



From resilience to multi-species flourishing: (re)imagining urban-environmental governance in Penang, Malaysia

Journal:	<i>Urban Studies</i>
Manuscript ID	CUS-852-17-09.R2
Manuscript Type:	Special Issue
Discipline: Please select a keyword from the following list that best describes the discipline used in your paper.:	Geography
World Region: Please select the region(s) that best reflect the focus of your paper. Names of individual countries, cities & economic groupings should appear in the title where appropriate.:	Southeast Asia, Asia
Major Topic: Please identify up to 5 topics that best identify the subject of your article.:	Agglomeration/Urbanisation, Environment/Sustainability, Governance, History/heritage/memory, Land Use
You may add up to 2 further relevant keywords of your choosing below.:	urban political ecology, resilience

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From resilience to multi-species flourishing: (re)imagining urban-environmental governance in Penang, Malaysia

Abstract

This paper uses the concept of multi-species flourishing to evaluate the potential of emergent urban governance initiatives in Penang, Malaysia, for achieving more socially and environmentally just forms of urban development. In doing so, the paper offers an empirical examination of increasing development pressures on the forested hillsides of Penang, and the significant environmental and socio-cultural implications associated with this activity. This includes the significant flash-flooding and landslides in 2016 and 2017 that have been attributed to unscrupulous hillside developments and deforestation on the island for condominium and highway development. In tracing local responses to these developments, the paper draws attention to the various more-than-human relationships that have been mobilized in preventing further degradation of the environment. I also re-visit the concept of environmental imaginaries to illustrate the close relationship between environmental and social well-being. The paper thus argues that it is important to move beyond concepts of resilience, which advocate the implementation of technology and engineering measures to adapt to, rather than resist, the environmental shocks associated with intensive urban development. The research for this paper has been conducted through participatory research with local civil society groups, and aims to evaluate the role of both governmental and non-state actors in these efforts and the challenges faced in doing so. The paper concludes that research on urban resilience and urban governance must move beyond human-centered modes of thought and practice that regard cities as operating outside of ecological systems.

Keywords: urban governance, resilience, multi-species flourishing, urbanization, Malaysia, environmental imaginary

Introduction:

“In clearing ground, you should be cautious of not falling into a common error, in felling countries over-run with woods, which is that of causing every tree to be cut down without previously ascertaining whether they might not prove of great convenience and pleasure to the inhabitants” (John Macpherson in Gardner et al. 2011, p. 1).

In the above quote, which is an instruction from the Acting Governor General of India to Francis Light - credited as the ‘founder’ of George Town (Penang), Malaysia - we see how forests are a significant factor that should be considered by local governments in carrying out or authorizing development plans. The quotation alludes to how conflicting views on the use of natural resources can create considerable tension in society, and even act as a threat to the ruling political party.

Penang is an island and state on the Northwestern coast of Peninsular Malaysia, with George Town as its capital and historic port and town center. Penang is now one of the most highly urbanized and most densely populated regions in Malaysia, with approximately 1.7 million inhabitants in the state, and 700,000 inhabitants on the island. The urban area is also growing at double the national average, at 3.29% per year (Masum et al., 2017). Given a relative shortage of developable land, property speculation due to increasing land values, and a development-friendly government, new high-rise condominiums and luxury housing developments have been springing up across the island.

The central part of Penang Island is largely forested and consists of numerous steep hills, most notably Penang Hill, which is the highest and most famous peak on the island at 833m. The hills also contain important water catchments and forest reserves, but are nonetheless coming under increasing threat of encroaching development. This includes both legal and illegal deforestation for housing and infrastructure developments which have been combined with inadequate mitigation measures. Penang’s rapid and intensive urban transition has thus put considerable pressure on the natural environment, and has had serious socio-ecological effects, such as landslides and severe

1 flooding events in 2016 and 2017. Penang was thus identified as one of the deforestation hotspots in
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3 Peninsular Malaysia in 2013 (Masum et al., 2017). One problem is the lack of a gazetted Local
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5 Plan, which creates considerable ambiguity over what type of development is permissible on
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7 Penang's hillsides and allows for developers to exploit loopholes in existing policies (Mok, 2016b).
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9 Another is that 70% of forested areas in Penang are under private ownership, which makes it
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11 difficult for the government to control (Masum et al., 2017).¹ This has created a strong need for new
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13 forms of urban environmental governance in Penang, which I will analyze in the latter part of this
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15 paper.
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19 As I will discuss, the local government's response to these issues has been largely premised
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21 on the implementation of mitigation measures to allow further development. Through discursive
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23 analysis, I show how the government seems to adhere to a form of urban exceptionalism, which
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25 sees urban development as operating outside of the physical constraints of the natural environment.
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27 This mode of thought, which is common in modern resilience thinking and urban planning,
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29 attributes so called 'natural' events like flooding and landslides to climatic or geophysical events
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31 that are outside of human control (see Folke et al., 2005). Accordingly, the emphasis is placed on
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33 measures to mitigate future incidences of such hazards through natural resource management or
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35 civil engineering approaches (e.g. drainage canals and slope stabilization).
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39 However, as various scholars have recently pointed out, this approach is quite problematic
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41 in that it ignores the ecological connectivities that are necessary for creating socially and
42
43 environmentally just and desirable urban places (see Houston et al., 2017; Huber et al., 2017;
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45 Kaika, 2017). This paper thus builds on this work by reframing approaches to urban governance -
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47 which tend to be largely humanistic - through the concept of multi-species flourishing. In doing so,
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49 the paper begins with a particular controversy that emerged in 2013, following the clearing of Bukit
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51 Relau, now known as *Botak* (Bald) Hill. This event is significant in revealing the environmental
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56 ¹ This situation has arisen as the Penang State Government has relied on the sale of land for much of its
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58 revenue in previous years.
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1 sensitivities of Penangites, which link the degradation of the natural environment to their social and
2 physical well-being. Furthermore, I discuss recent participatory governance initiatives, including
3 the Penang Hills Watch (PHW), which has sought to create broader awareness of the fragility of
4 Penang's hillsides, and enroll more people into protecting them. This has also had political effects
5 by putting more pressure on the State Government in monitoring and enforcing development
6 restrictions in forested areas.
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14 While the focus of this special issue is on the development of human flourishing, I argue
15 that this can only be achieved by taking into account the various relationships and dependencies of
16 humans with the broader environment and non-human actors. Following Cook and Swyngedouw's
17 (2012) provocation to analyze how the urbanization of nature shapes socio-ecological relations, this
18 paper revisits the concept of environmental imaginaries - originally developed in the political
19 ecology literature - to examine how communities understand, interact and engage with the broader
20 urban ecosystem, and how they have been incorporated into processes of urban governance. By
21 developing a concept of environmental imaginaries as shaped by both humans and non-humans, we
22 can begin to identify pathways to alternative forms of urban development that can enhance multi-
23 species flourishing.
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37 The research for this paper included key informant interviews were conducted with local residents,
38 civil society activists, scholars, government officers, and urban planners. In addition to these
39 interviews, I also conducted narrative analysis of local newspaper and magazine reports related to
40 hillside developments in Penang, and personal observations of affected sites. This included walking
41 interviews with local residents and activists in Penang's forested landscapes that have already been
42 affected by il(legal) forest clearing, or are slated for future development projects. Following an
43 overview of the theoretical framing, I then introduce the political-ecological transformations in
44 Penang over the past 15 years, including the Botak Hill case, and analyze both state and non-state
45 responses to these. Subsequently, I turn to an analysis of the environmental impacts (especially
46 flooding) associated with hillside development in Penang. In the penultimate section, I introduce the
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1 Penang Hills Watch initiative and how it can be seen as a step towards multi-special urban
2 governance. The paper concludes with some reflections on the bottom-up urban governance
3 initiatives to inhibit the current pace of deforestation in Penang, and the importance of multi-species
4 flourishing to fostering more socio-ecologically just urban futures.
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10 **Towards multi-species flourishing: urban political ecology, resilience and environmental** 11 **imaginaries** 12 13 14 15

16 Resilience thinking traditionally concerns the ability of a given species or ecosystem to “absorb and
17 accommodate” environmental shocks as they arise (Holling, 1973: 21; see also Watts, 2015: 26).
18 The concept of resilience has been influential in environmental governance for devising methods of
19 increasing social resilience to environmental transformations. This view accepts the unpredictable
20 character of nature, but also posits that it is socially (co)produced, through the constant managing
21 and directing of the environment and natural processes by humans (Folke et al, 2005; Gonzalez-
22 Hidalgo et al. 2014; Holling, 1973). Resilience thinking has thus been criticized by political
23 ecologists and other critical scholars who point out a number of flaws in the concept. First, it is
24 rather anthropocentric given its focus on social wellbeing and human action (Armitage: 2008).
25 Second, attempts which try to prevent or resist (as much as possible) environmental transformations
26 sit uneasily with modern approaches to resilience, which often advocate techno-managerial
27 approaches to increasing the capacity for social adaptation to the risks associated with such
28 transformation (see Huber et al., 2017; Kaika, 2017). Gonzalez-Hidalgo et al. (2014) further argue
29 that modern approaches to resilience thinking are fundamentally flawed due to the fact that societal
30 responses to (or learning from) socio-ecological shocks are often curtailed by politics which prevent
31 the formulation of alternative visions of development that are more socio-environmentally just (see
32 also, Swyngedouw, 2010).
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53 As such, Armitage (2008) has advocated the usefulness of political ecology approaches
54 which stress the importance of ecological agency in shaping human-environment interactions (see
55 also Connolly, 2016). This would involve reframing resilience by considering the wellbeing of
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1 entire ecosystems, rather than just humans, which would ultimately reduce the risk of disasters
2 associated with the transformation of the environment. Accordingly, authors such as Houston *et al.*
3 (2017: 2), building on the work of Anna Tsing (2015) and Donna Haraway (2016), have recently
4 put forth the concept of ‘multi-species flourishing’, which seeks “an enlarged understanding of the
5 entanglements between human and nonhuman worlds”. Multi-species flourishing reflects a large
6 body of work on more-than-human geographies, such as Jennifer Wolch’s seminal ‘transpecies
7 urban theory’ (1995) and subsequent concept of the ‘anima urbis’ (2002) which, entails a stronger
8 moral and ethical stance towards recognizing the place of animals and other non-humans in the city,
9 and their critical role in shaping urban life. Flora are also an important subset of non-human actors,
10 which Houston and others have argued can be equally important to the life and spirit of urban
11 regions. Similarly, Lorimer (2012), drawing on Bruno Latour, has put forward the idea of a
12 ‘multinatural’ biogeography, which refers to the multiple trajectories along which any ecology
13 might evolve and the various ways in which they can be sensed, valued and contested.
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30 These concepts all help to move beyond human-centric approaches to urban-environmental
31 governance, as encapsulated though the concept of human flourishing. Along with other scholars
32 like Houston *et al.* (2017) and McCann (2002), I maintain that human flourishing is insufficient in
33 that it does not consider the various material, spatial and biophysical aspects of the places in which
34 urban governance takes shape. For instance, Douglass (2016: 3) states that the value of human
35 flourishing as a central concept can be attributed to “the idea of the city as a theatre of social action
36 and multifaceted experience of ‘becoming human’, including social and cultural relations”.
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38 However, this of course neglects the wellbeing of the wider biospheric environment (which
39 Douglass terms ‘planetary flourishing’). As such, in the words of Leonie Sandercock (2003), we
40 should allow for “difference in all of its multiplicity” to flourish. While Sandercock largely referred
41 to social and economic diversity, this understanding needs to be expanded to include environmental
42 justice which was only hinted at in her work.
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2 Recognizing the importance of urban natures (in its various forms), and asking how
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4 communities understand, interact, and engage with their broader urban ecosystem can hold
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6 considerable political opportunities for the development of more sustainable and socio-ecologically
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8 just urban futures (see Braun, 2005; Francis et al., 2012; Hinchliffe and Whatmore, 2016). Or, as
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10 Kaika and Swyngedouw (2011) have put it, the multiple of existing, possible or practical socio-
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12 natural relations need to be identified and explored. This in turn involves analyzing how the
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14 physical environment of particular places can facilitate (or limit) environmental movements, which
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16 has to date been poorly studied and understood. Such a move would not only make space for non-
17
18 human actors in urban planning and governance, but also understanding human flourishing as
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20 emergent through these relations (Houston et al., 2017). One way that urban political ecologists
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22 have done this is through the concept of urban metabolism, which has been useful in understanding
23
24 the processes through which nature is urbanized, and with what effects (e.g. Gabriel, 2014; Loftus,
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26 2006; Swyngedouw, 2006).

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30 Another useful concept is that of environmental imaginaries, which has been used by
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32 political ecologists examining social and ecological conflicts (e.g. Gabriel, 2014; Nesbitt and
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34 Weiner, 2001; Walker and Fortmann, 2003). Its value lies in the recognition of local landscapes as
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36 place-specific crystallizations made up of both discursive and material elements (see Kaika, 2006).
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38 For example, in their classical political ecological study *Liberation Ecologies*, Peet and Watts
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40 (1996: 263) coined the concept of the ‘environmental imaginary’, as “a way of imagining nature,
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42 including visions of those forms of social and individual practice which are ethically proper and
43
44 morally right with regard to nature”. They are rooted in particular places (and their environmental
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46 histories), and often serve as the primary source of contestations between alternative visions for
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48 those places. However, the use of this concept has been criticized for its neglect of non-human
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1 agency in shaping such imaginary work (see Harris, 2014; McGregor, 2004; Nesbitt and Weiner,
2 2001).²
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6 As we will see in the case of Penang, the natural environment and social identity of
7 inhabitants are closely related. Therefore, aesthetically and environmentally offensive (ab)uses of
8 Penang's forested hillsides have strongly shaped attitudes and values regarding appropriate forms of
9 urban development and relationships with the natural environment. For example, the Penang Hills
10 Watch Movement and associated Penang Forum (which I will discuss in the penultimate section),
11 formed in response to previous cases of environmental injustices in Penang and have since grown in
12 size and influence. They have also had political effects by putting pressure on the government, and
13 generating political opposition. For instance, a controversial proposed development project on
14 Penang Hill in 1989/90 led to the ousting of then Chief Minister Lim Chong Eu, who had been in
15 power for 21 years. Environmental imaginaries can thus be highly political, in that: "aesthetically
16 offensive uses of nature can spur political opposition to the hegemonic social order" (Peet and
17 Watts, 1996: 268).
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32 As Maria Kaika (2017: 99) suggests, "emerging imaginaries of people and environments
33 being and working in common" could offer more efficient and effective ways of creating more
34 socio-environmentally just cities than traditional conceptions of resilience are able to. It is therefore
35 important to move towards a new understanding of resilience, which goes beyond common
36 approaches to the insertion of nature or technologies into communities to make them more tolerant
37 to increasing levels of degradation (see Huber et al., 2017). Keil and MacDonald (2016: 1519), for
38 example, quoting Buxton, position resilience "in terms of socio-ecological systems" and "dynamic
39 interactions between socio-economic and biophysical systems" that operate across multiple scales.
40 This allows us to move beyond conceptions of 'human exceptionalism', which "'blinds us' to the
41 worlds we co-inhabit with a multitude of earthly creatures and nonhuman agents" from bacteria to
42 animals and even pollutants (Houston et al., 2017: 5; Tsing, 2015).
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56 ² Thanks to an anonymous reviewer for highlighting this point.
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2 Yet, this also involves deconstructing the discourses put forth by urban managers, who seek
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4 to brand new capital-intensive forms of urban development as being environmentally 'efficient' or
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6 'green'. As Houston *et al.* (2017: 5) point out, such modes of 'sustainable' urban design seek to
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8 "minimize impacts on the economic and social functioning of cities", and paradoxically, on the
9
10 same institutional structures that undermine the development of truly sustainable and
11
12 environmentally just cities. This will be the aim of the next section, which critically examines the
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14 Penang State Government's vision for a 'Clean and Green Penang', and how this has merely acted
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16 as a facade for the continued degradation of the broader urban ecosystem. I also discuss the illegal
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18 clearing of 'Botak Hill' in 2013, and its significance in re-awakening local awareness of the
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20 increasing vulnerability of Penang's natural environment.
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25 **The Cultural Significance of Penang's Forested Hillside**

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28 It has been rightly argued that the relationship of people with the local landscape and environment
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30 in Malaysia has taken a back seat to the country's race to become a 'fully developed' nation by
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32 2020. Accordingly, Hezri (2016) has argued that this focus on socio-economic development has
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34 resulted in many Malaysians becoming detached from the natural environment and local landscape.
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36 However, this attitude has been quite different in Penang, which has the greatest number of civil
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38 society organizations in the country, and a long history of environmental activism, making it an
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40 interesting case for this study (see Cheng and Ma, 2015). Furthermore, Penang has clearly
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42 demarcated forest reserves, and the Penang Structure Plan (PSP) disallows development on slopes
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44 steeper than a 25% gradient and/or on land higher than 75 meters. This restriction is more stringent
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46 than the federal guidelines for hillside construction, which demonstrates the strong environmental
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48 protection laws in Penang. Yet, it excludes 'special projects' which may be permitted by the State
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50 Government if they are low density developments and have strong mitigation measures in place to
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52 protect the integrity of the slopes. Due to increasing development pressure in the relatively land-
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1 scarce state, this exception has been frequently invoked, resulting in a marked increase in both the
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3 “extensive and intensive nature of hillside development” in Penang (Kam, 2016).³
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6 >> **Figure 1 about here**
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10 One of the most infamous (illegal) hillside developments to occur in recent years was the
11 sudden and illegal clearing of a large swath of forested land on Bukit Relau in early 2013 to make
12 way for a large (unpaved) road (see Figure 1). As one interviewee noted, Bukit Relau was hitherto
13 largely taken for granted by Penangites, as it is a secondary peak on the island, and not as well
14 known - or as accessible - as the highest peak Penang Hill (*Bukit Bendera*). However, the clearing
15 was a key incident which has sparked renewed awareness about the increasing vulnerability of
16 Penang’s natural environment. For instance, the hill was quickly given the nickname *Botak* (bald)
17 Hill, to reflect the very visible scar on its peak following the deforestation. Moreover, given that the
18 land was rezoned from forest reserve into a housing development zone the year before, there was
19 suspicion that further development would follow. Despite this speculation, the Penang State
20 Government announced that there had been no applications for development on the Hill, and no
21 projects planned, but that the road was built by the land owner merely to ‘monitor’ the site
22 (Amarthalingam, 2013).⁴
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38 Subsequently, the developer was also required to carry out ‘mitigation works’ to restore the
39 hill back to its original state, and fined RM30,000 (\$6,725). Interestingly, the developer claimed at
40 the time of the verdict that he was “willing to pay” the requisite sum to ensure the land “returns to
41 normal”, and has reportedly invested 50 million ringgit (\$11 million) in the mitigation works to date
42 (Amarthalingam, 2013). Nonetheless, mitigation works have now been ‘underway’ for nearly three
43 years, but still have not resulted in much improvement in the hill’s condition - despite Lim Guan
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51 ³ For instance, given that 40% of Penang Island falls with slope gradient of higher than 25% and only 7.4%
52 of forested land remains in Penang, the PSP has clearly been seen by the government as a mere suggestion,
53 rather than actual law.

54 ⁴ However, on a personal visit to the hill, there was a man stationed at the bottom of the illegal ‘road’ to the summit,
55 keeping watch over the site. The presence of this ‘guard’ - and his active monitoring and control of the site - raised
56 further suspicion with my guide that the developer may be planning to develop the site further.
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1 Eng's optimistic promise that the hill would be "completely green" by the end of 2016 (quoted in
2 Mok, 2015). On the contrary, however, the road up the hill has actually been widened, and - as I
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4 noted on a recent trip to Penang - paved. However, even if the required mitigation work were to be
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6 done, it would take a generation for the flora and fauna on top of the hill to return to its original
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8 state. This speaks to the importance of resistance to local development, rather than merely resilience
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10 which often advocates the implementation of 'mitigation' and 'restoration' techniques to carry out
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12 further development in a 'sustainable' way.
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17 Therefore, many critics charged that the penalty to the developer was not strict enough,
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19 based on the fundamental recognition that Penangites are members of multi-species communities.
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21 For instance, the late Karpal Singh, who was a member of parliament at the time, charged that this
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23 was a significant crime to Penangites - not just the hills - and should be punished accordingly. As he
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25 put it: "hills are the heart and soul of Penangites that ought not to be touched by anyone...General
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27 Accomplishment [the developer] has assaulted and brought massive destruction on natural state
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29 assets," (Singh in Shankar, 2014). Subsequently, the ruling was amended to the maximum penalty
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31 of RM50,000 (\$11,200) in the Court of Appeal (or a one year jail term in case of default) (*The Sun*
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33 *Daily*, 2014). As the presiding judge explained: "now everyone is conscious about the environment,
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35 especially in Penang, the forests are shrinking" (Hishamudin in *The Sun Daily*, 2014). Through
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37 these statements, we can see how the intrinsic value of Penang's forested hillsides are central to the
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39 identity and well-being of many local people and have generated wider awareness about the need
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41 for greater environmental protection to avoid the compounding effects of such socio-natural
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43 transformations.
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47 As such, Donna Haraway (2016: 51) has recently argued that forest well-being, in particular,
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49 "is one of the most urgent priorities for multi-species flourishing". As Penang Forum member
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51 Sharon Ahmat has put it: "these hills are fragile and easily degraded when disrupted by human
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53 activities [such as] hillside developments" (Ahmat in Dermawan, 2016). In addition to the cultural
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55 significance of the hills, they also function as important water catchments to provide water supply,
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1 prevent soil erosion and landslides. They further host a rich diversity of plant and animal species,
2 and act as ‘green lungs’ for CO2 buffering, nature appreciation and outdoor recreation activities -
3 which also significantly influences the well-being of urban dwellers (Dwyer et al., 1992; Penang
4 Forum, 2016).
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10 In a more recent example, the Penang State Government announced plans for one of two
11 pan-island expressways, which would connect the north coast of Penang Island to the airport in the
12 south in 15 minutes, known as Penang Island Link 1 (or PIL1). This road is part of the controversial
13 Penang Transport Master Plan (PTMP), and has received significant public resistance for its
14 potential impacts on the environment of Penang, its flora and fauna, and the health and safety of its
15 human residents (see Connolly, 2018). Figure 2 shows protesters in Penang holding up a banner
16 which reads ‘*Selamatkan Bukit-Bukau Pulau Pinang*’ (save the hills of Penang Island). The banner
17 pictures an anthropomorphized illustration of Penang Island with stitches on the side of its face,
18 representing the proposed highway and a gash where 717 kg of dynamite would be used to
19 construct a tunnel through the hills. The photo is thus an apt illustration of the concept of multi-
20 species flourishing, which stresses that the wellbeing of the environment (Penang Island), flora and
21 fauna (the monkey and birds clinging on to its sides) and humans (the girl comforting it).
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38 >> **Figure 2 about here**
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42 All of these various flora and fauna are an important part of Penang’s environmental
43 history, and have played as important a role as any human in shaping the city and its region (see
44 Barnard, 2014: ch.1). This is not only in a biophysical sense, but also in terms of the environmental
45 imaginaries and values of Penangites, which have been a crucial factor influencing the
46 environmental movements and urban governance initiatives documented in the latter part of this
47 paper. For instance, Penang’s hills have been described as evoking a “special response and feeling”
48 amongst many Penangites which is attributable to their “immense cultural and sentimental value”
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1 (Khor et al., 1991). The next section will discuss the severe socio-ecological impacts that incidents
2 like the Botak Hill Development have had, before further considering how the affected
3 communities and concerned residents are beginning to respond.
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10 **Beyond Urban Exceptionalism: Ecological connectivities in Penang's urban development**

11 In addition to high profile cases of illegal forest clearing, there are also many examples of
12 *legal* hillside development and forest clearing that are evident in many parts of Penang Island, such
13 as the PIL1 project. The increase in approved high-rise development and indiscriminate cutting of
14 steep hill slopes is now causing serious environmental and safety problems that are faced by various
15 resident communities at the foothills. Between 2008 and 2015, the Penang Island Municipal
16 Council (*Majlis Bandaraya Pulau Pinang* - MBPP) granted 56 approvals on land above 250 ft,
17 many of which are high-rise, high-density projects, along with a geometric rise in illegal hill
18 clearing cases from 2012-2015 (Kam, 2016). There is also a large area of land outside of forest
19 reserves which is not gazetted and can be a target for illegal land clearing. As such, Penang is
20 progressively developing at the expense of the environment, with a deforestation rate of 1.5% per
21 annum (Masum et al., 2017).
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36 Residents living near the hillsides - and environmentally conscious citizens of Penang - thus
37 feel that development is getting 'uncomfortably close' (Kam, 2016). The Consumers Association of
38 Penang (CAP) has also expressed concern over the rate that trees are being sacrificed for
39 development. As the Botak Hill case has shown, there are laws to control this, even possible jail
40 terms, but observers have lamented that there is often no political will to enforce them. As Jenkins
41 (2008:23) astutely observed, there seems to be "little comprehension of the possible implications of
42 mismanagement or the consequences of 'redefining' the planning and building laws" amongst
43 officials in Penang. Such oversights have constituted serious barriers to the possibility of Penang for
44 achieving a truly sustainable city on the grounds of multi-species flourishing.
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1 A direct consequence of the extensive hillside development and deforestation in Penang hit
2 the island quite severely towards the end of 2016. During the Hindu festival week of Deepavali,
3 there was a series of three flash floods that devastated large parts of the island. These were the
4 largest floods to hit the island since the 1990s, which surprised many residents who thought that
5 such severe flooding was a thing of the past.⁵ However, the Penang State Government was quick to
6 rebut claims that extensive development was the cause of the floods (Puah, 2016a; 2016b). For
7 instance, the state's Drainage and Irrigation Department (DID) concluded that the flash floods in
8 George Town were due to "unsystematic drainage system and continues heavy rain" [sic] (*The*
9 *Rakyat Post*, 2016). This was dismissed by Universiti Sains Malaysia (USM - University of
10 Science) Professor Chan Ngai Weng, who pointed out that "it is unwise to dismiss rapid
11 development and hillslope cutting as the cause of the flash floods" (Phuah, 2016). Indeed, most of
12 Penang's current hotspots for flooding are concentrated in the northeastern part of the island, which
13 is also the most built up area. Thus, as two Penang residents wrote in a letter to the *Malaysiakini*
14 newspaper: "the flash floods and the landslide in Penang are proof that we have drastically
15 underestimated the impact of manmade changes to the island and its ecology, and its ability to
16 mitigate natural disasters" (Rawther & Rawther, 2017).

17 As a result of such events, Masum *et al.* (2017) have recommended an immediate ban on hill-land
18 development to ensure overall environmental safety in Penang. Yet, in attempting to mitigate
19 against future flooding, the Government has not announced any plans to slow down development on
20 the island - even in forested hillside areas - but has simply stated that it will focus on upgrading
21 drainage systems in every neighbourhood (*The Rakyat Post*, 2016). In other words - the solution is
22 more development. For instance, a recent news article reported that the State Government is
23 planning to begin ten flood mitigation projects in mid-2017 worth a total of RM300 million (\$67
24 million), opening the projects up for tender to developers (Mok, 2016a). However, it is clear that

25 ⁵ At the time of revising this paper, there was an additional case of severe flooding and landslides that took
26 place at the start of the rainy season in September, 2017.

1 Penang needs to move beyond such urban planning approaches that are based on human
2 exceptionalism, and towards building a more reciprocal relationship with the natural environment,
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4 which would largely alleviate the need for such mitigation measures. This would involve, for
5
6 example, limiting hillside developments which could result in a degradation of the natural
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8 environment, as advised by the Penang Structure Plan. Unfortunately, as Rawther & Rawther
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10 (2017: np) lamented, Penang's politicians "seem to forget that we cannot survive on Earth without a
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12 balanced ecosystem".
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17 As mentioned above, flooding is nothing new to Penang. As early as the mid 1990s, Penang Island
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19 was plagued by constant flooding and environmental damage caused by irresponsible developers,
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21 with new suburban townships springing up from former agricultural or forested areas "almost
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23 overnight" (see Jenkins, 2008: x). Thus, after the recent flooding episode, one resident, Mohamad,
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25 complained, "I am tired of hearing repeated excuses from the state government, attributing the flash
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27 floods to the so-called 'King' Tide and tidal change pattern. Nothing has been done to mitigate the
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29 flash floods for far too long, I am saddened that the analysis and much-politicised flood mitigation
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31 schemes have come to nothing" (quoted in Phuong, 2016). Civil society members have also raised
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33 concern about the downstream impacts of upstream development and the inequity between public
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35 and private costs stemming from these projects.
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40 Such concerns raise classical questions in political ecology, such as development for whom? Who
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42 are the beneficiaries and who pays the social and environmental costs of such development. They
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44 also raises the need to move beyond urban exceptionalism frames which view human societies as
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46 being able to operate outside of ecological consequences. For instance, while development in
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48 Penang - either for housing or infrastructure (road) construction - is often framed as beneficial for
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50 all Penangites (through job creation and economic growth), the sustainability and desirability of
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52 such development is often forgotten. This refers not only to potential impacts like floods and
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54 landslides (which also incur significant social and economic costs), but also the loss of flora &
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56 fauna, which have been shown to be vital to quality of life, well-being and overall social &
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1 environmental health. In the next and penultimate section, I will consider a participatory
2 governance initiative known as Penang Hills Watch that has been launched by local civil society
3 actors to cultivate a stronger civic culture centered on raising awareness of the harms associated
4 with unscrupulous hillside developments.
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10 **The Penang Hills Watch and potential pathways to multi-species flourishing**

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14 In October, 2016, a citizen's initiative called Penang Hills Watch was launched which is designed
15 to monitor incidences of hill clearing in Penang, and galvanize support for safeguarding what is left
16 of the State's forests. The Penang Forum is a 'loose coalition' of NGOs (non-governmental
17 organizations) in Penang, which aims to "promote participatory local democracy, sustainable
18 planning and development, economic justice, affordable housing, environmental consciousness,
19 sustainable transport, workers' rights and heritage conservation" (Penang Forum, 2012). It was
20 formed between 2007 and 2008 through civic responses to previous development initiatives in
21 Penang, notably the anti-Penang Global City Centre Project of 2008, which was a proposed mega-
22 project to be located on the grounds of the Penang Turf Club, near George Town. The Penang
23 Forum has a steering committee which plans events and campaigns, but is not dominated by one
24 individual or group. The group gets its name from the regular public forums which are held to get
25 input from concerned residents on local development and conservation issues. Many of the
26 members communicate informally through various WhatsApp groups, including the 'Penang Hills
27 Watch' group, which shares information on hill clearings in Penang and the associated socio-
28 ecological impacts.
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47 PHW allows local residents to report cases of suspected illegal hill clearing from their mobile
48 phones, which are then posted to an interactive map (including photos and details of each case)
49 allowing for the identification of patterns of hillside development in Penang
50 (<https://hillclearinginpenang.usahidi.io/views/map>). The data is then collated by members of the
51 Penang Forum and forwarded to the State Government to help provide a comprehensive picture to
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1 the authorities of the number of hill clearing events taking place and their effects. The platform thus
2 provides quantifiable evidence of the increasing degradation of the local environment in Penang and
3 creates awareness of this amongst both the government and the wider public. This is one of the key
4 merits of the project, in that it allows for the various relationships and dependencies of Penangites
5 with their broader environment to be recognized, explored and acted upon.⁶

6 The initiative also involves the active participation of the State Government, who are requested to
7 respond to quarterly reports from Penang Hills Watch to provide clarification on the nature of the
8 activity, including: 1) the development's legality; 2) its purpose 3) the site's land use status; 4)
9 action to be taken by the City Council or State Government. Upon submission of the first quarterly
10 report, there 126 cases of hillside clearing, including 86 from government records, and 40 from the
11 public. Of these, approximately 89 were illegal clearings, 26 were approved developments, six were
12 under investigation and one was a natural slope failure (Penang Forum, 2017).⁷ The PHW project is
13 consistent with one of the central tactics of NGOs in Malaysia, which involves the provision of
14 expertise and development of in/formal contacts with government officials in order to develop a
15 more effective and trust-based working relationship (see Hezri, 2016; Cheng and Ma, 2015). It is
16 also an important urban governance initiative because the State Government and City Council
17 largely lack the resources (and political will) to do such monitoring itself - but also provides
18 transparency to the public regarding the protection of Penang's natural environment. As Masum *et*
19 *al.* (2017) have suggested, such co-management and enforcement of environmental laws can help to
20 ensure a more sustainable future for Penang.

21 The Penang Hills Watch can thus be seen as a key type of initiative that can help to cultivate a
22 multi-species sensibility more widely amongst members of a community. For instance, it
23 encourages similar modes and practices as the concept of multi-species flourishing does, including

24 ⁶ One limitation, however, is that it requires a smart phone (with GPS) to take photos and record information
25 about the clearing, which may exclude some members of the population.

26 ⁷ Remaining cases were duplicates of the same site.

1 interacting with, observing, and being involved in the wellbeing of nonhumans through activities
2 such as hikes or simply looking through one's window. It is also a bottom-up approach, which came
3 about through increasing public concern over the increasing encroachment of human activities on
4 Penang's hillsides, reducing the extent and integrity of remaining natural habitat. Through
5 galvanizing wider awareness and stewardship of the natural environment, the Penang Hills Watch
6 movement - and others like it - can act as key stimulus to safeguard and nurture the type of multi-
7 species flourishing that is central to sustaining urban ecosystems and quality of life.

8 Some critics have argued that, because the PHW is focused on information sharing, the initiative
9 may not actually have that much impact due to the the numerous 'special cases' of approved works
10 on forested or hillside sites, mentioned above. These demonstrate that the government is already
11 aware of and has approved many of the hill clearing projects, thus inviting speculation that the
12 developers and local authorities are somehow complicit in these events. Moreover, as the 'Botak
13 Hill' case clearly shows, the enforcement action taken by the government often has no teeth, as
14 mitigation and restoration works are never fully enforced. The stop work orders issued to illegal
15 developers often achieve just that - they stop work, leaving bald patches of exposed hillside which
16 are subject to further erosion and landslides. However, the collaborative approach with the
17 government can also serve to remind officials of the importance of protecting the hillsides.

18 Furthermore, given that a goal of the PHW is also to enhance public awareness about hill clearing
19 issues and impacts, it could act as a catalyst for putting pressure on Penang's politicians to begin
20 taking the integrity of the environment seriously.

21 Finally, a major collaborative effort has been underway since 2016 to secure a UNESCO Biosphere
22 Reserve listing for Penang Hill, which would create additional protected space for flora and fauna
23 in Penang, and facilitate inter-special interaction. Biosphere Reserves are research-driven
24 conservation programs that promote solutions for reconciling the conservation of biodiversity with
25 the sustainable use of a site (UNESCO, 2017). They are nominated by national governments, and
26 the Penang Hill movement is being led by a group of actors including Penang Hill Corporation

1 (PHC) and State Forestry Department (government bodies in charge of monitoring and maintaining
2 the Hill); The Habitat (a private sector eco-tourism venture) and the local University of Science,
3 Malaysia (USM). The rationale for the nomination is the rich biodiversity of the hill, which contains
4 several endemic species of orchids, ants and spiders as well as over 100 species (about 80%) of the
5 island's birds found on the hill (*The Star*, 2016). Having Penang Hill listed as a biosphere would
6 allow for greater protection of the hill, as well as promoting more people to interact with and
7 understand the significance of the hill and its flora and fauna. Along with PHW, this would be a
8 positive step towards achieving a form of urban governance on the grounds of multi-species
9 flourishing which would help to alleviate some of the pressures currently threatening the long-term
10 viability of Penang and its urban ecosystem.
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25 **Conclusion**

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27 This paper has outlined the increasing development pressures on the forested hill-land on the
28 island-state of Penang, Malaysia, and has detailed the significant environmental and socio-cultural
29 implications associated with this activity. In tracing local responses to these developments, the
30 paper has analyzed how the importance of socio-ecological connectivities have been mobilized by
31 local actors in developing a more sustainable future for Penang. The paper has thus argued for a
32 widening of the concept of urban governance along the lines of multi-species flourishing, and to
33 move beyond resilience approaches which only constrain possibilities for socio-environmental
34 justice. As I have demonstrated with examples from the Penang experience, such approaches see
35 urban development as separate from ecological systems, and thus often rely on the implementation
36 of technology and civil engineering measures to mitigate against future environmental shocks. On
37 the contrary, the paper has shown how urban development and environmental harms such as
38 landslides and flooding events are actually closely connected, thus requiring a fundamentally
39 different approach to urban planning.
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2 In his book *Concrete and Clay*, Matthew Gandy (2002:11) has argued that "if we want to
3 incorporate the independent agency of nature into our analysis, we need to be sensitive to the way
4 in which biophysical processes are mediated through human cultures". This paper has attempted to
5 do just that, through illustrating the environmental imaginaries of Penangites, and their reactions to
6 events such as the Botak Hill clearing, which are largely based on experiences in and with the
7 natural environment. The Botak Hill case has sought to demonstrate how such aesthetically and
8 environmentally offensive (ab)uses of nature have created greater recognition of the fragility of
9 Penang's ecosystems, and the need for new structures of urban governance. This has been
10 encapsulated in the Penang Hills Watch initiative, which has sought to mobilize even more people
11 into generating collective response to the harms of capital intensive development. Such social
12 movements are vital to fashioning a model of urban development that is socially and ecologically
13 sustainable in the context of intensifying transformations of nature associated with Asia's urban
14 transition.

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16 In order to do so, I have suggested that we must give analytical priority to the various
17 existing and potential socio-ecological relationships in a particular place, and how they might be
18 reworked in a more equitable manner. As I have argued, this can help to reimagine a different form
19 of 'resilient' and 'sustainable' cities, which are not simply based on 'adding' nature or
20 technological measures to offset further development and socio-ecological injustices. This explains
21 the importance of the concept of multi-species flourishing, which can re-frame the question of
22 urban resilience in terms of the myriad socio-ecological dependencies on the wider geophysical
23 environment and non-human species in a particular place. Without such a shift in approach, rapidly
24 urbanizing cities like Penang will continue to be impacted in compounding ways by the unregulated
25 interventions into nature that are currently increasing in both frequency and severity.

26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 **Acknowledgements:** 54 55 56 57 58 59 60

1 The research for this paper was made possible by a research grant provided by the Asia Research
2 Institute, National University of Singapore. Earlier drafts of the paper received valuable comments
3 from Michelle Miller and three Urban Studies reviewers, which helped to clarify my writing and
4 strengthen the arguments. Thanks also to Remy Chacko for time and insights given during the
5 research for this paper, and sharing his photograph used here (Figure 1).
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Figure 1: Summit of 'Botak Hill', which used to be primary forest until the illegal clearing in 2013
Photo by Remy Chacko, January 2017.

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Figure 2: a protest against the Penang Island Link Highway 1 (PIL1) in Penang on August 9th, 2018.
Source: www.facebook.com/StopPIL1/

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