The rise and fall of biodiversity offsetting in the Lodge Hill large-scale housing development, South East England

Dimitrios Bormpoudakis[1,*], Joseph Tzanopoulos[1,2], Evangelia Apostolopoulou[3,4,*]

[1] School of Anthropology and Conservation, University of Kent, Canterbury, UK

[2] Kent Interdisciplinary Centre for Spatial Studies, University of Kent, Canterbury, UK

[3] Department of Geography, University of Cambridge, Cambridge, UK

[4] Department of Geography, Harokopio University of Athens, Kallithea, Greece

* These authors have contributed equally to the work.

Abstract

In this paper, we aim to shed light on the geographies that led both to the selection of Lodge Hill for the construction of a large-scale housing development and to the subsequent attempt to use biodiversity offsetting to compensate for its environmental impacts. We draw on extensive fieldwork from 2012 to 2016, and diverge from previous studies on offsetting by focusing less on issues related to metrics and governance and shifting our analytic attention to the economic and urban geographies surrounding the Lodge Hill case. We argue that this approach can offer not only an empirically grounded account of why offsetting is being selected to address the impacts of specific urban development projects, but also an in-depth understanding of the factors that determine offsetting's actual implementation on the ground. Viewing the Lodge Hill case through the frame of urbanisation allows us to better grasp the how, why and when particular alliances of actors contest and/or support the implementation of biodiversity offsetting. Our analytical lens also helps exposing the fragility of neoliberal natures and the roles inter-capitalist competition and species biology and ecology can play on the success or failure of neoliberal policies.

Introduction

> [The defence secretary] was questioned as to why the Ministry of Defence had failed to release enough land. One factor, apparently, was the presence of wild birds on some sites: prompting the chancellor to ask environment secretary Owen Paterson what more he could do to remove *the feathered obstacles* to economic revival.
>
> Pickard and Parker, 2013[1] *(added emphasis)*

In March 2013, Lodge Hill, a decommissioned military camp in the rural Hoo Peninsula in South East England, attracted unprecedented media attention[1] across the country. The ex-camp was going to be turned to a major housing development, but wildlife protection issues arose during the planning process, making Lodge Hill one of the most controversial urban development projects of the last decade in England. The cynical characterisation of the area's nightingales as 'feathered obstacles to economic revival' by the then Chancellor of the Exchequer[1] did not fit quite well with the pledge of the previous Coalition government (2010-2015) that it would be the 'greenest government ever'[2]. Even though the story of the housing development in Lodge Hill goes back to 1995 and the broader regeneration plans for East London, North Kent and South Essex, it was not until 2007 that the project started getting off the ground. The submission of a planning application for the construction of 5,000 new houses led to enquiries regarding the environmental conditions in the area. Lodge Hill proved to be a significant area for wildlife, inter alia, because of the presence of c. 1.3% of the national UK nightingale (*Luscinia megarhynchos*) population.

The national significance of the nightingale population in Lodge Hill initiated a conflict between urban development and environmental protection. The environmental controversy over the new housing development eventually centred on the use of biodiversity offsetting for providing the necessary compensation for the loss of nightingale habitat. Biodiversity offsetting had been introduced in the UK in 2013 (Defra, 2013) and was seen by the government as a policy that had the potential to reconcile nature conservation and economic development (Apostolopoulou and Adams, 2017, 2019; Hannis and Sullivan, 2012; Lockhart, 2015).

In this paper, we aim to shed light on the geographies that led both to the selection of Lodge Hill for the construction of a large-scale housing development and to the subsequent attempt to use biodiversity offsetting to compensate for its environmental impacts. Our goal is twofold. Firstly, to explore how the history of nature and its conservation in Lodge Hill, especially during the last three decades, has been sutured both with the development of the Thames Gateway regeneration project (Allmendinger and Haughton, 2009; Raco, 2005), and with key changes in the dominant frames of non-human nature in UK conservation. Secondly, to show that experimentation with biodiversity offsetting in England reveals that the implementation of neoliberal conservation on the ground is a highly contested process with uncertain outcomes. Thirdly, we aim to decentre political ecologies away from conservation-as-a-new-frontier–of-accumulation, towards an understanding of neoliberal conservation as part of the wider political project of the neoliberalisation of nature that considers the *dialectics* between "green" and "un-green" grabbing (Apostolopoulou and Adams, 2015). Through our analysis we aim to offer not only an empirically grounded account of why offsetting

is being selected as the appropriate policy to address the biodiversity impacts of specific urban development projects, but also an in-depth understanding of the factors that influence and ultimately determine its success or failure. Our overall goal is to, thus, understand and substantiate the *where*, *when*, and *by whom* neoliberal conservation policies are being promoted, contested and succeed (or fail) to fulfil their promises.

Theoretical considerations and empirical investigation

In principle, offsetting seeks to compensate losses to biodiversity in one place by securing equivalent biodiversity gains elsewhere and promises to achieve a No Net Loss or even a Net Gain of biodiversity (Defra, 2013). Often, but not always, this process is mediated by a market-based mechanism, whereby credits (e.g. habitat or conservation credits), which are calculated using a series of metrics, are exchanged between contracting parties (e.g. a developer and a land owner whose land acts as a habitat or conservation bank). Biodiversity offsetting involves the deregulation, market-friendly reregulation, and 'thickening' (Rea, 2018) of environment and planning legislation to foster economic development and growth, the extension and consolidation of the monetary valuation of previously unvalued natures, and an increased involvement of the private sector in sustaining social reproduction (Apostolopoulou et al., 2018).

So far, critical scholars have been primarily concentrated on the role of offset metrics and valuation techniques in the creation of new value(s) from nature (see e.g. Bracking et al., 2014; Dauguet, 2015; Robertson, 2000, 2012; Sullivan, 2013) and to a lesser extent on the social impacts of offsetting (see e.g. Apostolopoulou, *in press*;

Bidaud et al., 2017; Seagle, 2012). In the UK, research has primarily focused on offset metrics (see e.g. Carver and Sullivan, 2017), value struggles (see e.g. Sullivan and Hannis, 2015) and issues of governance and regulation (see e.g. Lockhart and Rea, 2019 Lockhart, 2015; Taherzadeh and Howley, 2018). Here our aim is not to offer a detailed account of biodiversity offsetting policy in England (for this see Apostolopoulou and Adams, 2019) but to shed light on the geographies of capitalism that are implicated in the emergence, legitimization, questioning and adoption of biodiversity offsetting in particular places.

In line with the above approach, we adopt an in-depth case study approach and an understanding of neoliberal conservation (Apostolopoulou et al., 2014; Apostolopoulou and Adams, 2015; Büscher et al., 2014), and particularly biodiversity offsetting, as inextricably intertwined with the neoliberalization of space and place (Smith, 2010). Such an understanding necessitates the exploration of factors outside nature conservation itself that shape what conservation is and how it is practiced under the capitalist mode of production in different times and places. To achieve the latter we pay attention to the 'context of context', the patterned and patterning macrospatial landscapes within which programmes of neoliberalization are articulated and the conditions of production of such landscapes (Brenner et al., 2010). We thus turn our theoretical and empirical attention to the regional geographies that led to the formation of the Thames Gateway project, and the way they intersected with the fate of the Lodge Hill housing development by, inter alia, exploring the interrelationships between changing transport and urban geographies, and framings of nature and its conservation in the UK. By building on recent calls about the need for a political ecology of urbanization (Angelo and Wachsmuth, 2015), and recent

analyses of offsetting as the product of an urban policy, particularly in highly urbanized countries like the UK (Apostolopoulou, *in press*; Apostolopoulou and Adams, 2019), we see offsetting's increasing popularity across the globe (Bennett et al., 2017; Bull and Strange, 2018) as tightly interwoven with competition for land and space in the era following the 2008 financial crash. Even though the interrelationship between offsetting and neoliberal urbanization that has so far escaped analytical attention (for an exception see Apostolopoulou and Adams, 2019), we see a convergence between offsetting and planetary urbanization (Lefebvre, 1970; Brenner and Schmid, 2015; Brenner, 2013) that fuels the further deregulation and market-friendly reregulation of environmental and planning legislation. Urbanization patterns have been historically interrelated with changes in transport geographies shaping the production of nature and place (Lefebvre, 1991, 1970). New and extended transportation links reflect the need for constant reductions in the cost and time of movements in the capitalist mode of production (Harvey, 2006) and are a key manifestation of planetary urbanization (see e.g. Nüssli and Schmid, 2016).

While recognizing the important contribution of the existing literature on theorizing neoliberal natures and conservation, we argue that adopting a geographical perspective and a case study approach can shed light on crucial factors that have been largely sidelined in critical conservation and political ecology studies, at least so far. Most importantly, such an approach would allow us to 'track' neoliberal conservation policies (Dempsey and Robertson, 2012) such as offsetting, and explore where they hit the ground, how they perform after they are released 'in the wild' (Peck et al., 2012, p. 278), and how and by whom they are contested. Thereby, shedding light on the why,

where and when neoliberal policies succeed or fail to fulfill their promises (Apostolopoulou, *in press*; Lockhart and Rea, 2019).

In what follows, we situate Lodge Hill in the historical and economic geographies that have shaped, and are still shaping, the socionatures of the wider area and excavate the way these have changed in the post-2008 era. Our analysis draws on empirical data collected through fieldwork from 2012 to 2016. These include: (i) 95 interviews with conservation NGOs, local groups, local and national administration, developers, consultants, and conservation brokers, involved in biodiversity offsetting in England. 19 of these interviews were with people that were also involved in the Lodge Hill housing development, including representatives of NGOs, state agencies, private consultants, and local residents; (ii) documents related to the Lodge Hill development (Table 1) and the Thames Gateway regeneration project, and (iv) a visit to the site in 2015[3] (Figure 1).

Lodge Hill in context: Megacities, the Thames Gateway and a military camp in the Hoo peninsula

Lodge Hill sits next to the village of Chattenden on the Hoo Peninsula in Medway. The Medway conurbation (population c. 275,000) is one of the largest urban areas in South East England, located about 30 miles east of London. The site itself is 283.28 ha (2.83 km^2) and has been used for various military activities since 1873, most recently by the Royal School of Military Engineering as training grounds. It had been gradually decommissioned since the late 1980s. After the privatisation of military engineering

training services, it was deemed superfluous by Holdfast, the consortium that took over the training of military engineers in 2008.

As mentioned above, the Thames Gateway project is essential in understanding the Lodge Hill housing development. The regeneration of the Thames Gateway has preoccupied governments, local councils and developers since the 1970s. After a series of closures, the docklands in East London went from c. 30,000 employees in the 1930s to just 3,000 in 1981. Unemployment in some areas of North Kent, such as Medway, was as high as 25% in the 1980s following the dockyards' closure in 1984 and concurrent deindustrialisation. Adding to the above was the environmental blight left over by decades of industrial growth and subsequent dereliction.

A key moment in the creation of the Thames Gateway was the announcement of the 'East Thames Corridor' as the regeneration vehicle for East London, South Essex and North Kent in 1991. 1991 was also the year when the construction of the Channel Tunnel was approved. In 1993, it was agreed that both the route and its high-speed trains would pass through North Kent and Medway, a few minutes' drive from Lodge Hill[4]. In 1994, the Regional Planning Guidance for South East England was announced (Department of Environment, 1994), and the East Thames Corridor was officially in statute as 'the main opportunity for growth' and an 'area of major development capacity'. In 1995, the Thames Gateway Planning Framework (Department of the Environment, 1995) contained the first statutory mention of the Lodge Hill development next to Chattenden village. According to the Framework 'the release of land from the Defense estate' in Lodge Hill could create the 'scope for expanding the community into a new village' (Department of the Environment, 1995: 60).

Despite the above aspirations, the Thames Gateway was not a compelling case at that period mainly due to economic slowdown and record low house prices (Turok, 2009; Supplementary Material Item 1). This changed in 2003, when New Labour launched its plans for the area. New Labour's *Sustainable Communities* action plan (OPDM, 2003), designated the Thames Gateway as the biggest of the four national Growth Areas, inaugurating what was some years later named the largest regeneration project in Europe.

New transport geographies have been gradually intertwined with new urbanisation patterns in the South East with the Thames Gateway being one of the major foci. As John et al. (2005) put it house building has been 'the raison d'être' of the Thames Gateway. This was further supported by the 2006 decision to hold the Olympic Games of 2012 in the East London part of the Gateway which led to a significant increase in housing projections (Allmendinger and Haughton, 2009) and further investment in the area (Supplementary Material Item 4). Lodge Hill sat squarely within this housing growth drive and it was envisaged that it would become an ideal sleeping/commuting town, covering the majority of the increasing population and housing needs of the wider area, satisfying some the housing needs of London. Indeed, in 2011, around 20% of Medway residents worked in London, and as interviewees involved in the Lodge Hill development argued, the new proposal for the creation of 5,000 more houses was mostly intended for London-Medway commuters.

From nature translocation to biodiversity offsetting: The evolving frames of nature in UK conservation

Since the mid-1980s, the advantages of relocating nature across space and time through habitat creation had already been identified by the extractive and civil engineering industries (Bullock et al., 1996). The liberty of developers to implement habitat translocation and creation schemes in the absence of proper regulations, evidence and monitoring (Worthington and Helliwell, 1987), forced state authorities to develop research projects to ascertain whether such schemes can achieve conservation aims (Bullock et al., 1996; Parker, 1995). The results showed that while such practices had potential in some cases, they were largely incompatible with the goals of nature conservation and No Net Loss, especially for valuable sites and species: "Habitat creation should *never* be put forward as a substitute for the conservation of seminatural habitat. There are too many examples of development proposals which promote such programmes as a full "mitigation" for the loss of existing seminatural habitat […] However, the evidence is clear that a complete replacement will very rarely be achieved" (Parker, 1995: 1, original emphasis).

Regarding the Thames Gateway project in particular, habitat creation as a way to compensate for habitat loss were considered by state and quasi-state agencies (e.g. English Nature) as inappropriate solutions for mitigating development impacts on biodiversity: "Nature conservation bodies […] do not view habitat creation as a replacement for the loss of wildlife [areas]. It would be impossible to predict […] how wildlife populations would react if areas of wildlife interest were lost and nationally

replaced by other sites offering conservation potential (Llewellyn and Tym, 1993: 28)". The debate around the translocation of species, as far back as 2003, saw conservation bodies and the government's advisers express deep concern for the push of the construction industry towards the reframing of non-human nature as movable, exchangeable and essentially reproducible (JNCC, 2003).

However, the above approach has shifted significantly during the last decade. As many interviewees pointed out and as public documents further confirm, in 2007, when discussions started about the Lodge Hill housing development, biodiversity offsetting was gaining increasing popularity both internationally and in the UK. The decision to explore its implementation in the UK was officially announced in 2011. At that time, the Government published the Securing the Value of Nature White Paper (HM Government, 2011) announcing a new voluntary approach to offsetting and a pilot scheme in six areas. In 2013, a Green Paper was published, outlining specific offset metrics for measuring biodiversity loss in terms of biodiversity 'units', 'easily and quickly', based on distinctiveness, habitat condition and habitat extent (Defra, 2013). In key documents that introduced offsetting in the UK planning system, habitat creation was considered not only feasible but also capable to ensure a No Net Loss of biodiversity while enabling 'buying' biodiversity 'off the shelf' (Defra, 2013).

It is worth noticing that the changing frames of nature in UK conservation have been also expressed in the *Sustainable Communities* action plan (OPDM, 2003) which marked a new sustainability discourse (Raco, 2005) including, inter alia, plans to turn the Thames Gateway into an 'ecoregion'. The Gateway was seen at that time as 'an exciting

opportunity' to integrate economic growth with environmental enhancement and promote an understanding of the landscape as a "functional green infrastructure" which can create a positive sense of place, provide environmental protection and enhance the local inhabitants quality of life (OPDM, 2004: 3). Interestingly, the concept of 'green infrastructure' saw widespread use in the UK first time in the context of the Gateway and was a key part of the Gateway's sustainability paradigm (Raco, 2005) according to which nature becomes part of sustainability's "triple bottom line", a word-loan from economics to signify the "win-win-win" reconciliation between people, planet and profit (Allmendinger and Haughton, 2013: 95). Green infrastructure is largely based on a neoliberal utilitarian conceptualisation of nature and aims to mark a 'new environmental aesthetic' (CABE, 2006). This conceptualisation of nature became clearer in the White Paper (HM Government, 2011), and, importantly, in the biodiversity offsetting Green Paper (Defra, 2013) where the links between nature-as-infrastructure and as a 'movable amenity', the key framing behind offsetting, became obvious.

The first phase (2007-2013): The win-win discourse of biodiversity offsetting

Even though Lodge Hill has been included in all regional planning strategies and plans since the 1995 Thames Gateway Development Plan, and was perceived as a strategic development that could address Medway's housing needs, it was not until September 2007 that the development started getting off the ground. The Ministry of Defence contracted Land Securities Group plc., a member of the FTSE 100 index and one of the biggest property developers in Britain. The proposal included 5,000 houses, a retail

centre, and related amenities, a promise for thousands of new jobs as well as a new 'sustainable' community. As the website of the project mentioned, the development would lead to 'a new sustainable community, capitalising on its exceptional setting, a distinctive place that connects to the surrounding rich countryside, with a land use pattern that minimizes the need to travel […] an exemplar for the Thames Gateway in the way that it minimises its impact on the environment and provides for an excellent quality of life for its residents'.

The timing was important: house prices in England were at their peak and house building at a 20-year high (Fig. 1 and Supplementary Material Items 1 and 2), creating hopes for a profitable investment. However, the application was met from the beginning with opposition from a highly diverse group of people and organizations, including local community groups, conservation organizations and rival developers.

Interviewees from the local community criticized the governmental emphasis on large-scale housing projects and openly questioned its social benefits, a criticism that was significantly fueled by the chronic state disinterest for the wider area:

> "We've got a hospital that doesn't serve the needs of Medway, and they are going to build 5,000 more houses in Lodge Hill in addition to the 7,000 houses that have already got permission to be built in the area. How exactly they will cover the needs of all these people?" (Interview with a local campaigner)

Along with concerns on the scope of the housing development and the interests it would serve, local people were also highly critical of its environmental impacts:

"We kept saying no, we know there's nightingales there and if you go for 5,000 you're going to do material damage to the nightingale population. But they weren't willing to reconsider this. They were putting all their eggs in one basket for this development". (Interview with local campaigner)

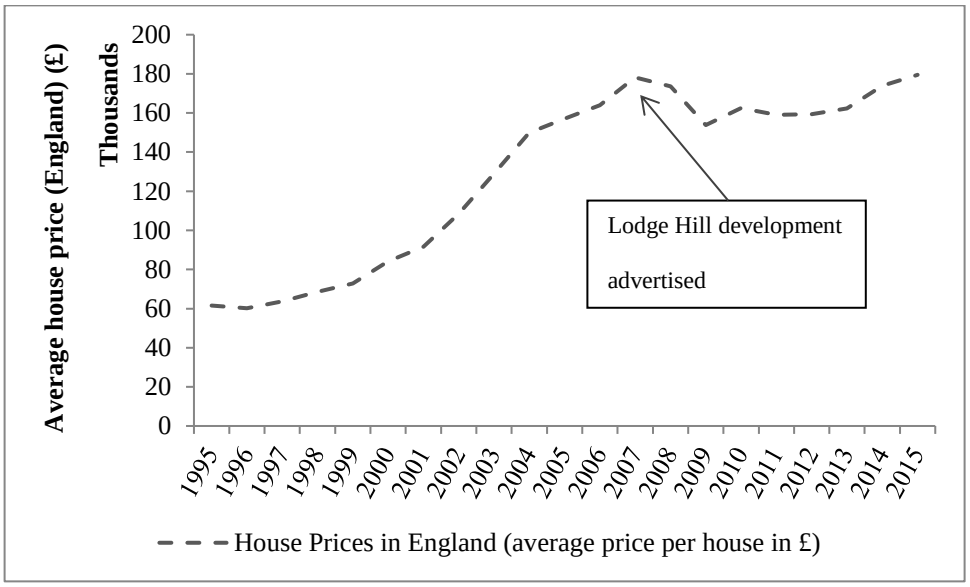

Figure 1. Average house prices in England. Source: Source: Office for National Statistics.

From 2008 until 2011, Land Securities and Medway Council run several presentations, and hearing sessions, involving a host of interested parties. A series of nightingale habitat technical meetings were also held with representatives of conservation agencies and NGOs, consultants, the Environment Bank[5], Medway Council, and others. Attendees of consultation workshops mentioned the area as one of the 'top five sites in Kent for nightingales' and argued that a 'buffer zone should be introduced' to 'protect the species' (Trimedia, 2009: 17).

At the beginning of the consultations off-site mitigation for the loss of nightingale habitat was a second option, and only as far as it would be 'as close to the site as

possible' or at 'worst case' within the Hoo Peninsula[6]. However, in 2012, data from the latest British Trust of Ornithology (BTO) national nightingale survey indicated that the Lodge Hill population was possibly exceeding the 1% of the national population (c. 1. 3%) with around 60% of site population within or right on the edge of the proposed development area (Figures 3 and 4). According to the new data the impacts of the development would be much greater than initially thought and compensation would also have to be provided off-site. Indeed, Natural England in July 2012, argued that due "to the high proportion of nightingales within the proposed development area and their distribution […] if the development was to go ahead, reduction of the impact on the nightingale population *would rely on compensatory habitat creation or management outside the development site*"[7] (our emphasis).

The new data about the nightingale population along with the wider national policy context that was favorable towards the implementation of biodiversity offsetting (Apostolopoulou et al., 2014; Apostolopoulou and Adams, 2019), gradually led to the adoption of the offsetting option. In 2012, the Medway Council submitted its draft Core Strategy for examination by the Planning Inspectorate, designating Lodge Hill as a 'strategic allocation site', meaning that it looked to cover its future housing needs mainly from this development. In the strategy, it was stated that mitigation for the nightingale population was to be done off-site and mainly through offsetting. For supporters of the Lodge Hill housing development, offsetting was seen as an opportunity to pass a planning application that was met for years with resistance both for its social and ecological impacts[8]. The Lodge Hill development was also perceived by offsetting's supporters, including conservation brokers like the Environment Bank and sections of the

government, as an ideal case for proving offsetting's win-win potential. On the contrary, activists argued that Lodge Hill was used from the beginning in a rather opportunistic way by the Government:

> "They were using Lodge Hill as an unannounced pilot – if the case was successful it would offer great publicity to offsetting and its potential to enable and green-wash large-scale housing developments; but since it was not an official pilot they could also say that this was not an 'official' testing of offsetting if it failed". (Member of a local conservation NGO).

The Medway Council commissioned the Environment Bank, and in December 2012, the final report on biodiversity offsetting was published (Environment Bank, 2012). The report concluded that offsetting could ensure No Net Loss of biodiversity and was technically feasible 'although there are uncertainties in calculating how much is necessary' (*ibid*, 13). Following the report's publication offsetting was promoted by its supporters as a novel and realistic policy that had the potential to enable a development project of major economic importance to proceed while protecting the nightingales by addressing the inadequacies of the English planning system. The pro-offsetting rhetoric proved quite powerful at the beginning and created expectations even to local residents who were opposing the development:

> "There's a historical mistrust by local people in mitigation and compensation for housebuilding. There is plenty of anecdotal evidence, not just in Medway but also in neighbouring Maidstone and Gravesham and other areas where communities are fighting developments for protecting wildlife, that they promise mitigation but

> they don't do it. When biodiversity offsetting first came in, we were sceptical but then we decided to support the idea because we thought that rather than that absurdity we had before of promises made and not delivered, this would be much more structured, the habitats would be looked at for their condition and monitored based on objective criteria, and there would be a signed up, legally binding agreement".

However, a report from BTO was published in 2012 (Hewson and Fuller, 2012) arguing that even though habitat creation 'is theoretically feasible' (p. 12), they clearly did not endorse it in their conclusions (p. 18). The BTO report was submitted as evidence against the implementation of offsetting and was admitted as such by the Planning Inspector who was in charge of approving the Medway Council's Core Strategy[9]. The lack of evidence that habitat creation would actually work played a key role in changing the position of local people:

> "Crikey, it didn't last long, our hopes. Fortunately, we were disillusioned fairly early. The first thing they did [the Environment Bank] was a scoping study, and after that their first statement was that they could find no evidence that habitat creation for nightingales hasn't worked. We were stunned and we told them that this doesn't ring true. We have extensively discussed with NGOs and experts and we had read the BTO report and we knew that everyone was saying that they knew no examples where creating habitat in areas where there were no occupied nightingales worked". (Local campaigner)

And:

> "….because there are no nightingales there [in the proposed offset site] they said they were going to use tapes to lure them in. The BTO explained this is an ecological trap; you can bring in females to join a tape of a singing male into a habitat that's got no food. It just struck us and shocked us that's how desperate they were that they would use tape luring to bring them in". (Local campaigner)

The attempt of offsetting's supporters to force a consensus that did not exist along with continuous inconsistencies and conflicting information gradually exposed the role that offsetting was expected to play:

> "At first they said the offset site should not be far from Lodge Hill. But when we asked more information it came up that the sites they had in mind weren't suitable, that the owners didn't want to sell, that they were floodplains or the farmers wanted to build solar panels on them […]". (Local campaigner)

We should point out here that the complexities of biodiversity offsetting for nightingales noted by several interviewees are related to the particularities of the species and its habitat, which were unveiled by the release of the BTO report (Hewson and Fuller, 2012). Nightingales winter in sub-Saharan Africa, and arrive in England for a spell between circa April-August, and go back to Africa. Every time they arrive back to England they go to the same place; if it is the first time they take the trip, it is thought that the presence of other nightingales ('conspecifics') attracts them to a particular place. Thus, the BTO report (Hewson and Fuller, 2012) notes:

> "We are unaware of any detailed published account that explicitly describes the establishment of a nightingale population in relation to habitat creation and

> vegetation development on a formerly unoccupied site. Indeed, we are unaware of any instance where habitat creation for nightingales has been attempted on any large scale". (p. 18)

And:

> "[I]t is possible that Nightingale settlement patterns within available habitat are influenced by 'conspecific attraction' i.e. the presence of other Nightingales already occupying the [new] area … [T]he result of social processes operating may be that initial stages of colonisation are more difficult and proceed more slowly, until a small population becomes resident". (p. 13)

It is important to emphasize that nightingales have declined by 90% in the last 50 years and they appear on the UK's Red List of birds of high conservation concern[10].

The second phase (2013-2017): The new SSSI notification and the abandonment of the development plans

The new data about the nightingale population forced Natural England to consider notifying the site as a Site of Special Scientific Interest[11] (SSSI). Initially, in October 2012, Natural England decided not to do so[12], 'due to insufficient confidence in the national population [of nightingales] estimate'. However, in 2013 the BTO official estimates were released, indicating that 84 pairs of nightingales were found on the development site representing 1.3% of the national population[13]. 1% is a threshold that allows for the declaration of SSSI status and, thus, in November 2013, Natural England's

Executive Board confirmed that the existing Chattenden Woods SSSI would be extended to include most of the land within the Lodge Hill site (Figure 4). The decision was also based on the presence of ancient woodland and neutral grassland. The new SSSI is around 351 hectares, of which 236 hectares were part of the Lodge Hill development. In its closing statement to the Planning Inspector, Natural England, despite raising concerns regarding the nightingale population if the development were to proceed[14], kept a neutral position on what should be done. As interviewees from Defra pointed out, since the planning system does not prohibit building on an SSSI, the SSSI notification did not exclude offsetting from consideration.

In 2013, citing the nightingales and National Planning Policy Framework's presumption for sustainable development, the Planning Inspector concluded that 'the only reasonable course of action' is for the Council to withdraw its Core Strategy and prepare a new Local Plan, effectively stopping the development. In November 2013, the Council withdrew the Strategy. The BTO findings and the SSSI notification were critical also in the sense that they solidified the mounting opposition to the housing development. It is important to emphasise here the very diverse alliance of organisations that grouped together (Table 3): from local conservation groups and businesses, to large NGOs and national-scale FTSE 500 developers, like rival developers Barratt Strategic and the Church Commissioners for England who had competing development interests in the area:

> "…we've got lots of developers who have lawyers and if they don't want Lodge Hill to happen they might them bring in, because they've got their vested interests

in other land in Medway, sites that they want to build on and they would lose out if Medway Council got their 5,000 at Lodge Hill."

And:

"There was another consultant who wrote several emails destroying the arguments of [proponents of offsetting] using a detailed analysis of even hard stuff on metrics etc. […] He works as a consultant for developers who have alternative sites to build houses on but he was on our side for stopping Lodge Hill so we were grateful for his inputs". (Local campaigner)

The opposition by competing businesses along with the opposition from some of the biggest national NGOs in England was crucial, as they spent human and financial resources in submitting evidence against the development to the Planning Inspector. Locally, Lodge Hill was opposed by the majority of Medway residents and all parish councils, as evidenced by the fact that the project became a major political issue in the 2014 by-elections[15]. As interviewees from the local community argued, the Conservatives, worried about local backlash, performed a *volte-face,* with their candidate opposing the decision of the Conservative-led council, as did Ukip and the Greens[16]:

"Now the conservatives oppose something that the Conservative council voted for. It's odd. They have done this because they were getting very anti-Lodge Hill vibes. […]. Lodge Hill is becoming quite a political issue".

Land Securities, on their side, in February 2014, submitted an updated planning application to Medway Council to address the environmental impacts in light of the new

SSSI designation. The new approach was again met with criticism by local campaigners. As one of the participants in the consultation process pointed out:

"The planning application was re-submitted in February and we saw that they ignored work done during examination in public. They used their own metric and their own calculation and they came out with a figure of 264 hectares which was much lower than the previously agreed figure".

The updated application also adopted a new terminology: instead of 'offsetting' now the term 'compensation' was used. However, the core logic of offsetting had not been abandoned and the developers were now arguing that they would achieve a Net Gain of biodiversity:

> "We will do better than No Net Loss. So we are pretty certain that nightingales will persist as a small population at Lodge Hill and at the immediate adjacent off-site mitigation area which means that if we are compensating for the loss of the 1% of the population, which is what the site supports, then we are actually overcompensating because a proportion of that population will still carry on breeding at the site"[14].

The new report proposed on-site habitat creation for the less conflictual species (e.g. great crested newts), a new off-site mitigation area (approx. 86 ha) and a nightingale compensation site (approx. 264 ha) within land owned by the Ministry of Defence in Shoeburyness/Foulness in Essex. Even though the terminology was different, from "offsetting" to "No Net Loss" compensation, the logic of offsetting, including the use of

metrics and multipliers, as well as the metaphor of movable nature, were evident in the new proposals.

Importantly, the proposed nightingale habitat compensation area was *across* the Thames, had no public access, and if implemented, would severely disrupt the connections of local residents with the area. As a local resident who participated in the Public Enquiry argued:

> "You can't replace the beauty of this place in my humble opinion. We are losing something valuable. You know you can go to the first roundabout and hear about five nightingales competing against each other and I've brought up elderly relatives who were disabled and I got them up in the car and just opened the window and they heard their first nightingale, it's just brilliant. The Medway Council has never advertised it as a beautiful place, rich with Duke of Burgundy and all the rest".

It is important to emphasize here that despite the significance of Lodge Hill for local people, the impacts of the loss of nightingale habitat for the local community have been characteristically underestimated by all involved parties, ranging from conservationists who argued that the issue is the compensation for the loss of biodiversity and not the social impacts, to the brokers and the developer's consultants who did not hesitate to characterize the role of local people as negative for the nightingales.

The fact that the offsetting proposal had been gradually rebranded as 'nightingale compensation land' led many key actors to perplexity. Representatives of Natural England argued that Lodge Hill was not an 'offsetting' case anymore since the Defra

metrics had been abandoned. Opponents of the development, and particularly conservationists, interpreted this as a communication strategy from the Government and public environmental administration to distance themselves from a case that was becoming highly controversial. Despite the strong reaction from conservationists and local residents to the new proposals, the Medway Council's Planning Committee decided, by applying the same principles of the National Planning Policy Framework that the Planning Inspector used to dismiss the Plan, that 'development needs outweighed the impact to the SSSI'[17]. The Council, after increasing housing targets in June 2014 at 1,000 dwellings per year, unanimously approved the updated application in September 2014, subject to its referral to the Secretary of State for Communities and Local Government. However, nightingales proved their worth as 'feathered obstacles' for a second time: the decision was 'called-in' in February 2015. This meant that ministers, following a public inquiry would have to judge whether the national significance of the development could override wildlife concerns.

In September 2015, Land Securities, citing the increased costs incurred by the environmental requirements of the project, pulled out of its contract with the Ministry of Defence[18]. The public inquiry that was scheduled did not go ahead and, in September 2017, the Defence Infrastructure Organisation and the Homes and Communities Agency also withdrew their planning application but stated that they intend to submit revised proposals[19]. In spring 2018, Medway Council submitted a new Local Plan that included the Lodge Hill development with a reduced number of houses (2,000), leading again to petitions from NGOs, including the RSPB and the Wildlife Trusts, and local opposition. At the time of writing, the latest news is that in December 2018, Homes England, the

state agency responsible for affordable housing that replaced the Homes and Communities Agency and current owner of the land, revealed a much smaller development plan (500 homes), taking place outside the SSSI boundaries[20], which was met with relief (and some apprehension) by campaigners. In essence, this latest development put an end to ideas of a megaproject-type house building in Lodge Hill.

The rise and fall of biodiversity offsetting in Lodge Hill: the where, when and by whom

Our analysis of biodiversity offsetting in Lodge Hill contributes to the understanding of both the 'context of context' (Brenner et al., 2010) and the historically-geographically specific factors and socioeconomic, ecological, and political conditions that initially led to offsetting's selection as the appropriate policy to resolve a classical conflict between environmental protection and urban development (Apostolopoulou and Pantis, 2010), and that have ultimately determined its failure in fulfilling its promises. This analysis can shed light on the drivers that are behind the localisation of neoliberal conservation and urbanization policies and their success or failure on the ground and, therefore, has important implications for future critical geographical research and praxis.

In particular, it contributes to theorizing the link between neoliberal natures (Heynen et al., 2007) and the changing economic geographies of capitalism. Transformations in economic and transport geographies in the 1990s have been largely fuelled by the 'infrastructural' and 'entrepreneurial' visions that shaped the Thames Gateway regeneration project and economic development in South East England more

broadly (Sparke, 2000). The importance of the High Speed 1 rail line that connects London, Kent and the rest of Europe played a central role in shaping the wider dynamics in the area. For British capitalism, the Thames Gateway (along with the high speed rail line) reflected an 'area of opportunity; at the threshold of Europe's largest city and of the expanding continental marketplace' (Department of the Environment, 1995: 2). Perpetual reductions in the cost and time of movement and the drive for eliminating distance and spatial barriers through advances in technology and transport infrastructure (see also Marx, 1857 on the "annihilation of space with time"; Harvey, 1989) could potentially provide the engine for the circulation of capital and materials between the emerging mega-region of London and the expanding European market. These expectations were clearly expressed by the Department of Environment: 'as the European Single Market is increasing the relative importance of trade with Europe, the prospect of the Channel Tunnel opening in 1993 or 1994 … will revolutionise the accessibility of the East Thames Corridor' (Llewellyn and Tym, 1993: 2). Changes in economic and transport geographies have, in turn, bound with transformations in urban geographies and played a central role in the production of large-scale housing 'visions' (Sparke, 2000) in Medway and the Hoo Peninsula. The territorialisation of the Thames Gateway was thus strongly moulded by the changing geographies of the South East (Allmendinger and Haughton, 2009).

Thus, the consolidation of London not just as an expanding city but also as an aggregating and expanding web of relations has been relying on 'sacrificial countrysides' (see also Arboleda, 2016) like Lodge Hill, something particularly obvious during the last decade. Lodge Hill should be seen as part of a dense web of relations between London as

an evolving megacity, adjacent peripheral cities, towns and villages, and (international) transportation corridors. As the 1970s economic crisis opened up the city as a laboratory for neoliberal experiments (Harvey, 2005), the same happened, and is still happening, with the 2008 crisis not only for the city but also for the urbanising countryside, the city-region and 'urban galaxies' (Soja and Kanai, 2006), like London and its extended regional urbanisation.

The dialectical relationship between dominant narratives of nature and changing transport and urban geographies has been expressed in the way that the Thames Gateway has been linked to the reframing of nature as a 'movable amenity' in the early 2010s. Moreover, and relatedly, it has been evident in the important policy shift, from the 1990s until today, from the position that habitat creation should rarely be considered as an appropriate solution for replacing the loss of wildlife areas, to the current endorsement of offsetting as the best way to ensure not only a No Net Loss but also a Net Gain of biodiversity, not only in the UK but worldwide (Bull and Strange, 2018). Offsetting brings about a reframing of non-human nature as a movable amenity that can be relocated where development interests dictate, implying that due to scientific advancements, primarily in natural capital accounting and restoration ecology, non-human nature should not be a barrier to economic growth since it can be destroyed and replicated without any loss occurring. The notion of equivalent and exchangeable natures is intertwined with the new territorialities that innovations in transportation and urbanization have engendered, showing the spatial aspect of biodiversity offsetting.

Indeed, the emergence of offsetting in the UK can be linked to the entrepreneurialisation and urbanisation of rural areas and has been related to the

imperative to deregulate/re-regulate environmental and planning legislation to facilitate urbanization not only in post-financial crisis England (Apostolopoulou and Adams, 2015, 2017; Apostolopoulou et al., 2014), but in many places across the globe (Bennett et al., 2017). Therefore, in considering so-called "innovative" market-based instruments, such as biodiversity offsetting, we think that a clear shift is needed in the neoliberal conservation literature from exploring their role in promoting "accumulation by conservation" (Büscher and Fletcher, 2015) to substantiating the way they are used in support of capital accumulation through facilitating real estate development, especially in the context of a prolonged economic crisis and the prevalence of austerity politics (see also Apostolopoulou and Adams, 2019; Apostolopoulou et al., 2018).

Importantly, offsetting should be seen as part of urbanisation's 'creative destruction' (Brenner and Schmid, 2015; Lefebvre, 1970) that dispossesses the public of any right to the production of space and nature (Apostolopoulou and Adams, 2019). Offsetting's social impacts (see Re:Common, 2018; Seagle, 2012) are shown well in the Lodge Hill case: the existing nature did not fit well into the new 'green' vision for the wider area. Due to the gradual transformation from military training grounds to an 'empty' landscape, Lodge Hill has become a peculiar place. It could be called a 'marginal site of spontaneous nature' (Gandy, 2013: 1312) or an unintentional landscape (Gandy, 2016) where nature has taken over a unique built environment. This 'undisciplined' environment, regardless of its value for the local community, had to be transformed into a site for capital accumulation whereas compensation for this loss could be placed in a different area were public access would be restricted.

Two further observations are important here. Firstly, the Lodge Hill case points to the pioneering role of large-scale developments and extractive industries in the emergence of the framing and practice of 'movable natures' in English conservation that has been further consolidated through the emergence of biodiversity offsetting. The latter has coincided with the ascension of the conservation consultancy industry into a multibillion industry with FTSE-included companies that allowed private consulting firms to have a strong impact in the formulation and adoption of environmental policies. Thus, along with the documented role of big conservation NGOs in shaping the geography of UK conservation (Adams et al., 2014), there is also an 'archipelago of consultants, marketing experts, public relations people, lawyers, [and] creative accountants' (Hall et al., 2013: 16) that strongly supported the promotion of market-based environmentalism. Even though the latter has been exemplified in the Lodge Hill case through the decisive role of the Environment Bank and the various consultants that were involved from both sides of the nightingale issue, it should not lead us to underestimate the role of the government as evidenced in the Green Paper's argumentation for introducing the policy in the English planning system (Defra, 2013).

Secondly, transport geographies, despite the limited attention that have received so far, often intertwine with neoliberal conservation playing a profound role in shaping dominant framings of non-human nature and its conservation. Indicative examples include the biodiversity offsetting project of the Network Rail's Thameslink Programme in partnership with London Wildlife Trust and Lambeth Council that aims to restore the Great North Wood, which once grew across much of South London[21]. Another example is the Wallasea Island project, an RSPB-Crossrail partnership aiming to combine the

largest construction project in Europe with the continent's biggest coastal habitat creation scheme, with the goal to save 'both projects significant sums of money' (Comeford et al., 2010: 39). Returning to the Thames Gateway but looking at a different case, the construction of the London Gateway deep-water port and Logistics Park in South Essex, entailed the biggest translocation of animals and habitats in the UK. According to media reports, '24,000 adders, grass snakes, common lizards and slow worms'[22] were translocated 140 miles away in a project organized by the Environment Bank. This reminds us that ports, as major transport and logistics hubs, played a crucial role in the grounding of another reframing of nature related to the implementation of the EU Habitat's Directive (92/43/EEC) in the late 1990s/early 2000s: the move from an understanding of nature as static and in state of equilibrium, to an understanding of nature as non-equilibrium, non-static, with fluid boundaries and hybrid ontologies (Gibbs et al., 2007).

Understanding the success and failure of actually existing neoliberal conservation

One key lesson that the Lodge Hill case offers is that the details of policies matter. Biodiversity offsetting is a policy largely based on a typical win-win rhetoric of success and on promises that previous conundrums will be solved through the introduction of a new, improved approach of delivering environmental compensation. This was particularly evident in the UK where supporters of the policy were mainly framing offsetting as a rational and pragmatic response to the previous failures of the planning system. However, offsetting policies are also known for their inability to address their

promises (Apostolopoulou, in press) and their success is highly contestable (Gibbons et al., 2018). In cases of high publicity and strong local opposition, like the Lodge Hill case, this discrepancy between rhetoric and reality did not remain unchallenged. The scrutiny that the policy has received has exposed several inconsistencies that its supporters were trying to conceal by orchestrating a consensus that was essentially non-existent. To add to that, the national importance of the nightingale's population made Lodge Hill a symbolic battleground the outcome of which would indicate the future of wildlife in the UK under the new era of biodiversity offsetting. This urges to think that offsetting, particularly in countries like the UK with a strong conservation movement historically, has fewer chances to succeed in cases of major publicity and ecological impacts of wider societal interest, as in the case of an iconic species for British naturalism like the nightingale (Supplementary Material Item 3), and more chances either in small-scale projects or when the implicated species and habitats are considered more common (Apostolopoulou, in press) or less charismatic (Lorimer, 2007).

Furthermore, while the well-documented charisma of nightingales played a significant role in the failure of biodiversity offsetting in Lodge Hill, as compared for example to great crested newts that are continuously 'moved around' in translocation schemes, the ecological and biological features of this particular species were also important. As a migratory animal, with very particular habitat requirements and complex behavioural ecology, the nightingale is not a straightforward target for offsetting. Importantly, the biology and ecology as well as the population status of the species were only revealed after laborious surveying by nightingale experts and statistical calculations by BTO. The latter shows that natural sciences, in this case ecology, even though they

may often enable, through for example their role in the designation and legitimatization of reductionist offset metrics and valuation techniques, the march of neoliberal natures, they also have the potential to create significant barriers to the latter.

Another significant lesson from the Lodge Hill case is that the controversy over the proposed development in Lodge Hill cannot, be reduced to a discussion focusing only on disagreements over offsetting metrics or even on the promises and pitfalls of neoliberal conservation policies such as biodiversity offsetting. It is rather a constellation of factors in all their historical and geographical variegation, including the UK housing crisis, the increasingly contested discourse of 'hyper-regeneration[23]', the London 2012 summer Olympics, the Thames Gateway, the ecological, social and cultural importance of nightingales, as well as the chronic dissatisfaction of local inhabitants with the ecological and social impacts of neoliberal urbanization that the wider area was suffering due to its links to the Thames Gateway, along with an archipelago of often invisible actors, that have been (and still are) at play. It is also the above constellation of factors that can explain why Lodge Hill not only has not been the success story that the UK government was aiming for, but it became a case of a successfully 'contested neoliberalism' (Leitner et al., 2007), contributing at that time to the decreasing popularity of biodiversity offsetting in the UK (Lockhart, 2015).

It is important to point out here that offsetting currently remains optional for developers in England. The policy has proven controversial and has been contested by many local communities, some national NGOs and activist organisations. However, despite the setback and the absence, at least so far, of a biodiversity credits market at a

national scale (Lockhart and Rea, 2019), biodiversity offsetting is being currently implemented in several localities and districts across the country (see e.g. District Level licencing for great crested newts[24]), often facilitating controversial urban development projects (Apostolopoulou and Adams, 2019). Furthermore, the UK government is in the process of rolling out a new policy based on the key concept behind biodiversity offsetting, namely Net Gain. The latter has already been included in the updated National Planning Policy Framework released in February 2019, while a public consultation on the government's Net Gain proposal run in late 2018. In July 2019 the government published its response, promising to make Net Gain mandatory in a forthcoming Environment Bill (see Defra 2019[25]).

The fact that non-market-dependent variants of biodiversity offsetting are being implemented across England and Net Gain is about to be mandated by Government law allows us to argue that its introduction into UK policy was not a failure. As the Lodge Hill case shows the introduction of offsetting into UK policy has not led so far to the creation of environmental markets in the model of the US but has been nonetheless clearly related to a governmental attempt to re-regulate, streamline and simplify environmental licencing for infrastructure, housing, and other types of development. Thus, despite setbacks exemplified by the Lodge Hill case, offsetting will be part of environmental policy in UK, while the question of market-creation remains open (see Defra 2019[26]).

Our understanding of the evolution of biodiversity offsetting in the Lodge Hill case as an outcome of the articulation of transport and urbanisation geographies with

neoliberal natures, offers some important insights into the kind of alliances that forged to oppose biodiversity offsetting and our theoretical and methodological choice of looking closely at the geographies shaping the Lodge Hill case allows us to do so. Viewing this conflict through urbanisation lenses, we can understand that rival developers, such as Barratt Strategic, McCulloch Homes, Taylor Wimpey, or The Church Commissioners for England, while instrumental in contesting biodiversity offsetting and the development in Lodge Hill, are competitors for housing planning licences – competitors for land to build on. This shows both that intra-capitalist competition within processes of extended urbanisation influences the dynamics of the neoliberalisation of nature and that biodiversity offsetting can have both positive and negative roles to play in relation to accumulation, something that has so far received almost no attention in the existing literature (for an exception see Apostolopoulou et al., 2018).

The picture gets even more complicated if we delve deeper into the heterogeneous assemblage that resisted the housing development and the offsetting proposals. In particular, the Lodge Hill case allows us to understand not only the opportunistic way offsetting may be used to enable and legitimize controversial urban developments, but also that a crucial factor that may determine its success or failure is the variety of interests that may oppose it. In this case, it was a wide, and conflicting alliance of interests that strongly opposed governmental plans leading to offsetting's failure to achieve its promise of smoothing conservation-development conflicts. This urges us to move beyond an uncritical embracement of opposition and consider the origins, scope, limits and potentials of particular alliances to understand how solidarities are constructed (see Featherstone, 2013). In the Lodge Hill case, the opposition ranged from opposition

to the housing development from competing development interests reflecting the interests of different sections of capital, opposition to offsetting from conservationists and opposition to both the development and offsetting from local residents on the basis of the ecological and social impacts and injustices. Interestingly, this included some big NGOs who while they were among the strongest opponents of the housing development and the use of offsetting in Lodge Hill[27], they have otherwise been strong supporters of neoliberal conservation policies, including offsetting (see e.g. Comeford et al., 2010). This shows that we cannot always predict which organisations/actors/institutions will offer their support or not to neoliberal policies 'in the wild' by taking into consideration only their public position documents or national level stance, since contradictory or opportunistic positions are common.

Even though the formation of this broad front played a key role in the failure of the governmental plans, it is our belief that such a broad alliance has profound limitations primarily because it cannot lead to any alternative and socially progressive alliance linked to wider issues of social and environmental justice. The latter would necessitate identifying the common interests and goals between a circumstantial agreement against this particular housing development and offsetting proposal. Such a political exercise is crucial not only for future alliances against new proposals for the economic exploitation of Lodge Hill or for implementing offsetting, but also for tracing similar and divergent trajectories in different places and forming possible alliances that move beyond the specificities of place-based opposition and have the potential to more effectively contest neoliberalism on the ground by demanding a radically different production of socionatures. This would require finding the common interests between those who

contest the capitalist production of nature and space in different places without underestimating that uneven geographical development (Smith, 2010; Harvey, 2006) may necessitate different strategies, tactics and alliances for contesting capitalism in different places, regions and countries (see Gramsci, 1971).

We have tried to offer a thick description of the Lodge Hill case while considering the economic and urban geographies and environmental politics that shaped its fate. We believe that this analysis can contribute in explaining what drives and determines the implementation of neoliberal conservation on the ground while exposing the fragility of the conditions necessary for the neoliberalization of nature, including so far largely ignored factors like intra-capitalist competition and the role of the publicity and charisma of a species for its exploitation and for resistance thereto. Our analysis, by offering a nuanced understanding of the dialectics of success and failure of particular policies as occurring in real time and space and not in a geographical vacuum as often implied in the literature is also important for building 'an oppositional politics on the basis of situated knowledges' enabling the formation of new political-economic alliances that transcend place (Katz, 2001: 1230). The latter can become possible by linking place-based opposition to broader processes that fuel such opposition creating the conditions for uniting spatially specific struggles to form a "more universal" politics (Featherstone, 2005: 252; Harvey, 2000, 2012). Ultimately, the story of Lodge Hill and the way we chose to analyse it in this paper can show how the geographies of offsetting, and more broadly of neoliberal conservation policies, are linked to specific political questions of what alliances, in which spaces, can offer long-term radical alternatives to neoliberal conservation and urbanisation policies.

Acknowledgements

We sincerely thank all those who agreed to talk to us; without their input it would be impossible for us to write this paper. This piece of research has been years in the making, and we thank all those who commented on its previous written and oral versions. All shortcomings remain of course ours. EA was partly funded by a Marie Curie Intra-European Fellowship (PIEF-GA-2013-622631) (Conservation and Ecosystem Services in the New Biodiversity Economy). DB was partly funded by the EU FP7 project SCALES (Securing the Conservation of biodiversity across Administrative Levels and spatial, temporal, and Ecological Scales), grant 226 852. This work was also supported by the Hellenic Foundation for Research and Innovation (HFRI) and the General Secretariat for Research and Technology (GSRT), under the HFRI Fellowship grant entitled "From the 'right to the city' to the 'right to nature': Exploring environmental movements in the era of the Anthropocene as pathways to social-ecological sustainability" (GSRT code 235, KE 275 ELKE).

References

Adams WM, Hodge I, Sandbrook L (2014) New spaces for nature: The re-territorialisation of biodiversity conservation under neoliberalism in the UK. *Transactions of the Institute of British Geographers* 39: 574-588.

Allmendinger P, Haughton G (2009) Soft spaces, fuzzy boundaries, and metagovernance: the new spatial planning in the Thames Gateway. *Environment and Planning A* 41: 617-633.

Allmendinger P, Haughton G (2013) The Evolution and Trajectories of Neoliberal Spatial Governance: "neoliberal" episodes in planning. *Planning Practice and Research* 28: 6-26.

Angelo H, Wachsmuth D (2015) Urbanizing urban political ecology: A critique of methodological cityism. *International Journal of Urban and Regional Research* 39(1): 16-27.

Apostolopoulou, E. Biodiversity offsetting, depoliticization, and contestation: Unraveling the politics of a community struggle against executive housing in North East England. *Transactions of the Institute of British Geographers, in press.*

Apostolopoulou E, Adams WM (2015) Neoliberal capitalism and conservation in the post-crisis era: the dialectics of 'green' and 'un-green' grabbing in Greece and the UK. *Antipode* 47: 15-35.

Apostolopoulou E, Adams WM (2017) Biodiversity Offsetting and Conservation: Reframing Nature to Save It. *Oryx* 51: 23-31.

Apostolopoulou E, Adams WM (2019) Cutting nature to fit: Urbanization, neoliberalism and biodiversity offsetting in England. *Geoforum* 98: 214-225.

Apostolopoulou E, Bormpoudakis D, Paloniemi R, Cent J, Grodzińska-Jurczak M, Pietrzyk-Kaszyńska A, Pantis JD (2014) Governance rescaling and the neoliberalization of nature: The case of biodiversity conservation in four EU countries. *International Journal of Sustainable Development and World Ecology* 21: 481-494.

Apostolopoulou E, Greco E, Adams WM (2018) Biodiversity Offsetting and the Production of 'Equivalent Natures': A Marxist Critique. *ACME: An International E-Journal for Critical Geographies* 17(3): 861-892.

Apostolopoulou E, Pantis JD (2010) Development plans versus conservation: explanation of emergent conflicts and state political handling. *Environment and Planning A* 42: 982-1000.

Arboleda M (2016) Spaces of extraction, metropolitan explosions: planetary urbanization and the commodity boom in Latin America. *International Journal of Urban and Regional Research* 40: 96-112.

Bennett G Gallant M ten Kate K (2017) State of Biodiversity Mitigation 2017. Markets and Compensation for Global Infrastructure Development. Ecosystem Marketplace, Forest Trends.

Brenner N (2013) Theses on Urbanisation. *Public Culture* 25: 85-114.

Brenner N, Peck J, Theodore N (2010) Variegated neoliberalization: geographies, modalities, pathways. *Global Networks* 10: 182–222.

Brenner N, Schmid C (2015) Towards a new epistemology of the urban? *City* 19: 151-182.

Bull JW, Strange N (2018) The global extent of biodiversity offset implementation under no net loss policies. *Nature Sustainability* 1: 790–798.

Bullock JM, Hodder KH, Manchester SJ, Stevenson MJ (1996) *Review of information, policy and legislation on species translocations.* Peterborough: JNCC.

Büscher B, Dressler W, Fletcher R (eds) (2014) *Nature Inc.: environmental conservation in the neoliberal age*. University of Arizona Press.

Büscher B, Fletcher R (2015) Accumulation by conservation. *New Political Economy* 20: 273-298.

CABE (Commission for Architecture and the Built Environment) (2006) *New things happen. A guide to the future Thames Gateway*. Accessed May 2, 2018.

http://webarchive.nationalarchives.gov.uk/20110118095356/http:/www.cabe.org.uk/publications/new-things-happen.

Carver L, Sullivan S (2017) How economic contexts shape calculations of yield in biodiversity offsetting. *Conservation Biology* 31(5): 1053-1065.

Comeford E, Molloy D, Morling P (2010) Financing nature in an age of austerity. Royal Society for the Protection of Birds. Accessed April 9, 2018. https://www.rspb.org.uk/Images/Financingnature_tcm9-262166.pdf.

DBIES [Department for Business, Energy & Industrial Strategy] (2017) *Cutting red tape Review of house Building*. Accessed May 4, 2018. https://cutting-red-tape.cabinetoffice.gov.uk/wp-content/uploads/2017/02/Housebuilding-review-.pdf.

Defra (2013) *Biodiversity Offsetting in England Green Paper*. Accessed May 4, 2018. https://consult.defra.gov.uk/biodiversity/biodiversity_offsetting/supporting_documents/20130903Biodiversity%20offsetting%20green%20paper.pdf.

Dempsey J, Robertson M (2012) Ecosystem services: Tensions, impurities, and points of engagement within neoliberalism. *Progress in Human Geography* 36: 758-779.

Department of Environment (1994) *South East Regional Planning Guidance*. London: HMSO.

Department of Environment (1995) *The Thames Gateway Planning Framework* (RPG9A). London: HMSO.

Ekers M, Loftus A (2013) Introduction. In *Gramsci: Space, nature, politics*, ed. M. Ekers, Hart, G., Kipfer, S., and A. Loftus, 15-43). Chichester: Wiley.

Environment Bank (2012) *Biodiversity Offsetting to compensate for nightingale habitat loss at Lodge Hill, Kent*. Environment Bank Ltd.

Featherstone D (2005) Towards the relational construction of militant particularisms: or why the geographies of past struggles matter for resistance to neoliberal globalisation. Antipode, 37(2), 250-271.

Featherstone D (2013) "Gramsci in action". Space, politics, and the making of solidarities. In *Gramsci: Space, nature, politics*, ed. M. Ekers, Hart, G., Kipfer, S., and A. Loftus, 65-82. Chichester: Wiley.

Gandy M (2013) Marginalia: Aesthetics, Ecology, and Urban Wastelands. *Annals of the Association of American Geographers* 103: 1301-1316.

Gandy M (2016) Unintentional landscapes. *Landscape Research* 41: 433-440.

Gibbons P, Macintosh A, Constable AL, Hayashi K (2018) Outcomes from 10 years of biodiversity offsetting. *Global Change Biology* 24: 643-654.

Gibbs D, While A, AE Jonas (2007) Governing nature conservation: the European Union Habitats Directive and conflict around estuary management. *Environment and Planning A* 39: 339-358.

Gramsci A (1971) *Selections From the Prison Notebooks*. Edited by Nowell-Smith G and Hoare Q. London: International Publishers.

Hall S, Massey D, M Rustin (2013) After neoliberalism: analysing the present. *Soundings* 53(53): 8-22.

Hannis M, S Sullivan (2012) *Offsetting nature? Habitat Banking and Biodiversity Offsets in the English Land Use Planning System.* Dorset: Green House.

Harvey D (1989) *The Condition of Post-modernity: An inquiry into the Origins of Cultural Change*. Oxford: Blackwell.

Harvey D (2000) Spaces of Hope. Edinburgh: Edinburgh University Press.

Harvey D (2005) *A Brief History of Neoliberalism*. Oxford University Press.

Harvey D (2006) *Spaces of Global Capitalism: Towards a Theory of Uneven Geographical Development*. London, New York: Verso.

Harvey D (2012) Rebel cities: From the right to the city to the urban revolution. Verso.

Hewson CM, Fuller RJ (2012) *Factors Potentially Affecting the Viability and Success of Biodiversity Offsetting to Compensate for Nightingale Habitat Loss*. Thetford: BTO.

Heynen N, McCarthy J, Prudham S, Robbins P (2007) *Neoliberal Environments: false promises and unnatural consequences*. Routledge.

HM Government (2011) The Natural Choice: Securing the Value of Nature. Accessed May 4, 2018. https://www.gov.uk/government/publications/the-natural-choice-securing-the-value-of-nature.

JNCC - Joint Nature Conservation Committee (2003) Habitats Translocation Policy for Britain. The Countryside Council for Wales, English Nature and Scottish Natural Heritage. Available at: http://jncc.defra.gov.uk/pdf/habitats_policy.pdf

John P, Tickel A, Musson S (2005) Governing the mega-region: governance and networks across London and the South East of England. *New Political Economy* 11: 91-106.

Katz C (2001) On the grounds of globalization: a topography for feminist political engagement. *Signs: Journal of Women in Culture and Society* 26: 1213-1234.

Lefebvre H (1970) *La révolution urbaine, vol. 216*. Paris: Gallimard.

Lefebvre H (1991) *The production of space*. Oxford: Blackwell.

Leitner H, Peck J, Sheppard ES (2007) *Contesting neoliberalism: Urban frontiers*. New York and London: Guilford Press.

Llewellyn D, Tym R (1993) *East Thames Corridor: A Study of Development Capacity and Potential Prepared for the Department of Environment*. London: HMSO.

Lockhart A (2015) Developing an offsetting programme: tensions, dilemmas and difficulties in biodiversity market-making in England. *Environmental Conservation* 42: 335-344.

Lockhart A, Rea C (2019) Why there and then, not here and now? Ecological offsetting in California and England, and the sharpening contradictions of neoliberal natures. Environment and Planning E: Nature and Space, doi.org/10.1177/2514848619850778.

Lorimer J (2007) Nonhuman charisma. *Environment and Planning D: Society and Space* 25: 911-932.

Martin P (2005) Comparative topographies of neoliberalism in Mexico. *Environment and Planning A* 37: 203-220.

Marx K (1973) [1857] *Grundrisse*. Harmondsworth, Middlesex: Penguin.

Medway Council (2018) *Medway Local Plan Development Strategy*. London: Ove Arup & Partners Ltd.

Nüssli R, Schmid C (2016) Beyond the urban–suburban divide: Urbanization and the production of the urban in Zurich North. *International journal of urban and regional research* 40: 679-701.

OPDM (2003) *Creating Sustainable Communities: Building for the Future*. London: HMSO.

OPDM (2004) *Creating Sustainable Communities: Greening the Gateway*. London: HMSO.

Parker DM (1995) *Habitat creation – a critical guide. English Nature Research Report No 21*. Peterborough: English Nature.

Peake L (2016) On feminism and feminist allies in knowledge production in urban geography. *Urban Geography* 37: 830-838.

Peck J, Theodore N (2010). Mobilizing policy: Models, methods, and mutations. *Geoforum* 41: 169-174.

Peck J, Theodore N, Brenner N (2012). Neoliberalism resurgent? Market rule after the great recession. *South Atlantic Quarterly* 111: 265-288.

Raco M (2005) Sustainable Development, Rolled-Out Neoliberalism and Sustainable Communities. *Antipode* 37: 324-347.

Re:Common (2018) Offsetting for whom? in: Apostolopoulou E Cortes-Vazquez J eds The Right to Nature: Environmental justice, social movements and neoliberal natures Routledge-Earthscan, pp. 200-209.

Robertson MM (2006) The nature that capital can see: science, state, and market in the commodification of ecosystem services. E*nvironment and Planning D: Society and Space* 24: 367-387.

Seagle C (2012) Inverting the impacts: Mining, conservation and sustainability claims near the Rio Tinto/QMM ilmenite mine in Southeast Madagascar. *Journal of Peasant Studies* 39: 447-477.

Shaw J, Sidaway JD (2011) Making links: On (re) engaging with transport and transport geography. *Progress in Human Geography* 35: 502-520.

Smith N (2010) *Uneven Development*. 3rd ed. London and New York: Verso.

Soja E, Kanai M (2006) The urbanization of the world. In *The endless city*, ed. R., Burdett and D. Sudjic. London: Phaidon.

Sullivan S (2013) Banking nature? The spectacular financialisation of environmental conservation. *Antipode* 45: 198-217.

Swyngedouw E (2006) Metabolic urbanization: the making of the cyborg city. In *In the nature of cities: urban political ecology and the politics of urban metabolism*, ed. E. Swyngedouw, N. Heynen and M. Kaika, 36-55. London: Routledge.

Trimedia (2009) Lodge Hill Stage Two Public Consultation-Workshops. Accessed May 4, 2018. http://www.medway.gov.uk/pdf/Statement_of_Community_Involvement_Final_Evidence_.pdf.

Turok I (2009) Limits to the mega-city region: Conflicting local and regional needs. *Regional Studies* 43: 845-862.

Worthington TR, Helliwell DR (1987) Transference of semi-natural grassland and marshland onto newly created landfill. *Biological Conservation* 41: 301-311.

Bidaud C, Schreckenberg K, Rabeharison M, Ranjatson P, Gibbons J, Jones JP (2017) The sweet and the bitter: intertwined positive and negative social impacts of a biodiversity offset. *Conservation and Society* 15: 1-13.

Seagle C (2012) Inverting the impacts: Mining, conservation and sustainability claims near the Rio Tinto/QMM ilmenite mine in Southeast Madagascar. *Journal of Peasant Studies* 39: 447-477.

Taherzadeh O, Howley P (2018) No net loss of what, for whom?: stakeholder perspectives to Biodiversity Offsetting in England. *Environment, Development and Sustainability* 20: 1807-1830.

Notes

[1] https://www.theguardian.com/environment/2014/sep/25/-sp-nightingales-lodge-hill-sanctuary-conservation-britain; https://www.newscientist.com/article/mg21829220-200-does-habitat-replacement-let-developers-off-the-hook/; https://www.theguardian.com/commentisfree/2016/jun/06/housing-development-nightingales-5000-homes-lodge-hill-kent; https://www.theguardian.com/environment/2013/mar/29/nightingales-lodge-hill-mod-site; http://www.bbc.com/news/uk-england-kent-41171919; http://www.oxfordtimes.co.uk/news/14630402.A34_Lodge_Hill_scheme___39_may_only_be_possible_if_homes_are_built_at_Abingdon__39_/; https://www.thetimes.co.uk/article/farage-tries-something-french-to-prepare-for-sweet-success-rklx0pz73jz; https://www.thetimes.co.uk/article/developers-can-pay-to-rip-up-nature-n8qql0jnxwv

[2] http://www.theguardian.com/environment/2010/may/14/cameron-wants-greenest-government-ever

[3] The site is closed for the public; one of the authors was allowed to enter with special permission.

[4] To put the high-speed rail link into perspective for what it meant for London and North Kent and Medway residents, it is useful to consider that currently the Chatham or Rochester to King Cross/ St. Pancras trip (central London) is c. 40 minute trip, a commute time which is comparable to many places within the London metropolitan region.

[5] The Environment Bank Ltd. was set up in 2006 to "promote the concept of biodiversity offsetting in the UK and are now a leading ecological consultancy specialising in biodiversity accounting, metrics and offset brokerage" (https://www.environmentbank.com/about-us/). Its

founder, Professor David Hill CBE, has been a leading British environmental consultant, the former Director for Ecology and Chief Scientific Adviser for RPS Group plc. (a global consultancy, constituent of the FTSE 250), and a Board Member of both Natural England and the Joint Nature Conservation Committee, the public bodies that advise the Government on nature conservation. The Environment Bank Ltd. had been very active in promoting biodiversity offsetting in the years prior to its introduction as a policy in 2011 (see Supplementary Material Item 5).

[6] https://www.medway.gov.uk/download/downloads/id/386/consultation_draft_lodge_hill_development_brief.pdf

[7] Natural England letter to Medway Council: https://www.medway.gov.uk/downloads/file/422/natural_england_letter-_re_lodge_hill_development_allocation_090712

[8] http://www.theguardian.com/politics/2011/nov/20/draft-planning-guidelines-housing

[9] Planning Inspector's decision letter: https://www.medway.gov.uk/downloads/file/471/letter_to_medway_council_21_june_2013

[10] https://www.rspb.org.uk/get-involved/campaigning/protecting-wildlife-sites-near-you/save-lodge-hill/

[11] SSSIs are a type of protected area designation introduced by the Wildlife and Countryside Act 1981 (amended 1985). SSSIs "are subject to stricter controls to protect wildlife, habitats and geological formations than most other types of designated area." http://publications.naturalengland.org.uk/publication/47003

[12] Natural England Board minutes: https://www.medway.gov.uk/download/downloads/id/558/minutes_from_natural_england_executive_board_meeting_october_2012.pdf and Natural England letter to Medway Council:

https://www.medway.gov.uk/downloads/file/422/natural_england_letter-_re_lodge_hill_development_allocation_090712

[13] https://www.bto.org/volunteer-surveys/nightingale-survey.

[14] Natural England closing statement, 30/5/2013: https://www.medway.gov.uk/downloads/file/2421/natural_england_lodge_hill_closing_statement_300513

[15] See https://www.bbc.com/news/uk-england-kent-29919650.

[16] The UKIP candidate, Mark Reckless, who won the 2014 by-election, defected from the Conservatives to join UKIP, ostensibly on the Lodge Hill issue. According to his critics, he performed a U-turn on the issue after he sensed the sentiment of the public, since only a few months before the elections he was supportive of the development and the council's plan. (https://publications.parliament.uk/pa/cm201213/cmhansrd/cm130326/debtext/130326-0003.htm). The Conservatives' current MP for the area, elected in the 2015 national election, is also in conflict with the conservative-led Local Council in opposing the Lodge Hill development (https://www.kelly4rochesterandstrood.com/campaigns/fighting-unsustainable-development-our-green-space).

[17] Medway Council letter to the Minister of State for Housing and Planning, https://anewnatureblog.files.wordpress.com/2015/01/mc_11_2516-letter_to_minister_of_state-2523281.pdf.

[18] http://www.bbc.co.uk/news/uk-england-kent-34225450.

[19] http://www.bbc.co.uk/news/uk-england-kent-41171919.

[20] https://www.gov.uk/government/news/homes-england-proposes-new-approach-to-development-at-lodge-hill

[21] http://bbop.forest-trends.org/documents/files/network_rail_webinar_presentation.pdf.

[22] http://www.theguardian.com/environment/2011/mar/21/essex-reptiles-wiltshire-homes.

[23] Inspired by *Where will we leave*, http://southwarkplayhouse.co.uk/the-little/where-will-we-live/.

[24] District Level Licensing for great crested newts was introduced as a pilot project in Kent in 2018, and has now been launched nationally. It is based on the "strategical creation" of "favourable compensatory habitats offsite of development to compensate development pressures." https://naturalengland.blog.gov.uk/2019/03/11/protecting-great-crested-newts/

[25] See the UK Government's response to the consultation on Net Gain, published in July 2019. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/819823/net-gain-consult-sum-resp.pdf.

[26] See the UK Government's response to the consultation on Net Gain, published in July 2019. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/819823/net-gain-consult-sum-resp.pdf.

[27] https://community.rspb.org.uk/search?q=lodge%20hill.