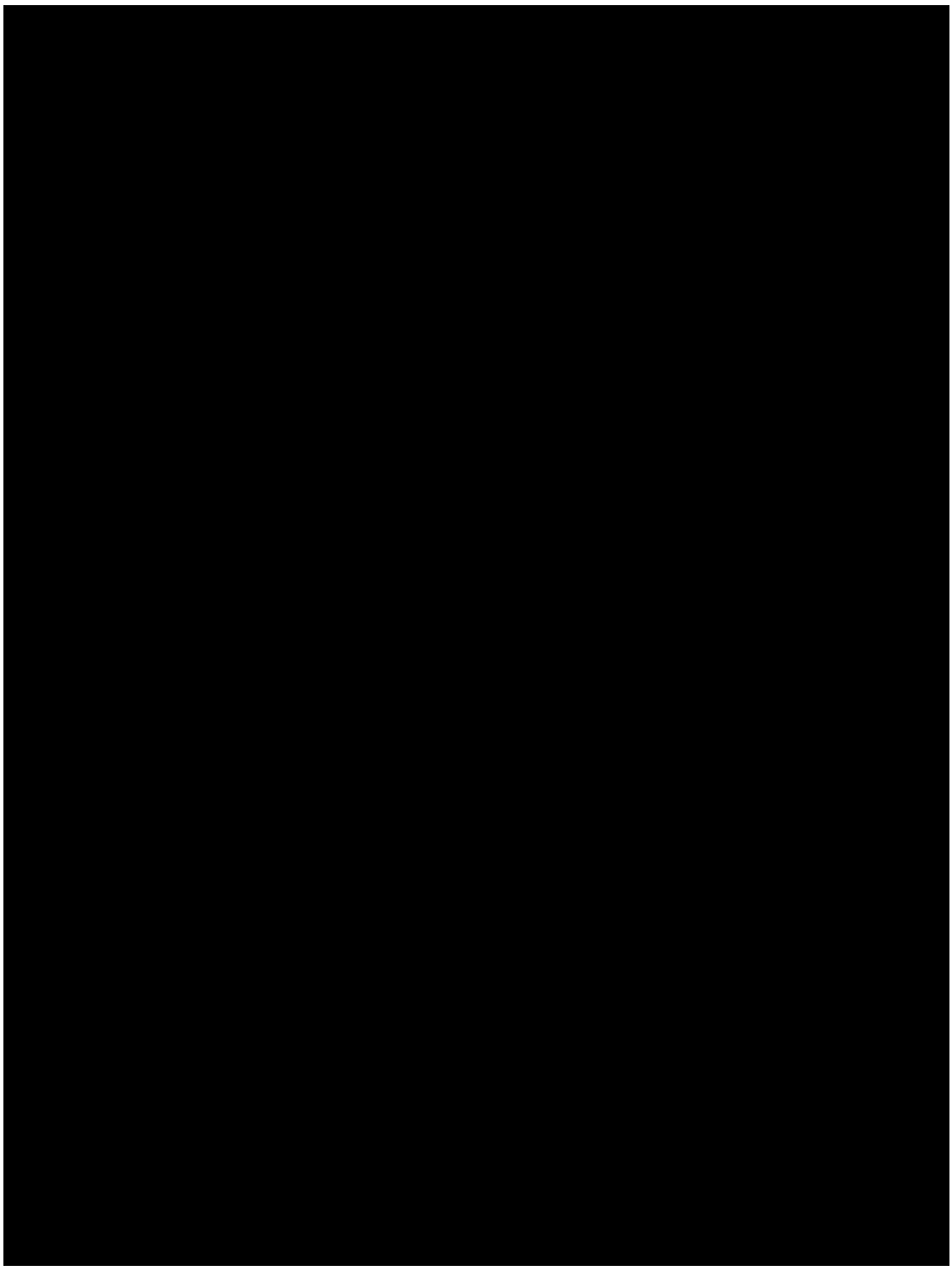

Figure 12: Map of the Corowa region showing Sloane's Froglet records. Sites where Sloane's Froglet was detected on at least 1 occasion (present) are marked in blue. Sites where Sloane's Froglet was not detected (absent) on any occasion despite multiple visits over three years are marked in yellow.

Figure 13: Map of Sloane's Froglet survey sites in northern NSW. Sloane's Froglet was only detected at one site near Mungindi.

5.0 Discussion

The combined results from the historical distribution records and current distribution show that Sloane's Froglet is distributed widely in the Murray-Darling Basin and occurs in the Darling Riverine Plains, NSW South Western Slopes, Riverina and Victorian Midlands bioregions (see Figure 14).

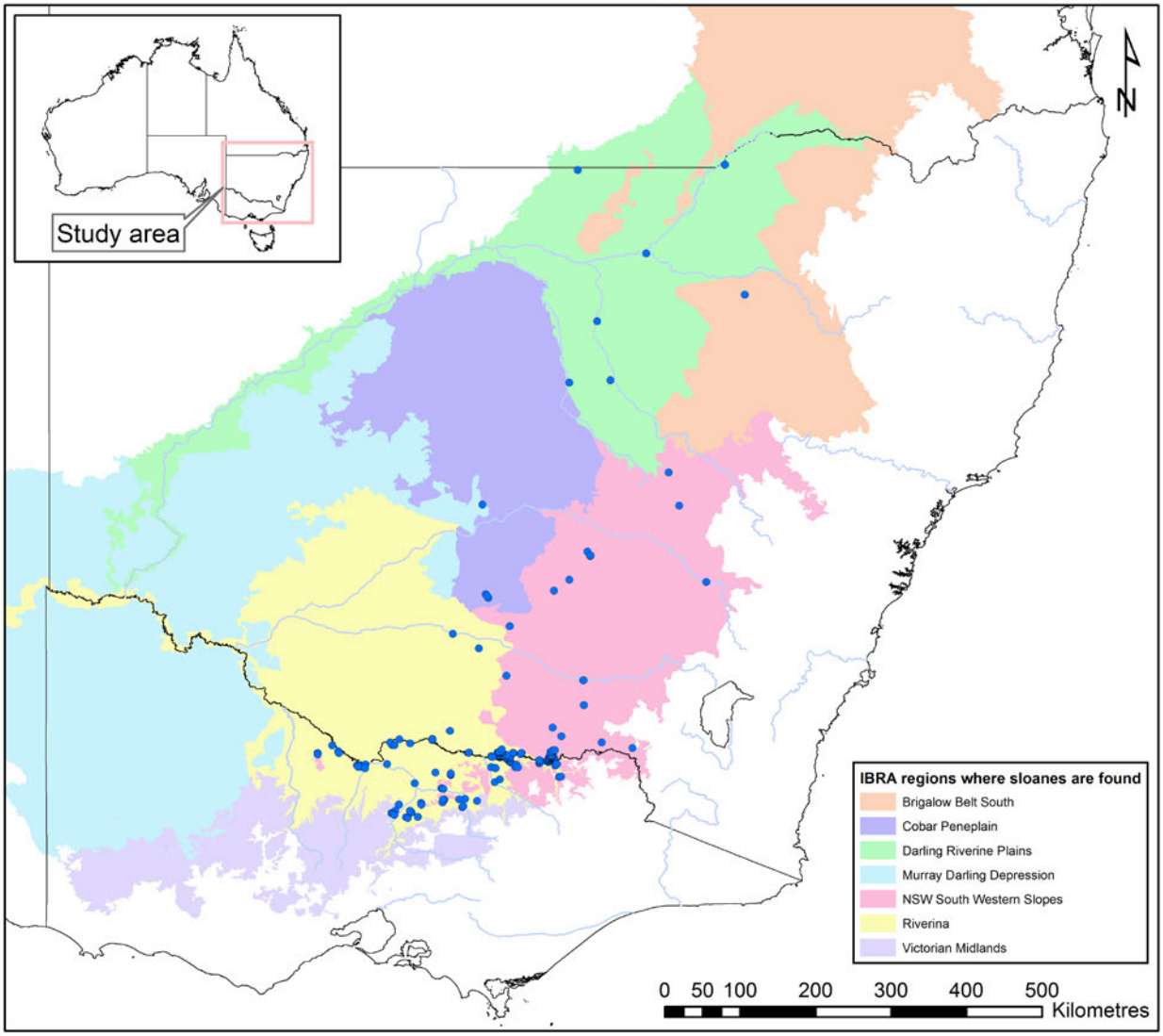

Figure 14: Map of all the known distribution for Sloane's Froglet (past and current records) and the IBRA regions (IBRA Regions source: Australian Government Department of Environment IBRA7)

The early records for Sloane's Froglet (1950s to 1960s) are from northern central Victoria and along the Murray River near Tocumwal and Mulwala. These records were collected as a result of the intensive survey work undertaken by Littlejohn and his colleagues Martin and Watson on the distribution and calls of frogs in southeastern Australia. This work resulted in a greater understanding of the distribution, taxonomy and evolution of frogs in south-eastern Australia which was made known through a number of publications (for instance Littlejohn, 1957; Littlejohn, 1959, 1963, 1964, 1965, 1966, 1981; Littlejohn & Martin, 1964, 1965a, 1965b; Littlejohn & Watson, 1973; Martin & Littlejohn, 1969) as well as *The Atlas of Frogs of Victoria* (Brook, 1979). Since that time surveys undertaken by Andrew Bennett in 1993 (Bennett, 1998; Brown, 2008) show that the species is also found in the Benalla and Nagambie regions a little to the south of the initial distribution.

Early knowledge about Sloane's Froglet distribution in NSW along the Murray River comes from the same source as the Victorian information. The extension of its range throughout the western slopes and eastern plains of Murray Darling Basin of NSW has come from a variety of smaller surveys and incidental records rather than large or targeted distribution surveys. However, it is clear that at least in the past Sloane's Froglet was present throughout this region (although perhaps in small and isolated populations) to the Queensland border.

It seems quite likely that Sloane's Froglet could have occurred in the past or still may occur in southern central Queensland given that the most northern record in NSW occurs at Mungindi and is within 200 metres of the Queensland border. The complete lack of records in Queensland may be because the species occurs there rarely or the result of a lack of familiarity with the species or lack of surveying at the appropriate time of year and time of day.

Recent broadscale surveys in NSW and Victoria have detected few or no Sloane's Froglets (Gosper, 2002; Mac Nally et al., 2009; Wassens, Sass, Swan, & Thompson, 2004). It seems quite likely that the concerns that led to it being listed as threatened in NSW in 2008 are real.

The recent targeted surveys I undertook for this project show that Sloane's Froglet does persist in the landscape in two main regions: Corowa/Wahgunyah and Albury. It has not yet been confirmed if this is a continuous population. Sloane's Froglet occurs in Victoria throughout the Wahgunyah and Rutherglen areas. Surveys on the NSW side of the border between Corowa and Albury located Sloane's Froglets at only seven locations near and downstream of Howlong.

Despite intensive survey effort in wetlands downstream of Corowa I was unable to locate Sloane's Froglet in this area. Murray Littlejohn was also unable to relocate Sloane's Froglet at Tocumwal when revisiting the area in 2007 (Littlejohn, pers. Com.) (Figure 15). The 2003/04 records from Barmah-Millewa are of interest as there is the possibility of locating a larger population there, but the survey period coincided with flooding of the area and while an initial attempt was made to enter the area, conditions made further survey impossible. This area of the Murray River requires follow up surveys.

Figure 15: Photograph of Murray and Patsy Littlejohn at the Tocumwal site that is the type locality for Sloane's Froglet in 2007, 50 years after its initial discovery. The site was dry. No Sloane's Froglets were located at Tocumwal in recent surveys. (Murray Littlejohn)

The two major populations of Sloane's Froglets located in the Albury and Corowa area are within peri-urban areas. Other research into the frog occurrence and diversity in regional areas has suggested that presence of some species may be correlated to neighbourhood vegetation cover (Smallbone, Luck, & Wassens, 2011). In the case of Sloane's Froglet it may also be useful to consider the number of waterbodies in close proximity and the connectivity between them in peri-urban areas. Further investigation into this is currently being undertaken (Knight, unpublished data).

The majority of frog diversity surveys are undertaken in spring and summer and these surveys may miss detecting Sloane's Froglet. Past distribution records may have suffered from a lack of knowledge about this species and about key seasons and times for the detection of it. The current surveys have not suffered this limitation. Concurrent research undertaken that commenced in 2009 and was focused in 2010 identified months, weather conditions and times of day when Sloane's Froglets were most likely to be detected (Knight, unpublished data). Sloane's Froglets are most actively calling in the winter and early spring (Knight, unpublished data). In southern NSW Sloane's Froglet begins to call consistently in April. It is able to be detected by call through the winter months. Once other frog species commence calling in late winter and early spring (particularly the Spotted Marsh Frog), Sloane's is more difficult to detect.

Distribution surveys were limited by the availability of resources. At times very wet weather limited access to sites. It is highly likely that future surveys will find Sloane's Froglet in other parts of Victoria, NSW and Queensland. It does seem likely that populations may well be small and disjunct.

As Arthur Brook (1989) noted twenty five years ago "[T]he large area and relatively small human population of Australia have retarded the collection of basic distributional data for most animal groups." Since that time a great deal of research has been undertaken about Australian frogs, their conservation and habitat requirements. It remains the case that baseline data on the distribution of many species is still unavailable. With species such as Sloane's Froglet, targeted surveys are more likely to detect the species than broader diversity surveys.

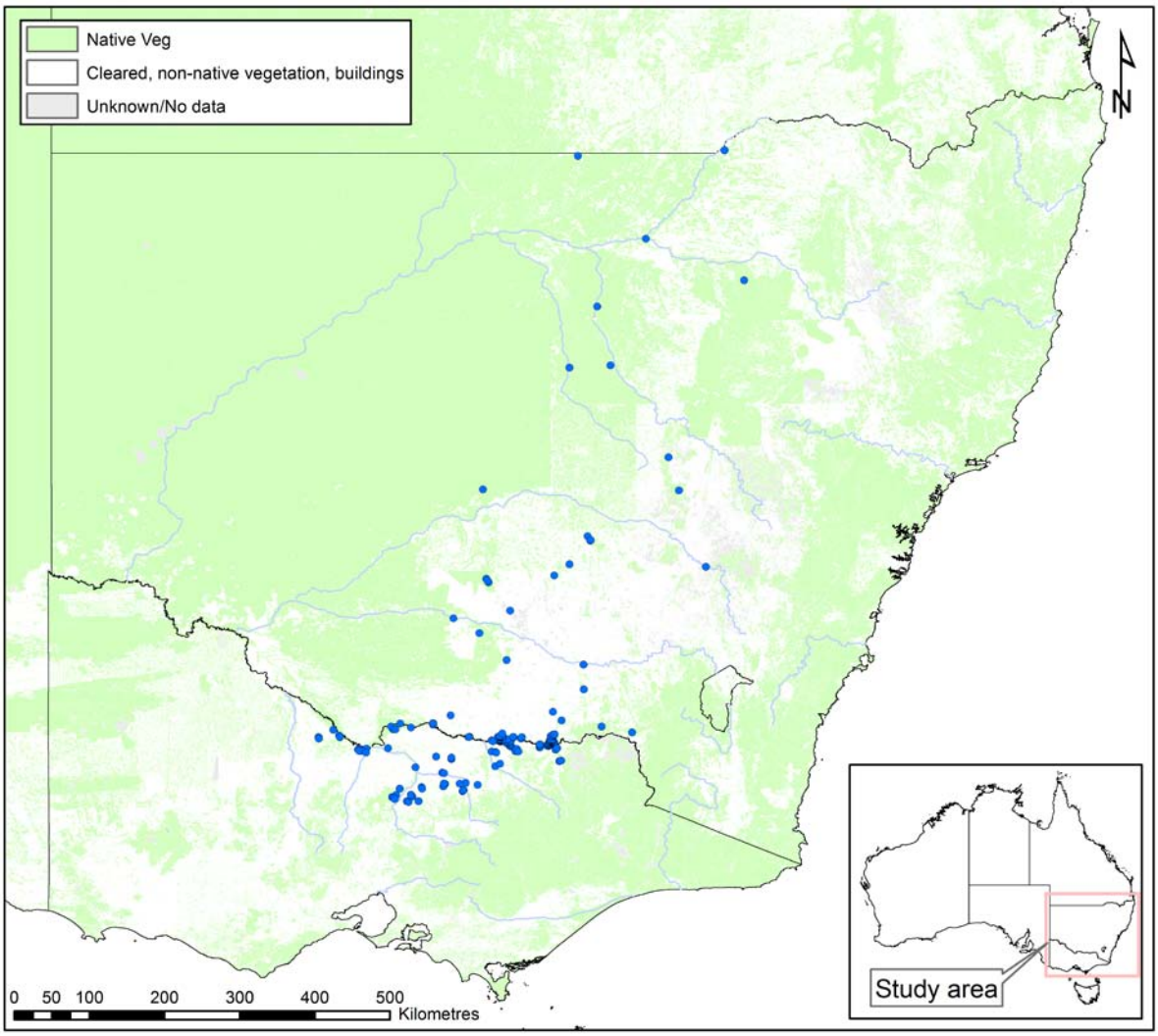

Figure 16: Map of all known Sloane's Froglet distribution (past and current records) and the NVIS data on clearing of native vegetation in NSW and Victoria. Sloane's Froglet distribution coincides with regions with a large area of cleared vegetation. (NVIS data source: AG Dept of Environment 2012)

The coincidence of Sloane's Froglet distribution with the Box-gum woodland is of interest. This region has a high rate of species decline, high rates of land clearing and fragmentation (Beeton, 2006) (see Figure 16) and altered water regimes (NSW Scientific Committee, 2002). The perceived decline of Sloane's Froglet could well be correlated with the overall decline in biodiversity of this region.

Sloane's Froglet has populations significant for its recovery and long-term viability at Albury, particularly the Thurgoona region, and Corowa, as well as in north-east Victoria. As stated by Smallbone, Luck and Wassens (2011) "careful planning of low-lying neighborhoods near town centres and peri-urban neighborhoods on town fringes is required to ensure anuran conservation in urban settlements". This is especially the case for Sloane's Froglet as at this time no larger populations have been located in agricultural or conservation areas.

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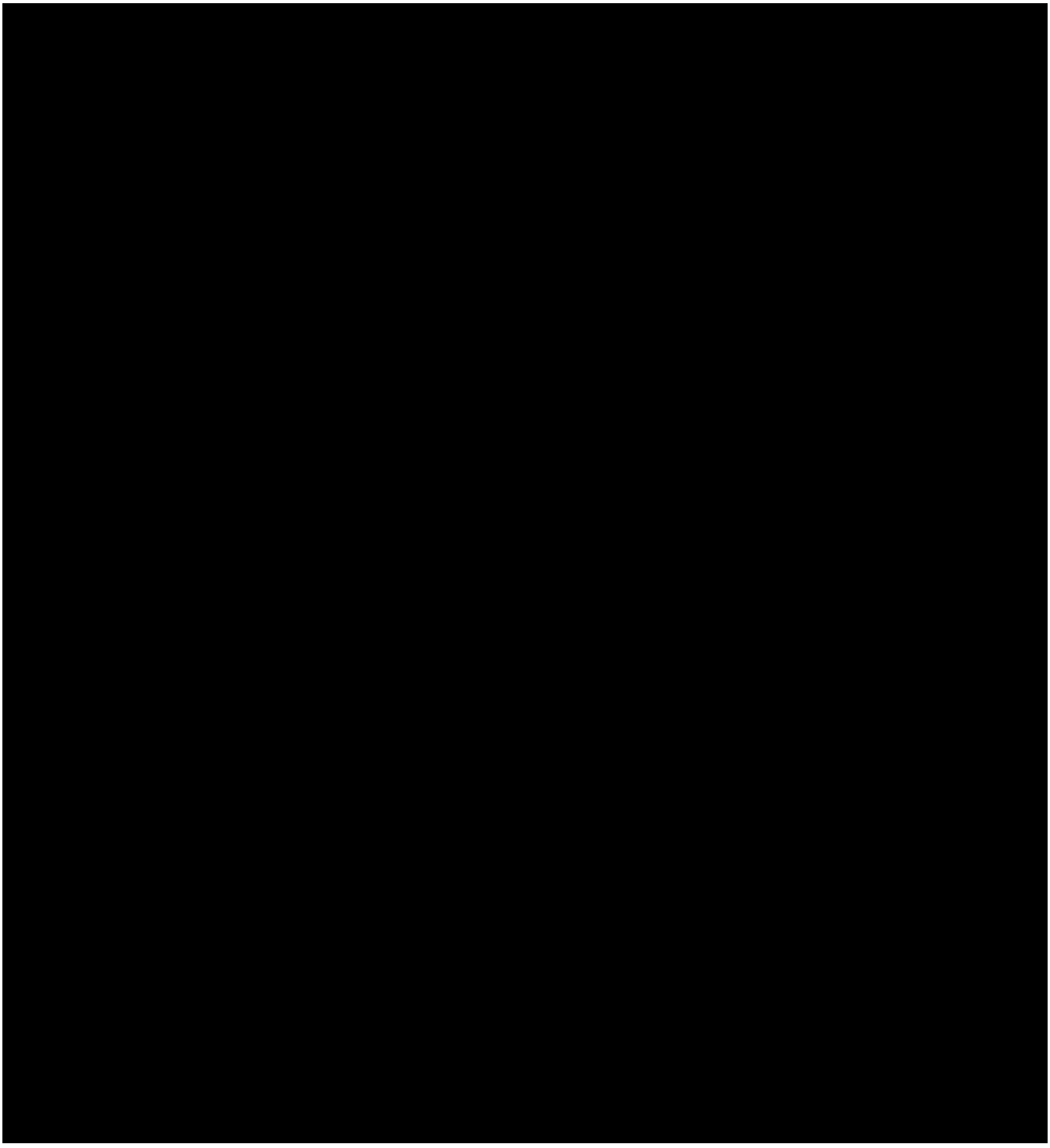
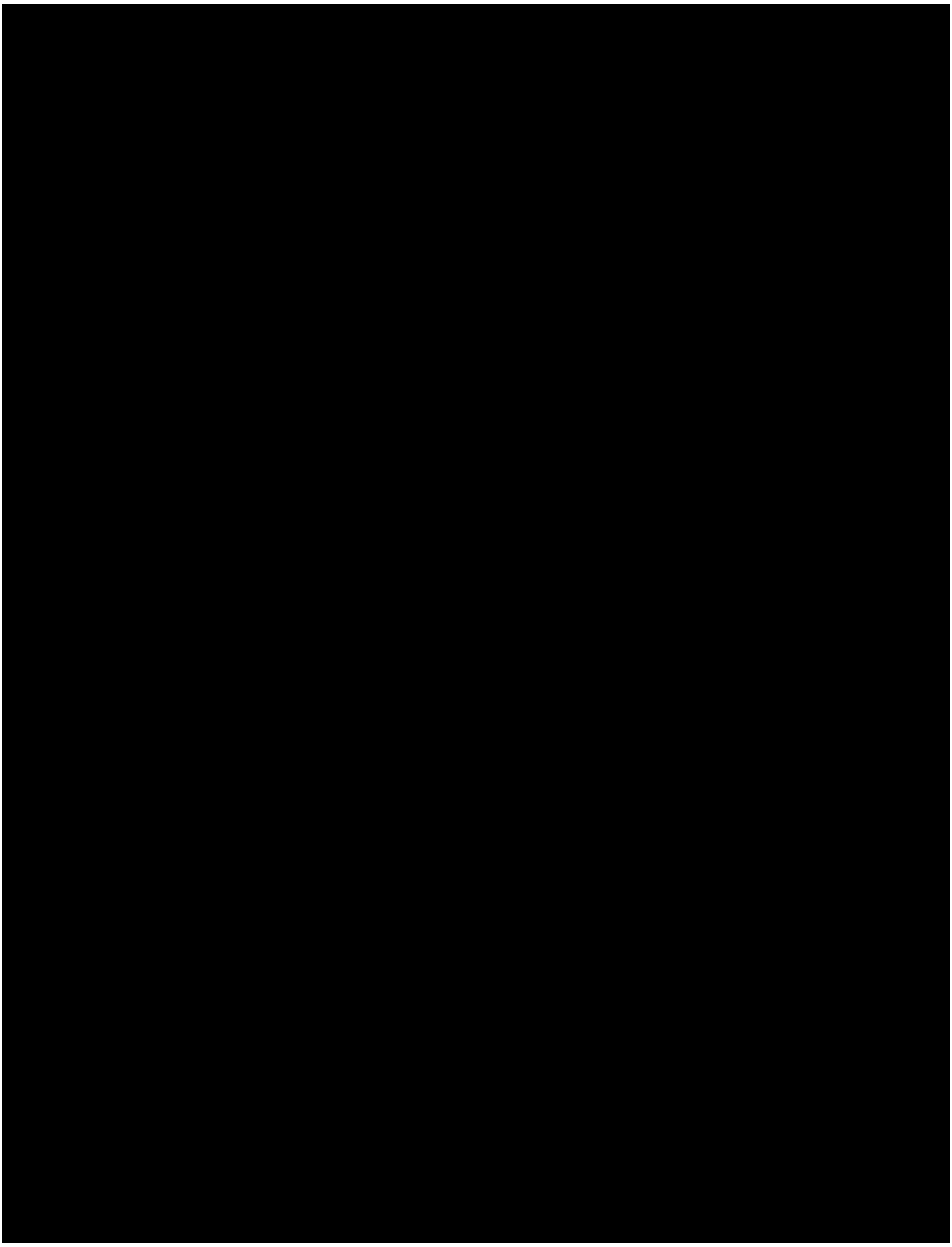
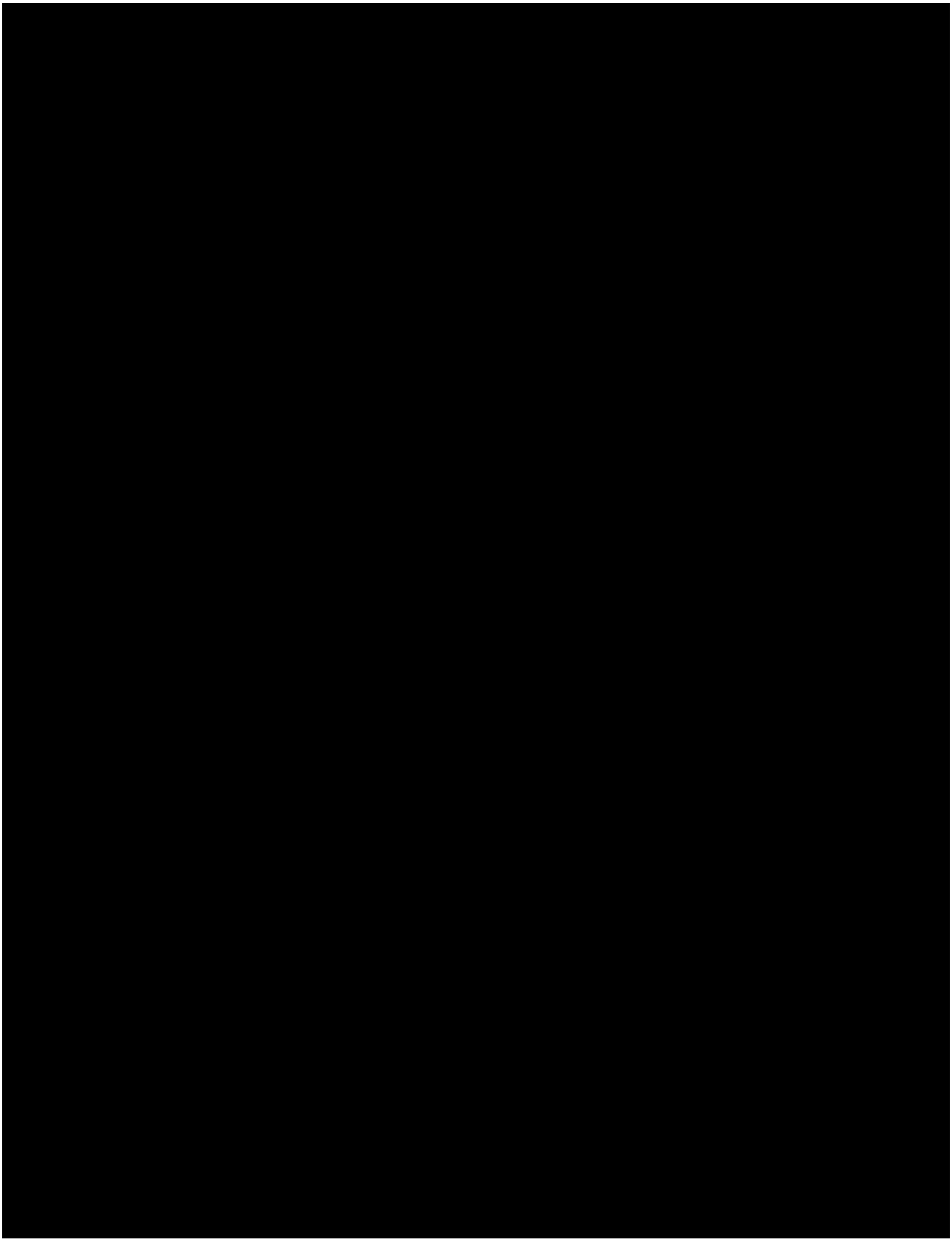
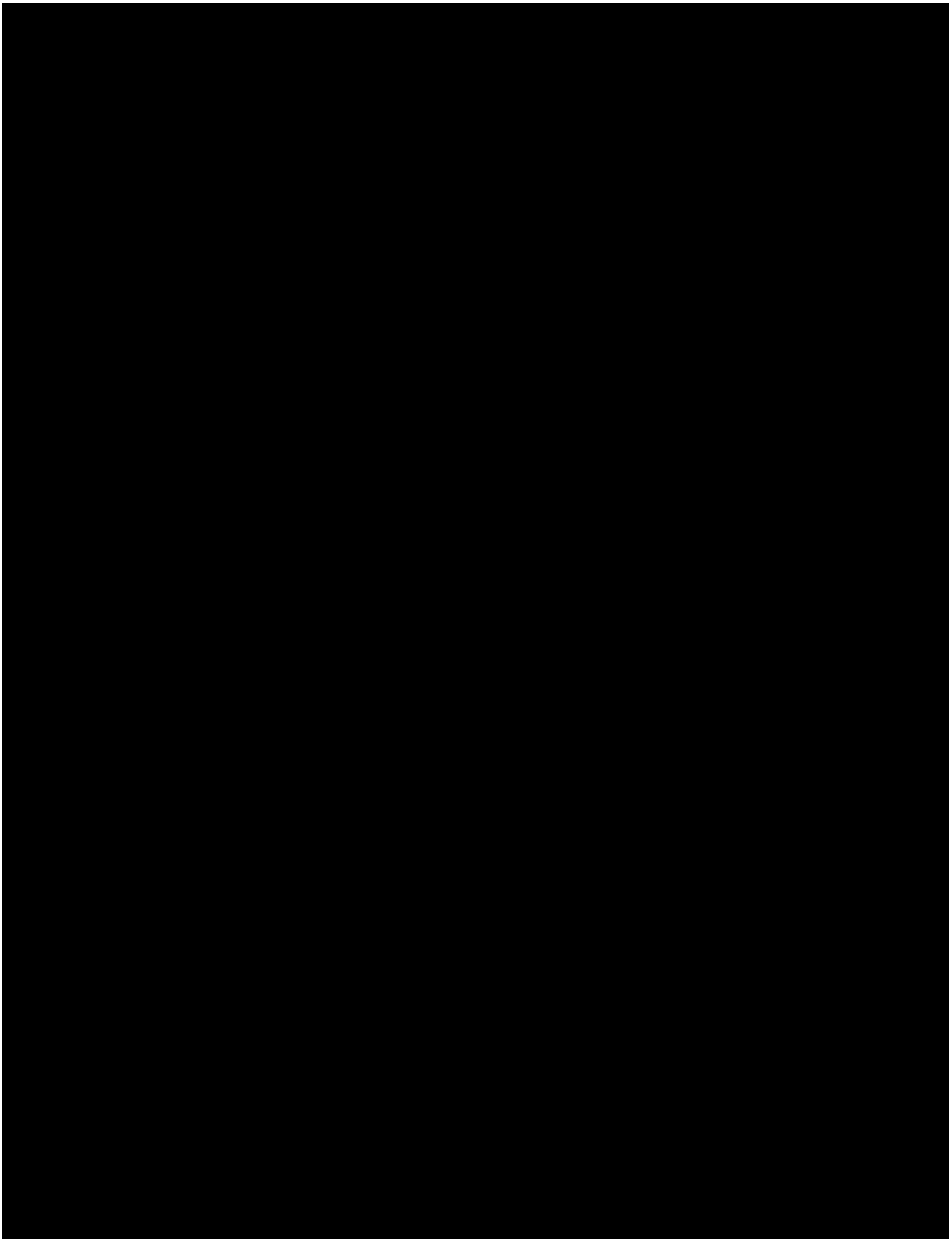
Appendix A. Table of locations of sites surveyed.

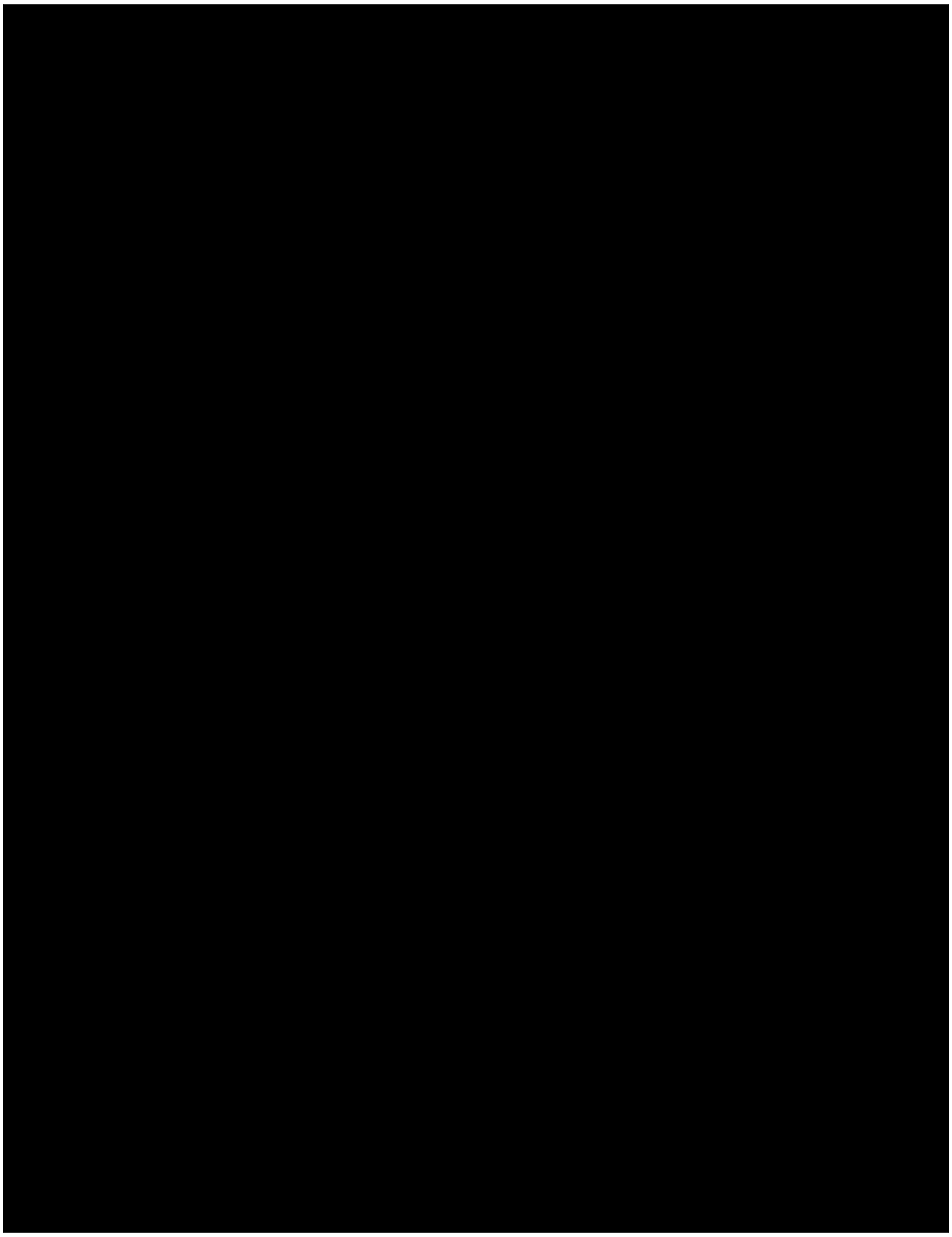
Table 1: Detection data for Sloane's Froglet at sites surveyed in 2010, 2011, 2012 and 2013. 2010, 2011 and 2012 surveys were undertaken by Alexandra Knight. Surveys in 2013 were undertaken by Alexandra Knight and David Hunter. While Sloane's Froglets were not detected at many sites it should not be assumed that they never use those sites. Sloane's Froglets appear highly mobile and may use different sites at different times in different seasons and years.

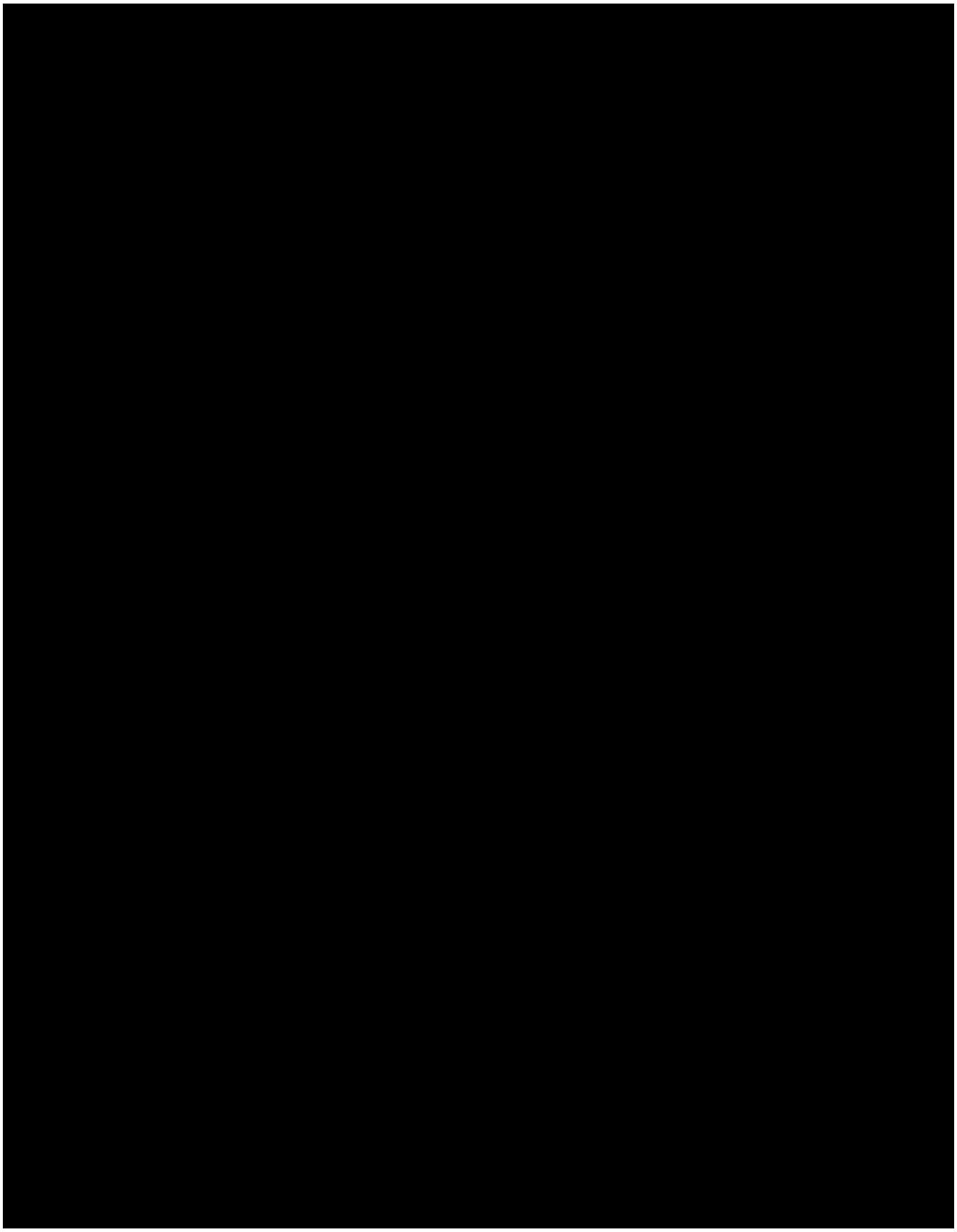


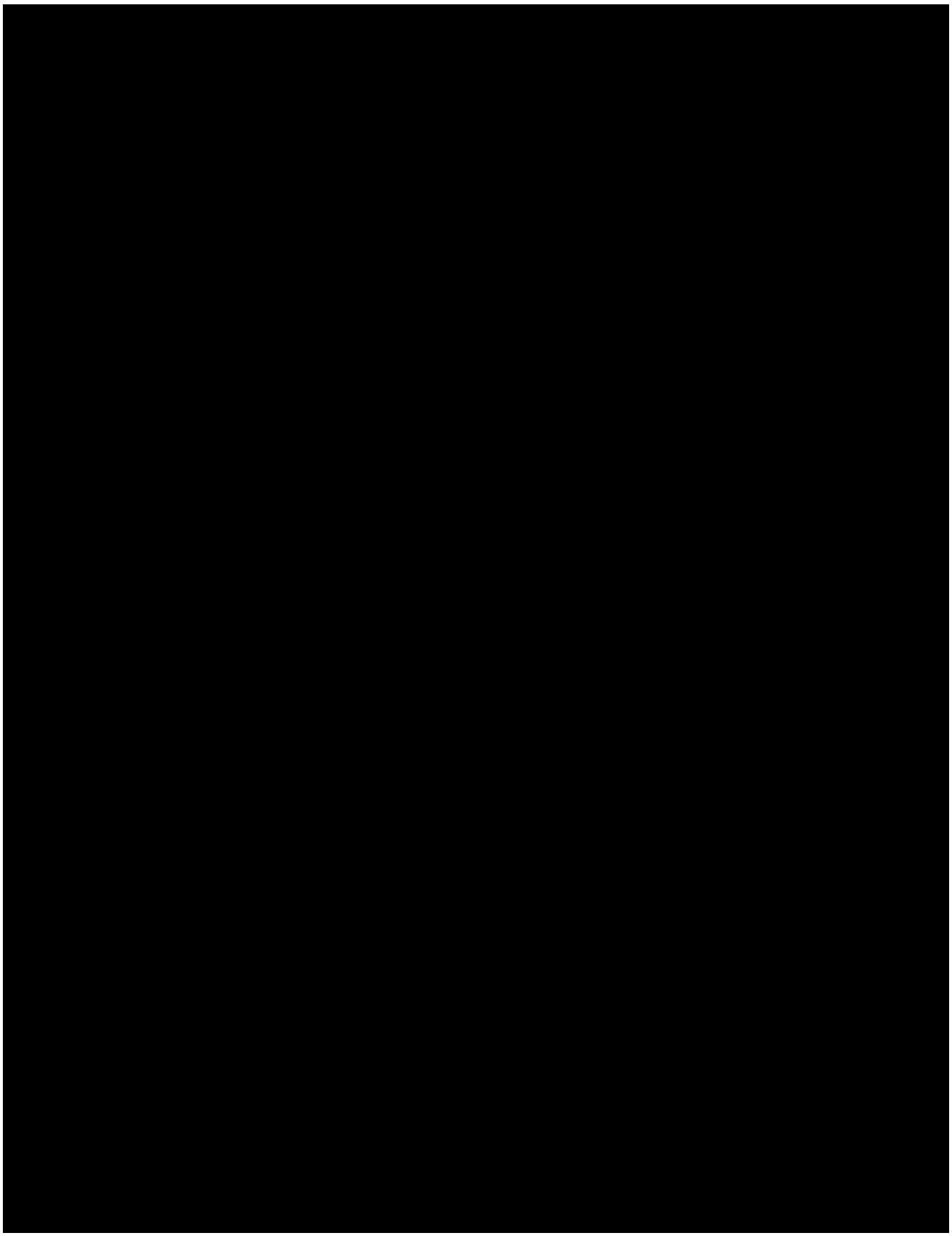


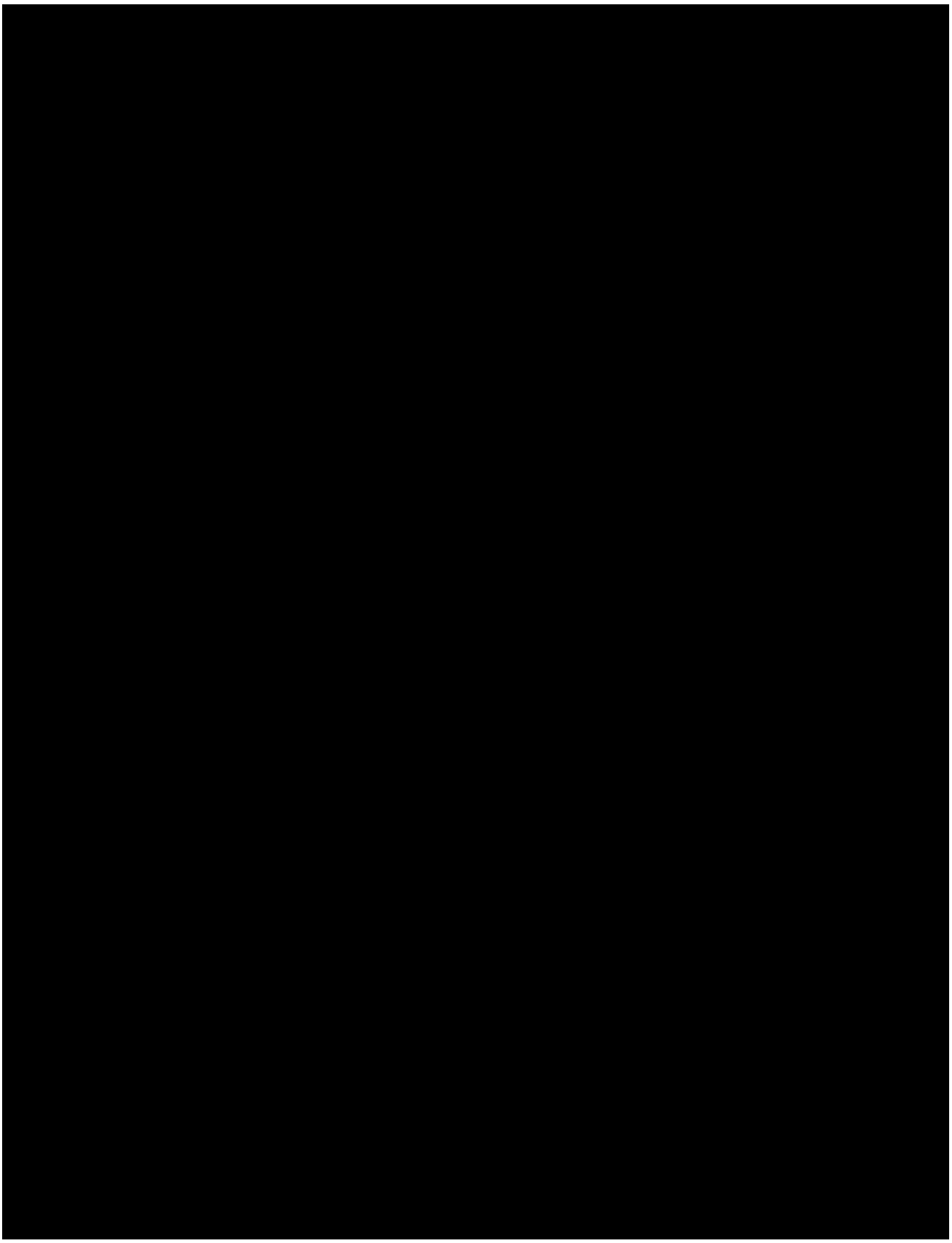


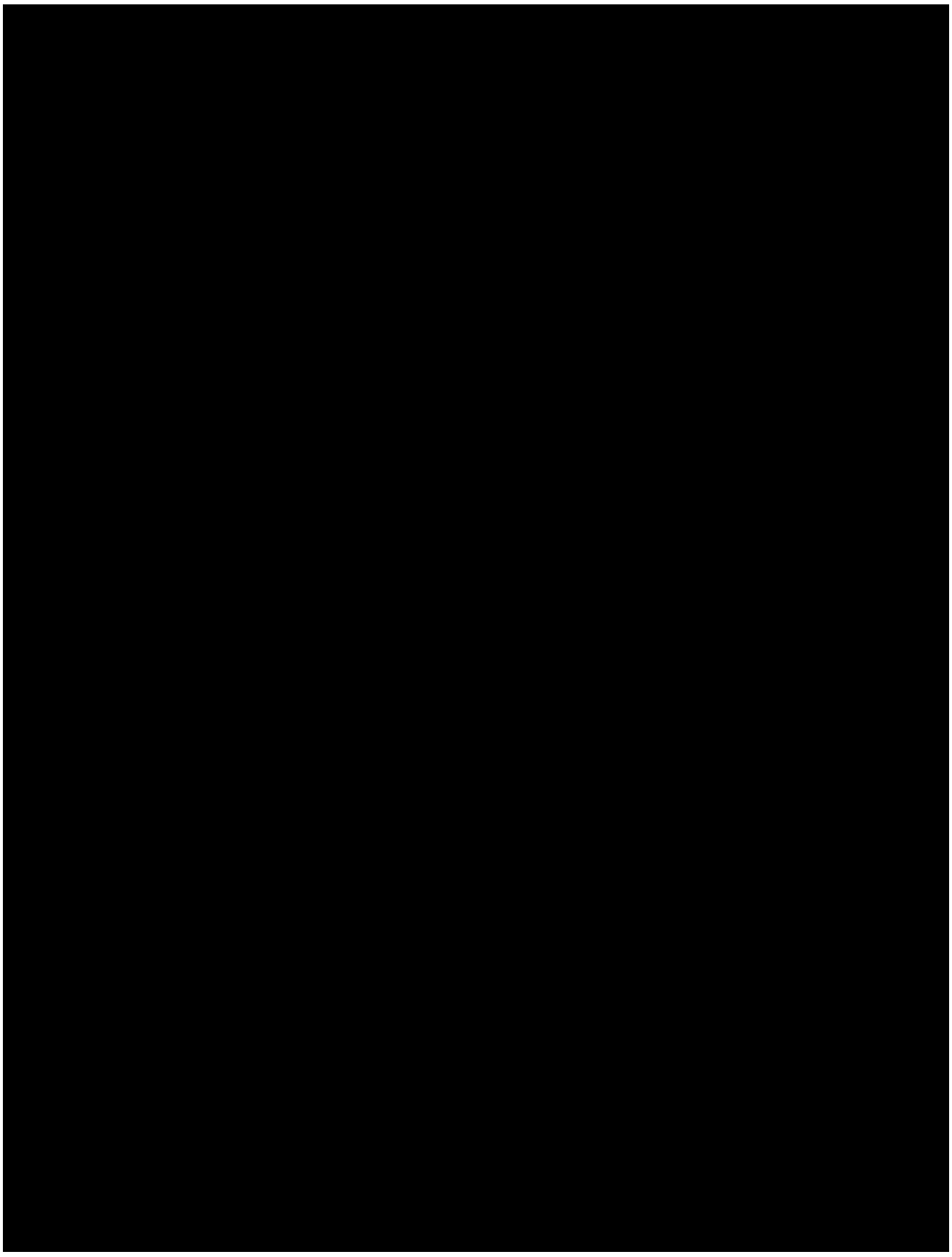


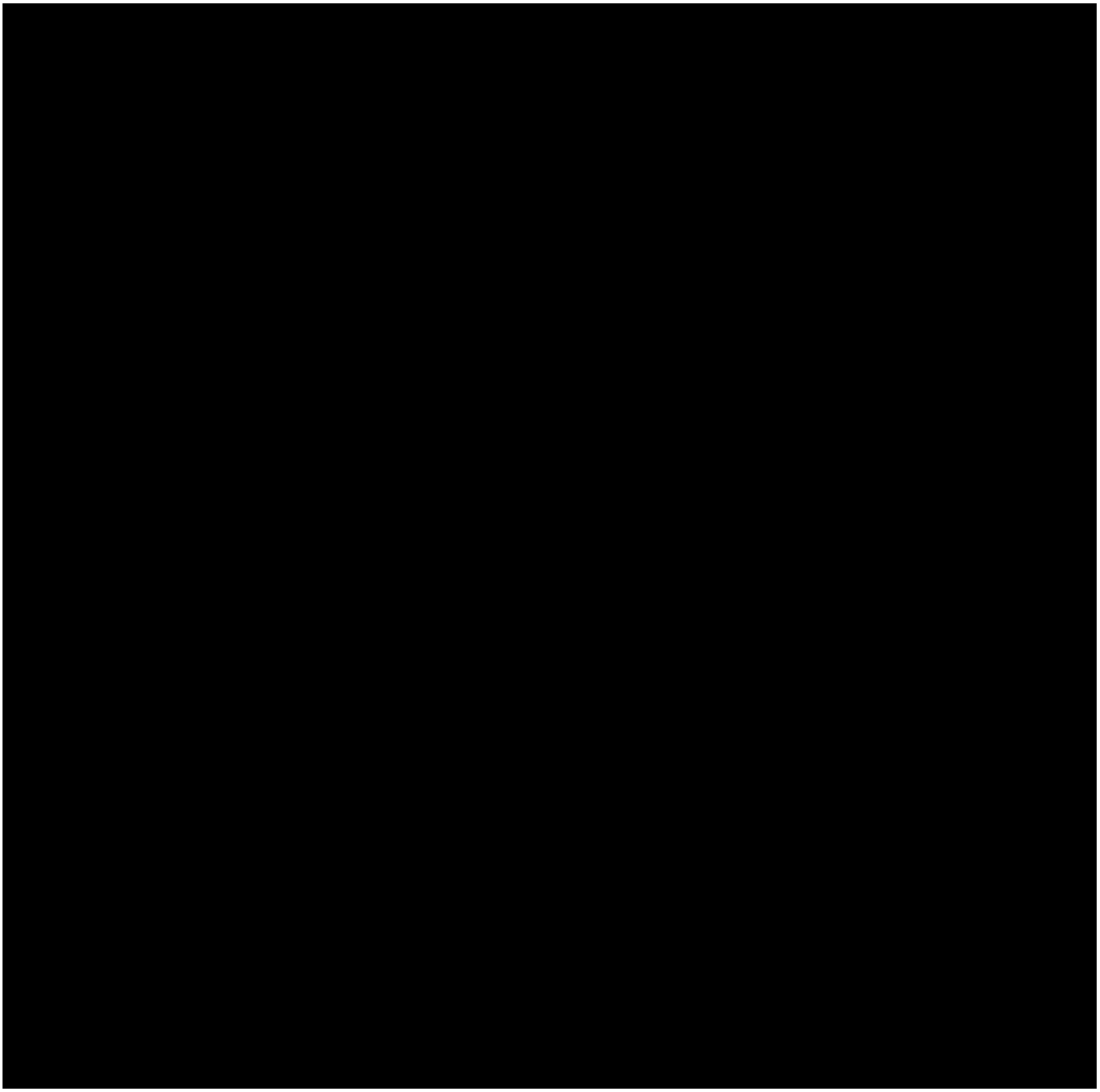












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