



Extreme weather, complex spaces and diverse rural places: An intra-community scale analysis of responses to storm events in rural Scotland, UK



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ABSTRACT

The impacts that increasing rural demographic and socio-cultural diversity has had upon the responses of rural community members to weather-related hazard events has remained relatively understudied within the Disaster Risk Reduction scholarship. Drawing upon interview evidence obtained from a study of three rural communities in Scotland, UK, the article explores how variation in length of residence amongst community members affects abilities to cope during periods of extreme weather, with long-term residence being associated with more positive outcomes than more recent in-migration. The article suggests that differences in responses between long-term residents and more recent in-migrants results from a complex array of differences in exposure to previous storm events, differences in occupational backgrounds that result in differences in ways of relating to the land, and differences in social relationship preferences and expectations. The article makes the claim that policies and practices of Disaster Risk Reduction, including the Scottish Community Resilience initiatives, need to focus more on the intra-community scale in rural settings in order to better protect residents from the risks that extreme weather poses to human well-being. In their present form, Scottish Community Resilience initiatives are likely to be limited in their ability to improve the storm-coping abilities of residents because their implementation at the whole-community scale reflects outdated assumptions about the character of rural communities and ignores the impacts of several decades of demographic change. The findings also raise questions about how the knowledge that enables successful adaptation to environmental hazard events can be effectively mobilised within increasingly complex and diverse societies.

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1. Introduction

While scholars working within the field of climate change mitigation have moved beyond referring indistinctly to different socio-cultural groups, the implications of increasing demographic and socio-cultural diversity within Western rural settings for Disaster Risk Reduction have remained relatively underexplored. This paper suggests that a recent Scottish Government weather-related hazard mitigation initiative, like many other centrally-controlled disaster response developments, underestimates the importance that increasing demographic change and socio-cultural diversity has on shaping local responses to emergency events (see [Berkes and Ross, 2013](#); [Norris et al., 2008](#); [Lopez-Caressi et al., 2014](#); [Shaw and Goda, 2004](#); [Shaw, 2014](#), for discussion of the limitations of integrated community approaches to Disaster Risk Reduction).

During the previous 5 years, the Scottish Government Community Resilience initiative has aimed to mitigate the risks posed to human well-being from increasing frequency, unpredictability, duration and intensity of extreme weather events, including flooding, heavy snowfall and high winds ([Scottish Government, 2012a](#)). However, it can be argued that this initiative lacks appreciation of the implications that increasing demographic and socio-cultural diversity has upon shaping local residents' responses to the impacts of global climate change.

The development of Scottish Community Resilience initiatives arose from a recognition that extreme weather events, including flooding, heavy snow and unpredictable seasonal weather patterns, have been increasing in both frequency and severity ([Scottish Government, ibid](#)). Data gathered over the previous 40 years has shown that average temperatures in Scotland have increased by 0.5 °C since 1914 ([Kendon et al., 2016](#)). Since 1961, most areas have experienced significant rises in precipitation, resulting in increases in the frequency of major floods and landslides (*ibid*). According to

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current predictions, the frequency of flood-related events is likely to increase further over the next 50 years (Hulme and Jenkins, 1998; Hulme et al., 2001; IPCC, 2013; Scottish Government, 2014). Although snowfall levels are predicted to decline over the next 50 years, for the past 8 years Scottish communities have been affected by increasing numbers of particularly severe and prolonged snowstorms, including on the west coast which does not normally experience the same amount of snowfall as the higher mountainous northern regions (Kendon et al., 2016; Scottish Government, 2014). Furthermore, these snowstorms have often occurred during March and April, rather than during the mid-winter months (Kendon et al., *ibid*; Scottish Government, *ibid*). In addition, Scotland has experienced an increase in the severity of gale force winds, which disrupt travel, infrastructure and energy supplies.

To mitigate the risks to human well-being that severe weather poses, the Scottish Government placed the establishment of Community Resilience Committees in both urban and rural communities at the heart of its approach to weather-related vulnerability prevention. In rural settings the Scottish Government has focused on establishing one Community Resilience Committee per each single village location. This differs from their approach to urban areas, where efforts have been made to set up a number of different Community Resilience groups within a particular postcode area, in recognition of the multiple social groups that can exist within a single area (Scottish Government, 2012b). While 'rural' can be defined according to functional criteria, such as a high dependence on agricultural employment, the Scottish Government's approach reflects a traditional definition of rural spaces as one that is based on population density. The Scottish Government also defines rural communities as a single communities, based upon their location (Scottish Government, *ibid*). This implies that rural communities exist as single, bounded, homogenous wholes, devoid of the diverse communities-within-communities that characterise more densely populated urban areas. Scottish Government policies also remain underpinned by this simple urban-rural classification scheme, which defines a rural settlement as one with a population of less than 3000 (Scottish Government, *ibid*). This can be further divided in terms of accessible rural locations, which are located within a 30 min drive of a town with a population of at least 10,000, and remote rural locations (*ibid*). Nearly one fifth of the Scottish population live in rural areas (*ibid*).

Over the previous fifty years, the rural population of Scotland has increased substantially as a result of in-migration (Champion et al., 1998; DEFRA, 2013; Scottish Government, 2012c). Existing scholarship emphasises how the decline of the agricultural and fishing industries, the growth of oil-related wealth and an increasing financially secure ageing population has affected rural migration patterns and changed the socio-cultural and demographic makeup of rural communities (De Lima, 2012). Thirty years ago, the majority of in-migrants were either White Scottish or White British, and were either wealthy retirees or middle-aged professionals (De Lima, *ibid*). Although the majority of contemporary in-migrants are also White Scottish or White British wealthy retirees and middle-aged professionals, since 2007 rural Scotland has also become home to a number of European in-migrants employed in the seasonal agriculture and tourism industries (De Lima, *ibid*). As a result of increasing rural in-migration, villages have expanded in size, new settlements have sprung up and less remote small rural villages have been transformed into larger commuter villages. Consequently, the social characteristic of rural villages has been described as having become increasingly fragmented, with the emergence of communities-within-communities, made up of community members with shared interests rather than on the basis of shared residential location alone (see Mackenzie, 2004, 2006,

MacKinnon, 2002; The Scottish Government, 2010; Shucksmith and Philip, 2000, for further information on social-demographic change in rural Scotland).

While Scottish rural society has undergone these significant changes, the UK and Scottish Governments have increasingly faced accusations of demonstrating an urban bias in their policy developments. It is argued that this bias has resulted in the marginalisation of rural problems, such as crime, poverty and the closure of rural businesses; and also displays a lack of consideration towards the problems being faced by an increasing in-migrant population (see Bailey et al., 2016; Barclay et al., 2004; Commins, 2004; Hirsch et al., 2013; Milbourne and Doheny, 2012; Shucksmith and Philip, 2000). This bias may partly result from the binary rural-urban classification embedded in Government policy, which renders rural problems as the antithesis to urban problems (Weisheit et al., 2005). However, concerns about the marginalisation of rural issues are also based upon evidence that assumptions about rural areas as simple and homogeneous in terms of their demographic and socio-cultural character have significantly influenced both the design and enactment of rural policies (Barclay et al., 2004; Donnermeyer, 2007; Garland and Chakraborti, 2004; Lee et al., 2005; Satsangi et al., 2010 Shortall and Shucksmith, 2001; Shucksmith, 2000). As rural populations remain smaller than populations in urban areas, it tends to be assumed that rural residents possess greater degrees of familiarity with one another, a better developed sense of community and a greater degree of social stability than their urban counterparts (Hirsch et al., 2013; Weisheit et al., 2005). Rural communities in the UK are also assumed to more likely to demonstrate 'self-reliance' and a more stoic attitude in the face of adversity (see Cloke et al., 1994; Commins, 2004; Shucksmith et al., 1994).

These assumptions about the character of rural Scottish communities also underpins the implementation of Scottish Community Resilience initiatives within rural areas. These initiatives have been rolled out on a village-by-village basis in rural areas and senior Government officials and emergency service personnel continue to express beliefs that rural citizens are more likely than their urban counterparts to be better prepared for weather-related emergencies, be more likely to be able to cope with and adapt to the impacts of severe weather, and be more likely to be able to depend upon each other for support (see Fazey et al., 2017, and Lyon and Fazey, 2015, for further information about the rolling out of Community Resilience plans in Scotland). However, it can be argued that this approach fails to fully appreciate the extent to which demographic change has affected residents' abilities to cope with weather-related hazards. It also reveals reluctance on behalf of Government officials to move away from conceptualisations of rural spaces that perpetuate assumptions of rural communities as apolitical and socio-culturally homogenous, despite the existence of a growing body of scholarship that challenges these notions of passivity and homogeneity (Chakraborti and Garland, 2004; De Lima, 2012; De Lima and Wright, 2009; Philo, 1992; Smith, 2007). Scotland's rural population is also expected to rise further to 5.54 million by 2033, with inward migration trends amongst retired populations predicted to continue (Scottish Government, 2010). Given the predicted population increase, predictions of increasing severe weather, and the Scottish Government's current outdated approach to policy-making for rural areas, it follows that an increasing number of rural residents are likely to face an increased risk of harm during future storm events. Furthermore, if rural settings are becoming more demographically and socio-culturally heterogeneous, the impacts of severe weather events are likely to be experienced less evenly amongst community members. This presents an important consideration for the scholarship, policy and practice of Disaster Risk Reduction, as the diversity of communities,

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