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Garlick, Ben ORCID logoORCID:

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1 **Cultural geographies of extinction: animal culture amongst Scottish**
2 **ospreys**

3 **Ben Garlick**

4 *School of Humanities, Religion & Philosophy, York St John University.*

5 **Abstract**

6 This paper explores cultural geographies of extinction. I trace the decline of the
7 Scottish osprey during the nineteenth century, and its enduring, haunting presence
8 in the landscape today. Taking inspiration from the environmental humanities,
9 extinction is framed as an event affecting losses that exceed comprehension in terms
10 merely of biological species numbers and survival rates. Disavowing the 'species
11 thinking' of contemporary conservation biopolitics, the osprey's extinction story
12 pays attention to the worth of 'animal cultures'. Drawing a hybrid conceptual
13 framework from research in the environmental humanities, 'speculative' ethology
14 and more-than-human geographies, I champion an experimental attention to the
15 cultural geographies of animals in terms of historically contingent, communally
16 shared, spatial practices and attachments. In doing so, I propose nonhuman cultural
17 geographies as assemblages that matter, and which are fundamentally at stake in the
18 face of extinction.

19 **Key Words**

20 Extinction, Conservation, Cultural geography, More-than-human geography,
21 Osprey, Scotland

22

23 **Introduction**

24 The species label *Pandion haliaetus* – the osprey – envelopes much lively difference
25 and possibility. Across four subspecies of this brown and white piscivore are
26 variations in size, markings and geographical behaviour. Furthermore, past and
27 present observations suggest multiple osprey life-ways are possible, expressed
28 between, and within, these subspecies. Colonial behavior, for example, characterises
29 certain communities (notably in North America) but not others, perhaps reflecting
30 prey or nest availability (Newton, 1979). In a similar vein, European and North
31 American ospreys (*P.h. haliaetus* and *P.h. carolinensis*) are migratory, whilst
32 Australian (*P.h. cristatus*) and Caribbean (*P.h. ridgwayi*) birds are not. For mobile
33 communities, annual seasonal refrains correspond with sea ice coverage; spring
34 melts driving prey into northern shallows (Poole, 1989). For Scottish ospreys (my
35 focus here), wintering grounds predominate on Africa's western coast. After an
36 initial successful migration south, the young birds reside here for around three years
37 before returning north to seek a mate and nest. Rearing young in summer, breeding
38 adults depart come autumn (Dennis, 2008). Migration studies posit that favoured
39 routes may be shared across generations and regional communities (see Dennis,
40 2008).

41
42 Regional differences, and preferences, suggest osprey lives are geographically
43 contingent. This paper explores such contingency in the context of extinction. Paying
44 close, geographical attention to the lives of birds, I sketch the historical cultural
45 geographies of the osprey in Scotland, from the late-eighteenth to the early-twenty-

46 first century. Following calls for more 'beastly' geographies (Hodgetts and Lorimer,
47 2015) I take seriously the lived spatio-temporal particulars of osprey life. In
48 conversation with recent work within the environmental humanities, I frame osprey
49 differences in terms of an 'animal culture' both spatially and temporally contingent,
50 and at stake amidst the unfolding geographies of extinction. Historical records of
51 ospreys in Scotland reveal such differences, emergent over time, raising questions
52 regarding the nature of extinction and loss.

53

54 Consider that in the early-nineteenth century the northern Scottish county of
55 Sutherland hosted a vibrant community of ospreys. In 1848, notorious sportsman
56 and naturalist Charles St John travelled here with professional egg-collector William
57 Dunbar (see St John, 1884). Visiting lochs where ospreys nested on ruins and rocky
58 outcrops - including Assynt, 'an Laig Aird' (possibly Laicheard) and an Iasgair
59 (Figure 1) - they took eggs and shot several adult birds. Afterwards, Dunbar wrote
60 to a southern client that they had 'finally done for the Ospreys in Sutherland'
61 (Harvie-Brown and MacPherson, 1904: 186).

62

63 Over a century later, in August 1961, George Waterston, Scotland's representative
64 for the Royal Society for the Protection of Birds, holidayed in northwest Sutherland.
65 He had just overseen a third successful nesting season for the ospreys at Loch
66 Garten, Speyside. Dubbed 'Operation Osprey', re-colonising birds had raised young
67 in the Cairngorms under Society protections since 1959 (see Brown, 1979). Their
68 presence marked a return from 40 years of breeding extinction in Britain. Now

69 stewarding the re-colonisation, it seems Waterston was curious to retrace St John's
70 footsteps. He drew on accounts of the 1848 tour when planning his own northern
71 vacation. Waterston subsequently recalled his palpable excitement when standing
72 'almost exactly' where the infamous sportsman had once observed nesting ospreys
73 (Waterston, 1962: 113).

74

75 **[Figure 1 - Map showing the location of Scottish nest sites discussed in this paper.**

76 **Credit to L. Schofield]**

77

78 Whether scouting sites of potential re-colonisation or seeking sober reflection in
79 remote surrounds, the account Waterston offers of his excursion in Sutherland
80 conjures a profound *curiosity* for the ospreys' former geography and lifeworld. This
81 historical vignette also raises a question: how should we reckon with such an
82 absence – less of a biological species than of a particular way of living – when that
83 which was absent *comes back*? This paper, with a desire to craft more interesting,
84 lively accounts of more-than-human historical geographies, argues in response for
85 the need to appreciate extinction in terms beyond the species biopolitics of
86 contemporary conservation. Considering questions of extinction with an eye on
87 contemporary debates around reintroduction, re-wilding, and even 'de-extinction',
88 geographers must attend to that which remains lost even after a species *returns*.

89

90 *Composing osprey historical-cultural geographies*

91 Emerging out of a larger project seeking to explore the historical animal geographies
92 of Scottish osprey conservation (Garlick, 2017), this paper reads the insights of
93 scientific ornithology and empirical accounts of osprey life through a conceptual
94 framework rooted in contemporary literature around affect, neovitalist materialism,
95 biophilosophy and 'speculative ethology'. Thinking in speculative, risky and
96 creative ways about histories and cultures beyond the human foregrounds
97 important ethical questions about what is at stake in extinction.

98

99 My argument is based upon a speculative reading of the surviving traces and stories
100 of osprey presence, informed by the insights of a broader natural-scientific and
101 conservation literature concerning their behaviour, ecology and breeding biology. I
102 am alert to the contradiction here: seeking to challenge essentialist notions of species
103 whilst relying on literature steeped in this mode of understanding life and its
104 processes. This corpus enables me to better trace the activities and conditions
105 characteristic of osprey lived existence, such as it haunts the 'non-innocent'
106 eighteenth- and nineteenth-century documentary accounts of naturalists, travellers,
107 artists and sportsmen, comprising a nebulous 'animal archive' of ospreys in Scotland
108 (Benson, 2011).

109

110 However, I am careful not to allow such work to delimit *a priori* the capacities of
111 ospreys, or figure them transcendent of history and geography. Drawing on
112 scientific literature need not necessitate rigid adherence to a single scientific model,

113 or overly circumscribe the possible forms that osprey behaviour might take (Lestel *et*
114 *al*, 2014). Rather, contemporary work on osprey ecology and conservation sharpens
115 attention to how animal existence and agency are historically assembled and
116 expressed in relation to a host of other actors and material conditions (Howell,
117 *forthcoming*).

118

119 Similarly, many discussions held during the course of research with individuals who
120 have spent time working with these birds likewise inform my understanding of
121 ospreys' capabilities (see Midgely, 1988). Stories of humans living and working with
122 birds past and present provide 'narratives of affiliation' (H. Lorimer, 2009: 65),
123 helping tune into the elements of the environment affecting, and affected by, animal
124 existence (J. Lorimer *et al*, 2017: 6). In sum, extant writing and reflection on ospreys,
125 by those who have spent years researching with them, assists me in asking the 'right
126 questions' of documents bearing their trace (Despret, 2016).

127

128 As much a geographical thought experiment as act of historical-cultural geography
129 scholarship, this paper seeks to fulfil the ambitions of a more-than-human history by
130 speculating on the historical conditions for (and of) osprey existence (Despret, 2013).

131 This is also an ethical project of imagination and recognition. Perhaps, as Dominique
132 Lestel argues, we attribute 'too much' to humans, and 'too little' to others in social
133 theory (2014b: 99). A little epistemological 'courtesy' (albeit critically informed and
134 reflexive [Johnston, 2008: 644-645]) might stem from the recognition that, in certain
135 ways and under certain conditions, animals are '*not* so different from humans' (Philo

136 and Wilbert, 2000: 25, original emphasis). I frame osprey life as active and
137 contingent: an outcome of situated involvements between birds, humans, and other
138 agencies (after Woodward *et al*, 2010).

139

140 The aim is to write historical geography more attuned to ospreys' agential potential.
141 Rather than cry 'anthropomorphism!' I urge the reader to persist and consider the
142 questions such an account opens onto. A more lively account of past ecologies, I
143 argue, offers one route by which to mobilise the care required to live with, and
144 respond to, past and present environmental losses (see Tsing, 2015; Chrulew, 2011).
145 The alternative - divesting ospreys of lived experience and specificity - merely
146 'mechano-morphises' (Crist, 1999) creatures that, like ourselves, demonstrably
147 perceive the world, respond to it, and 'really are alive' (Ingold, 1994: xxi).

148

149 Over the following paper I attend to the more-than-human cultural geographies at
150 stake in extinction. I begin by establishing a conceptual framework that challenges
151 the 'species thinking' of conservation biopolitics and extends 'culture' beyond
152 humans. I then sketch the dimensions of a Scottish osprey 'cultural community' and
153 its unravelling until the point of eradication in 1916. Tracing a disjointed geography
154 of absence and presence, I emphasise the enduring losses that extinction (as the
155 cessation of a 'way of life') affects, demonstrating why thinking with animal culture
156 alerts us to the continuing ethical significance of such loss today.

157

158 **Extinction, culture and more-than-human geographies**

159 *Extinction beyond the biopolitical*

160 In contemporary wildlife conservation a creature's presence clearly matters, both
161 actually recorded and potentially emergent (Hinchliffe, 2007). Yet, acts of
162 classification, calculation, and distributional mapping often render such presence a
163 series of multiple, differently valued, and sometimes contradictory collectives in (or
164 across) space (Beirmann and Mansfield, 2014; Hodgetts, 2017). Such initiatives, read
165 by geographers through Michel Foucault's 'biopolitics' (see Foucault, 2003), figure
166 life primarily in terms of averaged characteristics, or norms. Despite a diversity of
167 animal presence on the ground, overall conservation strategy deals in populations,
168 and the massifying metrics of bio- or genetic diversity (J. Lorimer, 2006; Srinivasan,
169 2014; Hennessey, 2015).

170

171 Since the mid twentieth century contemporary conservation has been increasingly
172 defined by the perception of an encroaching, human-instigated, 'sixth mass
173 extinction' that it seeks to prevent (Adams, 2004; Kolbert, 2014). Extinction labels
174 *collective annihilation* – potentially of entire taxa (see Smith-Patten *et al*, 2015). Whilst
175 background rates of extinction may be 'ecologically necessary' – with fossil records
176 suggests a species disappearance on average every four years, creating space for
177 (better adapted) others to flourish – identified mass extinction events (where
178 disappearance rates reach 50-1000 times background levels) indicate episodes of
179 extreme ecological upheaval, generating much scientific and cultural interest (Heise,
180 2010).

181

182 Despite any extinction event entailing multiple, situated stories of decline – such as
183 that of the Sutherland ospreys – lived differences dissolve with losses rendered in
184 terms of quantifiable biological species units. In much conservation discourse,
185 extinction is enacted through numbers. Calculations of vulnerability prioritise what
186 must be saved. The ‘Red List’, compiled by the International Union for the
187 Conservation of Nature since 1964 (see IUCN, 2012), exemplifies this biopolitical
188 (and ethical) triage in action (Pooley, 2015). Meanwhile, conservation looks to
189 genetics to promote new measures of collective diversity (or value) at molecular
190 scales (Waterton *et al*, 2013; Hennessey, 2015). Hybrid forms compromising genetic
191 purity are suppressed (Fredriksen, 2016). Violent incarcerations (and inseminations)
192 accompany attempts to care for fragmented, remnant populations of rare species
193 (van Dooren, 2014; Chrulew, 2011). Threatened creatures circulate through multiple
194 spaces including digital databases, zoos and re-introduction centres (Whatmore and
195 Thorne, 2000; Braverman, 2015). There remains limited scope for care-full attention
196 to lived animal geographies within this biopolitical schema.

197

198 Marshalling recent humanities scholarship, I pay a different kind of attention to
199 species life and death. Specifically, work within ‘extinction studies’ (Rose *et al*, 2017 –
200 further expanded below) offers opportunities for staying with the particularities of
201 past osprey presence, and telling the story of the Scottish birds’ decline *and* return
202 whilst, at the same time, keeping hold of what *remains lost*. Grouping creatures into
203 collectives on the basis of apparently essential qualities renders them mere ‘units of

204 exchange' (Mitchell, 2016: 34), ultimately 'killable' to secure species wellbeing
205 (Haraway, 2008; Srinivasan, 2014). Yet crucially, such 'species thinking' fails
206 'absolutely' to recognise 'what [...] is actually lost' through extinction (van Dooren,
207 2010: 272). The vital relations and contingent differences comprising actual *ways of*
208 *living* – what Thom van Dooren terms 'flight ways' (2014) – are excluded from any
209 such biopolitical reckoning with environmental destruction. Writing within the
210 environmental humanities (Rose *et al*, 2017), as well as geography (see Van Patter
211 and Hovorka, 2018: 291), has challenged species essentialism and concomitant
212 conservation discourses of the 'greater good'. Increasingly, 'species' – as atomised
213 units of concern and a 'concrete phenomenon of nature' (Mayr, 1996: 263) – become
214 'unthinkable' within posthumanism's rhizomatic ontologies (Haraway, 2016: 57;
215 Whatmore, 2002).

216 *More-than-human cultural geographies*

217 To expand a sense of what is at stake in extinction, I make geographical and
218 historically specific osprey 'ways of living' tangible through the notion of 'animal
219 culture'. 'More-than-representational' (Lorimer, 2005) cultural geographies are just
220 as evidently 'more-than-human' (Whatmore, 2006; J. Lorimer *et al*, 2017). They elude
221 explanation merely in terms of autonomous, exceptional human figures (Whatmore,
222 2002; Hird, 2010; K. Anderson, 2014). Given 'making worlds is not limited to
223 humans' (Tsing, 2015: 22), consideration of osprey culture is entirely appropriate
224 amidst geographical scholarship long attendant to ways of living, doing and
225 distributing natures (Anderson *et al*, 2002; Kirsch, 2014).

226

227 And yet, concern with 'culture' in geography remains largely human-focussed
228 (Anderson *et al*, 2002: 18-21; Anderson, 2014; Hodgetts and Lorimer, 2015).
229 Meanwhile, biologists, particularly primatologists and cetologists, have long debated
230 the existence of nonhuman cultures (see Laland and Galef, 2009; Whitehead and
231 Rendell, 2015). Indeed, culture appears a practical (if implicit) consideration for
232 many conservation scientists. Van Dooren (2014; 2016) describes various instances
233 where the management of captive-bred birds – such as crows and cranes – involves
234 carefully supporting the development of an 'authentic' species being comprising the
235 behaviours, perceptions and vocalisations that encompass a 'wild' subjectivity. Such
236 examples feature plastic animal subjects, and testify to the multiple forms of
237 'animality' possible within different assemblages (Lestel, 2002).

238
239 Championing early critical attention to animal geographies, Chris Philo and Chris
240 Wilbert emphasised the need for attention to animals' own geographies – their
241 'bestly places' (2000: 5) – alongside the social construction of 'animal spaces'.
242 Although methodological and conceptual developments have favoured the former
243 (Hodgetts and Lorimer, 2015), there is growing energy within more-than-human
244 geography to explore the spatial character of animal life beyond its 'placing' by
245 humans (H. Lorimer, 2006; Johnston, 2008; Buller, 2014, Buller, 2015; Van Patter and
246 Hovorka, 2018; J. Lorimer *et al*, 2017). Animals, figured as 'geographers too' (Buller,
247 2015: 380), enact spatial lives and attachments. Birds, recognised as 'geographical
248 creatures' (Steinberg, 2010: iii), invest significance in place through migratory

249 refrains, perceptions and attachments. Such geographies characterise the 'flight way'
250 of osprey existence.

251

252 Through the osprey's story I challenge the 'residual humanism' (Lulka, 2009)
253 surrounding cultural geography's central concept: culture. I argue that avian
254 cultures reflect creative capacities to find diverse ways of inhabiting with (or
255 against) the limits of an environment, demonstrating non-linear, 'affective', ecologies
256 (Hustak and Myers, 2012). They take material form through 'non-essential'
257 behavioural adjustments – such as nest preferences – shared socially between groups
258 of birds, and with neither genetics nor environmental factors providing a 'truly
259 satisfying' explanation of their appearance (Lestel, 2014b: 98). Thus, ospreys have a
260 heritage exceeding biology, including group traditions, spatial arrangements and
261 individual experience (Lestel, 2011: 84), which constitutes their very 'personhood'
262 (Ingold, 1994).

263

264 I engage osprey cultural geographies via a hybrid conceptual frame (see Hovorka,
265 2017) drawing inspiration from 'speculative' approaches to ethology (the science of
266 animal behaviour). Such work continues the maverick, creative, creaturely spirit
267 championed by early pioneers of ethological study (see H. Lorimer, 2009). Rejecting
268 a traditional, 'Cartesian-realist' ethology equating behavioural signals with fixed,
269 universalising behavioural models, scholars including Vinciane Despret and
270 Dominique Lestel propose a more open-ended consideration of animals, and their
271 capacity to form contingent communities of meaning and relating (Despret, 2013).

272 Agential capacities are 'characterised by their historicity' (Lestel, 2002: 58), and
273 constitute an open, empirical question (Despret, 2006).

274

275 Culture is thus figured with an emphasis on affect and sense (Lestel, 2014b: 95). I
276 emphasise a corporeal reading of 'affect', foregrounding: the body's capacity to
277 register the impress of worldly forces; the manner in which such impressions
278 mediate a body's potential capabilities; and the various forces that emanate *from*
279 bodies to enact similar mediations upon surroundings and other bodies (Anderson,
280 2014). Specifically, I apply Sara Ahmed's concept of 'orientation' to characterize
281 'different ways of registering the proximity of objects and others' (Ahmed, 2006: 3)
282 as subjects affect and are affected by worlds. Orientations capture *how* spaces are
283 affectively inhabited: the aspects towards which the body extends, or from which it
284 retracts (Ahmed, 2010: 29). I (and others - Wright, 2015) see value in extending
285 Ahmed's thinking beyond humans. In an account of past and present osprey
286 nesting, orientation directs attention to the specific affects of a bird's worldly
287 situation, its 'point of view' (Ahmed, 2006: 12) as an emergent, multi-sensory,
288 perceptual attunement (Stewart, 2011).

289

290 In this manner, animal - specifically, avian - cultural life might be mapped, as
291 Deleuze and Guattari suggest, by virtue of 'counting its affects' (2013: 299). That is,
292 by documenting site- and relationally-specific ways of living as part of always-
293 hybrid communities (Lestel, 2014a); or through attention to the (re)articulation of
294 animal being amidst particular 'atmospheres' or fields of forces (J. Lorimer *et al*,

295 2017). Exploring more-than-human cultural geographies therefore requires attention
296 to processes of 'learning to be affected' by the world, as to mediate future meetings
297 (Despret, 2004: 131). Arising from assembled agential capacities to perceive and
298 respond, 'different worlds [...] come into view'. In turning toward these worldly
299 offerings, bodies acquire 'the very shape of their direction' (Ahmed, 2006: 15-16).
300 Understanding encounters with place, objects or 'others' requires situating subjects
301 amidst 'conditions of their arrival' (Ahmed, 2010: 33) and histories of relating. How
302 ospreys and nest sites become available to each other is a contingent process. Bodies
303 and places are entrained into the refrains of migration, assembly and return,
304 weaving together a creaturely ecology (H. Lorimer, 2009).

305

306 Osprey nesting geographies cohere as 'traditions' - social learning across
307 generations (McGrew, 2009) - marking out specific forms of difference *within* the
308 blanket category of 'genetic species'. These geographies emerge through the
309 accumulation of more-than-human traces - nests, perches, migration routes, feeding
310 grounds. In turn, attention to traces and trajectories proposes an ecology of dynamic
311 *places*, as opposed to static *habitats* (Massey, 2005; van Dooren and Rose, 2012: 10).

312

313 To conclude this section: cultural geography - in concert with scholarship drawn
314 from across the environmental humanities - has both scope and resource to engage
315 more-than-human culture. The specifics of 'nonhuman' presence matter, revealing
316 difference and diversity (see Lulka, 2009: 382). Attention to animal culture means
317 examining how orientations of creaturely being emerge in relation and become

318 sustained through inheritance. Over the remainder of the paper I discuss the osprey
319 in Scotland, making specific lives (and losses) visible and significant amidst
320 processes of mass death.

321

322 **An osprey cultural community**

323 Ospreys are creatures with the capacity to form, share and inherit place attachments.
324 On the basis of shared orientations towards 'nestable' sites I advance the claim that
325 nineteenth-century Scottish ospreys constituted a now-lost cultural community.

326

327 Nesting is a fundament of bird life, offering containment, insulation and protection
328 for eggs and young (Hansell, 2000). Sites of vital reproductive work (biological and
329 cultural), nests are 'key nodes' (Reinert, 2013: 17) connecting individual existence to
330 the assemblage of collective being (Chrulew, 2011: 147). One can understand nests as
331 'animal architecture': nonhuman structures affecting local stability amidst volatile
332 environmental conditions (Hansell, 2000). Richard Dawkins theorises such
333 constructions in terms of an 'extended phenotype': the blueprints for building being
334 genetically encoded, as much a reflection of evolutionary development as
335 physiological capacities (Dawkins, 1982 in Ingold, 2000). Today, however, biologists
336 emphasise multiple inheritance systems *beyond* the genetic (e.g. Laland and Galef,
337 2009). Nests offer an example of 'niche construction'. Coined by biologist John
338 Odling-Smee, this concept refers to species' capacities for altering environments,
339 maintaining spaces across generations that mediate selection pressures and enable

340 the emergence – and persistence – of particular forms of (social) life (Laland *et al*,
341 2016).

342

343 My own speculative reading frames situated niche-building by a particular group of
344 the same ‘species’ as demonstrative of cultural diversity. I follow Tim Ingold (2000:
345 175) in rejecting the genetic essentialism of ‘extended phenotypes’, treating animal
346 dwelling as embodied, perceptive, active.

347

348 *Cultures of nesting*

349 Ospreys historically display wide-ranging recognition for ‘nestable’ places. By
350 nestable I mean evoking the capacities for successful nesting. This definition is
351 derived from Gaston Bachelard’s phenomenological account of nesting as the
352 expression of locatable ‘confidence in the world’ (1994: 94-103). Crucially, such a
353 phenomenology defers to the animal: I place significance in where (and how)
354 ospreys direct perception.

355

356 Cultural activity is embodied: the potential capacities of creatures in relation to
357 environmental affordances define the limits of emergent cultural permutations
358 (Lestel, 2014b). Consequently, commonalities exist between osprey nest sites
359 globally. Proximate (<20km), plentiful fishing is key. Likewise, many birds favour
360 prominent, elevated, open sites: ‘landmarks’ for human and osprey alike (Poole,
361 1989: 85). Such features offer easier landings when laden with prey, and a vantage to
362 spot intruders (Hardrey *et al*, 2009). Being large raptors, osprey eyries (nest

363 structures) often exceed a metre in diameter. Viable sites offer a stable base for the
364 amassed sticks (and supplementary materials) held together by friction (Dennis,
365 2008).

366

367 Many places have hosted ospreys, so how do differences in site preference emerge?
368 Some attention is given to the affects of site attachment in accounts of osprey
369 nesting, noting the 'magical attraction' (Poole, 1989: 89) of 'special places' (Newton,
370 1979: 39). I offer here a speculative account of nesting processes, contextualising
371 ospreys within their affective ecologies, and connecting emergent orientations to site
372 within birds' unfolding 'lifelines' (Ahmed, 2006: 17).

373

374 In forming attachments to specific places, male ospreys demonstrate a particular
375 tendency to display 'natal philopatry': upon maturity they are likely to return to
376 their 'birth region' to breed. Sightings and recoveries of colour-ringed ospreys in
377 Scotland found 25 of 29 recorded birds nesting within 50km of their natal site - and
378 17 within 25km (compared to 2 of 34 females) (Dennis, 2008: 109). Results from
379 studies involving the ringing of Fennoscandian ospreys propose that 'a circle drawn
380 at 50km radius of the birth place' would account for over 40% of ospreys, again
381 reflecting the propensity for male birds to inherit attachments to place (Newton,
382 1979: 176). With regard to attachments to particular nesting *situations*, young ospreys
383 show a preference for sites echoing the characteristics of natal nests. Such a process
384 of 'imprinting to area' (Newton, 1979: 282) is elsewhere evoked to explain, for
385 example, the increasing colonisation of utility structures across generations by

386 ospreys in Europe (Meyburg *et al*, 1996). It is suggested that early flights from the
387 nest might orient fledgling ospreys to their surroundings, making 'sticky' (Ahmed,
388 2010) certain features within emergent avian geographical perceptions. Together,
389 such mechanisms demonstrate young ospreys' 'ontological openness' (van Dooren,
390 2014: 102) for geography.

391

392 Once a pair of ospreys has settled a site they will generally return to the same nest
393 annually, so long as both survive migration and the site remains productive (Poole,
394 1989). In this way, as adults maintain eyries, preferences for region (through male
395 progeny) and nesting situation become inheritable. Subsequently, orientations
396 towards particular *kinds* of nest site emerge as 'local traditions of preference'
397 (Newton, 1979: 82; Poole, 1989: 89).

398

399 Osprey nesting preference thus enacts landscape as a communally-inherited,
400 'learned skill' (H. Lorimer, 2006: 504) and recognition of the post-fledging period as
401 crucial for assembling the geographical subjectivity of young ospreys informs the
402 contemporary practice of translocation. From 1996 to 2005 young ospreys were taken
403 from Scottish nests, cage-reared at Rutland Water, Oakham, and released at the
404 point of fledging. From 2001, the first of these birds returned to nest, establishing a
405 breeding population here (Mackrill *et al*, 2012). Given natal philopatry is unevenly
406 observed (and varyingly expressed) an additional outcome of this project included
407 the tandem emergence of an osprey community in Wales with dispersal on return
408 migration.

409

410 The relocation example attests that despite certain tendencies being recorded,
411 geographical orientations are not pre-given. Rather, nesting geographies remain
412 contingent over the life-course, textured by osprey experience, even 'memory' (see
413 Despret and Meuret, 2016). Site faith is tied to the persistence of seasonal
414 monogamy. If birds die on migration their remaining partners will likely return,
415 drawn north by an enduring place association. Equally, sites can be abandoned if
416 eggs or young are lost due to extra-species intrusions or storms (Hardey *et al*, 2009).
417 In this way, nests are (re)opened to colonisation by roving, nestless birds, entrained
418 into new sets of osprey relations. A site's 'stickiness' for particular individuals
419 reflects an on-going, creaturely storying of place (van Dooren and Rose, 2012). I turn
420 to explore such processes at work amongst the ospreys of nineteenth-century
421 Scotland.

422

423 *Scottish osprey culture*

424 Several authors label the demise of the Scottish osprey as 'extinction' (Brown, 1979;
425 Poole, 1989; Kitchener, 1998; Dennis, 2008). Yet, within a biological species-centred
426 definition of extinction such loss would be termed 'extirpation': the eradication of a
427 given *population* of a species 'in a specific area' (Smith-Patten *et al*, 2015: 482).
428 Extirpation implies that losses only register significance if *genetic* survival or
429 diversity is threatened. Here, in developing a conception of extinction in which *ways*
430 *of life* are at stake, I problematise extirpation as a concept for the way in which it
431 renders disparate populations interchangeable.

432

433 Extinction studies scholarship challenges the essentialism inherent to biological
434 definitions of species, expanding the registers of significant loss (Mitchell, 2016).
435 Doing so requires telling alternative 'extinction stories': offering generative openings
436 (van Dooren, 2010: 272-273) onto the 'intimate peculiarities' of environmental
437 destruction (van Dooren, 2014: 7-8; Rose *et al*, 2017). Extinction is refigured as a
438 broader, slower process of detachment from conditions of dwelling in which the end
439 of a way of life precedes the disappearance of the last, lingering one (Rose, 2012).
440 Absence is felt beyond the biological, encompassing lost vocabularies, behaviours,
441 sensory knowledges and future possibilities (Smith, 2013). Recognising such losses
442 attests to more-than-human lives lived amidst relational *communities*, characterised
443 by situated forms of animal existence and worlding (see Yusoff, 2012: 587). As
444 Despret and Meuret articulate:

445

446 'Extinction begins when the world to which an animal was associated is reduced to
447 nothing, or almost nothing. Extinction begins when the ways an animal composes
448 the world and composes with the world are ended, when the ways he or she makes
449 a world exist, according to the ways his or her ancestors had created it, have
450 disappeared' (2016: 28-29)

451

452 In this spirit, I characterise the nineteenth-century Scottish osprey and its eradication
453 with reference to a collectively constituted orientation towards place. Doing so
454 makes legible osprey cultural geographies as a register of significant loss.

455

456 Prior to disappearance in the early twentieth century, there is limited data regarding
457 the osprey's extent in Britain. Virtually no records precede the 1800s (Waterston,
458 1962). Likewise, there is little evidence as to its persecution, particularly outside of
459 Scotland. By 1800 the birds had probably disappeared from Ireland and a handful
460 remained in England until 1847 (Lovegrove, 2007). A clear (if loosely documented)
461 trajectory of decline accompanies this geographical contraction. With the osprey
462 confined effectively to Scotland by 1850, one estimate puts their numbers between 40
463 and 50 breeding pairs (Dennis, 1991). The same year, however, other writers note the
464 ultimate demise of the Sutherland-based population (see Brown, 1979; Lovegrove,
465 2007) described barely a decade earlier by Scottish naturalist William Jardine as so
466 abundant that one might see four or five birds a day in certain localities (Waterston,
467 1962: 81; also Selby, 1836: 287). By 1895 there were at most four pairs nesting
468 (Harvie-Brown and Buckley, 1895: 71). This had declined to just two by the early
469 years of the twentieth century (see Cameron, 1948), and a final (recorded) pair bred
470 at Loch Loyne in 1916 (Gordon, 1949).

471

472 A notable feature of nineteenth-century accounts documenting encounters with
473 Scottish ospreys is their descriptions of nests, which suggest particular site
474 preferences. In northwest Sutherland, ospreys nesting on rock and ruin sites – rather
475 than the trees recorded elsewhere – were apparently common. For example, in
476 Charles St John's (1863: 138) writing he describes eyries 'placed either on the highest
477 part of some old ruin, on the peak of some rock which stands out from the water in a

478 lonely highland loch, or, rarely on the very summit of an old tree'. Elsewhere,
479 Jardine alleged to *only* have observed such behaviour, asserting Scottish nests were
480 'always' sited on ruined structures (Jardine, 1838: 184). Despite trees in abundance,
481 ruins were 'preferred if near' (Jardine, 1832 quoted by Yarrell, 1871). Similarly,
482 ornithologist William Yarrell, writing five years later, endorsed Jardine's
483 descriptions. Nesting ospreys are recalled on 'rocky islets' and 'old ruins', only
484 'sometimes on high trees' (1871: 32). In 1879, one newspaper article boldly claimed
485 ospreys built on trees only where ruins or rocks were not available ('Loch-an-Eilan
486 and its Ospreys', 9 June 1879). That rocks and ruins were central to natural
487 historians' understanding of the Scottish osprey, suggests their prominence within
488 the birds' own spatial perception during this period.

489
490 Ruin eyries offer an early example of the osprey's widely documented adaptability
491 to local conditions. The earliest record of ruin nesting occurs in the late-eighteenth-
492 century travel writing of Welsh naturalist Thomas Pennant (Baxter and Rintoul,
493 1954). At Loch Lomond, he describes 'sea eagles'¹ that 'quit the country in winter'
494 nesting on the ruins of Inchgalbraith island (Pennant, 1771: 80). Their presence is
495 corroborated in other late-eighteenth-century accounts - notably the writings of
496 Samuel Johnson, and within Gilpin's *Observations on the Picturesque*, compiled 1776
497 (1792: 27). Birds allegedly returned here until at least 1840 (Colquhoun, 1840),
498 suggesting cross-generational inhabitancy. In the diaries of Elizabeth Grant (1972:

¹ Whilst Pennant describes the birds as 'sea eagles', it is generally accepted that he was referring to ospreys (*Pandion haliaetus*) and not white-tailed eagles (*Haliaetus albicilla*), also persecuted during this period (see discussion in Baxter and Rintoul, 1954).

499 60) – of the Grants owning Rothiemurchus estate, Speyside – ospreys appear nesting
500 atop ruins at Loch an Eilein in 1808. Like Inchgalbraith, this site was long tenanted;
501 ospreys appearing here (with periods of absence) until 1902 (Cash, 1914).

502

503 Many of the structures reportedly colonised – including Kilchurn Castle, Loch Awe
504 (Pearson, 1987); Lochindorb Castle, Lochindorb (Wilson, 2007); and Ardvreck Castle,
505 Loch Assynt (St John, 1884) – if not already long-abandoned (like Lochindorb) were
506 certainly in a ruined state by the nineteenth century (see Simpson, 1937). As
507 Highland society was violently restructured under Hanoverian rule, possibilities
508 emerged for recombinant osprey ecologies. The avian attraction of such sites is clear:
509 they were (relatively) stable, prominent, and often near water. I speculate that the
510 perception of ruins as ‘nestable’ may reflect their resonance with the form of those
511 rock sites utilised elsewhere. In such a reading, a distinctive culture of nesting
512 emerges at the ‘contact zone’ (Haraway, 2008) between birds and the detritus of
513 human activity, subsequently propagated across generations.

514

515 The distribution of this practice, and its documented persistence amidst periods of
516 absence and re-colonisation, suggests rock and ruin nesting was not exceptional but
517 typical of this osprey community. Sites were made recognisable according to the
518 involvements orienting avian sensibilities to place. Once settled, the on-going
519 association between birds and site emerged via the affects of nesting elaborated
520 above. Ospreys nested on tree sites too (as observed today) but this does not
521 contradict a claim that their spatial perception of nestable landscapes was

522 demonstrably *different*. If we understand extinction to result in a ‘diminishment of
523 the prospects for becoming’ (Whale and Ginn, 2017: 98) then the demise of the
524 Scottish osprey is significant, their absence marking the end of a particular kind of
525 *being*.

526

527 **Unravelling a cultural community**

528 Conceptualising osprey existence as a communally-sustained way of life better-
529 captures what is at stake in extinction. Attention to animals’ geographies
530 foregrounds the lived spatiality of extinction stories. Scottish ospreys, as a cultural
531 community, would become extinct as intergenerational ties were severed or
532 unravelled (van Dooren, 2014: 22-27). Where survival necessitated the forging of
533 ‘liveable collaborations’ (Tsing, 2015: 28), osprey deaths occurred as violent and
534 death-filled relations proliferated. Importantly, the geographies and affects of
535 human-led extinctions appear less spectacular or discrete than the distributed
536 aggregate of ‘business as usual’ (Yusoff, 2012). The extinction of osprey culture
537 occurred with a sustained and cumulative violence enacted across lived geographies
538 and down through generations.²

539

² Due to the constraints of space this paper focuses primarily on the impacts of persecution carried out against ospreys in Britain and Ireland, rather than across the full stretch of their migratory geographies between Britain and West Africa.

540 *Forces of extinction*

541 In the nineteenth century, two sources of persecution emerged and combined to
542 whittle away osprey existence. The first was a natural history epistemology of
543 specimen collection, credited with fragmenting populations in the north. The second
544 was highland sport, linked to the killing of ospreys on managed estate lands at the
545 nest and on migration (McGowan, 2009).

546

547 Regarding collecting naturalism: a specific enthusiasm for the study and
548 classification of birds, emerging from the late eighteenth century, was predicated
549 upon the categorisation and comparison of specimens and eggs (see Farber, 1997).

550 Charles St John and William Dunbar's Sutherland tour typifies the 'peak' of such
551 collecting enthusiasm during the 1840s, allegedly contributing to the near-total
552 annihilation of the region's ospreys. Collectors also visited other well-known sites,
553 such as Loch an Eilein (see Harvie-Brown and Buckley, 1895: 75). There, the nest was
554 robbed by collector Lewis Dunbar (brother to St John's companion) annually from
555 1848 to 1852, his spoils going to southern clients (Wolley and Newton, 1864: 58-66).
556 Such actions prompted the ospreys to desert the ruin for over two decades (Cash,
557 1914).

558

559 Alongside collecting, ospreys suffered the wrath of landowners managing estates for
560 Highland sport. The arrival of the Royal Family on Deeside popularised a nature-
561 culture of romantic Highlandism, including the hunting of red deer (*Cervus elaphus*)
562 and grouse (*Lagopus lagopus scotica*) (Pringle, 1988). Hired gamekeepers zealously

563 pursued all raptors as 'vermin', fearing the propensity of some to predate game
564 (Lovegrove, 2007). Definitive figures for such destruction are elusive, with limited
565 information sourced from surviving estate and taxidermists' books (see McGhie,
566 1999). Oft-quoted records for Glengarry estate between 1837-1840 suggest the scale
567 of persecution: over three years 1,498 birds of prey were killed, including 18 ospreys
568 (given in Ellice, 1898: 27). Appreciating that by 1850 the *entire* Scottish community
569 likely comprised 40-50 breeding pairs, such figures suggest major losses on estate
570 lands.

571

572 The relationship between osprey nesting culture and the impacts of persecution is
573 hard to determine. Their nests may have been more accessible than those of other
574 raptors (see Selby, 1836: 286). Moreover, a strong 'faith' for nests and favoured
575 perches made them easier to kill or trap (Lovegrove, 2007: 107). Sportsman John
576 Colquhoun recalls how, 'aware of their habit', he rowed to Inchgalbraith ruin,
577 waited, and killed both ospreys upon their return, emptying a site 'occupied for
578 generations' (Colquhoun, 1840: 86-7).

579

580 *Protection and decline*

581 On some estates ospreys were given sanctuary. Eyries around Loch Arkaig were
582 protected under instructions from laird Donald Cameron of Locheil until abandoned
583 in 1914 (Cameron, 1948). At Loch an Eilein, resident ospreys were celebrated by
584 early-century artists and travelers in search of the picturesque (see MacCulloch,
585 1824: 400; Beattie, 1834: 75). After visiting in 1879, HM Inspector for Schools William

586 Jolly, writing for *The Scotsman*, bid the public, 'go to Rothiemurchus!' where they
587 might come as close to the birds as to 'a specimen in a museum' ('Loch an Eilan',
588 1879: 5). Subsequent tourist interest stimulated the estate's proprietors to safeguard
589 the nest, banning boats on the loch and setting keepers on watch (see Lambert, 2001).
590

591 Despite attempts to prevent persecution, 15 of 24 recorded osprey breeding attempts
592 at Loch an Eilein between 1846 and 1899 culminate with eggs being taken (Ritchie,
593 1920: 192). The removal of eggs likely spelled the end of the season. Given threats
594 faced on migration - estimate mortality rates for ospreys in the first year, derived
595 from observations in the Eastern USA, are around 57% (Newton, 1979: 368) - any
596 disruption to reproduction threatened a small community's capacity to endure. By
597 1871 the osprey was being described as 'the rarest of our native species' (Gray, 1871:
598 18),

599
600 Even where successful, isolated protections achieved little given the mobile lives of
601 ospreys spanned a seasonal, migratory refrain. As early as the 1810s migrating
602 ospreys were shot annually in southern counties (Montagu, 1831: 347). The killing of
603 birds on the move evokes recent criticism of 'static' conservation initiatives that fail
604 to recognise animal mobilities (see Lulka, 2004; Reinert, 2015). The osprey's existence
605 in Scotland was sustained through a migratory assemblage. Death *en route* was not a
606 discrete event, but affected a delocalised, 'reverberating absence' (Reinert, 2015: 52)
607 felt through diminishing returns over following seasons. In autumn, birds travelling

608 south stopped to roost or fish in less-friendly landscapes (see Harvie-Brown, 1896;
609 Dennis, 2008).

610

611 Ospreys 'slipped through the cracks' of legal frameworks intended to protect them
612 (see Srinivasan 2013: 109). The earliest legislation to offer blanket protection to wild
613 birds, introduced in 1880, did little to stem the killing unless local councils granted
614 special protections . However, by 1896 extra protection applied to a handful of UK
615 counties. A leaflet published by the fledgling 'Society for the Protection of Birds' the
616 same year decried this 'patchwork' of legislation as fatally mismatched to avian
617 flight-ways (Harvie-Brown, 1896). Protections fitted to human political boundaries
618 did little for birds running 'a gauntlet of innumerable shotguns' (Kearton, 1899: 61)
619 across a mobile, migratory geography (Lulka, 2004).

620

621 The maintenance of an osprey nesting culture required annual supplies of 'young
622 blood' (Harvie-Brown and MacPherson, 1904: 204). Yet at home, and on passage, the
623 community was diminishing. In the final 12 years of attempted breeding at Loch an
624 Eilein, just five produced young. In both 1888 and 1896, intruding ospreys instigated
625 skirmishes in which the eggs were smashed (and, in 1888, a female was killed)
626 (Cash, 1914: 115). The result was a frayed, precarious existence for birds at the
627 'edge' of extinction (van Dooren, 2014). The last pair to breed at Loch an Eilein did
628 so in 1899, though single ospreys appeared until 1902. Elsewhere, they bred at Loch
629 Arkaig until 1910 and Loch Loyne until 1916. A significant and specific form of
630 osprey culture had vanished.

631

632 **Hauntings of osprey culture**

633 Today, absence haunts the nesting geographies of re-colonising Scottish ospreys.
634 Before concluding, I argue that encounters with past osprey culture in the present
635 are both possible and necessary in the context of technoscientific discussions of
636 'genetic rescue' (Heatherington, 2012), rewilding (Lorimer and Dreissen, 2014), and
637 even 'de-extinction' (van Dooren and Rose, 2017). Haunted landscapes evoke the
638 'present-absence' of osprey life, serving to put contemporary avian geographies 'out
639 of joint' (see Derrida, 2006). The notion of haunting emphasises the composition of
640 geographies through absence as well as presence (Wylie, 2009). Sites such as those
641 Sutherland lochs encountered by Waterston in the paper's opening – or the ruins at
642 Loch an Eilein (Figure 1) – exhibit 'shadowy density' (Pile, 2005: 142). Their ghosts
643 invite us into counter-histories; transforming, renegotiating and re-evaluating
644 celebrated pasts (Gordon, 2008: 8). Taking osprey culture seriously creates space
645 outside of triumphant conservation narratives to ask: what remains lost when a
646 species *comes back*?

647

648 *Avian spectres*

649 More-than-human cultural geographies are woven from the affective traces of lived
650 activities, relations and attachments. Such traces outlast the existence of their
651 authors. They are witnessed, amidst the collapse of ecological communities, as
652 animals remain drawn 'to places that no longer exist' (van Dooren, 2014: 66). At

653 locations including Loch Awe and Loch Maree, ornithologist Robert Gray recalls, in
654 the latter half of the nineteenth century, lone ospreys 'hovering in the vicinity of
655 islets where nests were formerly placed' (Gray, 1871: 18-19). Similarly, at Loch an
656 Eilein, single birds appeared for three years following the last successful breeding
657 (Cash, 1914: 157). These ghosts map more-than-human geographies of absence
658 affected by extinction. Osprey site faith manifests as a performative trace of the pan-
659 generational work of pairs to invest in and maintain meaningful places. Spectral
660 birds conveyed the futility of such work in Gray's time of writing. They signal that
661 the loss of 'connectivity and mutuality' required to sustain communities often
662 precedes their 'final death' (Rose, 2012: 138).

663

664 Cultural expressions of avian life also haunted encounters with re-colonising
665 ospreys. In 1955, word reached George Waterston in Edinburgh, newly recruited by
666 the RSPB, of the species' potential return. Travelling to Speyside to investigate, his
667 tentative plans, sketched in conversation with local landowners and Nature
668 Conservancy representatives, were guided by an understanding of *past* osprey
669 cultural geographies. He assumed the birds would surely attempt to nest on Loch an
670 Eilein's ruins - the site now home to a large jackdaw colony (*Corvus monedula*)
671 requiring removal before re-colonisation could occur ('Ospreys at Loch Garten', 2
672 July 1955). Upon their return, however, it became clear the birds had different
673 interests. Failing to breed in 1956 and 1957, eventually a pair settled atop a Scot's
674 pine in the marshland south of Loch Garten. Following the robbery of that nest, they
675 colonised another tree northeast of the loch in 1959. There they succeeded in rearing

676 chicks under RSPB guard and their kin continue to return to this day (Dennis, 2008).
677 As other ospreys began to re-colonize – all tree-nesting – Loch an Eilein remained
678 empty.

679

680 With jackdaws present, the ruin was a niche closed in ecological terms. Yet the
681 enduring absence of ospreys from *all* former rock or ruin haunts in north and west
682 Scotland (see Dennis, 1983; Thom, 198: 146) suggests such places are also no longer
683 *culturally* available. The *orientation* of contemporary birds to the landscape is
684 different. Today's ospreys are predominantly tree-nesting, like those in Scandinavia
685 from where the current community is believed to have originated (Österlof, 1977:
686 75). These birds exist 'out of line' with the dimensions of a past affective community
687 (Ahmed, 2010: 37). Culturally, they are 'strangers [...] in a familiar land' (Lambert,
688 2011: 169).

689

690 Former sites like Loch an Eilein constitute 'signifiers for the dead' (Haraway, 2016:
691 69). I extend to place this concept developed by Haraway, after science fiction writer
692 Orson Scott Card, to characterise the spectral baggage that accompanies creatures
693 which, having evolved through symbiotic partnership, later find themselves
694 abandoned after extinction. She uses the example of an orchid, its flower continuing
695 to imitate the sexual organs of the now-absent bee once pollinating its kin. In a
696 similar vein, writer Connie Barlow discusses 'ecological anachronisms' like the
697 avocado. Characteristically large seeds and thick, oily flesh evoke the ghostly
698 presence of the long-extinct jungle herbivores once facilitating seed dispersal

699 (Barlow, 2000). In the landscape the materiality of a previous osprey affective
700 ecology outlasts the birds' annihilation. These ruins and rocks, apparently
701 unrecognisable to contemporary ospreys, can still offer *us* a meaningful encounter
702 with past avian lives.

703

704 *Haunted geographies*

705 Appreciating a historical, cultural osprey existence attunes one in potentially
706 transformative ways to contemporary avian lives and landscapes. Annually in the
707 UK, the number and range of pairs expands (now 300 – Dennis, 2016, pers. comm.).
708 This growth has been aided by the construction of new nest sites since the 1970s, to
709 which ospreys increasingly adapt (Dennis, 2008: 131-146). Evidence from mainland
710 Europe suggests successfully colonising such structures affects subsequent
711 geographical preferences. Young born of platform nests appear predisposed to settle
712 similar sites elsewhere (Henny and Kaiser, 1996). Nearly 40% of ospreys in the
713 Scottish Highlands utilise human (re)constructed platforms over osprey-constructed
714 sites (Dennis, 2008: 142). They appear more tolerant of humans and elsewhere show
715 interest in landscape objects like utility pylons (R. Thaxton, 2014 – pers. comm.).
716 Arguably, a 'cultural shift' has occurred (Dennis, 2008: 130). The expansion of
717 conservation involvement with ospreys in the UK over the twentieth century
718 propagates new geographical associations within this re-colonised community,
719 activating new forms of osprey life (Garlick, 2017).

720

721 Meanwhile, ruins and rocks remain empty. On Speyside, attention to osprey culture
722 unsettles narratives of triumphant return. Since 1959, ospreys have nested within a
723 15-kilometre flight of Loch an Eilein. They catch their prey at the Rothiemurchus
724 estate fisheries, just four kilometres away (see Lambert, 1999). Such disjointed
725 geographies of presence and absence haunt one another (Pile, 2005). This haunting
726 emphasises qualitative differences in what it means to *be* a Scottish osprey, now and
727 in the past.

728
729 What does this change mean? Is an absence from rocks and ruins significant? In their
730 discussion of London's declining house sparrows (*Passer domesticus*), Whale and
731 Ginn document the responses of local birders. One interviewee expresses sadness,
732 but not merely at encountering sparrows less frequently. Rather, their rarity means
733 that encounters with these usually convivial birds are themselves different. In the
734 absence of other sparrows, '[s]omething is missing in the very appearance of
735 sparrows themselves' (Whale and Ginn, 2017: 22). This is profoundly unsettling.

736
737 I likewise find the changes that extinction has wrought for Scottish osprey life
738 unsettling. This is not a wish to wallow in the past or appeal to static concepts of
739 Nature. Neither do I want to neglect the flourishing of today's birds, whose success
740 is cause for celebration. Such nostalgia blinds us to the value of ecologies existing
741 now, despite past destruction (Tsing, 2015). But I do want the loss of nineteenth-
742 century osprey lives to *matter*. Cultural concern expands and thickens creaturely
743 presence in accounts of extinction and cautions against the arrogant presumption

744 that human innovation can *reverse* environmental wrongs. Rendering the decline of
745 historical animal culture as a *significant loss* invests it with ethical value (see Butler,
746 2009).

747

748 Understanding ecological existence in terms of shared cultural relations, rather than
749 interchangeable species units serving set 'functions', means recognising that the loss
750 of one set of beings engenders a host of (often unforeseen) communal losses (Smith,
751 2013). What potential cultures - what 'lines of flight' (Deleuze and Guattari, 2013)
752 onto new forms of being - have been foreclosed upon by the eradication of this
753 osprey community? Equally, what alternative futures are now possible, following re-
754 colonisation, that were not before?

755

756 **Conclusion**

757 This paper has drawn from the work of geography and the environmental
758 humanities to position 'animal culture' - the relationally-constituted, shared
759 orientations of a community of creatures - as a valid object of geographical inquiry.

760 Elaborated here in terms of material, embodied, affective and historically contingent
761 relations of perception, niche-building, maintenance, inheritance and site
762 attachment, osprey cultural geographies trace the lives of birds on 'beastly', dwelt

763 terms (after Philo and Wilbert, 2000; Johnston, 2008). I argue the lives of ospreys
764 matter on terms more than their contributions towards overall genetic integrity or
765 species survival. Tracing the geographies of extinction and conservation means

766 attending to the differently lived geographies collected under general categories of

767 'species'. Crafting more nuanced extinction stories stays with the trouble of
768 biopolitical conservation, and the (epistemological) violence of essentialist thought.

769

770 Such an argument demands a more speculative historical project, attentive to the
771 assembling of animal agency across sites and relations (Despret, 2013). My paper
772 demonstrates the potential to inject more lively animal presences into what might
773 otherwise persist as primarily anthropocentric historical projects, regaling things
774 *done to* – rather than *with* or *by* – other creatures (see Howell, *forthcoming*). Defining
775 the limits of this project remains an on-going concern. How far might the cultural-
776 historical animal geographies proposed here be extended into the past, and what
777 challenges arise when attempting to trace the stories of creatures less expressive of a
778 certain 'archival charisma'? More specific to my argument, can more (temporally)
779 distant extinctions be made to matter ethically as those closer to hand? I invite others
780 to consider these questions.³

781

782 Crucially, appreciating the manner in which the Scottish ospreys' cultural extinction
783 haunts contemporary landscapes counters the implicit narrative of conservation's
784 'molecular turn' (Hennessey, 2015) whereby often-distributed members of a species
785 are collected, known and secured in terms of contributions to genetic diversity
786 (Chrulew, 2011). Encounters with genetic material offer promises of technocratic
787 redemption through re-wilding, de-domestication, and de-extinction initiatives. Yet,
788 such narratives too-often require an essentialised animal referent, comprising little

³ I am grateful to an anonymous reviewer for these reflections.

789 more than a collection of genetic traits and ecological functions; trading on classic
790 dichotomies that set animal existence apart from collaborative human becomings
791 (see Jørgensen, 2015).

792

793 Such thinking is evident in the osprey's story as early as 1949. An article
794 summarising the history of the birds in Scotland by naturalist Seton Gordon
795 concluded that whilst their eradication was lamentable, the reader should not fear:
796 'there is no danger of this fine bird disappearing from the face of the earth' (Gordon,
797 1949: 675). Such statements engage this 'fine bird' in terms of its collective
798 population status, rather than the myriad situated forms osprey life actually takes.
799 These sentiments resonate with contemporary conservation biopolitics in which
800 threats of extinction are evaluated at the scale of the species-collective. The promise
801 of scientifically-worked atonement goes unchallenged (van Dooren and Rose, 2017).
802 As long as *some creatures exist somewhere* nothing has truly been lost.

803

804 I have shown how telling stories about animal cultures makes the lived specificities
805 of animal presence legible, perceptible and the subject of care. For some conservation
806 biologists, recognising animal culture might mean acknowledging our
807 responsibilities to steward more-than-human 'cultural diversity' and ensure other
808 creatures achieve 'their varied cultural potentials' (McGrew, 2009: 69). As
809 cetologists Hal Whitehead and Luke Rendell note, incorporating culture into existing
810 conservation frameworks challenges the genetic basis upon which wildlife 'stocks'
811 are been safeguarded, or sacrificed (e.g. to meet hunting quotas). For whales,

812 'culture complicates conservation' (Whitehead and Rendell, 2015: 268). It is therefore
813 vital that more-than-human geographers engage with the arguments around the
814 existence, character, epistemology and significance of culture beyond humanity.

815

816 The return of the osprey is a story of conservation triumph. The re-colonisation of
817 Britain's skies by native raptors is widely (and rightly) celebrated (Lambert, 2011).
818 However, narratives of success must be read critically. Exploring the meaning of
819 extinction beyond the loss of biological species does not mean abandoning the idea
820 that extinction is irreversible (as some suggest – Smith-Patten *et al*, 2015). Rather, it is
821 to question what counts as *significant* loss. Given the compatibility of genetic rescue,
822 restoration and rewilding schemes with neoliberal discourse – the fear that relational
823 ontologies of nature render ecology fungible (see J. Lorimer, 2015) – I make this
824 point emphatically. No return is clean, things remain lost.

825

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