PRIMER 7 WORKSHOP
at HMSC, St Andrews, New Brunswick, Canada

Presenter: Dr Paul Somerfield (Plymouth Marine Laboratory, UK)
Venue: Huntsman Marine Science Centre, St Andrews, New Brunswick, Canada
Dates: April 27th - May 1st, 2020

This **PRIMER version 7** workshop takes place over 5 days (Monday – Friday, 08:15 to 17:15 on each day). Participants will engage in a mixture of informative lectures on key topics and computer lab sessions on literature data sets. Participants will have ample opportunity to discuss and analyse their own data sets in consultation with the lecturer, with dedicated time for this provided on the Friday. Participants are expected to **bring their own laptop**. Software either may be purchased (at a discounted price – see below) or a free fully functional but time-limited version will be made available to registered participants for trial use over the period of the workshop. Note that PRIMER is a Windows-only product, so Macs need to run a Windows emulation.

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...
- As well as covering the new methods in PRIMER 7, the core basic multivariate routines will also 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 designs (**ANOSIM**, **RELATE**) and unstructured cases (**SIMPROF**); emphasis on species analyses; linking community to abiotic data (**BEST**); biodiversity indices; bootstrap average 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**.

Venue

The workshop will be held at Huntsman Marine Science Centre, 1 Lower Campus Road, St. Andrews, New Brunswick, Canada. Tel: +1 (506) 529-1225. For further local information and details, including directions to the venue, parking, and accommodation options, please contact the local workshop organiser, *Jackie Walker*, jackie.walker@huntsmanmarine.ca.

Costs (in Canadian dollars)

COURSE REGISTRATION FEE (per person):

Academics / Professionals	Full-time Students
CAD $ 1,200	CAD $ 870

ACCOMMODATION (per person):

Choose one of the following:	Academics / Professionals	Full-time Students
• 5 nights, single occupancy* ($660) + all meals ($260)	$920.00	$920.00
• 2nd person sharing, additional fee	$260.00	$260.00

*subject to availability. *Please note that check-in date is Sunday April 26, 2020 and check-out is Friday May 1, 2020*

All prices are in Canadian dollars. The course fee **includes** all workshop materials, free guest Wi-Fi at the venue and (if needed), a temporary (fully functional but time-limited) software licence key for PRIMER version 7 with PERMANOVA+ for the registrant to use during the workshop. The course registration fee **does not include** meals, accommodation or the separate (discounted) costs of purchasing time-unlimited software (see below).

Contact and Registration

To register and secure your place, please send your filled-in registration form directly to the workshop organiser, Jackie Walker, jackie.walker@huntsmanmarine.ca. Places are limited and only those with completed registration forms can be assured a place. The **Final Deadline** for registration and payment is **April 1st, 2020**. Late registrants will only be accepted if space permits.

Software – special discount prices for workshop participants

Participants wishing to purchase PRIMER software at the discounted prices shown below[1] should indicate this on the registration form. All prices are in Canadian dollars. Current PRIMER licence status can be clarified by contacting primer@primer-e.com.

	New PRIMER 7 (CAD)	Upgrade PRIMER 6 to PRIMER 7 (CAD)	PERMANOVA+ add-on (CAD)
Private sector	$900	$450	$450
Public sector	$670	$340	$340
Academic	$450	$230	$230
Full-time student	$230	$115	$115

About the Lecturer

Dr Paul J. Somerfield (Plymouth Marine Laboratory) is a highly cited and sought-after numerical ecologist who has been instrumental in developing and using the methods in PRIMER across many fields, having led and lectured PRIMER workshops across the globe for over two decades. With knowledge and broad experience in analysing multivariate datasets of all kinds, Paul has mentored and published with hundreds of scientists and professionals from a wide range of disciplines: marine, freshwater and terrestrial ecology, oceanography, soil science, forestry, environmental science, microbial ecology, genetics, remote sensing and modelling.

[1] The workshop discount on software licences applies only to purchases of 3 or fewer copies within a given sector and excludes any additional discounts. Discounts for multiple purchases (i.e., up to 40%, see www.primer-e.com for details) accrue in the usual way for 4 or more copies.