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Ecosystem services and faith communities in Oceania

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A B S T R A C T

The interwoven threads that connect people, faith and environment across the scattered islands of Oceania show great diversity and complexity. Given that these remote populations face urgent challenges, this paper sets out a preliminary argument for closer integration between scientific and faith communities to enhance ecosystem services delivered by fragile ecologies. An overview of the diversity of traditional beliefs and religions provides context, while examples of key statements made by faith-leaders and projects undertaken by faith communities highlight the value of bringing together good science and good will. A novel pathway is proposed to foster active collaboration with *in situ* faith communities and extend synergies with science-based ecosystem services approaches to challenging problems. Early research suggests co-ordination between faith and science may improve the understanding and delivery of ecosystem services and better support Oceania communities faced with escalating climate impacts, and potential loss of livelihoods and ancestral homelands.

1. Context

The global decline of ecosystem health compromises provision of the ecosystem services upon which individuals, communities and entire cultures depend (Marshall et al., 2015). In the Oceania region (see Maynard et al. and Sayre et al., in this issue), threats to ecosystem health and the subsequent delivery of ecosystem services include widespread loss of biodiversity, forest destruction, impacts of invasive alien species and threats to food and water security (see Ceballos et al., 2017, also Maynard et al. in this issue). Many pressures are magnified in Oceania due to climate change (IPCC, 2014, 2018). Communities in the Pacific Islands are highly resilient and adaptive, but also particularly vulnerable as Oceania is one of the regions of the world most immediately affected by climate impacts (Campbell, 2014, in Nunn et al., 2016).

The geography of Oceania has shaped community values towards biodiversity and ecosystem services. Pacific cultures have traditionally emphasized environmental stewardship and the wise use of scarce resources, with the knowledge that the ocean connects more than it separates them. Coastal and marine ecosystems are seen as the lifeblood of Pacific Islanders, 'sustaining diverse natural assets from fish stocks to coral reefs, mangroves, seagrass beds and open ocean ecosystems' (Hoegh-Guldberg and Ridgway, 2016). Atmospheric regulation, carbon storage, water filtration by mangroves, seagrass and wetlands, and spiritual and cultural enrichment are other vital intangible benefits from coastal and marine ecosystems (Hoegh-Guldberg and Ridgway, 2016).

Maynard et al. 2019 (this issue) discusses how indigenous communities are the dominant population in Pacific Island countries, with traditional cultures and subsistence living highly dependent on the sustainable long-term management of ecosystems. These values and management systems have often been handed down through generations of inclusive participatory dialogue (e.g. talanoa), stories, art, song and traditional practices. Religion is now also an important way of life for many Pacific Islanders, post colonisation.

Mikusinski et al. (2013) suggest religions may provide ethical perspectives to people in biodiversity hotspot countries. Designation of sacred places has a key role in biodiversity conservation, and faith can be a complementary force when religious values encourage stewardship for nature conservation. The Oceania region is a biodiversity hotspot, where unique evolution of flora and fauna across the islands has led to high species richness. Flora and fauna species may have reached the islands when sea levels were low and movement between islands possible, then each species evolved and adapted to the particular environment on the island it inhabited.

Western sciences (ecology, sociology, economics and now ecosystem services) are moving to consider how best to integrate indigenous knowledge (Archer, 2015). To date, however, the capacity, knowledge and influence of faith-based groups remains relatively untapped. As E.O. Wilson (2006) said: *'religion and science are the two most powerful forces in the world today. If (they) could be united on the common ground of biological conservation, the problem would soon be solved'.*

Given the urgent challenges faced by Oceania's remote island populations, this paper sets out a preliminary argument for developing closer collaborations between faith and scientific communities (including practitioners) in Oceania to better manage the ecosystem

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services delivered by fragile ecologies. An initial investigation aims to ascertain the value of linking faith communities in Oceania with the science and practice of ecosystem services. Preliminary results from this investigation are discussed below under the following three aspects:

1. A review of the history and diversity of faiths across Oceania;
2. A review of ecological leadership revealed in public statements by senior faith leaders; and
3. A selection of local faith-led actions showing tangible commitment to ecosystem management.

Initial analysis provided in the discussion suggests how the integration of faith and science can enhance the delivery of ecosystem services. A novel pathway is proposed to foster active collaboration with *in situ* faith communities and thus extend the synergies with science-based ecosystem services approaches to complex sustainability challenges.

2. History and diversity of faiths in Pacific Islands

Almost one thousand distinct languages are spoken in Oceania, or about a quarter of the world's languages, indicative of the cultural, social and historical diversity of the region (Gibbs, 2005). Traditional spiritual faiths initially predominated across Oceania, with indigenous belief systems that held a clear view of sacred ecology. As Dickie (2005) describes, Pacific Islanders see *"humankind and nature as inextricably linked and themselves as the guardians of the ecosystem. They believe that people belong to the land and not the land to the people; and with this they have gained a strong sense of identity. They see the land and the sea and all that exists as interwoven and interconnected with all of life's processes – a source of life: it nourishes, supports and teaches; it is the core of culture; it connects people to the past (home of the ancestors), the present (provides resources), and the future (a legacy they hold and touch for the grandchildren)"*.

Pacific Island communities often attach a high value to preserving ecosystems for use by future generations, independent of their own needs. Under traditional indigenous practices, environmental management included deep respect for every element of the ecosystems that sustained life. Conservation management objectives were seen through the lens of customary obligation to country and connected to kinship responsibilities, as across indigenous Australia (Archer, 2015), with Pacific Island examples including paternal and maternal inheritance lines. Tabu areas (places that must be left alone) are protected from human interference for spiritual/cultural reasons and play an important conservation role. In particular, Tabu areas operating alongside traditional bans for certain seasons and species still play an important traditional role in fisheries management (Vierros et al., 2010), while sacred groves protect valuable habitat for terrestrial ecological diversity (Thaman, 2016).

Over time, traditional beliefs and ways of life have gradually merged with the (predominantly Christian) religions brought in during colonisation. Variations in the religions across Oceania are thus partly a result of historic people movements, and partly the outcome of missionary activity, recent migration and climate change related displacement. Today over 90 percent of people in the Pacific Island region identify as Christian of various denominations (see Table 1). Other identifiable communities of faith are Baha'i (1–2%), Buddhist (< 0.1–1.1%), Hindu (< 0.1–27.9%), Sikh (< 0.1%), Muslim (< 1–6.3%) and Jewish (< 0.1-%) (Pew Research Centre, 2010).

The diversity of religions in Oceania is most evident in the Federated States of Micronesia, Fiji and the Northern Mariana Islands. In the Federated States of Micronesia, the Catholic community comprises a little over 50% and the Protestant around 40% of the community, while other religious groups contributing a small percentage of the population include Assemblies of God, Baptists, the Baha'i Faith, Salvation Army, Seventh-day Adventists, Jehovah's Witnesses, the Church of Jesus Christ of Latter-day Saints (Mormons), and a small group of Buddhists on Pohnpei. Most immigrants are Filipino Catholics who have joined local Catholic churches (ARDA, 2019).

In Fiji, the Hindu community comprises over 25% of the population, many but not all being descendants of indentured workers brought to work in sugarcane plantations by the British. The relatively high (10.6%) Buddhist population in Northern Mariana Island near Guam is partly a legacy of the Japanese occupation during the Pacific campaign of World War II, as also in Palau, where Japanese settlers brought Mahayana Buddhism and Shintoism. Seventh-day Adventist, Evangelical and other Christian missionaries often teach in the elementary and high schools across the region.

Over the decades, this integration of religion with traditional spiritual values and ways of life has altered the social fabric of Pacific Island nations. Further research may reveal whether and how the integration of faith with local customs of Pacific Islanders has influenced their understanding of perceived value and management of ecosystem services within their own cultural contexts (e.g. changed nature or timing of traditional hunting/fishing/gathering due to religious observances).

3. Ecological leadership shown by faith leaders

Since over 80% of the world's population identifies as religious, the moral and ethical teachings promoted by global faith leaders can significantly influence ecological behaviours (SDSN, 2019; Mikusinski et al., 2013; Pew Research Centre, 2012). Multiple faith leaders at the highest level now call for urgent action on climate and sustainability in global statements (verbal and written) to the United Nations seeking swift action on the Paris Agreement, the Aichi Biodiversity targets, and the Sustainable Development Goals (SDSN, 2019; Tremal, 2019; Turkson et al. 2019; UNFCC, 2016).

A global faith-led climate initiative (Living the Change, 2019) is supporting diverse people of faith and spirit to include personal behaviour change as part of a collective response to the climate crisis. People are invited to adopt voluntary lifestyle changes in their food, transport and energy use – sectors of significant impact on individual carbon footprints across much of the world. While wealthier high-consuming communities and regions are particularly targeted, everyone can participate. The project combines the power of community and religious/spiritual inspiration with leading research on how to foster behaviour change. This initiative is a genuine invitation to community transformation and could potentially evolve to encompass improved ecosystem management.

Table 2 provides a brief selection of public statements by various religious leaders from different faiths (Christian, Baha'i, Buddhism, Hinduism, Muslim) setting out their commitment to sustainability, environmental responsibility and the urgent need to protect the environment and to address climate change.

Across many faiths, as shown in Table 2, there is a recognition of humanity's unique responsibility to the living whole, and the importance of respect for the natural order and the interdependence of all life. This responsibility also speaks to the human *ability to respond* to the challenges of social and ecological decline by taking actions that combine stewardship, science, faith and tradition. This initial investigation into ecological leadership (via published statement and reports) reveals strong commitment across many faiths to care for the environment and address the existential threats for communities facing ecosystem decline and escalating climate change. Further research will ascertain the tangible value of linking faith communities with the science of ecosystem services, while local projects outlined below point the way forward to practical action.

4. Local environmental actions taken by faith groups

At the local level, many faith groups across Oceania support

Table 1
Distribution of Faiths by population percentage in Oceania countries (Pew Research Centre, 2010).

COUNTRY	COUNTRY POPULATION (2010)	CHRISTIAN Percent %	MUSLIM Percent %	UNAFFIL Percent %	HINDU Percent %	BUDDHIST Percent %	JEWISH Percent %	FOLK RELIGION Percent %	OTHER RELIGION Percent %
Cook Islands	20,000	96.0	< 0.1	3.2	< 0.1	< 0.1	< 0.1	< 0.1	0.8
Fed. States of Micronesia	110,000	95.3	< 0.1	0.9	< 0.1	0.4	< 0.1	2.7	0.7
Fiji	860,000	64.4	6.3	0.8	27.9	< 0.1	< 0.1	< 0.1	0.5
French Polynesia	270,000	94.0	< 0.1	4.9	< 0.1	< 0.1	< 0.1	0.5	0.4
Guam	180,000	94.2	< 0.1	1.7	< 0.1	1.1	< 0.1	1.5	1.6
Kiribati	100,000	97.0	< 0.1	0.8	< 0.1	< 0.1	< 0.1	< 0.1	2.2
Marshall Islands	50,000	97.5	< 0.1	1.5	< 0.1	< 0.1	< 0.1	0.3	0.8
Nauru	10,000	79.0	< 0.1	4.5	< 0.1	1.1	< 0.1	8.1	7.4
New Caledonia	250,000	85.2	2.8	10.4	< 0.1	0.6	< 0.1	0.2	0.8
New Zealand	4,370,000	57.0	1.2	36.6	2.1	1.6	0.2	0.5	0.7
Niue	< 10,000	96.4	< 0.1	3.3	< 0.1	< 0.1	< 0.1	< 0.1	0.2
Northern Mariana Is.	60,000	81.3	0.7	1.0	< 0.1	10.6	< 0.1	5.3	1.1
Palau	20,000	86.7	< 0.1	1.2	< 0.1	0.8	< 0.1	0.8	10.4
Papua New Guinea	6,860,000	99.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.4	0.2
Samoa	180,000	96.8	< 0.1	2.5	< 0.1	< 0.1	< 0.1	< 0.1	0.4
American Samoa	70,000	98.3	< 0.1	0.7	< 0.1	0.3	< 0.1	0.4	0.3
Solomon Islands	540,000	97.4	< 0.1	0.2	< 0.1	0.3	< 0.1	1.3	0.7
Timor-Leste	1,120,000	99.6	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1
Tokelau	< 10,000	99.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2
Tonga	100,000	98.9	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	0.9
Tuvalu	< 10,000	96.7	0.1	1.3	< 0.1	< 0.1	< 0.1	< 0.1	1.9
Vanuatu	240,000	93.3	< 0.1	1.2	< 0.1	< 0.1	< 0.1	4.1	1.4

communities in environmentally related sustainability. Such programs aim to deliver sustainable livelihoods, resilient communities and leaders who value equality and inclusion. Several examples of faith groups addressing sustainability and ecosystem health through improved environmental management are given in Table 3 below, while Table 4. provides examples of the scope and reach of two faith groups. The primarily Christian examples presented below reflects the predominance of this faith across the region, while further research will, in time, identify a wider cross sample of on-ground projects.

Practical actions taken by faith groups are evidence of a commitment to sustainable development at both local and global level. For example, the Bahá'í see humans as the stewards of the natural world

Table 2
Selected quotes from faith leaders on care for the environment and climate.

Faith leaders	Statement
Pope Francis Laudato Si' (2015)	*When we speak of the "environment", what we really mean is a relationship existing between nature and the society which lives in it… It is essential to seek comprehensive solutions which consider the interactions within natural systems themselves and with social systems. We are faced not with two separate crises, one environmental and the other social, but rather with one complex crisis which is both social and environmental*
Abdu'l-Bahá, Baha'i faith (1996)	*"The earth is but one country, and mankind its citizens" and "in the ordering of human affairs, every effort should be made to preserve … the earth's bio-diversity and natural order". Religion and science are the two wings upon which man's intelligence can soar into the heights, with which the human soul can progress. It is not possible to fly with one wing alone! Should a man try to fly with the wing of religion alone he would quickly fall into the quagmire of superstition, whilst on the other hand, with the wing of science alone he would also make no progress but fall into the despairing slough of materialism*
His Holiness the Dalai Lama, Tibetan Buddhist leader HHDL (2013)	*Today more than ever before life must be characterised by a sense of universal responsibility, not only nation to nation, human to human, but also human to all other forms of life*
The Hindu Declaration on Climate Change Bhumi Project (2015)	*We call on all Hindus to expand our conception of dharma. We must consider the effects of our actions not just on ourselves and those humans around us, but also on all beings. We have a dharmic duty for each of us to do our part in ensuring that we have a functioning, abundant, and bountiful planet*
Islamic declaration on Global Climate Change, based on the body of ethics in the Qur'an – Preamble. IFEES (2015)	*God – Whom we know as Allah – has created the universe in all its diversity, richness and vitality: the stars, the sun and moon, the earth and all its communities of living beings…We human beings are created to serve the Lord of all beings, to work the greatest good we can for all the species, individuals, and generations of God's creatures*
The Federation of Catholic Bishop Conferences of Oceania, Cardinal John Ribat EcoJesuit (2017)	*Pope Francis urges the entire global human family to see our planet and its peoples as our universal home. Protection of the atmosphere and oceans are powerful examples of the need for political representatives and leaders of nations to take responsibility for the wellbeing of peoples beyond their own particular shores or borders. In some case, entire regions and nations are under threat from the indisputable fact of rising sea levels*
Anglican Primates of Oceania -[a] ACNS (2017)	*We all agree that as whole nations of ocean people lose their island homes, climate justice advocacy and action must become the most urgent priority for Oceanic Anglicans. We gather at a time when the rhetoric of nationalism, ridicule, fear-mongering and hatred is so prevalent. In such a climate where "me first" or "we first" dominates, we affirm: "We Together." (see also Fig. 1)*
Religions for Peace Gardner and Greenfaith (2018)	*Our world is clearly facing a great threat, to all living creatures and to the human family…. As humans we can learn to re-connect to the natural world, create a more equal society, and rethink our understanding of success and progress. People of belief are critical in this transformation. The many gifts possessed by the world's spiritual, faith and religious traditions are essential complements to secular models of progress. Our contributions are urgently needed, particularly in offering a hand of support to communities exposed to the most damaging aspects of unchecked climate change*

[a] Archbishops Clyde Igara of PNG, George Takeli of Melanesia, Winston Halapua and Philip Richardson of Aotearoa-NZ, Philip Freier of Australia.

Table 3
Examples of Faith-led Ecological Projects.

Faith	Action/Program/Project	Region/Reference
Anglican Church of Melanesia	Priority on increasing the resilience of Solomon Islanders in disaster prone areas, in food production, food security and capacity to respond effectively to natural disasters (increased extreme cyclones and flash floods). Sea level rise has led to disappearance of at least five low lying islands. Regional disaster committees in Malaita, Guadalcanal and Temotu dioceses have emergency supplies for use after a natural disaster, and support people in low lying areas with techniques and knowledge to remain food secure. Women from selected vulnerable coastal communities are trained in Backyard Gardening to increases crop yields and reduce vulnerability to climate change, supported by technical expertise from local organisation, Kastom Gaden. Women ("lead gardeners") are shown how to make raised beds, use salt-resistant crops where appropriate, and organic composting, mulching and pest management techniques. The women receive training in nutrition, along with planting materials and tools after the demonstration	Solomon Islands (ABM, 2019)
Baha'i Community	In the 'Breath of Life' tree-planting campaign, the Baha'i community planted indigenous trees on all the Islands. Ongoing initiatives focus on conservation education and training; projects to protect and restore the environment; use of the arts to inspire active commitment to environmental protection and development; and advocacy for sustainable development at local, national, and international levels	Hawaii (BIC, 1995)
Church of Jesus Christ of Latter-day Saints	Significant resources are invested in the Pacific, particularly in education, employment and other self-reliance initiatives. Humanitarian work considers local environmental knowledge and filters any "western thinking through a local lens" Existing on-ground projects relevant to ecosystem services include local food initiatives that avoid chemicals and promote natural compost, water projects that use rain water, natural springs or bores, and the construction of seawalls around at risk communities in Kiribati	Kiribati and other Pacific Islands (Dudfield 2019)
Catholic Church – Caritas	The Pacific Calling Partnership project ensures Oceania peoples are heard at global events and climate meetings. It began in Australia in 2006 through a group of Catholic congregations who had worked as missionaries in the Pacific Islands. Since 2010, Caritas Aotearoa (New Zealand) has produced 'State of the Environment Reports' with case studies on ecological management, food and water security for the poor and vulnerable	Oceania (Caritas, 2018)
Methodist Church	Navuso Agricultural College teaches on the job farming skills to students from across the region. Its education facilities may play an important role in managing Fiji's ecosystem services in future. A successful Farmer Soils School trained 150 participants (including 25 women) in biological methods of soil health	Fiji (GEF, 2016)
Fiji Council of Churches, Methodist Church, Community Churches of Christ., WWF	Ecumenical launch of a publication encouraging all Christians to become better stewards of the environment, given the loss of biodiversity in Fiji. These environmental tracts are for use by students, Elders and lay preachers and focus on encouraging youths to implement environmental care projects. The launch was followed by planting 10,000 mangroves along the seawall of My Suva Park to improve the coastal environment and encourage people to care about the environment and protection against cyclones and flooding; and a coastal clean-up led by Uto ni Yalo Trust	Fiji WWF Pacific (2018)

Table 4
Two Examples of Scope.

Faith	Region of Oceania	Population
Uniting Church	Uniting Church of Papua New Guinea	600,000 people
	Presbyterian Church of Vanuatu	65,000 members
	Methodist Church in Fiji,	280,000 > 36%
	Samoa and Tuvalu Congregational Christian Churches	96% of the population
	Kiribati Uniting Church	40,000 c.36% population
	Solomon Islands Christian Association & Uniting Church	50,000 +
Baha'i faith	Cook Islands, Eastern Caroline Islands, Fiji, French Polynesia, Hawaii, Kiribati, Mariana Islands, Marshall Islands, New Caledonia, Loyalty Islands, New Zealand, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, Western Caroline Islands (Hassall, 1996)	59,000 (Barrett, 1988)

and biodiversity a blessing, with science and religion as complementary aspects of human progress. Important principles guiding their approach to conservation and sustainable are that:

- Nature reflects the qualities and attributes of God and should be greatly respected and cherished
- All things are interconnected and flourish according to the law of reciprocity.

The Uniting Church community gathered to explore issues of environment, climate and gender justice at a recent Presidents Conference in Nadi, Fiji (July 2019), bringing environmental leadership into focus for the entire church. The Uniting Church has deep connections across the Pacific and believes local communities hold the solutions and governance to bring about lasting change.

Further discussions with Pacific Island faith groups on the integration of ecosystem services concepts into their current project activities appears one promising approach to enhancing the recognised value and management of ecosystem services within cultural contexts. The urgency of doing so is highlighted by escalating ecosystem decline and climate impacts across Oceania (see Fig. 1).

5. Discussion

Further research to understand religious commitments to the environment and the potential for enhancing ecosystem services will delve deeper into local leadership and actions (thus identifying key local champions for implementation) and review ecological guidance in key religious texts (e.g. the Bible, Koran, Dharma). This research will also benefit from conversations with local faith leaders in Oceania to assess their knowledge of ecosystem services concepts and engage them in discussions about perception of benefits relevant for their communities.

Improved understanding of ecosystem services can help communities manage biodiversity, thus producing food and other provisions more sustainably with less environmental harm. Campbell (2014)

Fig. 1. Climate Impacts: Two minor examples in the Solomon Islands. Photos: Philippa Rowland (2013), Morovo Lagoon near Seghe, Solomon Islands.

describes how sea-level rise and increased demands for food for growing populations have already depleted food supplies from coastal resources and identifies the need to redefine traditional livelihoods, given the urgency of ecosystem decline and climate change.

Nunn et al. (2016) point out that environmental stewardship messages communicated in familiar and respected religious contexts may be more successful than secular ones, concluding the foundations of future environmental sustainability in Oceania "are likely to lie in a mixture of traditional knowledge and scientific information filtered through worldviews of Pacific Island decisionmakers."

Supporting Nunn et al (2016), preliminary results from this research suggest that the integration of traditional, faith and scientific knowledge and practice is likely to be more robust than each on their own, particularly in rapidly changing circumstances (e.g. unchecked climate change). If local faith leaders are onside and supportive of ecological projects, the science may be more readily accepted, extending opportunities to integrate the principles of ecosystem services in local decision-making. Scientists from outside the local area may also find it easier to engage local communities if they have point of contact with a respected local faith leader who believes in the science of a proposed project.

A mapping study similar to one conducted by Mikusinski et al. (2013) is proposed for Oceania, to reveal the overlap of ecological assets with lands held by traditional owners and/or various faith groups. Their analysis was that conservation scientists may do well to refocus on strategies that reshape ethical attitudes to nature and encourage pro-environmental thinking and lifestyles.

A priority area for collaboration between faith and science may be the preservation of healthy reef systems, given that:

1/ the Intergovernmental Platform on Biodiversity and Ecosystem services (IPBES) regional assessment for the Asia Pacific reveal coral reefs as one of the most threatened ecosystems in Oceania; 2/ the intimate connection between Pacific Islanders and these fragile productive ecosystems; and 3/ the vulnerability of these key coral reef ecosystems to the impacts of climate change. A formal letter from Catholic Bishops expressed early concern about the need for action to protect coral reefs and their ecosystems from destruction (Catholic Bishops of Queensland, 2004).

Future co-ordination of such research could possibly be facilitated, in part, by the Specialist Group on Religion, Spirituality, Environmental Conservation and Climate Justice (ReSpECC) created in 2015 under the auspices of IUCN's Commission on Environmental Economic and Social Policy (CEESP). ReSpECC has already been engaged in coordination of Faith-based organisations working within the UN Framework Convention on Climate Change and initiated a parallel process with the UN Convention on Biological Diversity (IUCN, 2019).

6. Conclusion

Early research suggests deliberate collaboration between faith and science may improve delivery of ecosystem services and provide additional support to assist remote Oceania communities to adapt to ecosystem decline and climate change. The examples provided highlight the potential for faith groups to engage with local communities, national and international governments and provide an additional platform for the development and delivery of on-ground ecosystem service-based projects.

Finding ways to honour and integrate indigenous, faith and scientific perspectives has the potential to help catalyse change at the speed and scale necessary to influence the course of history. The confluence between the scientific discipline of ecosystem services and the rise of faith-led action motivated by climate justice and ecology is a vital groundswell for on-going dialogue and improved sustainability at local and global scales.

A new generation of collective action for the common good can inspire people in a troubled world.

"Every half degree matters
Every year matters
Every choice matters." (Howden, 2018)

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ecoser.2019.100994.

References

ABM (2019). Solomon Islands: Disaster Risk Reduction and Climate Change, https://www.abmission.org/pages/disaster-risk-reduction-climate-change-2019.html.

Abdu'l-Bahá quoted by Moojen Momen (1996) from "The Paris Talks", in A Short Introduction to the Bahá'í Faith extracted and condensed online, p. 143.

ACNS, 2017. Anglican Primates Speak Out on Climate Change. Anglican Communion News Service https://www.anglicannews.org/news/2017/03/anglican-primates-of-oceania-speak-out-on-climate-change.aspx.

Archer, R., 2015. Ecosystems as country, law, culture and futures: an indigenous perspective. In: Figgis, P., Mackey, B., Fitzsimmons, J., Irving, J., Clark, P. (Eds.), Valuing Nature: Protected Areas and Ecosystem Services. Australian Committee for IUCN, Sydney, pp. 28–33.

ARDA (2019). Associated Religion Database, http://www.thearda.com/internationalData/Countries/Country_150_2.asp.

Barrett, D., 1988. World religious statistics. In: 1988 Britannica Book of the Year, pp. 303 https://bahai-library.com/hassall_bahai_asia-pacific_issues.

Bhumi Project (2015). The Hindu Declaration on Climate Change. An initiative of the Oxford Centre for Hindu Studies in partnership with the Hindu American Foundation, GreenFaith and OurVoices http://www.hinduclimatedeclaration2015.org/.

BIC (1995). Conservation and Sustainable Development in the Baha'i Faith. Summit on the Alliance Between Religions and Conservation – hosted by HRH Prince Phillip, the Duke of Edinburgh, Windsor Castle, UK, 3 May 1995 Baha'i International Community https://www.bic.org/statements/conservation-and-sustainable-development-bahai-faith#16.

Campbell, J., 2014. Development, global change and traditional food security in Pacific Island countries. Reg Environ. Change 15, 1313–1324 (In: Nunn *et al.* 2016).

Caritas (2018). Caritas State of the Environment for Oceania Report https://caritas.org.nz/state-environment.

Catholic Bishops of Queensland (2004). "Let the Many Coastlines Be Glad – A Pastoral Letter on the Great Barrier Reef" released on World Oceans Day 8 June 2004 – see http://catholicearthcare.org.au/wp-content/uploads/2015/02/Let-The-Many-Coastlines-Be-Glad-A-Pastoral-Letter-on-the-Great-Barrior-Reef.pdf.

Ceballos, G., Ehrlich, P.R., Dirzo, R., 2017. Biological annihilation via the ongoing sixth mass extinction signalled by vertebrate population losses and declines. PNAS E6089–E6096 https://www.pnas.org/content/pnas/114/30/e6089.full.pdf, Accessed 1 April 2019.

Dickie, R.A., 2005. Indigenous traditions and sacred ecology in the Pacific Islands. UW-L J. Undergraduate Res. VIII.

Dudfield, R. (2019). Robert Dudfield (pers. comm. via email received 28 March 2019) Director of Public Affairs (Australia & Papua New Guinea) Church of Jesus Christ of Latter-day Saints – Pacific Area P: + 61-3-9481-E: rdudfield@churchofjesuschrist.org.

EcoJesuit (2017). Oceania bishops appeal for "courageous, far-sighted governance" of climate action in the Pacific. https://www.ecojesuit.com/oceania-bishops-appeal-for-courageous-far-sighted-governance-of-climate-action-in-the-pacific/10053/.

Gardner, G., Greenfaith, 2018. Caring for Our Common Future by Protecting the Earth. Religions for Peace, pp. 41.

GEF (2016). Fiji and the GEF. Global Environment Facility News October 5, 2016 https://www.thegef.org/news/fiji-and-gef.

Gibbs, P., 2005. Oceanic Religions: New Religious Movements. Encyclopedia of Religion. Thomson Gale, pp. 10 https://www.encyclopedia.com/environment/encyclopedias-almanacs-transcripts-and-maps/oceanic-religions-new-religious-movements.

Hassall, G., 1996. Baha'i faith in the Asia Pacific: issues and prospects. Baha'i Studies Review 6 London https://bahai-library.com/hassall_bahai_asia-pacific_issues.

HHDL (2012). His Holiness the 14th Dalai Lama, Tenzin Gyatso. Insight from the Dalai Lama Calendar 2013, copyright 2012 by Andrews McMeel Publishing, LLC, printed in USA. www.andrewsmcmeel.com ISBN-13: 978-1-4494-1601-0. Or via" (HHDL 2013). https://www.dalailama.com/messages/environment/universal-responsibility.

Hoegh-Guldberg, O.H., Ridgway, T.R., 2016. Reviving Melanesia's Ocean Economy – The Case for Action. Worldwide Find for Nature and Global Change Institute, pp. 63 ISBN 978-2-940529-43-8. Report available at https://ocean.panda.org.

Howden, M. (2018). Every Half Degree Matters. IPCC 1.5 Report and the role of lifestyle change. Presentation by Professor Howden, ANU Climate Institute to "The Human Face of Climate Change – the True Cost of Our Inaction." Parliament House, Canberra 29 November 2018, organised by the Multifaith Association of SA and co-sponsored by the nonpartisan Parliamentary Friends of Multiculturalism and Religions for Peace. Vimeo: https:// .com/320717385 (11.5min).

IFEES, 2015. The Islamic Declaration on Global Climate Change. The Islamic Foundation For Ecology and Environmental Sciences http://www.ifees.org.uk/declaration/.

IPCC, 2014. Climate change 2014: synthesis report. In: Pachauri, R.K., Meyer, L.A., Core Writing Team (Eds.), Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC, Geneva, Switzerland.

IPCC (2018). Special Report on Global Warming of 1.5°C. Accessed at: http://ipcc.ch/report/sr15/.

IUCN (2019). Religion, Spirituality, Environmental Conservation and Climate Justice (RESPECC) Specialist Group https://www.iucn.org/commissions/commission-environmental-economic-and-social-policy/our-work/religion-spirituality-environmental-conservation-and-climate-justice.

Living the Change (2019). Living the Change: faithful choices for a flourishing world see https://livingthechange.net.

Marshall, P.A., 2015. Value of ecosystem service benefits from the marine environment and the importance of MPAs. In: Figgis, P., Mackey, B., Fitzsimmons, J., Irving, J., Clarke, P. (Eds.), Valuing Nature: Protected Areas and Ecosystem Services. Australian Committee for IUCN, Sydney ISBN 978-0-9871654-5-9. Available for free download from www.acucn.org.au.

Maynard, S., Ausseil, A., Badola, R., Hemstock, S., Ross, H., Sangha, K., Vardon, M., Yao, R., Bertrand, P., Casey, F., Cork, S., Duffy, L., Karki, M., Nunn, P., Sayre, R., Travaro, R., Veitayaki, J., Yonariza, R., 2019. Ecosystem Service APPROACHES to Addressing the Sustainability Issues of OCEANIA. Elsevier Special Issue on Oceania.

Mikusinski, G., Possingham, H., Blicharska, M., 2013. Biodiversity priority areas and religions – global analysis of spatial overlap. Flora and Fauna International, Oryx 48 (1), 17–22. https://doi.org/10.1017/S0030605312000993. http://journals.cambridge.org, download 19 Sep 2014.

Nunn, P.D., Mulgrew, K, Scott-Parker, B, Hine, D.W., Marks, A.D.G, Mahar, D., Maebuta, J. (2016). Spirituality and Attitudes towards Nature in the Pacific Islands: insights for enabling climate-change adaptation. Published online 07 March 2016. Springer DOI 10.1007/s10584-016-1646-9.

Pew Research Centre (2010). Table of faiths extracted from Pew Research website 31/3/19 https://assets.pewresearch.org/wp-content/uploads/sites/11/2012/12/globalReligion-tables.pdf.

Pew Research Centre (2012). Pew Research Center's Forum on Religion & Public Life (December 2012), The Global Religious Landscape: A Report on the Size and Distribution of the World's Major Religious Groups as of 2010 (PDF), Pew Research Center, retrieved 20 September 2016.

Pope Francis (2015). Laudato Si' Encyclical. Downloaded http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html.

SDSN (2019). United Nations Sustainable Development Solutions Network (SDSN). Understanding and Achieving the Sustainable Development Goals: The Role of Multi-Religious Action. First Draft – For Discussion Purposes, 3 February 2019. See http://www.unsdsn.org.

Thaman, R., 2016. Agroforestry systems. In: Mainstreaming Ecosystem Services and Biodiversity into Agricultural Production and Management in the Pacific Islands. Technical Guidance Document. FAO, Rome, pp. 31–40.

Tremal, S. (2019). In Food Politics, All Roads Lead to Rome. The Ecologist, 28 February 2019, reproduced by Third World Network Features, downloaded from https://wp.twnnews.net/sendpress/email/?sid=NjcyNTk&eid=NTg0.

Turkson, Cardinal Peter, K.A., Kinsey, Sr. Sheila, F.C.J.M. (2019). Press Conference to present the International Conference "Religions and the Sustainable Development Goals (SDGs): Listening to the cry of the earth and of the poor" 05.03.2019 – http://press.vatican.va/content/salastampa/en/bollettino/pubblico/2019/03/05/190305a.html.

UNFCC (2016). Religious Groups urge Governments to rapidly implement Paris Agreement. External Statement/19 April, 2016 https://unfccc.int/news/religious-groups-urge-governments-to-rapidly-implement-paris-agreement.

Vierros, M., Tawake, A., Hickey, F., Tiraa, A., Noa, R. (2010). Traditional Marine Management Areas of the Pacific in the Context of National and International Law and Policy. Darwin, Australia: United Nations University – Traditional Knowledge Initiative https://www.academia.edu/30285874/Traditional_Marine_Management_Areas_of_the_Pacific_in_the_Context_of_National_and_International_Law_and_Policy.

Wilson, E.O. (2006). quoted in Mikusinski et al. 2013 – The Creation: An Appeal to Save Life on Earth. Norton, New York, USA.

WWF Pacific (2018). http://wwf.panda.org/?335250/WWF-Pacific-and-Methodist-Church-to-launch-Christian-Environmentalism-publication-at-Ecumenical-event.