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**Special Opportunities for Conserving Cultural and Biological Diversity:  
The Co-occurrence of Indigenous Languages and UNESCO Natural World Heritage Sites**

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**Abstract**

Recent research indicates that speakers of indigenous languages often live in or near United Nations Educational, Scientific, and Cultural Organization (UNESCO) Natural World Heritage Sites (WHSs). Because language is a key index of cultural diversity, examining global patterns of co-occurrence between languages and these sites provides a means of identifying opportunities to conserve both culture and nature, especially where languages, WHSs, or both are recognized as endangered. This paper summarizes instances when indigenous languages share at least part of their geographic extent with Natural WHSs. We consider how this co-occurrence introduces the potential to coordinate conservation of nature and sociocultural systems at these localities, particularly with respect to the recently issued UNESCO policy on engaging indigenous people and the forthcoming International Year of Indigenous Languages. The paper concludes by discussing how the presence of indigenous people at UNESCO Natural WHSs introduces important opportunities for co-management that enable resident indigenous people to help conserve their language and culture along with the natural settings where they occur. We discuss briefly the example of Australia as a nation exploring opportunities for employing and strengthening such coordinated conservation efforts.

***Keywords***

UNESCO Natural World Heritage Sites, indigenous people, linguistic diversity

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## **Special Opportunities for Conserving Cultural and Biological Diversity: The Co-occurrence of Indigenous Languages and UNESCO Natural World Heritage Sites**

### **Introduction**

In a world where unprecedented levels of human impact occur almost everywhere, governments and non-government organizations interested in conservation rely on protected areas as essential to maintaining the natural and cultural heritage of our planet. Protected areas are clearly designated places set aside to conserve “nature with associated ecosystem services and cultural values” (Dudley 2008, 8). Such localities vary in how they are defined and managed, some allowing different amounts of human presence and activity and others allowing none at all. Protected areas also vary in their importance due to the resources they contain, with some hosting natural or cultural resources, or some combination of the two, of global significance.

Some of the most important protected areas on Earth are those designated by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) as World Heritage Sites (WHSs). To be designated a WHS, a locality must be of *outstanding universal value* (the term used to describe their exceptional qualities) and meet at least one of 10 evaluation criteria (UNESCO and Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage 2017). For inclusion on the WHS list, localities must also have adequate protection and management in place to maintain their integrity. The evaluation criteria for WHSs includes six cultural and four natural characteristics. Sites can also be mixed cultural and natural WHSs, meaning that they feature characteristics of both types. Although some WHSs are officially recognized as endangered, many are increasingly at risk from human encroachment, loss of resources, climate change, and other threats that could compromise their ability to maintain globally important natural or cultural heritage.

We focus here on Natural and Mixed WHSs (hereafter *Natural WHSs*), sites whose recognition by UNESCO relies partially or totally on their natural features. Building on prior research that revealed high co-occurrence of protected areas and indigenous languages in regions containing

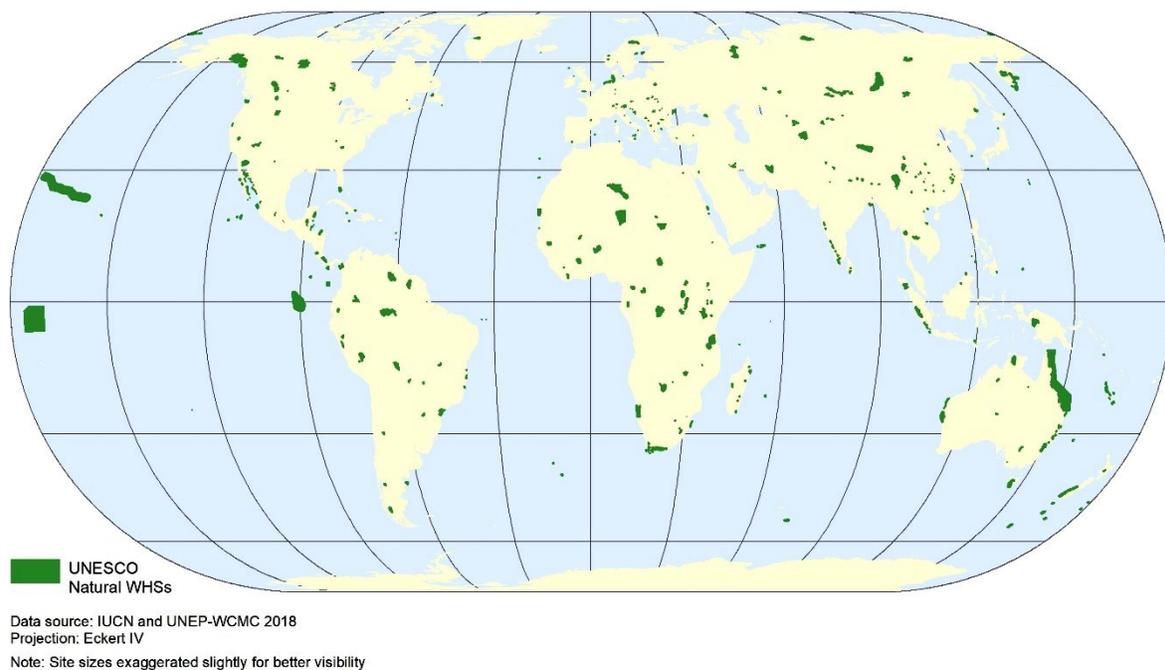
high biodiversity (Gorenflo et al. 2012, 2014; see also Nettle and Romaine 2000), we examine the degree to which these WHSs co-occur with such languages—in part to document any similar pattern for Natural WHSs, but also to understand the degree to which potential indigenous partners could help conserve these key localities (Romaine and Gorenflo 2017). Our attention then turns to the recently released *UNESCO Policy on Engaging with Indigenous Peoples* and the United Nation’s forthcoming International Year of Indigenous Languages as possible bases for involving indigenous residents in conserving Natural WHSs that they live within or near. We close by considering instances where UNESCO Natural WHSs co-occur with indigenous languages as opportunities for some form of co-management, capitalizing both on the traditional knowledge that indigenous peoples have of local landscapes (much of it encoded in and transmitted through their languages) as well as the notion that the presence of intact natural settings often seems to support the presence of indigenous peoples, and *vice versa*. A brief discussion of collaborative management programs in Australia provides an example of how nations might operationalize such opportunities.

### **Co-occurrence of Indigenous Languages and UNESCO Natural WHSs**

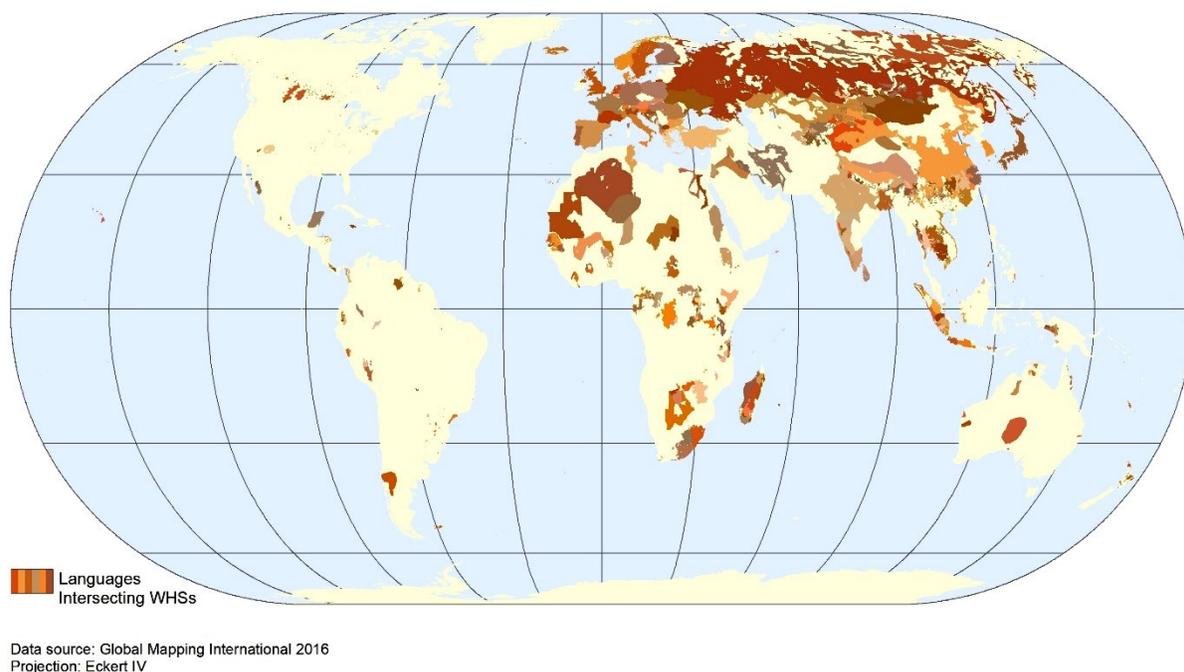
UNESCO Natural WHSs are localities with the following characteristics (UNESCO and Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage, 2017:19):

1. Natural features consisting of physical and biological formations, or groups of such formations, of outstanding universal value from the aesthetic or scientific point of view;
2. Geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation; and
3. Natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation, or natural beauty.

Mixed Natural and Cultural WHSs claim at least one of the above characteristics in addition to featuring monuments, groups of buildings, or sites of outstanding universal value (UNESCO and Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage, 2017). As of October 2018, UNESCO listed 209 Natural WHSs and 38 Mixed WHSs (UNESCO n.d.); this study focuses on these 247 sites, descriptions of all but three appearing in the World Database of Protected Areas, along with precise geographic locations in the form of geographic information system (GIS) data (United Nations Environment Programme-World Conservation Monitoring Centre and The World Conservation Union 2018). We created GIS data for the remaining three sites to conduct this study. The current Natural WHSs occur in a range of geographic settings distributed around the world (Figure 1a), most located in Asia, Africa, and North America (Table 1).



**Figure 1a.** Map of Natural World Heritage Sites



**Figure 1b.** Map of Indigenous Languages Intersecting Natural World Heritage Sites

Region	Natural WHSs <sup>a</sup>	All Languages Intersecting WHSs <sup>a</sup>	EGIDS <sup>b</sup>	Languages with ≤ 10 000 Speakers	Languages with ≤ 1000 Speakers
Africa	53	149	17	28	8
Antarctica	1	-	-	-	-
Asia	66	152	36	28	6
Australia	13	19	17	19	17
Europe	35	47	7	1	-
North America	42	40	20	21	11
Oceania	13	33	16	24	9
South America	24	24	12	10	6
<b>Total<sup>c</sup></b>	<b>247</b>	<b>464</b>	<b>125</b>	<b>131</b>	<b>57</b>

**Table 1.** Summary of Natural World Heritage Sites distribution and selected categories of co-occurrence with indigenous languages, by major geographic region

a:WHSs = World Heritage Sites

b: EGIDS = Expanded Graded Intergenerational Disruption Scale (categories considered in generating these results comprise 6b, threatened; 7, shifting; 8a, moribund; 8b, nearly extinct; and 9, dormant)

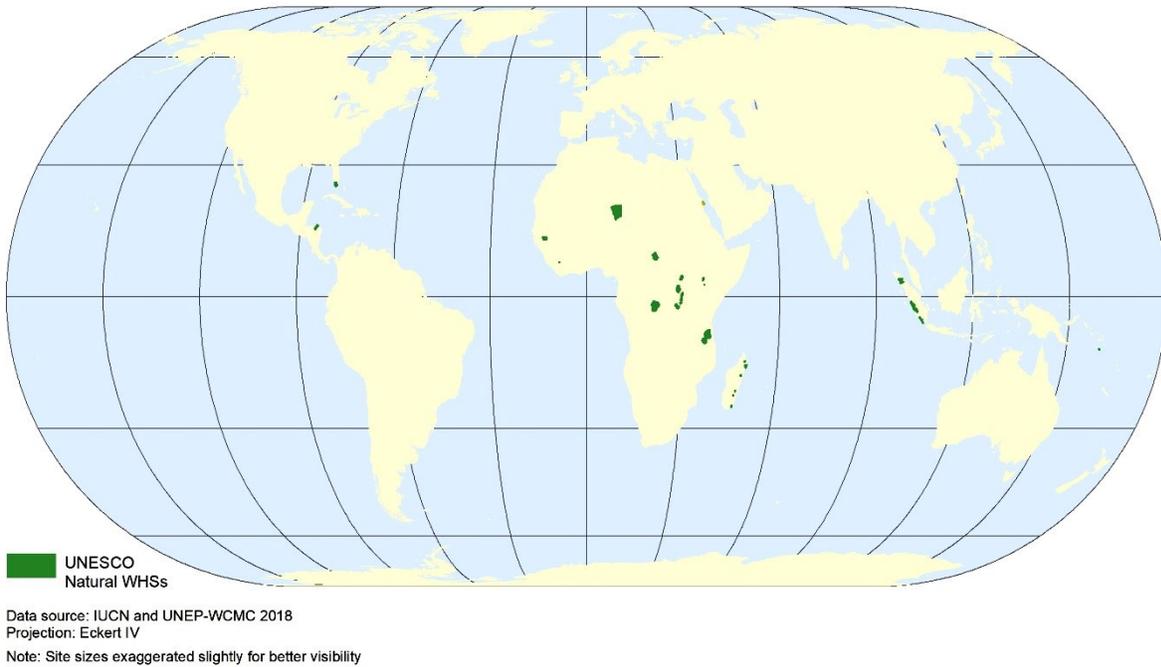
c: Totals for some language columns may not equal sums of those columns due to languages occurring in more than one continent Table 1. Summary of Natural WHS distribution and selected categories of co-occurrence with indigenous languages, by major geographic region

SIL International maintains the most complete dataset available on global languages (SIL n.d.), published in a frequently updated catalog called *Ethnologue*. Global Mapping International developed a GIS dataset of *Ethnologue*, recently releasing a version of their data based on the 7,097 global languages contained in the 19<sup>th</sup> edition of *Ethnologue* (Global Mapping International 2016; Lewis et al. 2016). In this paper, we focus solely on *indigenous and non-migrant* (hereafter *indigenous*) languages—languages associated with a particular group of speakers and areas—rather than those whose areas and speakers have changed with colonial expansion and similar processes (such as Spanish in Latin America, the Caribbean, and Equatorial Guinea). Some 464 indigenous languages share at least part of their geographic extent with Natural WHSs (Figure 1b). About two-thirds of these languages occur in Asia and Africa, a greater concentration than one finds with the Natural WHSs themselves (see Table 1).

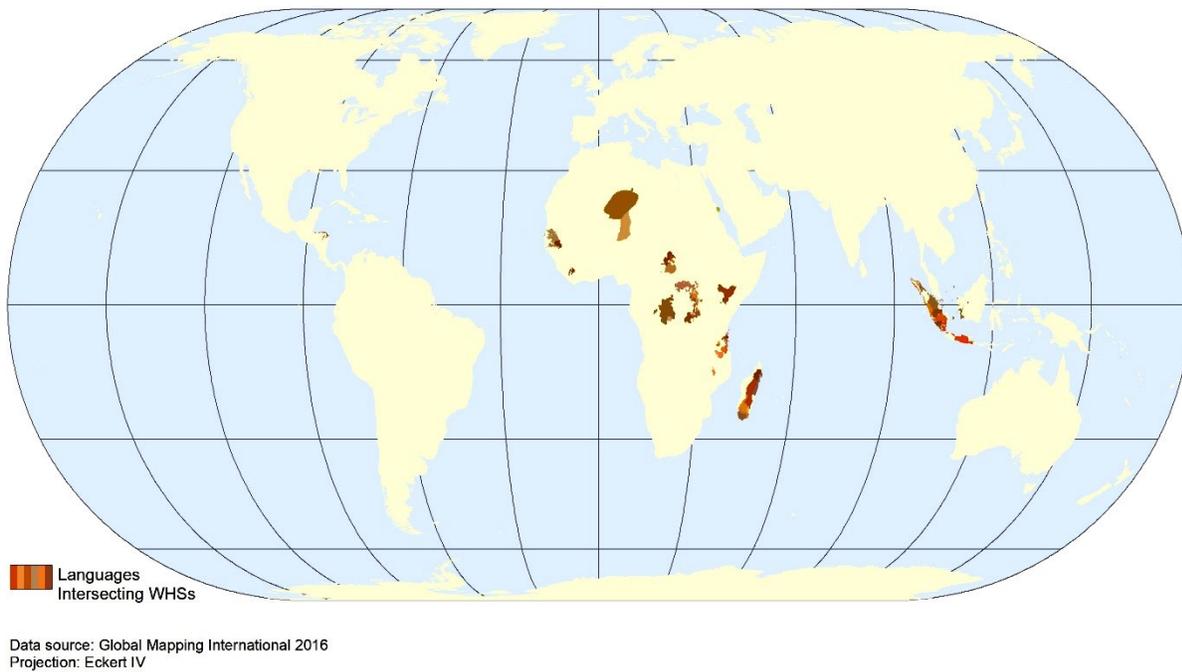
UNESCO currently classifies 16 Natural WHSs as endangered, due to natural disasters, pollution, poaching, unchecked tourism, and rapid urbanization, along with specific imminent or potential threats for particular localities (UNESCO n.d.). The vast majority of endangered Natural WHSs occur in Africa (Figure 2a). A total of 84 indigenous languages intersect these endangered WHSs (Figure 2b), again with most occurring in Africa (Table 2). Certain languages also may be endangered. Here, we consider three different criteria for language endangerment:

1. 1,000 or fewer speakers
2. 10,000 or fewer speakers
3. Limited intergenerational transmission of languages, as indicated by Expanded Graded Intergenerational Disruption Scale (EGIDS) assessments as “threatened,” “shifting,” “moribund,” “nearly extinct,” “dormant” (Lewis and Simons 2010).

A total of 57, 131, and 125 endangered languages, respectively (based on the above criteria), co-occur with Natural WHSs, their geographic distribution involving virtually all regions we consider (see Table 1). Many fewer endangered languages intersect endangered WHSs, the distribution once more dominated by Africa (see Table 2).



**Figure 2a.** Map of Endangered Natural World Heritage Sites



**Figure 2b.** Map of Indigenous Languages Intersecting Endangered Natural World Heritage Sites

<b>Region</b>	<b>Natural WHS<sup>a</sup></b>	<b>All Languages Intersecting WHS<sup>a</sup></b>	<b>EGIDS<sup>b</sup></b>	<b>Languages with ≤ 10 000 Speakers</b>	<b>Languages with ≤ 1000 Speakers</b>
Africa	12	63	10	10	1
Antarctica	-	-	-	-	-
Asia	1	16	5	-	-
Australia	-	-	-	-	-
Europe	-	-	-	-	-
North America	2	4	1	2	1
Oceania	1	1	-	1	-
South America	-	-	-	-	-
<b>Total</b>	<b>16</b>	<b>84</b>	<b>16</b>	<b>13</b>	<b>2</b>

**Table 2.** Summary of endangered Natural World Heritage Sites distribution and selected categories of co-occurring indigenous languages, by major geographic region

a: WHSs = World Heritage Sites

b: EGIDS = Expanded Graded Intergenerational Disruption Scale (categories considered in generating these results comprise 6b, threatened; 7, shifting; 8a, moribund; 8b, nearly extinct; and 9, dormant)

A considerable number of indigenous languages co-occur with Natural WHSs, marking locations where indigenous people share some of their geographic space with a site of global importance defined on criteria that rarely include existing cultural systems. These shared spaces represent high-profile protected areas with potential for involving indigenous peoples to conserve biodiversity as well as cultural and linguistic diversity.

### **UNESCO Guidelines on Engaging with Indigenous Peoples**

The presence of indigenous languages in many Natural WHSs introduces an opportunity to involve their speakers in managing these localities. The recently issued UNESCO guidelines on engaging indigenous peoples encourage such involvement, recognizing the important and irreplaceable knowledge that many groups possess in addition to language skills and information on their own cultures (UNESCO 2018). Many of the 105 articles in the guidelines, organized

within three sections, provide a basis for developing strategies to integrate local indigenous peoples into the management of UNESCO Natural WHSs.

The United Nations Declaration on the Rights of Indigenous Peoples provides the foundation for the new UNESCO guidelines, with some articles of this earlier document addressing pertinent issues such as conservation and the environment (United Nations 2008). The recently issued guidelines on engaging indigenous peoples note three existing programs—the Man and Biosphere Programme, International Geoscience and Geoparks Programme, and Local Indigenous Knowledge Programme (see Article 30)—as opportunities to involve indigenous and local peoples to advance understanding of biodiversity loss and impacts of climate change (UNESCO 2018). Many of these recommendations reflect UNESCO’s position that the traditional knowledge systems of indigenous peoples on resource management, adaptive practices, and government structures are as valuable as conventional scientific knowledge. The focus on science, technology, and knowledge, and on educational opportunities, could use Natural WHSs as laboratories where such education could be applied.

UNESCO, with its mandate to protect and promote cultural diversity, is particularly well placed to support the integration of local knowledge and management in Natural WHSs with an indigenous presence (UNESCO 2018). Article 44a specifically addresses the importance of indigenous people and their knowledge in creating, maintaining, and enriching biodiversity and ecosystem services, including conserving cultural and biological diversity and safeguarding the relationship between the two. Protected areas are, of course, in most cases owned and managed by government entities, but the UNESCO World Heritage designation tends to be highly valued and Natural WHSs represent highly visible opportunities to introduce some form of indigenous management. The United Nations designating 2019 as the International Year of Indigenous Languages (United Nations n.d.) provides increased visibility of the key role of languages in linking people, culture and the environment. Beyond empty gestures, introducing indigenous management has the opportunity to conserve both local indigenous cultures and the natural

settings that host them, with the hope (and expectation) that coordinated strategies will serve the conservation of both.

### **Considering Co-management Opportunities with Indigenous Peoples at Natural WHSs**

Protected areas are widely recognized as essential to the conservation of natural and cultural heritage in the 21<sup>st</sup> century. Unfortunately, many reserves do not function effectively, an obvious problem when so much of conservation relies on them. A recent study of more than 4,000 protected areas indicated that 42% showed major deficiencies (Leverington et al. 2010). Among key indicators of ineffectiveness were inadequate communication and community relations, and management planning (see also Dudley et al. 2004). Although the causes of protected area ineffectiveness can vary, many have pointed to heavy reliance on a top-down model of protected area designation and management—where national or local governments define protected areas and how they will be operated (Phillips 2003). In many reserves indigenous peoples were not consulted before or during the nomination process and still have no role in management. In reaction, there has been a call for increased involvement in conservation by local communities—the people most immediately affected by protected areas, both positively and negatively, and those with the greatest potential to support (or undermine) conservation activities (Argawal and Gibson 1999; Berkes 2007).

Involvement of local people in protected area management tends to take two forms (Borrini-Feyerabend et al. 2004). One is *co-management*, where government agencies and other stakeholders share decision making and accountability for managing *government-designated* protected areas. The second is *community conserved areas*, where local and mobile communities voluntarily agree to conserve localities through the use of customary laws and other locally-relevant guidelines. Indigenous people represent a special case for involving local peoples in protected area management, particularly when the locality of interest is one that has been affiliated with a particular indigenous group for sufficient time to develop a strong cultural connection (Fernandez-Baca and Martin 2007). Arguments for involving indigenous people often appeal to the rights of indigenous peoples inhabiting a protected area to influence its definition

and management (Rights and Resources Initiative 2015). But it is important to recognize the practical contributions of such peoples in managing landscapes, notably the potentially important role of indigenous knowledge to successful conservation (Beltrán 2000).

Australia provides a good example of recent attempts to involve indigenous peoples in conserving protected areas recognized primarily for their natural content. Australia contains the second largest number of Natural WHSs of any country, and although UNESCO has not identified any as endangered, certain sites (e.g., Great Barrier Reef) are increasingly threatened. Currently only 143 indigenous languages remain of the more than 250 once spoken in Australia (Marmion et al. 2014); all are spoken by 10,000 or fewer people, all but 13 by 1,000 or fewer, and 115 are endangered based on EGIDS criteria. Currently, four of Australia's 13 Natural WHSs are co-managed by indigenous and government authorities, consistent with the broad recognition of indigenous land interests (Hill et al. 2013). Along with other programs—including Caring for Country (which funds indigenous rangers for work on protected areas) and the Indigenous Protected Area System (which includes 75 sites covering more than 67 million hectares)—Australia has committed to coordinate government and indigenous efforts to conserve key protected areas. Meanwhile, developments in language policy provide an encouraging climate for focusing attention on Australia's linguistic diversity, which has shown the fastest decline of any country. In 2009 Australia established a National Indigenous Languages Policy (Aboriginal and Torres Strait Islander Social Justice Commissioner 2009), and the federal government committed AUS\$10 million from 2016 to 2020 to revive, maintain and promote indigenous languages. These legislative initiatives and financial investments could provide avenues for incorporating language more broadly into natural and cultural resource management. Australia is also a member of the UNESCO World Heritage Committee until 2021 and could provide leadership on this issue. Currently only four of Australia's WHSs are listed as mixed sites, but all sites with indigenous connections could be reviewed and with support of local owners, be re-nominated as mixed sites. The World Heritage Convention's differentiation between cultural and natural heritage remains problematic for indigenous peoples whose approach is more holistic.

Designation as a mixed site could provide a pathway to a shared framework that incorporates language into natural and cultural resource management.

## **Conclusions**

Indigenous peoples are stewards of a substantial amount of the world's biological, cultural and linguistic diversity. With nearly 80 percent of Natural WHSs intersecting at least one indigenous language, the new UNESCO-wide policy on engaging with indigenous peoples and the United Nation's declaration of the International Year of Indigenous Languages provide a timely, synergistic opportunity to integrate speakers of local indigenous languages into standard planning and management strategies for *all* Natural WHSs. The broad co-occurrence of nature and culture may indicate some sort of functional connection between the two (Gorenflo et al. 2012), and such integrated management would take advantage of that link. Regardless, valuable natural sites exist because local peoples have not destroyed them, and because the external forces that often prove detrimental to both nature and indigenous cultures have not been present in sufficient amounts to adversely affect either markedly. From the standpoint of broader conservation strategies with respect to development, what is good for indigenous culture and language may be good for nature as well.

Can conservationists use co-occurring nature and indigenous culture to improve management effectiveness of UNESCO Natural WHSs? If involving local people as active decision-makers in the conservation of natural heritage indeed is important, then the answer is "yes" for most of the sites examined in this study. In addition, it is possible to identify the people(s) to engage at each Natural WHS where an indigenous language occurs. How this collaboration occurs likely will differ among countries depending on government policies towards indigenous peoples and, often, among sites, depending on local challenges to conserving nature, indigenous patterns of using natural resources, and threats to both nature and culture from external forces.

Increasing extraction of resources to meet unprecedented human demands presents an enormous challenge to conserving the natural and cultural heritage of our planet. The degree of reliance on

protected areas as a solution to this challenge means that those localities *must function effectively*. Many do not. In this paper we have identified an important opportunity to engage indigenous peoples, their cultures and languages in the quest to improve the effectiveness of high-visibility reserves. Our immediate focus is on conserving globally important nature in WHSs. But it may well be that in achieving this aim, the indigenous cultures occupying these localities will benefit as well, along with the languages that they speak.

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## Biographical Notes

Suzanne Romaine is a linguist with research interests in the global extinction of languages and its consequences for cultural diversity. She contributed to UNESCO's *Education in a Multilingual World* (2003), and UNESCO's *Investing in Cultural Diversity and Intercultural Dialogue* (2009). She coauthored *Vanishing Voices, The Extinction of the World's Languages* (2000), and *Linguistic Diversity in High Biodiversity Regions* (2014). In 2015-2016 she was Marie Curie Fellow of the European Union and Senior Fellow at the Freiburg Institute of Advanced Studies. Romaine is also a fellow of the Finnish Academy and the Norwegian Academy of Science and Letters.

L.J. Gorenflo is trained in anthropology and geography. His primary area of research focuses on the interface between humans and biodiversity conservation. Current inquiries include both documenting co-occurrence of linguistic (*cultural*) and biological diversity and trying to identify functional reasons for this co-occurrence, as well as documenting resource demands of local people engaged in mixed wage-subsistence economies near protected areas. In 2014, he was lead author of *Linguistic Diversity in High Biodiversity Regions*. Dr. Gorenflo works primarily in Africa, Southeast Asia, and Latin America. He holds the Eleanor R. Stuckeman Chair in Design at Pennsylvania State University.