ICRI Member's Report

International Society for Reef Studies
(note that from Jan 2019 the new name will be the International Coral Reef Society)

Reporting period December 2017 – November 2018

1. **Reporting on the ICRI Plan of Action 2016-2018.** *Your responses will help inform the Secretariat about members' contributions toward the previous Plan of Action.*

ISRS has members throughout the world, based in academic institutions, conservation organisations and other bodies that are involved with reef conservation. Annual membership varies from 800-1500 individuals spread across 50-75 countries and territories. The fluctuations relate to the 4 – yearly International Coral Reef Symposia (ICRS) for which there are reduced registration fees for ISRS members and which lead to many renewals or new subscriptions. ISRS co-hosts the ICRS's, as well as regional and other coral reef meetings in the intervening years. ISRS produces the only peer-reviewed science journal devoted to coral reef science *Coral Reefs*, which has an impact factor of 3.095, and makes a "best paper" award for each volume, which encourages submission of good papers. Its newsletter *Reef Encounter* and its various briefings and policy statements are widely disseminated and read.

The society thus has enormous influence on the development of global reef science and on the education and career development of numerous reef scientists, managers and conservationists, as well as providing the scientific evidence on which good reef management interventions are based. Many ISRS members, the recipients of its various award schemes, and its Council officers and members have been or are leaders in reef conservation and key contributors to global science. Ruth Gates, the late President of ISRS, was a prime example of this.

During the last year, ISRS has provided 10 student travel grants, 4 student best paper awards; 6 ISRS graduate fellowships and made an Inaugural Reef Conservation Prize award that will result in a series of internship places with the Nature Conservancy.

Given the diverse membership of the Society and the wide reach that its members have, it is thus difficult to report on the specific activities that make up the Action Plan for ICRI.

   a. **Please list any relevant examples from your organisation/country of investment/projects to protect and restore the natural infrastructure of reefs and mangroves.** (See Goal (1) 2 ICRI Recommendation for supporting investments in the natural infrastructure of reefs and mangroves to increase climate resilience).

      Individual ISRS members are involved in such activities but the society as a whole does not have such projects

   b. **Has your organisation/country made any progress in the following areas to target anthropogenic pressures?** Please give detail below. Note: If no change since your last ICRI member report, please write 'no change'.

☐ **Encourage ban of plastic microbeads in cosmetic products.** (See Goal (3) 2 & See ICRI Recommendation to reduce plastic microbeads pollution in marine environment):

Not directly applicable to ISRS

☐ **Improve regulation and enforcement to reduce direct anthropogenic damage due to dredging and physical alteration of reef structures.** (See Goal (3) 3 & ICRI Recommendation to reduce damage due to dredging and dumping on coral reefs):

Individual ISRS members are involved in such activities but the society as a whole is not

☐ **Deployment of mooring devices limiting the mechanical destruction of coral reefs and seagrasses.** (See Goal (3) 4).

Individual ISRS members may be involved in this but the society as a whole is not

c. **Did your organisation/country celebrate International Year of the Reef?** Please give details below. (See Goal (5) 1 & ICRI Recommendation designating 2018 as the third International Year of the Reef):

ISRS supported the European Coral Reef Symposium (ECRS) in Oxford in December 2017 and the Conservation, Student and Education Committees organised, with the support of RCUK, an IYOR event at this. A report on this has been provided to the IYOR organising secretariat.

The members of the ISRS Conservation, Education and Student Committees, as well as individual ISRS members, have subsequently undertaken a range of activities, including talks and lectures, screenings of the film Chasing Coral and other events. Information on these has not been collated across the society.

A 3-page article on IYOR was published in the Sept 2018 issue of *Reef Encounter* that described some of the events, projects, and activities that have taken place in support of IYOR. The article mentioned ICRI's support of the Khaled bin Sultan Living Oceans Foundation "Science Without Borders Challenge", and provided links to a calendar listing of upcoming IYOR events, sign-up for the IYOR newsletter, and the IYOR website. The ISRS pledge of "10 things you can do" was launched on the ISRS website. The ISRS Student Committee created its own "Reef_Pledge", aimed at students (rather than the general public) and which included activities such as giving a talk at a school or writing to a local MP. https://www.wearedonation.com/businesses/isrsreefstudents-2/campaigns/reef_pledge-2/. The student committee also started a blog site, called "Reef Bites", which now holds 32 blog posts, written and edited by marine science students https://reefbites.wordpress.com/

2. **Contribution to the ICRI Plan of Action 2018-2020 and upcoming ICRI general meetings.** *Your responses to the following questions will assist the Secretariat in assessing contributions towards the major themes of the draft ICRI Plan of Action 2018-2020.*

Theme 1 – Promote effective and adaptable solutions to improve the protection of coral reefs

a. **Which of the below topics do you consider to be the three top challenges that your organisation faces in managing coral reefs?** Please select from the options below:

1 Climate change impacts

2 Inadequate planning, zoning and management

3 Unsustainable resource extraction

☐ Tourism and recreation

☐ Shipping

☐ Coastal development

☐ Dredging

☐ Illegal and destructive fishing

☐ Fish and coral trade

☐ Marine debris

☐ Other. Please specify:

b. **Please list any examples of innovative management practices that your organisation/country is involved in, such as use of VMS, drones & ecological mooring devices.** Include their limits, conditions of implementation, financing and an assessment of their results and links for more information if possible.

Individual ISRS members are likely to be working on this but the society as a whole is not

c. **Please list any examples of innovative funding for management that your organisation/country is involved in.** Include their limits, conditions of implementation, financing and an assessment of their results and links for more information if possible.

Not applicable

d. **Please list any examples of leading practices, techniques and strategies for building reef resilience that your organisation/country is involved in.** Include their limits, conditions of implementation, financing and an assessment of their results and links for more information if possible.

Many ISRS members are involved in research on reef resilience, and papers on this topic are published in the journal

e. **Please list any examples of leading practice reef restoration mechanisms that your organisation/country is involved in.** Include their limits, conditions of implementation, financing and an assessment of their results and links for more information if possible.

The Coral Restoration Consortium (CRC) has been accepted as the first Topic Chapter of ISRS. The purpose of the Topic Chapter is to increase collaboration between CRC and scientists and managers worldwide. CRC is hosting the first global conference dedicated to coral reef restoration and interventions in December 2018 - "*Reef Futures 2018: A Coral Restoration and Intervention-Science Symposium*" - in Key Largo, Florida, USA, and this is supported financially by ISRS. The meeting will bring together experts from around the world to share the latest science and techniques for coral reef restoration, while kicking off a global effort to dramatically scale-up the impact and reach of restoration as a major tool for coral reef conservation and management. ISRS will be producing a briefing on coral reef restoration in 2019.

Theme 3 – Support communities reliant on coral reefs

f. Is sustainable tourism development a significant challenge for your organisation? If so please include detail below of the kinds of challenges faced and your strategies to deal with them.

Individual ISRS members may be involved in this but the society as a whole is not

g. Is your organisation involved in activities to raise awareness and encourage action to support communities reliant on coral reefs? Please include details below.

Many individual ISRS member are involved in activities to raise awareness. The newsletter has this as a key aim, and the Education and Student Committees have undertaken a number of activities for this purpose (see above). The student committee maintains an active Twitter page and blog site to share and disseminate articles and research which raise awareness of the threats to reefs.

Theme 4 – Help to reduce anthropogenic threats to coral reefs, particularly those that occur at a global or regional scale

h. What activities is your organisation involved in to elevate awareness of the global nature of the threat of climate change to coral reefs? Please include details below

Climate change is a key issue for ISRS, and the journal *Coral Reefs* and the Newsletter *Reef Encounter* have published a number of articles related to this. The ISRS consensus statement on climate change and coral reefs, produced for the Paris COP of the UNFCCC, has been updated and will be disseminated at the CBD and UNFCCC COPs this year.

i. Has your organisation made any progress in dealing with destructive fishing and trade? Please include details below.

Individual ISRS members may be involved in this but the society as a whole is not

j. **Has your organisation made any progress in dealing with marine debris?** Please include details below.

Individual ISRS members may be involved in this but the society as a whole is not

3. **Would you like to report on your activities during the ICRI GM?** Please give details below.

   We would like to present the revised ISRS Statement on Coral Reefs and Climate Change and report on key activities of the society as a whole.

4. **International events.** Please list any upcoming international events relevant to ICRI which someone from your organisation plans to attend in 2018-2019.

   Please let me know if you know of any ISRS members attending the climate change meeting in Dec

   ☒ ICRI GM, Monaco, 5-7 Dec 2018

   ☐ Conference of the Parties to the United Nations Framework Convention on Climate Change, 3-14 Dec 2018

   ☒ Reef Futures 2018: A Coral Restoration and Intervention-Science Symposium, Florida, 10-14 Dec 2018

   ☐ Global World Heritage Marine Managers meeting, Alaska, US, 26-31 May 2019

Other:

ISRS is providing support for the following events:

- RCUK 2018 - 1st December 2018, Zoological Society of London. Reef Conservation UK is a networking group that promotes collaboration on issues related to coral reef conservation and research.
- 10th Mexican Coral Reefs Congress, 2-5 April, 2019, Educational Technology Center of the University of Colima, Manzanillo, Mexico.
- International Coral Reef Symposium (ICRS 2020), Bremen, Germany. Call for Sessions and Workshops will close on January 31 2019. Further details: http://www.icrs2020.de/

5. **Publications.** Please list relevant publications and reports you have released during this reporting period.

See Annex for list of conservation related papers published in the journal, *Coral Reefs* over this reporting period. Reef Encounter included reports from those who had received Graduate Fellowships and short articles on work by ISRS members from around the world.

6. **ICRI Member Feedback.** What do you find most valuable about the ICRI member reports? If you have any ideas for improvement please list below:

7. **General Information.** (Note that this information will be posted on the ICRI website on your member page: http://www.icriforum.org/about-icri/members-networks.)

Member type (Country / Organisation):	
Focal Point 1:	
Name: Sue Wells	
Title/Organisation: ISRS Conservation Committee	

Email: suewells 1212@gmail.com	
Focal Point 2:	
Name: Rupert Ormond	
Title/Organisation: Executive Secretary, ISRS	
Email: rupert.ormond.mci@gmail.com	

Annex. Conservation-related scientific papers published in Coral Reefs during this reporting period.

Four issues of the journal *Coral Reefs* were published in the reporting period. The following are some of the over 200 peer-review articles that were published, many of which are relevant to reef conservation and management.

- A seascape genetic analysis of a stress-tolerant coral species along the Western Australian coast: R. D. Evans, N. M. Ryan, M. J. Travers, M. Feng, Y. Hitchen
- Outbreak densities of the coral predator *Drupella* in relation to in situ *Acropora* growth rates on Ningaloo Reef, Western Australia: C. Bessey, R. C. Babcock, D. P. Thomson, M. D. E. Haywood
- In the shadow of the lionfish: interspecific association involving red emperor snapper (*Lutjanus sebae*) in Madagascar: Davide Seveso, Simone Montano, Davide Maggioni
- *Acropora cervicornis* genet performance and symbiont identity throughout the restoration process: Kelli E. O'Donnell, Kathryn E. Lohr, Erich Bartels, Iliana B. Baums
- Environmental conditions and herbivore biomass determine coral reef benthic community composition: implications for quantitative baselines
- James P. W. Robinson, Ivor D. Williams, Lauren A. Yeager, Jana M. McPherson
- Coral reefs respond to repeated ENSO events with increasing resistance but reduced recovery capacities in the Lakshadweep archipelago: S. Yadav, T. Alcoverro, R. Arthur
- eDNA detection of corallivorous seastar (*Acanthaster cf. solaris)*outbreaks on the Great Barrier Reef using digital droplet PCR: Sven Uthicke, Miles Lamare, Jason R. Doyle
- Plastic nets as substrate for reef corals in Lembeh Strait, Indonesia: B. W. Hoeksema, B. Hermanto
- Record of *Tubastraea coccinea* on *Xestospongia* barrel sponge: a new threat to Caribbean and Gulf of Mexico reefs? Luís Felipe Skinner
- Bilateral asymmetry in bleaching susceptibility within a giant clam, *Tridacna maxima:* Héloïse Rouzé, Laetitia Hédouin
- Spatial distribution patterns of phytoplankton biomass and primary productivity in six coral atolls in the central South China Sea: Zhixin Ke, Yehui Tan, Liangmin Huang, Huajian Liu, Jiaxing Liu, Xin Jiang
- The effects of suspended sediment on coral reef fish assemblages and feeding guilds of north-west Australia: Molly Moustaka, Tim J. Langlois, Dianne McLean, Todd Bond, Rebecca Fisher
- Intra- and interspecific variation and phenotypic plasticity in thylakoid membrane properties across two *Symbiodinium* clades. Joost S. Mansour, F. Joseph Pollock, Erika Díaz-Almeyda.
- Depth-related patterns in coral recruitment across a shallow to mesophotic gradient. Joseph A. Turner, Damian P. Thomson, Anna K. Cresswell, Melanie Trapon.
- Species traits dictate seasonal-dependent responses of octocoral–algal symbioses to elevated temperature and ultraviolet radiation. Mark McCauley, Anastazia T. Banaszak, Tamar L. Goulet
- Enhanced performance of juvenile crown of thorns starfish in a warm-high CO_2 ocean exacerbates poor growth and survival of their coral prey.Pamela Z. Kamya, Maria Byrne, Benjamin Mos, Symon A. Dworjanyn
- Variable thermal stress tolerance of the reef-associated symbiont-bearing foraminifera *Amphistegina* linked to differences in symbiont type. Marleen Stuhr, Achim Meyer, Claire E. Reymond, Gita R. Narayan, Vera Rieder
- Intra-genomic variation in *Symbiodinium* correlates negatively with photosynthetic efficiency and coral host performance. Shaun P. Wilkinson, Joshua I. Brian, Stefanie Pontasch, Paul L. Fisher.
- Nitrogen fixation and diversity of benthic cyanobacterial mats on coral reefs in Curaçao. Hannah J. Brocke, Bastian Piltz, Nicole Herz, Raeid M. M. Abed.

- Decline in symbiont densities of tropical and subtropical scleractinian corals under ocean acidification.Robert A. B. Mason
- Species traits as indicators of coral bleaching. Toni L. Mizerek, Andrew H. Baird, Joshua S. Madin
- Simulating the effects of colony density and intercolonial distance on fertilisation success in broadcast spawning scleractinian corals. Aaron Teo, Peter A. Todd
- Long-term variation in light intensity on a coral reef. Peter J. Edmunds, Georgios Tsounis, Ralf Boulon, Lorenzo Bramanti
- Comparing patterns of taxonomic, functional and phylogenetic diversity in reef coral communities. Joy S. Y. Wong, Y. K. Samuel Chan, C. S. Lionel Ng, Karenne P. P. Tun
- Sediment addition drives declines in algal turf yield to herbivorous coral reef fishes: implications for reefs and reef fisheries. Sterling B. Tebbett, David R. Bellwood, Steven W. Purcell
- Population connectivity among shallow and mesophotic *Montastraea cavernosa* corals in the Gulf of Mexico identifies potential for refugia. M. S. Studivan, J. D. Voss
- Rarity of the "common" coral *Pocillopora damicornis* in the western Philippine archipelago. Andrew F. Torres, Rachel Ravago-Gotanco
- Coral expansion in Sydney and associated coral-reef fishes. David J. Booth, John Sear.
- Impacts of coral bleaching on pH and oxygen gradients across the coral concentration boundary layer: a microsensor study. Verena Schoepf, Christopher E. Cornwall, Svenja M. Pfeifer.
- Genetic diversity and large-scale connectivity of the scleractinian coral *Porites lutea* in the South China Sea. Wen Huang, Ming Li, Kefu Yu, Yinghui Wang, Jingjing Li, Jiayuan Liang.
- The world's largest parrotfish has slow growth and a complex reproductive ecology. Brett M. Taylor, Richard J. Hamilton, Glenn R. Almany, J. Howard Choat
- Genetic differentiation in the mountainous star coral *Orbicella faveolata* around Cuba.
- Gabriela Ulmo-Díaz, Didier Casane, Louis Bernatchez, Patricia González-Díaz
- First record of coralline fungal disease (CFD) in the Indian Ocean. G. J. Williams, R. C. Roche, J. R. Turner
- Coral color and depth drive symbiosis ecology of *Montipora capitata*in Kāneʻohe Bay, Oʻahu, Hawaiʻi. T. Innis, R. Cunning, R. Ritson-Williams, C. B. Wall, R. D. Gates
- An outbreak of sea cucumbers hinders coral recruitment: Yu-Yang Zhang, Laurence McCook, Lei Jiang, Jian-Sheng Lian, Sheng Liu
- Contrasting patterns of changes in abundance following a bleaching event between juvenile and adult scleractinian corals: Mariana Álvarez-Noriega, Andrew H. Baird, Tom C. L. Bridge, Maria Dornelas
- Growth rates of *Porites astreoides* and *Orbicella franksi* in mesophotic habitats surrounding St. Thomas, US Virgin Islands: Sarah H. Groves, Daniel M. Holstein, Ian C. Enochs, Graham Kolodzeij
- Bleaching and recovery of a phototrophic bioeroding sponge. Joseph Marlow, Simon K. Davy, Megan Shaffer, Abdul Haris, James J. Bell
- The Pulley Ridge deep reef is not a stable refugia through time. Marc Slattery, Steve Moore, Lauren Boye, Samantha Whitney, Allison Woolsey
- Passive larval transport explains recent gene flow in a Mediterranean gorgonian. Mariana Padrón, Federica Costantini, Sandra Baksay, Lorenzo Bramanti
- Assessing the spatial distribution of coral bleaching using small unmanned aerial systems. Joshua Levy, Cynthia Hunter, Trent Lukacazyk, Erik C. Franklin
- Oxidative stress in the hydrocoral *Millepora alcicornis* exposed to CO_2-driven seawater acidification. Débora Camacho Luz, Yuri Dornelles Zebral, Roberta Daniele Klein
- Coral larvae change their settlement preference for crustose coralline algae dependent on availability of bare space. Franziska Elmer, James J. Bell, Jonathan P. A. Gardner .
- Effects of seawater pCO_2 and temperature on calcification and productivity in the coral genus *Porites* spp.: an exploration of potential interaction mechanisms. C. Cole, A. A. Finch, C. Hintz, K. Hintz, N. Allison

- Trade-offs in disease and bleaching susceptibility among two color morphs of the Hawaiian reef coral, *Montipora capitata.* Amanda Shore-Maggio, Sean M. Callahan, Greta S. Aeby.
- Early-phase dynamics in coral recovery following cyclone disturbance on the inshore Great Barrier Reef, Australia. Yui Sato, Sara C. Bell, Cassandra Nichols, Kent Fry, Patricia Menéndez
- Marked annual coral bleaching resilience of an inshore patch reef in the Florida Keys: A nugget of hope, aberrance, or last man standing? Brooke E. Gintert, Derek P. Manzello, Ian C. Enochs, Graham Kolodziej.
- Dispersal capacity and genetic relatedness in *Acropora cervicornis*on the Florida Reef Tract. Crawford Drury, Claire B. Paris, Vassiliki H. Kourafalou, Diego Lirman
- Meteorologic, oceanographic, and geomorphic controls on circulation and residence time in a coral reef-lined embayment: Faga'alu Bay, American Samoa. C. D. Storlazzi, O. M. Cheriton, A. M. Messina, T. W. Biggs
- Symbiont shuffling linked to differential photochemical dynamics of *Symbiodinium* in three Caribbean reef corals Ross Cunning, Rachel N. Silverstein, Andrew C. Baker
- Exploring variable patterns of density-dependent larval settlement among corals with distinct and shared functional traits. C. Doropoulos, L A. Gómez-Lemos, R C. Babcock
- Strong homing does not predict high site fidelity in juvenile reef fishes. R. P. Streit, D. R. Bellwood
- Population connectivity of the plating coral *Agaricia lamarcki* from southwest Puerto Rico Nicholas M. Hammerman, Ramon E. Rivera-Vicens, Matthew P. Galaska
- Reef-scale modeling of coral calcification responses to ocean acidification and sea-level rise Takashi Nakamura, Kazuo Nadaoka, Atsushi Watanabe, Takahiro Yamamoto
- Clonal structure and variable fertilization success in Florida Keys broadcast-spawning corals. M. W. Miller, I. B. Baums, R. E. Pausch, A. J. Bright, C. M. Cameron.
- Multiscale change in reef coral species diversity and composition in the Tropical Eastern Pacific. Catalina G. Gomez, Andrew Gonzalez, Hector M. Guzman
- Benthic habitat and fish assemblage structure from shallow to mesophotic depths in a storm-impacted marine protected area. R A. Abesamis, T Langlois, M Birt, E Thillainath.
- Super instrumental El Niño events recorded by a *Porites* coral from the South China Sea. Xijie Wang, Wenfeng Deng, Xi Liu, Gangjian Wei, Xuefei Chen, Jian-xin Zhao
- Mesophotic coral-reef environments depress the reproduction of the coral *Paramontastraea peresi* in the Red Sea. Bar Feldman, Tom Shlesinger, Yossi Loya.
- Recovery of coral cover in records spanning 44 yr for reefs in Kāne'ohe Bay, Oa'hu, Hawai'i. John Stimson
- Long-term growth rates and effects of bleaching in *Acropora hyacinthus.* Zachary Gold, Stephen R. Palumbi
- Mesopredator trophodynamics on thermally stressed coral reefs. Tessa N. Hempson, Nicholas A. J. Graham, M. Aaron MacNeil, Andrew S. Hoey
- Effects of thermal stress and nitrate enrichment on the larval performance of two Caribbean reef corals. Xaymara M. Serrano, Margaret W. Miller, James C. Hendee, Brittany A. Jensen
- *Stylophora pistillata* in the Red Sea demonstrate higher GFP fluorescence under ocean acidification conditions. Mila Grinblat, Maoz Fine, Yaron Tikochinski, Yossi Loya
- The influence of micro-topography and external bioerosion on coral-reef-building organisms: recruitment, community composition and carbonate production over time. J. Mallela
- Contact with turf algae alters the coral microbiome: contact versus systemic impacts. Zoe A. Pratte, Guilherme O. Longo, Andrew S. Burns, Mark E. Hay
- Increased temperature mitigates the effects of ocean acidification on the calcification of juvenile *Pocillopora damicornis*, but at a cost. Lei Jiang, Fang Zhang, Ming-Lan Guo, Ya-Juan Guo, Yu-Yang Zhang