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## Genomics in marine monitoring: New opportunities for assessing marine health status

Sarah J. Bourlat <sup>1</sup>, Angel Borja <sup>2</sup>, Jack Gilbert <sup>3</sup>, Martin I. Taylor <sup>4</sup>, Neil Davies <sup>5,6</sup>, Stephen B. Weisberg <sup>7</sup>, John F. Griffith <sup>7</sup>, Teresa Lettieri <sup>8</sup>, Dawn Field <sup>6,9</sup>, John Benzie <sup>10,11</sup>, Frank Oliver Glöckner <sup>12</sup>, Naiara Rodríguez-Ezpeleta <sup>2</sup>, Daniel P. Faith <sup>13</sup>, Tim P. Bean <sup>14</sup>, Matthias Obst <sup>1</sup>

<sup>1</sup>*Department of Biological and Environmental Sciences, University of Gothenburg, Gothenburg, Sweden*

<sup>2</sup>*AZTI-Tecnalia, Marine Research Division, Pasaia, Spain*

<sup>3</sup>*University of Chicago, Argonne National Laboratory, Argonne, IL*

<sup>4</sup>*School of Biological Sciences, Bangor University, Bangor, Gwynedd, UK*

<sup>5</sup>*Gump South Pacific Research Station, University of California Berkeley, Moorea, French Polynesia*

<sup>6</sup>*Biodiversity Institute, Department of Zoology, University of Oxford, Oxford, United Kingdom*

<sup>7</sup>*Southern California Coastal Water Research Project Authority, Costa Mesa, CA*

<sup>8</sup>*European Commission, DG Joint Research Centre, Institute for Environment and Sustainability, Ispra, Italy*

<sup>9</sup>*Centre for Ecology and Hydrology, Oxford, UK*

<sup>10</sup>*School of Biological Earth and Environmental Sciences, University College Cork, Cork, Ireland*

<sup>11</sup>*WorldFish Centre, Jalan Batu Maung, Batu Maung, Penang, Malaysia*

<sup>12</sup>*Jacobs University Bremen and Max Planck Institute for Marine Microbiology, Bremen, Germany*

<sup>13</sup>*The Australian Museum, Sydney, NSW, Australia*

<sup>14</sup>*Centre for Environment Fisheries and Aquaculture Science, Cefas Weymouth Laboratory, Weymouth, UK*

### ABSTRACT

This viewpoint paper explores the potential of genomics technology to provide accurate, rapid, and cost efficient observations of the marine environment. The use of such approaches in next generation marine monitoring programs will help achieve the goals of marine legislation implemented world-wide. Genomic methods can yield faster results from monitoring, easier and more reliable taxonomic identification, as well as quicker and better assessment of the environmental status of marine waters. A summary of genomic methods that are ready or show high potential for integration into existing monitoring programs is provided (e.g. qPCR, SNP based methods, DNA barcoding, microarrays, metagenetics, metagenomics, transcriptomics). These approaches are mapped to existing indicators and descriptors and a series of case studies is presented to assess the cost and added value of these molecular techniques in comparison with traditional monitoring systems. Finally, guidelines and recommendations are suggested for how such methods can enter marine monitoring programs in a standardized manner.

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