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Title:
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Date:
2018-12-01

Citation:
Dun, O., Klocker, N. & Head, L. (2018). Recognising knowledge transfers in ‘unskilled’ and ‘low-skilled’ international migration: Insights from Pacific Island seasonal workers in rural Australia. Asia Pacific Viewpoint, 59 (3), pp.276-292. https://doi.org/10.1111/apv.12198.

Persistent Link:
https://hdl.handle.net/11343/284379

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Recognising knowledge transfers in 'unskilled' and 'low-skilled' international migration: insights from Pacific Island seasonal workers in rural Australia

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Acknowledgements

Our thanks go to the Pacific Island Seasonal workers and key informants who have given us their time and shared their stories. We are very grateful to Alf Fangaloka of Tree Minders, Robinvale, for facilitating access to Pacific Island seasonal workers. We also acknowledge the efficient and valuable research assistance provided by Ikerne Aguirre Bielschowsky and helpful comments provided by two anonymous reviewers. The research reported on in this paper is funded by the Australian Research Council (DP140101165: 'Exploring culturally diverse perspectives on Australian environments and environmentalism') and the University of Melbourne

Introduction

The link between international migration and development[i] is a long-standing area of scholarly concern. Discussions have focused 'around two schools of thought' (Hugo, 2012: 26; de Haas, 2010; Faist, 2009) – brain drain, which signals a negative development outcome arising from a loss of skilled residents in countries of origin; and the positive contribution of financial remittances towards poverty reduction. Complicating this dual focus, scholars such as Levitt and Lamba-Nieves (2011) and Hugo (2012) have highlighted the positive contributions of diaspora populations to development

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/apv.12198

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in countries of origin – not only through remittances, but also through their capacity to act as conduits of information (see also de Haas, 2010; Clemens, 2013; and Friesen and Collins, 2016). Eschewing a purely economic focus, this approach recognises that migrants (individually and often collectively) also transmit social remittances: norms, practices, identities and social capital (Levitt, 1998; Levitt and Lamba-Nieves, 2011). Further, those who ultimately return to their countries of origin may do so 'with greater skills and experience than they had before they left', thus making important development contributions (Hugo, 2012, 28). Yet potential, knowledge and skills transfers are an underexplored dimension of international migration and development research (Levitt and Lamba-Nieves, 2011; Clemens *et al.,* 2014). Where they have been explored, it is usually in the context of highly skilled migrants from the Global South, partially because international migration tends to favour those with higher skill or income levels, and/or formal qualifications (King and Skeldon, 2010; Docquier and Rapoport, 2012; Newland and Riester 2018). However, there is a 'need to understand that all migrants are potentially knowledge carriers and learners' (Williams and Baláž, 2008: i). In this article, we consider the implications of reframing so-called unskilled and low-skilled migrants as knowledge holders through insights gathered from 20 Pacific Islander migrants employed under Australia's Seasonal Worker Programme (SWP).

The SWP enables residents of nine Pacific Island countries (PICs)[ii] and Timor-Leste to undertake 'low or unskilled work' on a temporary basis in Australia (Department of Employment, 2017a). Its focus is the agricultural sector, primarily horticulture[iii] (Department of Employment, 2017b). While predominantly driven by Australia's seasonal labour demands, the SWP has a second stated objective of contributing to economic development in workers' countries of origin (JSCM, 2016). Some PIC

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governments target participant selection at rural and/or poorer community members, focusing development benefits where they are most needed. This highly managed programme removes barriers that would usually inhibit such individuals from entering Australia. It facilitates their legal entry, funds initial travel-related costs[iv] and links workers directly with employers.

The following section provides further information about the SWP. We then make a threefold argument regarding its role in facilitating knowledge transfers. First, we challenge the positioning of SWP migrants[v] working in the horticultural sector as low-skilled or unskilled. We note in particular that some SWP migrants are farmers in their countries of origin and bring a range of relevant experience with them. Second, we provide evidence – based on interviews with 20 SWP migrants in rural Australia – of potential knowledge and skills transfers already occurring via the SWP. These transfers have been initiated by the migrants involved and are not formally recognised, supported or facilitated by the programme. Third, we conclude by discussing the potential benefits of reframing the SWP around the principle of knowledge transfer, in addition to its economic focus. As a formalised, temporary and circular migration programme – which *legislates* return migration – the SWP creates important possibilities for knowledge circulation and skills transfers. Given the SWP's horticultural focus, and the climate change and food security challenges facing PICs, such transfers may prove especially beneficial.

Australia's Seasonal Worker Programme (SWP)

The SWP was established in July 2012 following the successful Pacific Seasonal Worker Pilot Scheme (PSWPS) which commenced in 2008 (Bedford *et al.*, 2017). Its two stated objectives are:

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1. ‘to contribute to the economic development of participating countries through the provision of employment experience, skills and knowledge transfer, and…through remittances’;
2. ‘to assist Australian producers and employers who are unable to source enough local Australian workers to meet their seasonal labour needs by providing access to a reliable seasonal workforce’ (Durbin in JSCM, 2016: 5).

Initially, the PSWPS and SWP only applied to horticulture. In June 2015 the SWP was extended to include other types of agriculture and the accommodation sector (JSCM, 2016).

Governments of the ten source countries make their own determinations regarding selection of potential workers. The Fijian Government specifies that potential workers must be unemployed, live in a rural area and have ‘some skills in agro-farming’ (Ministry of Employment, Productivity and Industrial Relations, 2015: 1); and many Tongan SWP workers come from poor and/or rural villages (Blanco 2009; Gibson and McKenzie, 2011). The Government of Papua New Guinea (PNG) targets underprivileged, underemployed and rural residents (Official PNG Seasonal Workers Blog, 2012, 2013) and emphasises knowledge transfer as a dimension of SWP worker recruitment. It requires potential workers to be ‘committed to undertaking self-employable opportunities using the skills, knowledge and savings that have been acquired [via the SWP]’ (PNG Seasonal Workers Coordination Office, n.d.); and to ‘contribute meaningfully towards the enhancement of their [own] wellbeing’ and to ‘the development of their communities as an “agent of change”’ (Department of Labour and Industrial Relations, n.d.: 1).

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SWP migrants work in Australia for six to nine months at a time, depending on their country of origin (Department of Employment, 2017b). Between December 2009 and June 2017, close to 19,000 seasonal worker places were approved (Bedford *et al.*, 2017; Howes and Muller, 2018). The most recent annual intake of just over 6,100 workers (July 2016 – June 2017) was the highest yet (Howes and Muller, 2018). However, the SWP is not without valid critique and bad press, centred upon workers' highly constrained movements once in Australia, their insecure and precarious work conditions, lack of access to permanent residency and 12 SWP worker deaths in Australia since 2012 (Bedford *et al.*, 2017; Stead, 2017; Howes and Muller, 2018). Yet participation in the SWP continues to grow with workers motivated by comparatively higher wages in Australia. Indeed, a culture of migration and sending remittances is common in PICs (Connell, 2010). Evidence from the recent Australian Parliamentary Inquiry into the SWP (JSCM, 2016) showed that financial remittances earned via the programme are generating positive changes in the lives of workers and their families, contributing to poverty alleviation, housing improvements, enhanced access to education and supporting mitigation or relocation following natural disasters. Knowledge transfers – or social remittances – garnered negligible attention in the JSCM (2016) inquiry.

Workers without formal qualifications are commonly called low or unskilled workers, but 'may have a rich endowment of acquired skills in fields such as horticulture' (Newland and Riester 2018: 2). If mapped against the Australian and New Zealand Standard Classification of Occupations (ANZSCO[vi]), SWP horticultural workers fit the category 'Crop Farm Workers' (Skill Level 5, the lowest level of skill classification). They 'perform routine tasks in producing crops' [vii] (ABS and Statistics NZ, 2006: 744). Yet almost all of the SWP migrants involved in our study are *farmers* in

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their home countries. According to ANZSCO, Crop Farmers 'plan, organise, control, coordinate and perform farming operations to grow crops' and fit within Skill Level 1 (the highest) – 'commensurate with a bachelor degree or higher', or '[a]t least five years of relevant experience' (ABS and Statistics NZ, 2006: 81). Nonetheless, the SWP frames all workers, including those who are experienced Crop Farmers in their origin countries, as low or unskilled. We contend that the ANZSCO classification system offers scope to reframe SWP migrants, especially those with farming backgrounds, as knowledge holders. In this paper, we consider Pacific Islander seasonal workers through this lens, providing evidence to support their potential role in knowledge transfer. The following section frames our argument in the broader literature on knowledge transfers, international migration and development.

Knowledge transfers, international migration and development

Mobility is a well-established means of exercising agency to improve livelihoods (de Haas, 2010; Castles, 2009). The sustainable livelihoods framework (DFID, 1999) and the new economics of labour migration theory (Stark and Bloom, 1985; Taylor, 1986), show how households use migration to pursue development outcomes, by actively managing risk and responding to shocks or stressors. However, a focus on development being achieved by migrants themselves (e.g. via remittances and diversification of income streams), arguably – and we think, problematically – diverts attention away from structural aspects of development policy and the role of States in shaping favourable conditions for migration-led development (Skeldon, 2008; De Haas, 2010). Friesen and Collins' (2016) conceptualisation of 'brain chains' is useful in this regard as it draws attention to the importance and diversity of structural elements that mediate and make knowledge transfers possible.

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Brain chains emphasise the complex linkages between individuals and families, diasporic communities, private and public agents, and States; and the policies, processes and institutions that can bolster knowledge transfer via migration (Friesen and Collins, 2016). The United Nation Development Programme's Transfer of Knowledge through Expatriate Nationals (TOKTEN) programme is an example whereby valuable structural supports have underpinned migration-led knowledge transfers. TOKTEN invites migrants from the Global South, who are established skilled professionals overseas (e.g. in healthcare, engineering, and education), to return to their countries of origin, as short-term volunteers, to share knowledge and expertise with local counterparts (Logan, 1990; Mavroudi and Nagel, 2016). Brain chains, and the TOKTEN example, prompt consideration of how the SWP could better support its own stated development and knowledge transfer objectives.

A growing body of research seeks to understand how knowledge transfers across distance, in an increasingly globalised world, contribute to economic advantage (Williams and Baláž, 2008; Bathelt and Henn, 2014). Typically focused on innovation and competitive advantage amongst business firms, studies have analysed *how* knowledge flows at close spatial proximity and across distance (Maskell and Malmberg, 1999; Williams and Baláž, 2008; Bathelt and Henn, 2014). A common conclusion is that person-to-person interactions are vital, especially for transfers of tacit knowledge[viii] (Bathelt and Henn, 2014). Effective knowledge transfers are further supported by shared work experience or close social relations; and new knowledge is created when actors have sufficiently different knowledge bases but similar cognitive foci (Barthelt and Henn, 2014; Wood *et al.*, 2014 discuss these ideas apropos farmers). Studies regarding knowledge transfers in agriculture

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commonly show the value of on-farm experiential learning and farmer exchanges (McIntyre *et al.*, 2009; Wood *et al*., 2014).

Bringing the focus back to migration, Faist (2008, 2009) described migrants as transnational development agents, and highlighted the existence of two-way knowledge flows between the Global North and South. The significance of migration has also been underscored by Williams and Baláž (2008:14, x), who argued that 'international migration is an important, and sometimes the only, effective means for transferring some forms of tacit knowledge across international boundaries'. While the predominant focus has been on the contribution of diaspora communities to such processes, Faist (2008: 27) argued that 'persons who engage in short-term mobility' also require attention. Further, as noted earlier, the focus of most research and programmes has been on knowledge transfers via highly-skilled migrants (such as information technology and medical professionals, managers, entrepreneurs, scientists and international students) (Williams, 2007; Williams and Baláž, 2008; Friesen and Collins, 2016; Mavroudi and Nagel, 2016). Challenging this trend, Williams and Baláž (2008) argued that skills are socially-defined and that so-called unskilled jobs may have relatively high knowledge content – thus the workers involved may be seen as learners, knowledge carriers and knowledge creators. They posited that all migrants should be seen as 'knowledge bearers' with the potential to 'play a role in knowledge transfers in all or most economic sectors' (Williams and Baláž, 2008:14).

To sum up, knowledge transfers are a lesser-studied dimension of international migration and development research (than financial remittances), but they have garnered increasing attention over

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the past decade. Accumulating evidence indicates that effective knowledge transfers require not only person-to-person interactions but often also broader structural support. However, studies applying these perspectives to so-called low and unskilled migrants, circular migrants, and the agricultural sector are lacking. The following section builds the case for positioning SWP migrants as 'knowledgeable migrants' (Williams and Baláž, 2008: 16) by considering the agricultural context of their home countries.

Agriculture in the Pacific Islands region

The 22 countries and territories of the Pacific Islands region are topographically diverse, ranging from small, low-lying atolls with limited soil fertility to larger and agriculturally productive mountainous islands (Barnett and Campbell, 2010; Campbell, 2015). Agriculture and forestry underpin the livelihoods of many of the region's people, accounting for a sizeable share of export incomes and employing the bulk of the labour force (Sisifa *et al.*, 2016). Staple and common crops vary widely across the region. In PNG, Kiribati and Tonga – the countries of origin of the seasonal workers involved in this study – key crops include[ix] yam[P,T] (*Dioscorea spp.)*, taro[P,T] (*Colocasia esculenta*), giant swamp taro[K] (*Cyrtosperma chamissonis*), sweet potato[P,T] (*Ipomoea batatas*), cassava[P,T] (*Manihot esculenta*), tannia[T] (*Xanthosoma sagittifolium*), breadfruit[K] (*Artocarpus spp*.), pandanus[K] (*Pandanus tectorius*), banana[P, K] and coconuts[P, K] (Bourke *et al.,* 2009; FAO, 2010; Campbell, 2015; Connell, 2015; MAFFF *et al.,* 2015; Agriculture and Livestock Division, n.d.). Major export crops include coffee[P], copra[P, K], palm oil[P], cocoa[P] and root crops[T] (Allen *et al.,* 2009; Kiribati NSO, 2015; MAFFF *et al.,* 2015; Taylor *et al.,* 2016).

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Nearly all agriculture in the Pacific Islands region is rain-fed, rather than irrigated (Barnett, 2011), and remains dominated by traditional farming systems (FAO, 2010). These range from low-input shifting agricultural (swidden) systems to high-input permanently cultivated systems, and are characterised by integrated use of trees, mixed cropping and extended fallow periods (FAO, 2010). Notwithstanding pervasive discourses of vulnerability, these biodiverse traditional farming systems have long supported food security and engendered resilience to environmental change in the region (Campbell, 2015). For example, in most PICs, subsidiary crops with varying levels of resistance to water scarcity and water logging, salinisation and wind conditions have traditionally been grown alongside dominant staples; reducing the 'likelihood of total crop losses during extreme events' (Campbell, 2015: 1316). 'Modern' agricultural monocultures have become more common in the region over the past half century alongside increased dependence on imported foods due to the impacts of colonisation and globalisation (Campbell, 2015; Connell, 2015). These changes are affecting the resilience of local food systems, enhancing PICs' vulnerability to the effects of climate change (Campbell, 2015; Barnett, 2011; FAO, 2010). Nonetheless, traditional farming systems and skill-sets remain pervasive (FAO, 2010). There is a valuable and extant agricultural knowledge base amongst farmers in the region – some of whom are, in turn, SWP migrants.

Research with SWP migrants in the Sunraysia region, Australia: study site and methods

Our research took place in Australia's Sunraysia region which straddles the Murray River and encompasses parts of south-western New South Wales and north-western Victoria, including Mildura Rural City and the townships of Merbein, Red Cliffs and Robinvale (Figures 1 and 2). This key horticultural region produces almost all of Australia's dried vine fruits (98%) and table grapes

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(75%), as well as significant volumes of citrus, pistachios, almonds and olive oil (Department of Environment Land Water and Planning, 2016; MDC, 2014). The region's vegetable growers produce 13 per cent of Australia's carrots, alongside zucchini, squash, pumpkins and asparagus (MDC, 2014). The Sunraysia region is also one of Australia's most ethnically diverse rural areas – at least one-third of horticulturalists speak a language other than English at home (Missingham *et al.*, 2006). This paper focuses on a subset of a broader research project, which has documented culturally diverse perspectives on the environment and agriculture in this region, through interviews with over 130 participants from 15 different countries (see Authors 2017, 2018).

[Insert Figures 1 and 2 around here].

Among the region's ethnically diverse residents is a sizeable Tongan diaspora in Robinvale – some of whose members were key to the SWP's establishment in the region (and Australia) having hosted the first workers under the PSWPS. In the 2016 Census, seven per cent of Robinvale's population indicated that they speak in Tongan language at home (compared to 0.1 per cent nationally), and 3.5 per cent of the town's residents were born in Tonga (ABS, 2017). This is likely an underestimate. Key informants interviewed as part of our broader study noted that the census form does not have enough space to list all family members in large Pacific Islander households. Some families are hesitant to complete the form due to their residency or citizenship status, a distrust of government, and misunderstandings about the role and purpose of the Census.

Results presented in this article draw on five focus group discussions with 20 male SWP migrants, and interviews with three key informants from Sunraysia's Tongan diaspora community. The latter

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included a respected elder, a labour manager on a dried grape farm, and the Tongan-born Director of Tree Minders, a family-owned labour sub-contractor. Tree Minders has supplied labour to the region's horticulturalists for over two decades and has been involved in the SWP since the pilot scheme in 2009. The seasonal workers who participated in our study came from PNG (n=4, from the Eastern Highlands, Madang and Central provinces), Tonga (n=13, from Tongatapu, Eua, Ha'apai island group and Vava'u island group) and Kiribati (n=3, from South Tarawa, North Tarawa and Tabiteuea North). The selection of these workers was opportunistic: they were the cohort of SWP migrants in Robinvale at the time of our research. The men ranged from first-time programme participants to those in their seventh year. Focus groups were divided according to nationality, and contained three to five participants. They were conducted in English. Our participant recruitment occurred via Tree Minders. A Tongan-speaking Tree Minders' employee interpreted for Tongan-speakers as needed. Seasonal workers with high English fluency interpreted as needed during the I-Kiribati focus group. PNG workers spoke excellent English and no interpretation was required.

Data were collected between December 2014 and June 2015[x]. Our open-ended questions explored the workers' reasons for participating in the SWP, but primarily asked about the environment and farming in countries of origin and Australia. We sought to gather insights regarding the workers' pre-existing agricultural techniques and knowledge; the perceived relevance of these when working on Australian farms; and the potential utility of agricultural knowledge gained in Australia (under the SWP) upon their return home. The scope of this study was to collect data on the workers' self-assessed contributions to knowledge transfer. We did not travel to the relevant PICs to evaluate how those knowledge transfers had played out on-the-ground, although this would be a fruitful area for

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future investigation. Key informants from the Tongan diaspora were asked about the broader horticultural context of the Sunraysia region and the role and influence of migrants. Audio-recordings were transcribed verbatim and coded for evidence of knowledge transfers. All participants (except two key informants who consented to being identified) are referred to using pseudonyms.

All of the focus group participants, excepting two I-Kiribati workers, were farmers in their home countries. They described growing diverse staple crops using traditional farming methods on plots ranging between one acre and four hectares in size. Most had been doing so since childhood – and, at the time of interview, maintained subsistence or small-scale commercial farms 'at home' while travelling to Robinvale annually to work on almond plantations. Samson from PNG emphasised, 'You know, most of us we come from agricultural backgrounds'; and Tokoni from Tonga explained, 'this work [on farms in the Sunraysia region] it is not new to us because this is what we normally [do] back at home'.

Of course the precise farming context for each SWP participant is different, according to their place of origin (e.g. climate and soil conditions, market access, scale of farming and so on), shaping their knowledge-base in distinctive ways. Yet these diverse farmers do hold something in common: through participation in the SWP, each was exposed to a different farming regime. For some, this exposure broadened their 'imaginative capacity' (Allon and Soufoulis 2006: 51), and they reported changing (or planning to change) their farming practices upon returning home[xi]. The following sections are structured around two categories of knowledge transfer identified as relevant by our interviewees (new technology and crop types, and improving crop yields). We then discuss the

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relevance of Sunraysia's Tongan diaspora in facilitating, legitimating and creating opportunities for knowledge transfers via the SWP.

Exposure to new technology and crop types

We asked the seasonal workers if there was anything they had learned about farming while in Australia that they had tried, or would like to try, back home. Paea, from PNG was interested in technology:

> [The] basic reason for me to come here is to work and earn money...And, more importantly, just to broaden my knowledge…to learn… more stuff, especially, you know, technology and all sorts of things...Like solar irrigation; the use of free power from the sun…to pump water from the well around [the] lakes into the farm and then it is like computerised or something. It waters the plant[s] like every 6a.m. in the morning, every 6[p.m.] in the evening…It's all computerised. Especially in the almonds...

Participation in the SWP created a desire, among some seasonal workers, to try new crops on their own land. Aleki had started to grow tomatoes, carrots, capsicums, cabbages, beans and cucumbers on his eight acre plot in Tonga. He explained: 'I get the ideas when I'm…start working here [in Australia] in the farm.' This diversification has brought benefits – these crops can be harvested up to four times per year, while yams and cassava typically have just one harvest. Aleki has even won a local prize for his farm's crop diversity. The SWP also piqued his interest in agricultural technologies. He described observing and 'looking forward for the irrigation' while in Robinvale and

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hoped to install an irrigation system in Tonga, 'it is one of my goals…I think…we [will] put [a] dripper line…and get some water machine [pump for] irrigation.' In addition, Aleki had seen tomatoes and vegetables being grown in greenhouses in Bowen, Queensland (while visiting a fellow SWP participant based there), and hoped to adopt approach in Tonga to extend the growing season and avoid losses from too much rain. This discussion prompted the Tree Minders employee to reflect that it might be beneficial to find Aleki a placement with a vegetable farm in Australia.

When the I-Kiribati seasonal workers were asked, 'Is there anything that you've seen growing here that you think might grow in Kiribati or that you would like to try in Kiribati?' Tekiau (who did not own a farm at the time), expressed an interest in experimenting with almonds, 'I just want to give it a try because the almond is…very healthy to your body.' Others responded, 'There [are]…plenty of plants we [would] love to plant back home. But that depends on where we get the seeds…you're gonna [be] fined by the quarantine' (Erene, from Kiribati). The workers proceeded to debate whether almonds or oranges would actually grow in Kiribati. The Tree Minders employee reflected on the challenge of experimenting with different crops in Kiribati, a low-lying atoll state, as opposed to Tonga:

> [O]ne of the things that kind of hinders them [the I-Kiribati, is]…they're so busy just trying to survive...growing plants that…[they] know it's going to grow and produce…something to eat, you know?…they will go back to traditional plants where it's been done [before] because it's a matter of survival…I can see my boys from Tonga saying: "Oh we'll try this, we'll try that…" because there's leeway, there's a chance that it [an experimental crop] could grow...I

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> think that if there was an orange tree that we could experiment with that can grow in salty water, we'd give it a shot in Kiribati…Tekiau is more willing to give it a trial…But at the end of day, I think he wants to experiment to see if it's going be a fruit for them to survive on…

Overall, our conversations with seasonal workers indicate that time spent on the Sunraysia region's farms generates curiosity and a desire to try new crops. However, structural supports (instance.g. access to targeted horticultural training opportunities beyond almond farms; and approriate support for seed transfers) would be enhance their opportunities to experiment upon returning home.

Ideas for improving crop yields

Samson explained that participation in the SWP, and observations made on Australian farms, had improved his crop yields in PNG:

> I've started a little bit of [a] project [in PNG]…I am the landowner…when working in the almond farm [in Robinvale] I've seen how the irrigation system is…The distance how they plant the trees, at least I've learned. So the previous years when I came and went back [to PNG] I started planning because I'm embarking on a noni[xii] project…before coming here…I was planting one metre apart and then the result wasn't good…[the plants] were too close…I came here I learned a lot so I went back [to PNG] and say "No, this is wrong". So I have to change the idea of planting the noni, so probably three or four meters apart.

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Repeated participation in the SWP enabled Samson to transfer his observations and new skills. By his own account, the opportunity to witness farming practices in Robinvale, firsthand, underpinned this knowledge transfer process:

> [N]ow it's good. It's [noni plants] growing well. I got a distance where it can really bear big fruit compared to the previous ones...So when I do my spacing to four metres apart the fruit is really big. And that is the difference…I thank the programme [SWP], the Australia[n] Government, and PNG Government, for allowing us to come over here, and just learn something and then take it back and implement it back home…I think the most valuable thing is…looking at how the irrigation system and everything is set up in the farm here. (Samson).

For Samson firsthand observation of almond farms in Australia was the crucial factor in instigating change:

> It was very important for me coming here. What I've seen, I have implemented it. But if I'd not come over to Australia, like…someone coming and telling me to do my spacing [in PNG], I don't think I would believe him because normally I have to experience [things] myself, see things on my own…then I will expand on my experience.

When asked if they had learned anything in Australia that could be applied in Kiribati, Tekiau discussed pruning:

> We learned a lot from…the farm [in Australia]. I mean trying different things…back in Kiribati, we did do a pruning…But here in Robinvale…we understand why the tree needs to [be] prune[d]…For the sunlight that can produce fruit, so that may appl[y]…in our islands…I

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> think breadfruit needs to be pruned because sometimes they don't have a fruit...So you have to cut a little bit so that sunlight may produce more fruit.

Ioane, who has a farm on one of Kiribati's outer islands, reflected:

> Yeah what I see with the almond tree, I [now] put it the same with the breadfruit and any kind of the fruit…that we grow in Kiribati. Because sometimes…there comes a time that they [the fruit trees]…didn't give you [fruit]. And then you started to think, "Ah this one is not good", so you cut it off [chop the tree down]. But what I see here, when you try to put some sunlight in it and the way you prune, who knows, it gives you a fruit...for sure.

Blanco (2009) made similar observations during his interviews with Tongan seasonal workers in the Sunraysia region during the pilot scheme in Australia. Half of the 28 workers interviewed considered newly acquired skills in pruning and chainsaw use would be helpful in Tonga, especially for 'pruning mango trees' (Blanco 2009, 57). The potential for horticultural knowledge exchanges involving Pacific Island seasonal workers has also been noted in relation to the longer-running New Zealand Recognised Seasonal Employer (RSE) scheme, which was implemented in 2007 due to labour shortages in the horticultural and viticultural sectors (Craven, 2015; Bedford *et al.*, 2017). RSE scheme workers have reported gaining pruning skills in New Zealand (Gibson and McKenzie, 2014). Such knowledge transfers have the capacity to extend SWP/RSE benefits beyond the individual workers' households, especially if newly acquired pruning skills result in increased fruit production that improve village food security.

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How diaspora populations can support knowledge transfers

Members of the Sunraysia region's Tongan diaspora are well-established in the local grape and almond industries and provide various supports (e.g. pastoral care and accommodation) for SWP migrants. Alf (the Tongan-born Director of Tree Minders and member of this diaspora) told us that, during a 2005 Senate enquiry into labour shortages in the horticulture industry (which contributed to the instigation of the PSWPS), he had actively 'lobbied the then-Howard government to try to get in labourers [from the Pacific Islands] because we had a lack of labour, but the demand was there… [the horticultural industry] out here was growing massively.'

When asked how the Tongan diaspora had contributed to the Sunraysia region's table grape and almond industries, Maamaloa (a Tongan migrant and resident of Robinvale since 1986) noted the Tongans' physical strength, work ethic and farming backgrounds were key to the vast expansion of these industries:

> When we first came here…there were not much table grapes in this town. Mainly they…[were] dried fruit and winery...Now Robinvale is almost the biggest table grapes farming in Australia. We were the one[s] who were doing the work…because we are the one[s] who [were] planting…because…most of that [was] done by hands. And even…now picking them by hands; to prune them [grape vines], by hands; to roll them [grape vines], by hands. Everything is done by hands. But see us Tongans, we were the ones who can do it.

Maamaloa shed further light on the farming capacities of Tongans:

> We grew up [in Tonga]…relying on the land…that's what we did…when we came here [to Robinvale] we felt that that is something you don't have to learn to do it…You don't have to

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> learn to be a farmer here in Australia, you are already a farmer, you already know most things about farming. The only difference is…[here] they are using more machinery than hand.

Maamaloa explained that the Tongans' capacities on table grape farms were noted by the companies that later established the region's almond plantations (which entail greater use of machinery such as chainsaws and tree shakers/harvesters, than grapes). Tongans were thus engaged, according to Maamaloa, to plant 'millions' of almond trees since 2001. Alf explained 'we've [Tree Minders] planted probably 90% of Australia's almond industry… I think now we've planted about 10 million trees since 1995'. Following the commencement of the PSWPS and SWP, seasonal workers became the key source of labour on almond plantations, Maamaloa explained:

> [A]lmonds is a new industry, is a new kind of thing….not… things that Australia already know about...it's only…say the last 10 years that [almonds] came into here. And actually Robinvale is the biggest almonds plantation in the southern hemisphere…And…like the pruning, them people [almond company managers] don't know nothing about pruning. It is us Tongans…If we cut the branch it will fork out in two or three more branches, it will be[ar] more fruits and most of the time we are telling them…they know nothing about it. But that's our Tongan [capacity for] playing with gardening yeah. We brought that.

He continued:

> [P]runing time…that is the hardest thing…because you get a chainsaw in one hand and have to cut and pull. Some [branches] are as big as my hand and it's really, really, really hard…You have to open up and see the whole trees, they have to cut in the middle…it's like a vase so the sun can shine in the middle and they can bear fruits all outside and inside.

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By Maamaloa's account, early members of Robinvale's Tongan diaspora (himself included) led the way on the Sunraysia region's almond plantations, developing new expertise and pruning skills with a crop that was unfamiliar in Australia at that time (as indeed it is in Tonga and other PICs). Beyond their sheer physical strength and capacity to work hard, Maamloa attributed the Tongan diaspora's contributions to the almond industry to their familiarity with farming, traditional farming expertise and an innate capacity for 'playing with gardening'. Via the SWP, the pruning skills developed by members of the Tongan diaspora working on Robinvale's almond plantations have been passed on to seasonal migrants, contributing to the transfers of knowledge mentioned earlier. This knowledge transfer process between Australian almond plantations and Tongan farms is supported by the presence of a diaspora community in Robinvale (members of which share a common language with the seasonal workers and also work on the region's almond farms), and by the circular migration process. The fact that the SWP workers are not permanently settled in Australia matters here.

In recognition of this potential, Heleni (a Tongan-born labour manager on a dried grape farm near Mildura) and Ben (the Anglo-Australian farm manager) hope to set up a three-year horticulture training course targeted at Tonga-based participants, separate to the SWP. Heleni was motivated to do so by a desire to secure a source of reliable, skilled workers while simultaneously providing horticultural training for Tongans. Finding a reliable source of trained workers has been challenging for Heleni, because the dried grape farm where he works cannot readily meet the conditions of the SWP (largely because the work does not fall into one continuous 6 month block). Heleni explained that he and Ben would like to get '500 people from Tonga to here [Mildura]' to 'study what we are

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doing [on the dried grape farm]', emphasising 'they are not gonna come as a seasonal worker, they [will] come to study…[because] what they know [learn] here they can [then] do it back at home'. The idea, which they have been pursuing, is for the Tongans to study horticulture and also work on the farm as a means of practical, on-farm training and to earn money. Ben further explained 'if they could do three years [of study] here and…[also] work on a block…they get educated and then they take that back home.'

Both the seasonal workers and key informants involved in this project recognised the potential for circular migration arrangements to contribute to the transfer of knowledge from Australian farms to Tongan ones (whether via the SWP itself, or via Heleni and Ben's attempt to create a dedicated training programme). However, our data also signals something more: the potential for two-way knowledge transfers.

Two-way knowledge transfers via circular migration?

Here we retain a deliberately speculative tone. Collecting evidence of two-way knowledge transfers via the SWP is challenging, not least because the programme frames these migrants as farm labourers – rather than experienced farmers (despite the fact that many own farms in their home countries, as we have shown). During focus groups, the SWP migrants discussed their expertise with particular crops (especially root crops), planting techniques and knowledge of medicinal plants from their homelands. But there are barriers to sharing this knowledge in an Australian context. Most obviously, a lack of opportunities for SWP workers to grow their cultural foods while in Australia – due to a lack of land on which to do so. Thomas, from PNG, stated that access to land would allow

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him to apply his traditional agricultural knowledge (when not working) to 'make a small garden…Try to grow [plants] myself yeah… Just to [be] observing, make a research, small research, for only six months.' Daniel, a seasonal worker, had managed to grow some taro next to his residence, using the same techniques as in Tonga (although the taste and size of the resulting crop was different due to the variety of taro available). However, access to land for growing cultural foods was uncommon amongst the seasonal workers in our study.

A modernist knowledge hierarchy, elevating western farming knowledge above traditional farming systems, also appears to be at play as a knowledge sharing barrier. This was most evident in the seasonal workers' own reflections. When asked if they had agricultural knowledge that could be applied on Australian farms, they considered that their knowledge would not be needed, or wanted: 'Oh that would be traditional knowledge. They don't need traditional knowledge here' (Thomas). Nonetheless, a formal evaluation of the PSWPS (Reed *et al.*, 2011: 38) revealed that employers consider the seasonal workers' prior farming experience beneficial: '[t]hey are often subsistence farmers so are used to growing things – they understand what plants need, the growth cycle, the effects of nutrition and weather' (Reed *et al.*, 2011: 38).

It is pertinent to focus briefly on the root crop expertise of farmers in the PICs. Sweet potato, cassava and tannia (amongst the most commonly grown crops in the region) are relatively drought tolerant crops (FAO, 2010). Expertise with such crops could prove invaluable when exploring their viability in Australian regions (like the Sunraysia) impacted by a warming and drying climate (Garnaut, 2008; Quiggin *et al.*, 2010) – particularly as sweet potato has been flagged as a potential climate change

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crop for Australia (MSSI, 2015). Not only is sweet potato relatively drought resistant, it also thrives under high atmospheric carbon dioxide concentrations (MSSI, 2015). In a context of environmental change, SWP workers from farming backgrounds may yet prove beneficial for Australian agriculture in ways that exceed their role in filling labour shortages. For example, by transferring knowledge about crops that are widely grown in their countries of origin, and about which they have significant expertise.

Discussion

Our study has identified moments whereby temporary and circular international migration has created opportunities for knowledge transfers in the lesser-studied horticultural sector (between Australian farms, farms in PICs, Pacific Islander diaspora populations and seasonal workers). Building on the work of Williams and Baláž (2008) and Friesen and and Collins (2016), and using interview material from Australia's Sunraysia region, we have sought to reposition 'low-skillled' and 'unskilled' seasonal migrants from farming backgrounds as knowledge holders and knowledgeable migrants.

Our argument is that the current framing of the SWP, as a programme for low and unskilled workers, does not adequately describe the contributions of our research participants. This framing hides and fails to correctly identify their established agricultural knowledge, and their capacities to absorb new experiences and transfer knowledge as part of the circular migration process. Seasonal workers arguably fit Faist's (2008, 2009) category of 'transnational development agents' because, in addition to financial remittances, their capacity to transfer knowledge has the potential to enhance crop yields

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and thereby also their income-earning capacities in countries of origin. Our findings complement recent calls from Australian fruit and vegetable growers, the National Farmers' Federation and the Primary Industries Skills Council to recognise the complexity of intensive horticulture, and the demand for 'skilled horticultural workers' (Martin, 2013; National Farmers' Federation, 2014). The SWP migrants who we spoke to are more than seasonal labourers, they are farmers. Their farming backgrounds matter: they shape their engagement with, and perceptions of, Australian agriculture – causing them to recognise that the SWP does more than contribute financial remittances. The potential for knowledge transfer via the SWP is particularly strong because the migrants are engaged in horticulture at both ends: in countries of origin and destination. While the crops involved differ, some aspects of the knowledge gained (e.g. around technologies and pruning) are transferrable, and in some cases the crops may be too. While not all knowledge transfers will necessarily be positive (in terms of their implications for the environment and food security in PICs), there is scope for the SWP to better recognise, incorporate and facilitate 'farmer exchanges' that may be beneficial for SWP workers, Australian farmers and economic development in both countries of worker origin and destination.

Our research participants described three types of horticultural knowledge and skills that already move to-and-fro from diverse PICs to Australia. These transfers include knowledge about technologies to improve horticultural production (e.g. irrigation systems, solar power, and greenhouses); exposure to different crop types (e.g. almonds and market vegetables for PICs, and tropical root crops for the Sunraysia region); and techniques to improve crop yields (e.g. pruning and spacing of tree crops). The SWP migrants involved in our study dismissed the relevance of their own

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agricultural knowledge in the context of Australian farms, perhaps unsurprisingly given that the programme classifies them as mere labourers, and given the distinctive agricultural contexts of Australia and the PICs. Reframing seasonal workers, in the ways that we have proposed, may open pathways for thinking differently about the types of knowledges and practices that can beneficially be exchanged between farms in PICs and Australia, and can also counter discourses that normalise losses from climate change in some PICs (Barnett 2017). Consideration of such pathways ought to include transfers in the opposite direction (knowledge flows from PICs to Australia) – an opportune prospect given the climate change scenarios facing the Sunraysia region. Such reframing would bolster the capacity of the SWP to meet its stated development goals and the knowledge-acquisition objectives articulated by participating PIC Governments (most notably, PNG).

However, existing research has shown that the movement of knowledge across international borders via migration benefits from structural supports in places of origin and destination. Friesen and Collins' (2016) brain chains remind us that more favourable conditions for knowledge exchange can be created via the involvement of a broad range of civil society actors (e.g. farmers, community food growing groups and local communities), diaspora communities, researchers, businesses, training and education institutions, and investors. While structural supports for agricultural knowledge transfer are scarce in the SWP, New Zealand's RSE has taken some steps in this regard. Bedford (2013) documented spontaneous and planned supports for crop production in PICs. One of the largest employers under the scheme identified training and technical assistance in crop cultivation and maintenance, pest management, fertilisers, practical planting skills and machinery maintenance as

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the most effective way for employers to contribute to development in workers' countries of origin. Bedford (2013) further noted that employers, industry organisations and New Zealand government agencies are increasingly considering investment in joint development projects to promote development in PICs, via the RSE scheme. Potential investors have undertaken 'scoping exercises in Vanuatu, Samoa and Tonga to assess the possibilities for joint projects with local communities' intended to reduce reliance on imported foods and produce goods for export (Bedford, 2013: 245). Joint ventures already underway include coffee growing on Tanna (Vanuatu) and vegetable growing in Samoa (Bedford *et al.*, 2017).

The SWP migrants to whom we spoke relied heavily upon their own agency and expertise to transfer agricultural knowledge. Australia's skilled migration programmes engage with skill assessing authorities and educational institutions as a standard component of migration management. The SWP (earmarked as a form of 'low-skilled' and 'unskilled' migration) does not. Structural supports could take a number of forms and directions, however, possibilities include re-consideration of the training dimensions of the SWP and the role of the Australian Centre for International Agricultural Research (ACIAR) or the Australian Pacific Technical College (APTC) in this regard (see Authors, 2017) and could draw on the example of in-country horticulture skills training being provided in PICs by the New Zealand Horticulture Industry Training Organisation (Bedford, 2013). As we have shown, many SWP migrants are farmers who already possess horticultural knowledge and skills, but desire to know more and to develop new skill-sets. Our findings prompt consideration about expanding educational, training and scientific inputs into the SWP, if the stated development and knowledge transfer objectives of the programme are to be maximised.

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Conclusion

This paper has provided empirical evidence of SWP workers' self-assessed participation in knowledge transfers, via circular international migration, in the under-studied agricultural sector. With respect to international migration and development, it contributes to a growing body of literature which seeks to look beyond financial remittances and the brain drain. We cannot definitively ascertain the extent of development benefits experienced by the SWP migrants involved in our study, and their broader communities. This would require data collection in PICs, which is beyond the scope of our present project – but an important area for further investigation. Nonetheless, the seasonal workers we spoke to signalled links between agricultural productivity and food security in their countries of origin, and knowledge gleaned via the migration process. In the agricultural sector, where production is intricately linked to the physical environmental setting, the tacit knowledge transfers enabled by international migration create new possibilities for agricultural innovation and experimentation. These reflections are not only germane for the SWP, but for similar schemes globally e.g. New Zealand's RSE, Canada's Seasonal Agricultural Worker Programme and a fledgling pilot project enabling Haitian farmers to do temporary agricultural work in the USA (Basok, 2000; Hennebry and Prebisch, 2010; Carvajal Gutiérrez and Johnson, 2016; Clemens and Postel, 2017). They may also generate new ideas for how temporary labour mobility schemes in the agricultural sector (which are already proving to help build resilience during times of natural disasters e.g. Bailey and Shiu, 2016; Clemens and Postel, 2017) can better integrate knowledge regarding disaster resilient crops.

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This paper has brought together Williams and Balaz's (2008) 'knowledgeable migrants' and Friesen and Collins' (2016) 'brain chains', alongside interview data from the Sunraysia region, to question established understandings of seasonal agricultural workers. SWP migrants move continuously between sites of horticultural production in their countries of origin and destination. Through so doing, they actively facilitate knowledge transfers with potential benefits for food security and development. Pacific Island seasonal workers are ideally situated as agents of knowledge exchange, despite the fact that they have thus far been framed as unskilled labourers. Given evidence that such knowledge transfers have already arisen of the migrants' own volition, supporting and expanding such opportunities ought to become a key priority for governments on both sides of the SWP – in countries of origin and destination.

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[i] Following a human development perspective, development 'is about expanding the richness of human life, rather than simply the richness of the economy' (Human Development Report Office, 2015: para 3).

[ii] Fiji, Kiribati, Nauru, Papua New Guinea (PNG), Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. For ease of reference, we use the acronym PICs to incorporate these countries.

[iii] In this paper, horticulture specifically refers to 'production horticulture' encompassing the cultivation of 'fruits, vegetables, flowers, mushrooms, nuts' (McSweeney *et al.*, 2014: 1119).

[iv] These costs are re-couped via deductions from SWP migrants' wages earned in Australia.

[v] We use the terms SWP migrants, SWP workers and seasonal workers interchangeably.

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[vi] ANZSCO classifies all occupations/jobs in the Australian and New Zealand labour markets and outlines 'the level of skill that is typically required to competently perform the tasks of a particular occupation' (ABS and Statistics NZ, 2006: 7).

[vii] Crop Farm Worker tasks include: 'planting trees, seeds, seedlings, roots, bulbs, vines and other plants using hand tools and farm machines; building trellises for climbing vegetables and vines; operating farm machines to cultivate, fertilise, spray and harvest fruit, nuts, grains and vegetables; spraying trees, vines and other plants with chemicals to control weed growth, insects, fungus growth and diseases; thinning, weeding and hoeing row crops, and pruning trees and vines; irrigating land for crop growth; selecting and picking fruit, nuts, grains and vegetables according to size and ripeness, and discarding rotting and over-ripened produce; grading, sorting, bunching and packing produce into containers; [and,] loading filled fruit, nut, grain and vegetable containers onto trucks' (ABS and Statistics NZ, 2006: 744).

[viii] Tacit knowledge 'denotes all intellectual or corporeal capabilities and skills that the individual cannot fully articulate, represent or codify…[it] is developed from direct experience, observation or interaction in which one largely learns by doing and understanding is often at a subconscious level. [..] tacit knowledge sticks to the individual and is difficult to transfer other than via personal contact' (Williams and Baláž, 2008: 55 and 57).

[ix] Here we highlight (using superscripts) the crops most common and/or important in the three countries of our 20 SWP research participants: 'P' denotes PNG, 'T' denotes Tonga, and 'K' denotes Kiribati.

[x] With the exception of one interview with a Tongan key informant in August 2017.

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[xi] Even for our two non-farmer i-Kiribati participants (noting that one specifically plans to purchase land for growing crops with his SWP earnings), observations made while on Australian horticultural farms are still useful given home food gardening is viewed as a possible panacea for addressing the nation's food security and development challenges (East and Dawes 2009).

[xii] The noni plant *Morinda citrifolia L (Noni)* 'has been used in folk remedies by Polynesians for over 2000 years, and is reported to have a broad range of therapeutic effects' (Wang *et al.*, 2002: 1127).

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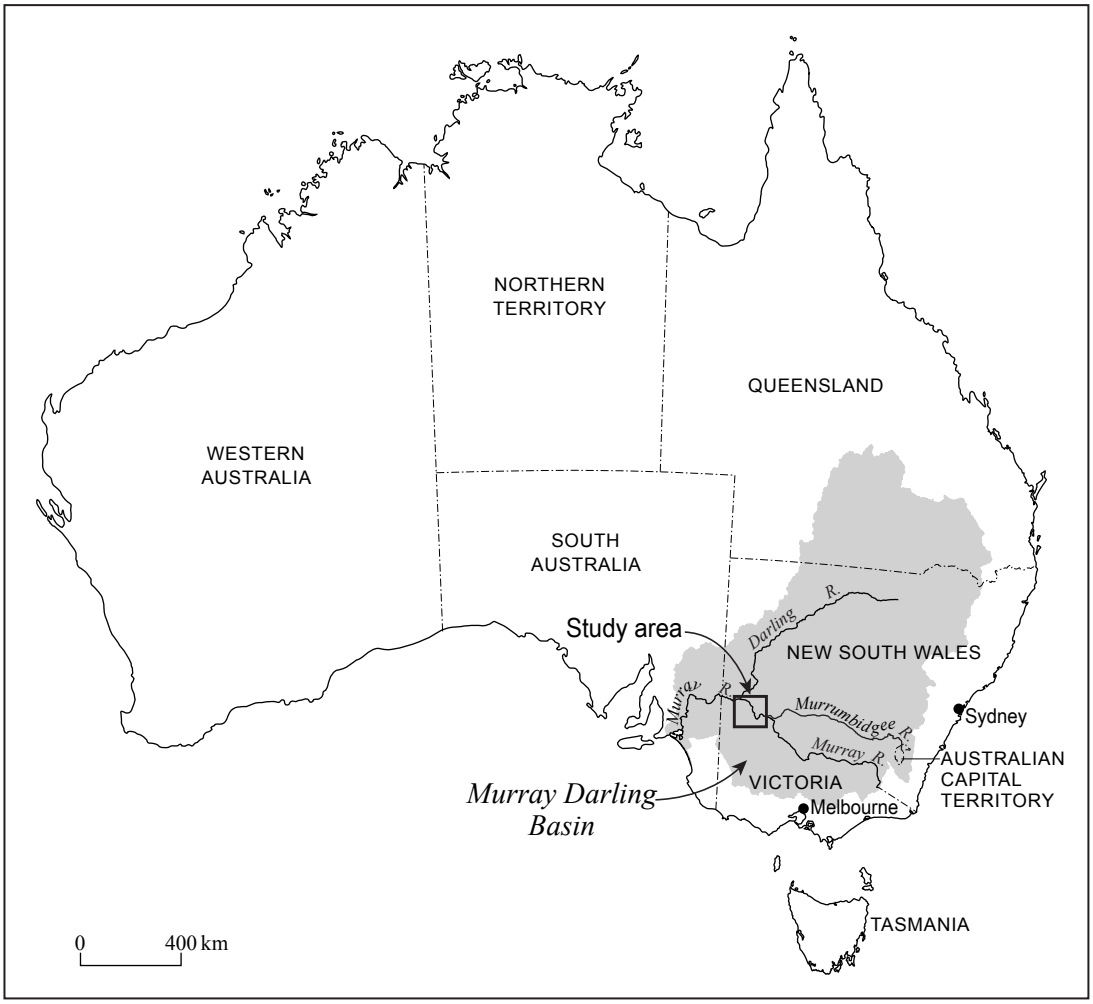
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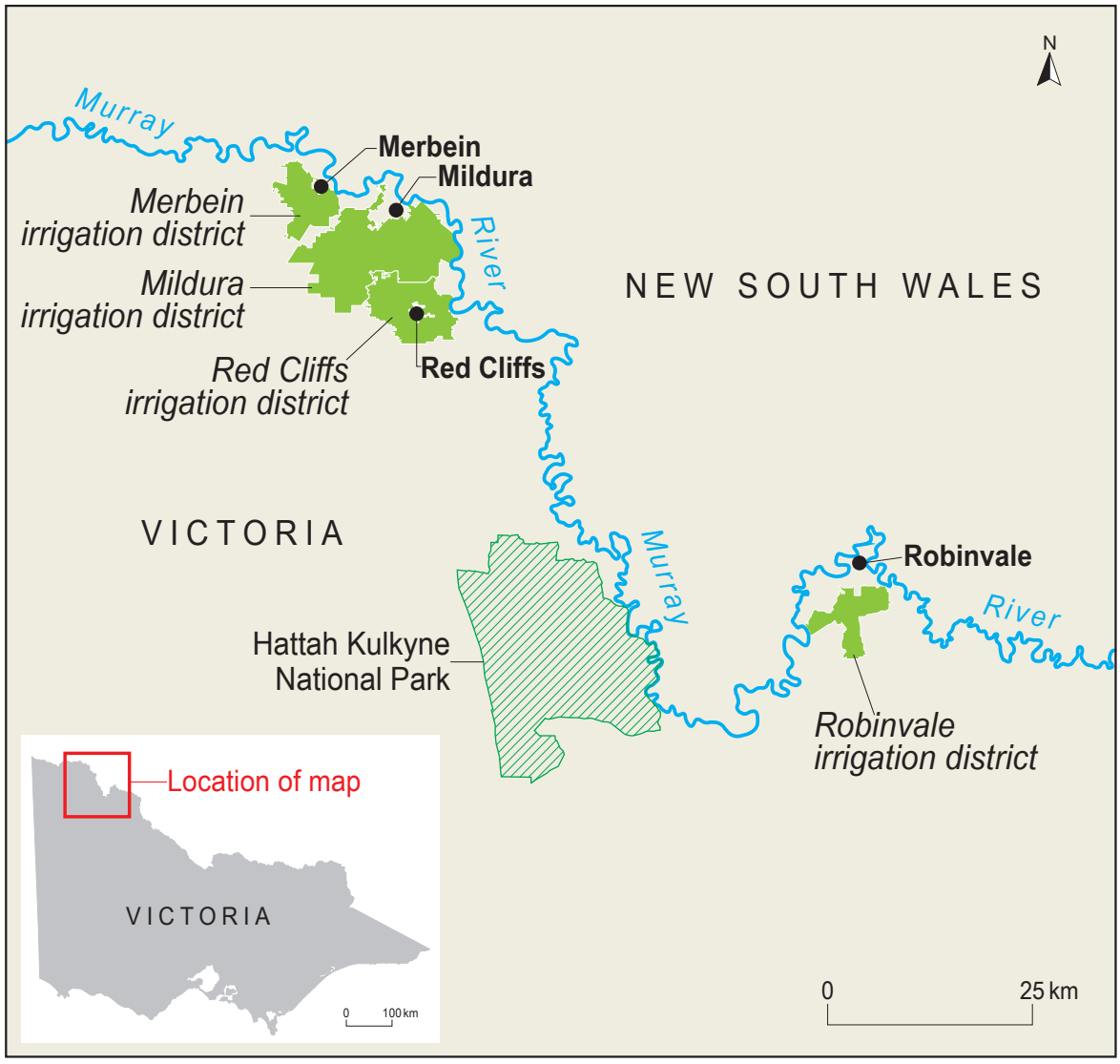
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Recognising knowledge transfers in 'unskilled' and 'low-skilled' international migration: insights from Pacific Island seasonal workers in rural Australia

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Acknowledgements

Our thanks go to the Pacific Island Seasonal workers and key informants who have given us their time and shared their stories. We are very grateful to Alf Fangaloka of Tree Minders, Robinvale, for facilitating access to Pacific Island seasonal workers. We also acknowledge the efficient and valuable research assistance provided by Ikerne Aguirre Bielschowsky and helpful comments provided by two anonymous reviewers. The research reported on in this paper is funded by the Australian Research Council (DP140101165: 'Exploring culturally diverse perspectives on Australian environments and environmentalism') and the University of Melbourne.

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