

GOYDER INSTITUTE FOR WATER RESEARCH MODEL METADATA TEMPLATE

METADATA REQUIRED	DETAILS
Model Name and version	Conceptual models of ecological responses from a flood event in the Lower River Murray
Date of lodgement of Metadata. Name of Metadata Provider	14 April 2015 Dr Qifeng Ye SARDI Aquatic Sciences, 2 Hamra Avenue, West Beach SA 5024 Qifeng.ye@sa.gov.au
Goyder Institute Project Number and Name	GOYDER INSTITUTE FOR WATER RESEARCH Project No. E.1.3 Murray Flood Ecology Conceptual modelling of the ecological responses from a flood event in the Lower River Murray
Project Team	Project Leader: Dr Qifeng Ye, qifeng.ye@sa.gov.au Task Leader: Dr Rebecca Lester, rebecca.lester@deakin.edu.au Project Team Members: Courtney Cummings, courtney.cummings@epa.sa.gov.au Prof. Peter Fairweather, peter.fairweather@flinders.edu.au
Creator/Developer	Above project team
Owner/Contact Person and contact details	Dr Rebecca Lester, School of Life and Environmental Sciences, Deakin University. rebecca.lester@deakin.edu.au
Model Location	<i>Where is the model archived?</i> Details of the conceptual models are available in Goyder Institute Technical Report Series No. 14/11. Available at http://goyderinstitute.org/ <i>Is there a version of the model in active further development? Where is this active version located?</i> No, although models could be updated in the future
IP or other permission requirements	***** REFER TO GOYDER INSTITUTE FOR WATER RESEARCH AGREEMENT ***** <i>Are there any IP issues associated with the model and/or the dependencies that future users need to be aware of?</i> There are no IP issues for future users, but future users would need to acknowledge the original work as Lester et al. 2014
Licences associated with model and/or dependencies	***** REFER TO GOYDER INSTITUTE FOR WATER RESEARCH AGREEMENT ***** <i>Are there any licenses associated with the model and/or the dependencies that future users need to be aware of?</i> There are no licence issues for future users.
Confidentiality agreements associated with model and/or dependencies	<i>Are there any confidentiality agreements associated with the model and/or the dependencies that future users need to be aware of?</i> Not applicable

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Brief outline of model	The conceptual models in the Murray Flood Ecology project provide a framework for assessing ecosystem responses (covering both abiotic – water quality and nutrients and biotic – primary productivity, plants and fish, responses) to flooding/high flow events in the Lower River Murray.
Area/region covered	Lower River Murray
Platform and language and version	Not applicable. The models represent qualitative summaries of predictive statements and involve no computational components.
Dependencies upon: i) other models and/or platforms (including version) and location ii) essential data and data sources and location	Not applicable

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How was model used	The models represent our contemporary understanding of ecological responses of biotic/abiotic components of the Lower River Murray to high flow/flooding. These models provide guidance to managers and stakeholders when considering environmental flow planning and management. Furthermore, the models highlight key areas of uncertainty in our understanding of the ecological responses to flows. ○ <i>Parameterisation/Validation (if applicable; provide a brief summary and include time period of calibration/simulation)</i> Not applicable. Conceptual models were constructed for the Lower River Murray during a single flooding event based on findings from a series of research tasks under the Murray Flood Ecology project. Details are provided in the synthesis report Technical Report Series No. 14/6 available on http://goyderinstitute.org/ ○ <i>Scenarios and outputs from various runs (provide a brief summary and indicate where these are stored)</i> Summarised in Goyder Institute Technical Report Series No. 14/11. ○ <i>Assumptions behind model (provide a brief summary and indicate where these are stored)</i> Summarised in Goyder Institute Technical Report Series No. 14/11. ○ <i>Limitations of model (provide a brief summary)</i> Summarised in Goyder Institute Technical Report Series No. 14/11. ○ <i>Peer review process (if applicable)</i> Reviewed by two external reviewers. ○ <i>Extensibility of model (can it be run for different time periods)</i> It would be of interest to test the model outside the bounds of the Murray Flood Ecology project event and investigate the potential implication of multiple large flow/flood events, or the ecological response related to an in-channel flow compared with an overbank flow. Goyder Institute Technical Reports are available at http://goyderinstitute.org/

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Specificity of data	<i>Was data sourced from local field sites or literature</i> Our ecological understanding in conceptual models was based on findings from a series research tasks under the Murray Flood Ecology project conducted at local field sites in the Lower River Murray and expert opinion from task leaders. Key information from tasks are available from the journal publications or Goyder Institute Technical Reports listed in the 'Publications' section. Hydrological data was sourced from DEWNR and the Murray-Darling Basin Association.
Datasets/data products produced	<i>Include details of where datasets/products are located and contact details in the storage location</i> No datasets were produced, but products are summarised in Goyder Institute Technical Report No. 14/11 available at http://goyderinstitute.org/
Other Information	
Publications (papers and technical reports)	Goyder Institute for Water Research Technical Reports http://goyderinstitute.org/ Aldridge, K., Lorenz, Z., Oliver, R. and Brookes, J. 2012, <i>Changes in water quality and phytoplankton communities in the Lower River Murray in response to a low flow-high flow sequence</i>. Goyder Institute for Water Research Technical Report Series No. 12/5. Adelaide, South Australia. Cheshire, K.J.M., Ye, Q., Wilson, P. and Bucater, L. 2012, <i>From drought to flood: annual variation in larval fish assemblages in a heavily regulated lowland temperate river</i>. Goyder Institute for Water Research Technical Report Series No. 12/6. Adelaide, South Australia. Holland, K.L., Turnadge, C.J., Nicol, J.M., Gehrig, S.L. and Strawbridge, A.D. 2013, <i>Floodplain response and recovery: comparison between natural and artificial floods</i>. Goyder Institute for Water Research Technical Report Series No. 13/4. Adelaide, South Australia. Lester, R.E., Cummings, C.R. and Fairweather, P.G. 2014, <i>Conceptual modelling of the ecological responses from a flood event in the Lower River Murray</i>. Goyder Institute for Water Research Technical Report Series No. 14/11, Adelaide, South Australia. Nicol, J.M., Gehrig, S.L., Frahn, K.A., Strawbridge, A.D. 2013, <i>Resilience and resistance of aquatic plant communities downstream of Lock 1 in the Murray River</i>. Goyder Institute for Water Research Technical Report Series No. 13/5. Adelaide, South Australia.

	Oliver, R.L. and Lorenz, Z. 2013, <i>Floodplain influences on the metabolic activity in the South Australian section of the Murray River during the 2010/11 flood</i>. Goyder Institute for Water Research Technical Report Series No. 13/1. Adelaide, South Australia. Thwaites, L. and Fredberg, J. 2014, <i>The Response Patterns of Wetland Fish Communities Following Prolonged Drought and Widespread Flooding</i>. Goyder Institute for Water Research Technical Report Series No. 14/9. Adelaide, South Australia. Journal Papers: Bice, C.M., Gehrig, S.L., Zampatti, B.P., Nicol, J.M., Wilson, P., Leigh, S.L. and Marsland, K. 2014, <i>Flow induced alterations to fish assemblages, habitat and fish-habitat associations in a regulated lowland river</i>, <i>Hydrobiologia</i>, 722, 205 – 222. Doody, T.M., Bengner, S., Pritchard, J. and Overton, I.C. 2014, <i>Ecological response of Eucalyptus camaldulensis (River Red Gum) to extended drought and flooding along the River Murray, South Australia, 1997-2011 and implications for environmental flow management</i>, <i>Marine and Freshwater Research</i> 65, 1082-1093. http://dx.doi.org/10.1071/MF13247 Leigh, S.J. and Zampatti, B.P. 2013, <i>Movement and mortality of Murray cod (Maccullochella peelii) during overbank flows in the lower River Murray, Australia</i>, <i>Australian Journal of Zoology</i>, 61, 160 – 169. Zampatti, B.P. and Leigh, S.J. 2013, <i>Effects of flooding on recruitment and abundance of Golden Perch (Macquaria ambigua ambigua) in the lower River Murray</i>, <i>Ecological Management and Restoration</i>, 14, 135 – 143.
Collaborations and acknowledgements	SARDI Aquatic Sciences; CSIRO; University of Adelaide; Flinders University; DEWNR; SAMDB NRM Board; SA Water
Keywords	Murray Flood ecology, conceptual models, flow, water quality, nutrients, primary productivity, fish, aquatic and floodplain vegetation

PROJECT COLLABORATOR



Government of South Australia

South Australian Murray-Darling Basin
Natural Resources Management Board