

1 **Australia's Stock Route Network: 1. A review of its values,**  
2 **and implications for future management**

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13 Bionote:

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19 Scharnhorststrasse 1, 21335 Lueneburg, Germany, and Tara Martin is a Research Scientist with

20 CSIRO Ecosystem Sciences, EcoSciences Precinct, 41 Boggo Rd, Dutton Park QLD 4102. This

21 research forms part of a larger project investigating the value of travelling stock routes for

22 biodiversity conservation, in response to a pressing need for quantitative data and information to

23 guide stock route management decisions.

24

## 25 **Summary**

26 The Stock Route Network (SRN) is a vast system of public land, comprising vegetated strips and  
27 small reserves across the eastern length of the Australian continent. Now predominantly following  
28 the road system, this network was historically established to allow for the movement of livestock  
29 prior to truck and railway transport. Due to declines in traditional uses, parts of the SRN may now  
30 be sold to private landholders, or put under long-term grazing leases, making it unavailable for  
31 other emerging uses. This is in spite of the fact that it is widely accepted by researchers,  
32 practitioners, graziers and agriculturalists that the SRN holds great natural and cultural value. We  
33 conducted a review of scientific and grey literature to determine the known values of the network  
34 for biodiversity conservation, cultural heritage, rural communities, and Australian society as a  
35 whole. We found that the majority of existing literature on the network focuses on New South  
36 Wales (NSW) and is of a conservation-based nature. The Stock Route Network supports a wide  
37 range of threatened species and communities, with considerable potential for many more to be  
38 discovered. The network also holds heritage value for both Indigenous and non-Indigenous  
39 Australians. The societal benefits from the SRN are numerous because it provides land for  
40 recreation and apiary sites, a source of seed for revegetation projects, a focus for rural tourism, as  
41 well as the traditional benefits for stock droving and emergency agistment. In light of our review,  
42 we identified key knowledge gaps pertaining to the values of the SRN, and propose a number of  
43 options for its future management. Appropriate governance and increased investment in SRN  
44 management is now urgently required to ensure that it continues to conserve its many  
45 environmental and social values in perpetuity.

46 **Introduction**

47 The Stock Route Network (SRN) is a vast system of strips and small blocks of remnant vegetation  
48 which stretches across the eastern length of Australia, covering approximately 4.5 million hectares  
49 (Figure 1). Now predominantly following the road system, this network incorporates a wide variety  
50 of vegetation types, topographies, geologies, and histories (Davidson 1999). Known as “the Long  
51 Paddock”, the SRN was gazetted as public land early in Australia’s pioneering history to allow for  
52 the movement of livestock prior to the advent of truck and railway transport (McKnight 1977). The  
53 SRN comprises the Travelling Stock Routes and Travelling Stock Reserves of New South Wales  
54 (NSW), and the Stock Route Network of Queensland (Qld), as well as numerous other parcels of  
55 Crown land (Hibberd *et al.* 1986). For the purpose of this review, all are referred to as ‘stock  
56 routes’, and the entire network of NSW and Qld are together referred to as the Stock Route  
57 Network (SRN).

58  
59 The use of the NSW network as a means of transporting stock has declined since the 1950s  
60 (O’Connor 2004). Rural Lands Protection Boards (RLPBs) have been responsible for the  
61 management of NSW stock routes since 1880 (Cameron and Spooner 2010), but they have been  
62 increasingly subsidising stock route management due to this decline in use, which has in turn  
63 threatened their financial viability. In 2008, the RLPB system underwent an independent review,  
64 which recommended that the stock routes be ceded back to the NSW Department of Lands  
65 (Integrated Marketing Communications 2008). The Department of Lands (now called the Land and  
66 Property Management Authority) stated that following this hand back “disposal through sale may  
67 be an appropriate outcome for a restricted number and area of TSRs” (Land and Property  
68 Management Authority 2009, p31). Based on this suggestion, the future of the SRN in NSW is  
69 uncertain. The stock routes of Queensland are also experiencing a decline in use by travelling stock,  
70 with local councils responsible for their management struggling to administer them in an

71 economically viable manner. In response to problems which arose during the drought of 2002-03, a  
72 review recommended that the Queensland network be classified into ‘active’ and ‘inactive’  
73 sections, with ‘inactive’ stock routes being leased to private graziers and subjected to Annual  
74 Grazing Agreements (Department of Natural Resources and Water 2008)

75  
76 Although the SRN is now used for droving less often than it formerly was, it is widely accepted by  
77 researchers, practitioners, graziers and agriculturalists that it holds great natural and cultural value.  
78 When it emerged that the future of the network was in question, 513 scientists signed the “Long  
79 Paddock Scientists Statement”, which highlighted the role the SRN plays in environmental and  
80 heritage protection, and in supporting traditional uses (Possingham and Nix 2008). The letter came  
81 at a critical point in the debate, but was primarily intended to be an advocacy tool, as opposed to a  
82 review of information collected. A more in-depth review, which presents evidence in support of the  
83 statements made, is both timely and much-needed to inform the debate concerning the future of  
84 stock route management. In this paper, we review and summarise information on a wide range of  
85 present-day values of the SRN, expanding on the themes introduced in the “Long Paddock  
86 Scientists Statement”, and identifying strengths and weaknesses in current knowledge. We then  
87 discuss the implications of our findings for the ongoing administration and management of the  
88 SRN.

89

## 90 **Methods**

91 We conducted a broad literature search to identify existing scientific and grey literature on the stock  
92 routes of NSW and Qld. Using the terms “travelling stock”, “stock route” and “stock reserve”, we  
93 searched ISI Web of Knowledge (topic search– all results included), Google Scholar (whole  
94 documents – first ten pages of results included), and JSTOR (all disciplines, all content, all results  
95 included) up to October 2010. We confined our search to literature relating to stock routes of NSW

96 and Qld. Additional literature not identified during the search that we were made aware of through  
97 other discussions with stakeholders, was also included. We did not conduct a quantitative review of  
98 this literature (such as a meta-analysis), but instead completed a conventional, qualitative review.

99

## 100 **Results**

101 We found 107 publications dealing with stock routes, including 68 journal articles, 13 government  
102 reports, 14 books, three consultant's reports, three conference papers, two government submissions,  
103 one independent report, one PhD and one Honours thesis, and one letter (Table 1). Most did not  
104 focus solely on stock routes, and we may have failed to identify additional material in which the  
105 SRN is a small component of the work rather than its central focus.

106

107 We identified only seven peer-reviewed journal articles that focused specifically on the SRN (as  
108 opposed to roadsides or remnant vegetation in general). These were: Cameron and Spooner (2010),  
109 Davidson *et al.* (2005), Lentini *et al.* (in press), Lentini *et al.* (2011), Lindenmayer *et al.* (2010b),  
110 O'Connor (2004), and Spooner *et al.* (2010).

111

112 A total of 71% of all literature was specific to NSW, 16% to Qld, and 13% covered issues relating  
113 to both states. We grouped the information collected into five broad themes (biodiversity  
114 conservation, cultural heritage, supporting rural communities, and value to Australian society). For  
115 each theme, we summarised existing findings, and identified key knowledge gaps.

116

### 117 *i) Biodiversity conservation*

118 Some stock routes are in excellent condition because of the absence of pesticides, herbicides,  
119 fertilisers, irrigation and cultivation (Davidson 1999; Davidson *et al.* 2005; Hibberd *et al.* 1993), as  
120 well as long-term set-stocking by domestic livestock, which is commonplace on surrounding

121 private land (Dorrough *et al.* 2004; Martin and McIntyre 2007). Stock routes are some of the oldest  
122 remnants of native vegetation in landscapes, and support a large number of old, hollow-bearing  
123 trees which provide vital habitat for hollow-nesting fauna (Law and Chidel 2006; Spooner and  
124 Smallbone 2009). Stock routes also contain some of the largest remnants of vegetation types  
125 currently underrepresented in the National Reserve System (Law and Chidel 2006; Prober and  
126 Thiele 2005; Prober *et al.* 2001).

127

128 There are many examples of threatened species occurring in stock routes. The native herb  
129 Wandering Peppergrass (*Lepidium peregrinum*) was presumed extinct until it was rediscovered in  
130 2001, and the majority of individuals were in a stock route (NSW Scientific Committee 2000).  
131 Another ground-dwelling herb, *Trioncinia retroflexa*, was also rediscovered in a stock route  
132 (Fensham *et al.* 2002). Mammal surveys conducted in three stock routes of the Mount Molloy area  
133 in Qld revealed a total of 56 species, of which nine were classed as rare or threatened. Finally,  
134 surveys of approximately 200 stock routes by the Queensland Department of Environmental and  
135 Resource Management found at least 95 threatened species, of which 16 are federally listed as  
136 'Endangered' under the Environment Protection and Biodiversity Conservation Act (EPBC Act,  
137 Walsh 2009). Several studies note the existence of listed threatened ecological communities in the  
138 SRN, including White Box (*Eucalyptus albens*) -Yellow Box (*Eucalyptus melliodora*) -Blakely's  
139 Red Gum (*Eucalyptus blakelyi*) woodland (Burrows 2000; Prober and Thiele 1995; Spooner and  
140 Lunt 2004), Coolibah (*Eucalyptus intertexta*) - Black Box (*Eucalyptus largiflorens*) woodland  
141 (Gibbons *et al.* 2008), natural grasslands of the Queensland Central Highlands (Fensham *et al.*  
142 2002) and Inland Grey Box (*Eucalyptus microcarpa*) woodland (Lentini *et al.* in press; Lunt *et al.*  
143 2006; Prober and Thiele 2004).

144

145    ii)     *Cultural heritage*

146    In many areas, the SRN overlaps with Indigenous trading paths, Song Lines and Dreaming Tracks  
147    (Department of Environment and Climate Change NSW 2008). As a result, stock routes contain  
148    places and objects of significance to Aboriginal people such as scarred or carved trees, camp sites,  
149    missions, quarries, axe-grinding grooves, ceremonial grounds, rock shelters, or burial sites  
150    (Nowland *et al.* 1997). According to the NSW Aboriginal Heritage Information Management  
151    System, in a 41 million ha section of the NSW wheat-sheep belt (see Lentini *et al.* 2011, this issue),  
152    stock routes harbour around 1500 recorded Aboriginal heritage sites (pers. comm., DECCW Nov  
153    2010).

154  
155    The SRN also provides an important connection for European Australians to the development of  
156    modern Australia; “The romantic image of the tall, browned, Australian stockman or woman  
157    droving a mob of sheep or cattle has captured the world’s imagination...” (O’Connor 2004, p1).  
158    This evocative image may be considered an important link to Australia’s pioneering past (Figure 2).

159

160    iii)    *Supporting rural communities*

161    Perhaps the greatest value that modern-day stock routes provide to rural communities is fodder for  
162    livestock during times of drought, and emergency pasture following floods or fire (Duncan 1962;  
163    Heathcote 1991; Nowland *et al.* 1997). During some droughts, every stock route in particular  
164    districts has been used by livestock at some point (Hampton and NSW Crown Lands Office 1982).

165

166    Droving on the stock routes is now less common than in the past, but still occurs, and occasionally  
167    on quite large scales. The review of the Rural Land Protection Board system in NSW found that  
168    around 9.9 million head of stock used the stock routes annually. Surprisingly, Boards with highest  
169    usage were also suffering the largest financial losses (Integrated Marketing Communications 2008)

170 which suggests that a primary problem is not one of lack of use, but rather costly management and  
171 inappropriate pricing schedules.

172

173 Stock routes also support rural economies in a variety of other ways. For example, NSW is  
174 currently the largest beekeeping state in Australia, and honey production is worth an estimated  
175 \$28.5 M yr<sup>-1</sup> (NSW Government 2007). Because many stock routes incorporate large tracts of  
176 remnant vegetation, they are highly desirable sites for apiarists, and allow bees to be supplied with a  
177 diverse range of floral resources (NSW Agriculture and Rural Lands Protection Boards 2001, see  
178 Figure 2). Stock routes located next to flowering crops can provide bees with a source of forage,  
179 while landholders simultaneously reap the benefits of crop pollination (Breckwoldt 1986,  
180 Department of Agriculture, Fisheries and Forestry 2011).

181

182 Some farming communities use their local stock routes to attract tourists. The small town of  
183 Barraba in NSW was the first to establish a series of ‘bird routes’, marketing various stock routes as  
184 bird hotspots (Figure 1) which now attract enthusiast ‘twitchers’ from as far afield as Norway,  
185 Canada, Belgium and the USA (Jones 2000). The scheme proved highly successful, and several  
186 other districts have established bird trails of their own (Schultz and Valenzisi 2010).

187

188 *iv) Other values for Australian society*

189 Stock routes provide important sites for recreation and scientific research, because most are easy  
190 and free to access, and incorporate a wide variety of vegetation and environmental conditions.

191 Much of the scientific literature we found did not directly investigate stock routes, but rather used  
192 them as ‘reference sites’ (Gibbons *et al.* 2008; Lunt *et al.* 2006; Prober *et al.* 2002; Prober and  
193 Thiele 2004). This is because they are often the closest analogue to what grassland, woodlands and  
194 shrublands resembled prior widespread agricultural development (Martin and Green 2002). These



195 same characteristics also make stock routes appealing to the general public. According to “The  
196 Long Paddock” directory, recreational activities that take place in stock routes include pony club  
197 and gymkhana events, fishing, bush walking, and picnicking (NSW Agriculture and Rural Lands  
198 Protection Boards 2001).

199

200 Another benefit of stock routes is they may act as carbon sinks in otherwise cleared agricultural  
201 landscapes. A study in NSW found that significantly more carbon is stored in the aboveground  
202 components of the vegetation in stock routes and other roadside reserves compared to paddocks  
203 (Eldridge and Wilson 2004). Similarly, Miklos *et al.* (2010) found that a stock route stored higher  
204 levels of soil organic carbon (8.21 kg/m<sup>2</sup>) than an adjacent cropping field (5.04 kg/m<sup>2</sup>).

205

206 Finally, stock routes provide a valuable source of locally-adapted seed for restoration projects. Seed  
207 from stock routes is likely to be genetically fit and diverse, since the seed comes from relatively  
208 large, intact and well connected remnants that include a wide range of vegetation types. Burrows  
209 (2000) found seed collected from Yellow Box (*Eucalyptus melliodora*) trees in stock routes had  
210 significantly higher reproductive output than seed from trees in paddocks, and Prober *et al.* (1998)  
211 found that even small remnant populations in stock routes can help maintain genetic diversity of the  
212 rare Yam Daisy (*Microseris lanceolata*).

213

214 v) *Knowledge gaps*

215 Given the outcomes of this literature review, we have identified eight key knowledge gaps  
216 pertaining to the values of the Stock Route Network, and which should be prioritised for future  
217 research.

218

219 1. *Does the SRN provide connectivity and facilitate dispersal?* The SRN provides substantial

220 structural connectivity across hundreds of kilometres of the agricultural landscape, and this is  
221 possibly one of its greatest assets (Figure 1). Despite these likely benefits no study has empirically  
222 assessed this connectivity value to date.

223 *2. Should we protect larger, or more intact stock routes?* When considering which stock routes to  
224 prioritise for conservation, decision makers need to have a clear understanding of how trade-offs  
225 between high quality small remnants compared with larger stock routes will affect different  
226 taxonomic groups – these effects will change depending on the species being targeted for  
227 conservation.

228 *3. What is the role of landscape context on stock routes?* Few studies on the ecological value of  
229 stock routes have considered the impact of the surrounding landscape, which may be important in  
230 determining habitat suitability. Surrounding land use is likely to have an important influence on the  
231 quality of the stock routes (Martin *et al.* 2006), and conversely, stock routes have been shown to  
232 influence fauna on adjacent agricultural land (Lentini *et al.* in press).

233 *4. What is the value of the SRN compared with National Reserve System?* Some authors have  
234 expressed concern that because of their linear shape and association with roads, stock routes are  
235 susceptible to edge effects (Major *et al.* 1999a; Major *et al.* 1999b) and may act as conduits for  
236 weeds and pathogens (Lodge *et al.* 2005). Yet these negative effects may be offset by the fact that  
237 the SRN supports threatened ecological communities not represented in the National Reserve  
238 System (see Lentini *et al.* 2011 in this issue, for further exploration of this question.)

239 *5. We do not know the extent to which the SRN preserves Indigenous sites.* Many stock routes have  
240 not been subject to archaeological surveys, and hence more work is needed to determine the  
241 Indigenous heritage value of the network.

242 *6. The ecosystem services that the SRN provides have not been quantified.* Ecosystem services may  
243 include pollination and pest control by wildlife, water filtration, carbon sequestration and erosion  
244 mitigation. These and other likely services need to be taken into account when considering the

245 financial costs and benefits of maintaining the SRN.

246 7. *What permit pricing schedules would best reflect demand and management costs?* John *et al.*

247 (1997) use a derived-demand approach to investigate competitive pricing of the stock route permit

248 system in Nyngan, NSW. They found that the cost of droving permits could be increased

249 significantly from \$0.02 up to \$0.80/sheep/day before demand becomes elastic. This area of

250 research warrants further attention, and case studies which cover broader areas in different regions

251 of the SRN would be valuable.

252 8. *How many people use the SRN each year?* Permits are not required to use stock routes for many

253 recreational activities, research, or seed collection, and data on recreational use are not aggregated

254 consistently (Hampton and NSW Crown Lands Office 1982). This make it difficult to quantify the

255 extent to which stock routes are used by the general public.

256

## 257 **Discussion**

### 258 **Management issues**

259 Through this literature review, as well as our parallel study which demonstrates that the SRN

260 complements the National Reserve System (Lentini *et al.* 2011, this issue), we have shown that the

261 SRN provides a suite of values to Australian society, and also that further research is needed in

262 several key areas. An increasingly apparent overarching problem is that the multiple-use nature of

263 the SRN does not fit into the single-use management structures of NSW and QLD, whereby

264 different departments manage land for different purposes. Therefore, it is unclear how management

265 of the SRN can integrate traditional uses of grazing and droving with emerging uses, such as

266 conservation and recreation.

267

268 To this end, several approaches might be feasible. For example, the Rural Lands Protection Boards

269 and local councils could continue to manage stock routes, but in recognition of their responsibility

270 to protect and conserve threatened species and communities they would receive additional financial  
271 support from State and Federal governments. Permit pricing schedules for use of the stock routes  
272 would need to be adjusted to better represent a user-pays system (see knowledge gaps 7 and 8,  
273 above). This would reflect not only the benefits derived by private enterprises which drove and  
274 agist livestock, but also the benefits to the rest of Australian society, including recreation and  
275 conservation.

276  
277 Alternative SRN management options are available, but may restrict the use of the SRN to certain  
278 groups. For instance, management of portions of the network could be transferred to adjacent  
279 landholders, and market-based instruments (such as reverse auction) could be employed to promote  
280 the protection of stock route values. However, this would inhibit the accessibility of stock routes to  
281 the public. A similar approach has been successfully employed by the Australian Government in  
282 their Environmental Stewardship Program, which has made significant gains in the conservation of  
283 box-gum woodland on private land across south-eastern Australia via the implementation of a  
284 tender system (Zammit *et al.* 2010).

285  
286 Another alternative for the future management of the SRN is to incorporate it into the current  
287 National Reserve System, which could be appropriate given its significance for biodiversity and  
288 cultural heritage.

289  
290 Another alternative for the future management of the SRN is to incorporate it into the current  
291 National Reserve System, which could be appropriate given its significance for biodiversity and  
292 cultural heritage. Transfer to the National Reserve System would help achieve regional and national  
293 conservation targets, particularly conservation objectives relating to comprehensiveness and  
294 representativeness. However, transfer to the National Reserve System would also further strain an

295 already over-stretched system, and would exclude any form of grazing on stock routes. Such an  
296 approach is therefore unlikely to receive support from traditional rural users. These are just a few of  
297 the options available, but clearly a funding model which better reflects contemporary uses of the  
298 SRN should be implemented.

299

### 300 **An uncertain future for the Stock Route Network**

301 It is difficult to fully quantify what Australian society might lose through the sale or long-term  
302 leasing of portions of the SRN. Although we know that it supports threatened species and  
303 ecological communities, and sites of cultural significance for Indigenous people, to date survey  
304 efforts in the SRN have been disparate. There is a chance that the loss of sections of the network  
305 will also mean the loss of these conservation and cultural assets before we fully understand their  
306 extent. Sustained high grazing pressure, which stock routes may be subjected to if sold or placed  
307 under long term leases, has been known to reduce diversity of herbaceous flora (Dorrough *et al.*  
308 2004; McIntyre *et al.* 2003), inhibit tree regeneration (Fischer *et al.* 2009), and negatively affect  
309 woodland birds (Martin and McIntyre 2007). If sold or leased, these stock routes also will no longer  
310 be accessible to the general public as places for recreation and research.

311

312 The importance of maintaining and restoring connectivity across cleared landscapes is becoming  
313 increasingly recognised, with significant efforts being made by both public and private entities in  
314 this endeavour. The degradation of the stock routes through intensive grazing would run counter to  
315 current national and international multi-million dollar investments to restore large-scale  
316 connectivity (Department of Environment and Climate Change NSW 2007). When considering  
317 future options for individual stock routes, management decisions are restricted by both limited  
318 funding and time. However, both the Qld and NSW governments have a mandate to protect  
319 threatened ecosystem and species, Indigenous and European cultural heritage, and the interests of

320 the agricultural communities through the EPBC Act (1999), the Crown Lands Act (1989), the NSW  
321 Aboriginal Land Rights Act (1983) and Qld Aboriginal Land Act (1991), the NSW Threatened  
322 Species Conservation Act (1995), Qld Nature Conservation Act (1992), and the Rural Lands  
323 Protection Act (1998). These legal obligations are clearly relevant to the SRN.

324

325 We hope that this review helps draw attention to the fact that the stock routes are a significant  
326 public asset. Given that this natural infrastructure benefits not only rural communities, but all of  
327 society, improved governance and increased investment in SRN management is now urgently  
328 required to ensure that it continues to conserve its many environmental and social values in  
329 perpetuity.

330

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339

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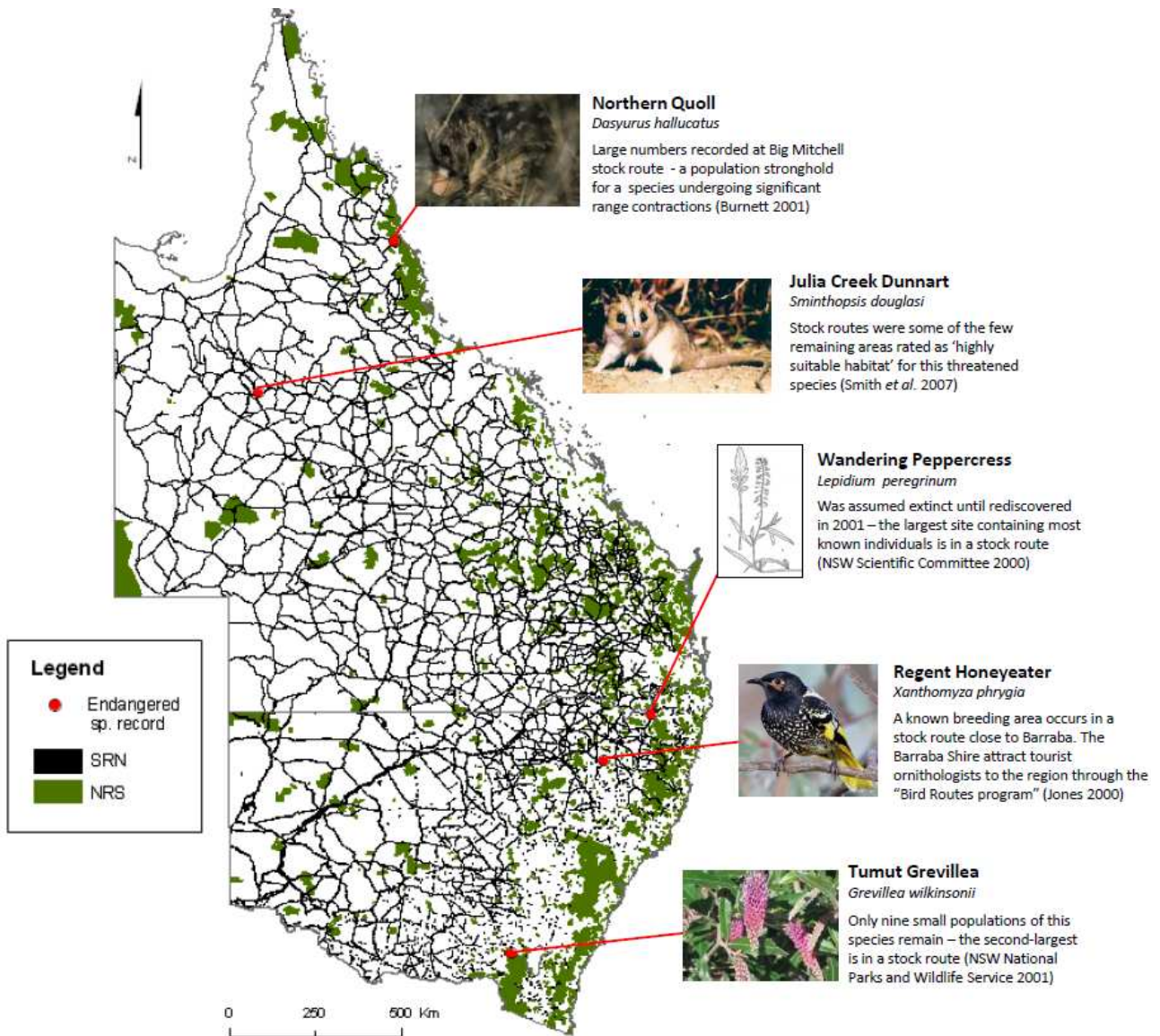
630 Table 1 - Literature considered in the review, categorised according to theme, state which the  
631 material covers ('NA' refers to publications which are not state-specific), and the type of  
632 publication ('Book' refers to both books and book chapters).

Theme	State	Publication type	Literature	Total	
<b>Conservation (47)</b>	NSW	Book	Hibberd and Soutberg (1991), Williams <i>et al.</i> (1991)	2	
		Conference	Davidson (1999)	1	
		Journal	Brock <i>et al.</i> (1999), Debus <i>et al.</i> (2006), Dorrough <i>et al.</i> (2004), Driscoll (2004), Eldridge <i>et al.</i> (2006), Gill and Williams (1996), Law and Chidel (2006), Leavesley (2002), Lentini <i>et al.</i> (in press), Lentini <i>et al.</i> (2011), Lewis <i>et al.</i> (2009), Lindenmayer <i>et al.</i> (2010b), Major <i>et al.</i> (1999c), Major <i>et al.</i> (2003), McIntyre and Lavorel (1994b), Prober (1996), Prober and Thiele (1995), Prober and Thiele (2004), Prober and Thiele (2005), Prober <i>et al.</i> (1998), Prober <i>et al.</i> (2001), Sass (2003), Semple (1986), Spooner and Lunt (2004), Spooner and Smallbone (2009), Thompson <i>et al.</i> (2006)	26	
		Report (Govt)	Drew <i>et al.</i> (2002), Freudenberger and Drew (2001), Mills (2000), NSW National Parks and Wildlife Service (2001), NSW National Parks and Wildlife Service (2002), NSW Scientific Committee (2000)	6	
	QLD	Thesis (Hons)	Channing (2000)	1	
		Journal	Fensham <i>et al.</i> (2002), McIntyre and Martin (2001), McIntyre <i>et al.</i> (2002), Smith <i>et al.</i> (2007)	4	
	NA	Report (Cons)	Burnett (2001)	1	
		Report (Govt)	Walsh (2009)	1	
		Book	Breckwoldt (1986), Martin and Green (2002), Prober and Hobbs (2008), Lindenmayer <i>et al.</i> (2010a)	4	
		Journal	Sutherst <i>et al.</i> (2007)	1	
<b>Cultural Heritage (19)</b>	NSW	Journal	Cameron and Spooner (2010), King (1959), Lunt and Spooner (2005), No author (1860), O'Connor (2004), Smailes and Molyneux (1965), Spooner (2005)	7	
		Report (Cons)	Heritage Concepts Pty Ltd. (2007)	1	
		Report (Govt) Submission	Department of Environment and Climate Change NSW (2008) Environmental Defenders Office NSW (2009)	1 1	
	QLD	Journal	Moore <i>et al.</i> (1928), Knowles <i>et al.</i> (1946), Morphy & Morphy (1984), Saunders (1995)	4	
	NA	Book	McKnight (1977)	1	
		Journal	Spooner <i>et al.</i> (2010), Taylor (1926)	2	
		Report	Pearson (1999)	1	
		Thesis (PhD)	Kerwin (2006)	1	
<b>Society and Science (22)</b>	NSW	Book	Scultz & Valensi (2010)	1	
		Journal	Burrows (2000), Dorrough <i>et al.</i> (2007), Gibbons <i>et al.</i> (2008), Jansen and Robertson (2001), Jones (2000), Lunt <i>et al.</i> (2006), Major <i>et al.</i> (1999a), Major <i>et al.</i> (1999b), Major <i>et al.</i> (2001), McIntyre and Lavorel (1994a), McIntyre <i>et al.</i> (1993), Miklos <i>et al.</i> (2010), Prober <i>et al.</i> (2002), Prober <i>et al.</i> (2005), Somerville and Nicholson (2005), Thompson and Eldridge (2005)	16	
	QLD	Submission	NSW Government (2007)	1	
		Journal	Fensham <i>et al.</i> (2007), Martin and McIntyre (2007), McIntyre <i>et al.</i> (2003)	3	
	NA	Book	Pigram and Jenkins (2006),	1	
	<b>Rural communities (6)</b>	NSW	Book	Anderson (2006)	1
			Conference	John <i>et al.</i> (1997)	1
Journal			Eldridge and Wilson (2004), No author (1915)	2	
QLD		Conference	Duncan (1962)	1	

	NA	Journal	Heathcote (1991)	1
<b>Management (5)</b>	NSW	Report (Cons)	Integrated Marketing Communications (2008)	1
		Report (Govt)	Department of Environment and Climate Change NSW and Industry and Investment NSW (2010), Land and Property Management Authority (2009)	2
	QLD	Report (Govt)	Department of Natural Resources and Water (2008), Local Government Association of Queensland Inc. (2003)	2
<b>Multiple values (8)</b>	NSW	Book	Hibberd <i>et al.</i> (1986), Hibberd <i>et al.</i> (1993), NSW Agriculture and Rural Lands Protection Boards (2001), Nowland <i>et al.</i> (1997)	4
		Journal	Davidson <i>et al.</i> (2005)	1
	Report (Govt)	Hampton and NSW Crown Lands Office (1982)	1	
	NA	Journal	Possingham (2008)	1
		Letter	Possingham and Nix (2008)	1
			<b>TOTAL</b>	107



633 Figure 1 – “Endangered species in the Long Paddock”. Map shows: the Stock Route Network of  
 634 New South Wales and Queensland (SRN), the National Reserve System (NRS), and several  
 635 examples of species which are listed by the Australian Government as Endangered, and that have  
 636 been recorded in stock routes (photos top to bottom: Wildlife Explorer – Picasa Web Albums, Greg  
 637 Mifsud, Catherine Wardrop, Chris Tzaros, Karen Hedley)



638

639 Figure 2. a) The classic view of an Australian stock route: A drover with his mob of travelling  
640 sheep. “Australian stock route”, Harold Cazneaux, c. 1935 (Image courtesy of the Cazneaux family  
641 and the National Library of Australia) b) A modern-day stock route, supporting three purposes: An  
642 apiary, agistment, and conservation of nationally endangered Grey box (*Eucalyptus microcarpa*)  
643 grassy woodland. “The Driftway”, Bogolong, 2009, NSW central-west slopes (Photo, Pia Lentini).

a)



b)



644

645