

Presenter: **Dr Adam N. H. Smith** (Massey University)

Dates: **1st - 5th November 2021**

08:30 - 17:30 Australian Eastern Daylight Time (UTC + 11 hrs)

This **PRIMER version 7 ONLINE WORKSHOP** will take place over **5 days**, (Monday – Friday, 08:30 - 17:30), on each day, with **4 scheduled online sessions per day**: two in the morning and two in the afternoon in Australian Eastern Daylight Time (UTC + 11 hrs). Within each scheduled session, there will (generally) be:

- a **live lecture** (typically ~45-60 minutes), with ample opportunities for questions;
- a **computer lab** session (done by participants on their own machines); and
- a **live wrap-up/summary**, in which the presenter will go through the computer lab, summarising salient points of interpretation, and also fielding any further questions.

Much of the final day of the workshop (Friday) will be devoted to Masterclass / Own-data sessions, where participants can ask questions, interact with other workshop participants in small (breakout) groups, and also consult one-on-one with the presenter to analyse their own datasets, using the tools learned during the week.

Participants are expected to use their own computer, which must be equipped with secure and reliable internet access, a microphone and a camera, enabling direct communication *via* appropriate video-conferencing software¹ for the duration of the workshop. All workshop materials and recorded lectures will be made available to participants for the duration of the workshop and for four (4) weeks thereafter. Software may be purchased (at a discounted price – see below) *or* a free fully functional (but time-limited) licence will be made available to registered participants for trial use during the workshop. Note that PRIMER is a Windows-only product, so Macs need to run in Windows emulation. If you would like to, or are able to, it would be great to arrange to share a space and participate in the workshop alongside other participants in your area.

Please note: *a subsequent online PERMANOVA+ workshop will be held 15-19 November 2021, Australian Western Time (UTC + 8hrs). Details of this subsequent workshop can be found here: <https://www.primer-e.com/workshops/>.*

Content

- This workshop will provide an intensive and extensive overview of statistical methods in non-parametric analysis of multivariate data, encapsulated in the software: **PRIMER version 7**. It will cater to both those who are **new to PRIMER** and to those who are “**old hands**”, but have not yet had a chance to get up to speed with the latest developments in version 7. Important new tools include: **shade plots** with flexible ordering & clustering of axes; **coherence plots** to show species displaying statistically distinguishable response patterns; **unconstrained** binary or divisive **flat clustering** (as in *k*-means) along with **SIMPROF** tests; **metric, threshold metric, non-metric** or **combined MDS** in any dimensions; **bootstrap averages** to show variation among averages in metric MDS space; **2-way versions** of BEST and RELATE; **new plot types** (bar, box, means, line, histogram, scatter, surface, shade) in 2-d or 3-d; **animations** of ordinations captured to video files; multi-factor and multi-variable **segmented bubble plots** in 2-d and 3-d; ANOSIM extended for **ordered factors** and **3-factor** designs and much more...

¹ PRIMER-e will facilitate access to a secure video-conferencing platform for workshop participants only.

- As well as covering new methods in PRIMER 7, the core basic multivariate routines will all be fully discussed, e.g. pre-treatment of data; definitions of similarity; clustering; ordination by principal components (**PCA**), non-metric (and metric) multi-dimensional scaling (**MDS**); permutation tests on similarity matrices for structured (**ANOSIM**, **RELATE**) and unstructured (**SIMPROF**) cases; emphasis on species analyses; linking community to abiotic data (**BEST**); biodiversity indices; means plots (with approximate region estimates), and the many graphical tools available for effective presentation of results. Non-parametric statistics and permutation tests make the methods intuitively simple to understand so **no prior background in statistics is assumed**.

Registration fees*

*New Zealand residents must add 15% GST

PRIMER 7 Online Workshop Fees*	Full Registration:	Student Registration:
Rest of the world	USD \$ 880	USD \$ 580
*Participants based in countries using Australian Dollars as official currency	AUD \$ 1,100	AUD \$ 780

The registration fee **includes** workshop materials, and a temporary (fully functional but time-limited) software licence key for PRIMER 7 with PERMANOVA+. The registration fee **does not include** the separate (discounted) costs of time-unlimited software.

Software – discount prices for workshop participants

Participants wishing to purchase PRIMER software at the discounted prices shown below should indicate this on their registration form. Software prices are in USD for all participants, except for participants based in countries which utilise the Australian dollar as their currency, they are eligible for the AUD prices shown below **in square brackets and in blue font**. If you are based in New Zealand, you will also be charged an additional 15% for GST.

*AUD Prices	New PRIMER 7 (USD) [AUD]	Upgrade PRIMER 6 to PRIMER 7 (USD) [AUD]	PERMANOVA+ add-on (USD) [AUD]
Private sector	\$ 800 [\$ 1,000]	\$ 400 [\$ 500]	\$ 400 [\$ 500]
Public sector	\$ 600 [\$ 750]	\$ 300 [\$ 375]	\$ 300 [\$ 375]
Academic	\$ 400 [\$ 500]	\$ 200 [\$ 250]	\$ 200 [\$ 250]
Full-time student	\$ 200 [\$ 250]	\$ 100 [\$ 125]	\$ 100 [\$ 125]

Contact and Registration

To register, please fill out the **registration form** available for download from the PRIMER-e website (www.primer-e.com/workshops) and return it directly to primer@primer-e.com to secure your place. Places are limited. The **Final Deadline** for registration and payment is **25th October 2021**. Late registrants will only be accepted if space permits.

About the Presenter

Dr Adam N. H. Smith (Massey University, Albany, Auckland, New Zealand) is a highly sought-after ecological statistician who specialises in the application of modern statistical methods to ecology and management, including fisheries and marine reserve assessment. Adam obtained his PhD from Massey University and has a wealth of multi-disciplinary experience across multiple sectors. He lectures across a wide range of areas, including both univariate and multivariate statistics, data mining, quantitative ecology, and biostatistics. He has been a key consultant to industry and government, having worked as an in-house statistician for the Department of Conservation (DoC) and the National Institute for Water and Atmospheric Sciences (NIWA) in New Zealand. Adam is an

enthusiastic and engaging lecturer with a passion for natural environments and for teaching and learning.