Table A2: Formal VOI

Year	Authors	Title	Subfield*	System	Spatial Scale	Time Scale**	Objective	Actions	Model***	Uncertainty	Optimization	VOI****
1999	S. Kuikka, M. Hildèn, H. Gislason, S. Hansson, H. Sparholt and O. Varis	Modeling environmentally driven uncertainties in Baltic cod (*Gadus morhua*) management by Bayesian influence diagrams	Fisheries management	Baltic cod (*Gadus morhua*) fishery	1,600,000 km² (Baltic Sea)	1yr	Maximize yearly catch and minimize risk of recruitment failure	Choose catch effort	Age-structured stochastic population model	Represented by the probabilities that one of three different recruitment models applies to the fishery dynamics	Monte Carlo simulations	3-7%
2009	S. Mantyniemi, S. Kuikka, M. Rahikainen, L. T. Kell and V. Cattalo	The value of information in fisheries management: North Sea herring as an example	Fisheries Management	North Sea herring (*Claupea harengus*) fishery	570,000 km² (North Sea)	20yrs	Maximize fishery profit over 20yrs	Choose catch effort	Bayesian stochastic population model	Alternative model structure: compensatory (Beverton-Holt) or over-compensatory (Ricker) density-dependence in survival of spawned eggs	Non-exhaustive brute-force search	5%
2010	C. Costello, A. Rassweiler, D. Siegel, G. De Leo, F. Micheli and A. Rosenberg	The value of spatial information in MPA network design	Fisheries Management	Southern California Bight fishery	11,000 km² (135 10km diameter patches in the Southern California Bight)	1yr	Maximise the value of the fishery subject to a conservation weighting	Choose among candidate areas to include in reserve system and/or set a catch limits in candidate areas	Metapopulation model	A set of 8 plausible dispersal kernels for the metapopulation model each kernel is equally likely to be the true kernel	-	0-11%
2011	J. L. Moore, M. C. Runge, B. L. Webber and J. R. U. Wilson	Contain or eradicate? Optimizing the management goal for Australian *Acacia* invasions in the face of uncertainty	Invasive species control	*Acacia paradoxa* invasion of South Africa	3 km² (initial size of infestation)	20yrs	Minimize costs and losses from invasion	Choose whether to contain, eradicate or take no action	Constant rate of spread from initial infestation to maximum possible extent defined by bioclimatic niche model	The extent of infestation is unknown	Numerical optimisation of non-linear simultaneous equations	8%
2011	M. C. Runge, S. J. Converse and J. E. Lyons	Which uncertainty? Using expert elicitation and expected value of information to design an adaptive program	Threatened species recovery	Recruitment dynamics of Eastern migratory whooping crane (*Grus americana*) population	200 km² (Necedah National Wildlife Refuge)	10yrs	Maximise number of breeding pairs, reproductive success, adult survival and condition	Choose among 7 separate management strategies	Expert elicited hypotheses	Each hypothesis weighted according to expert opinion	Calculation of all terminal utilities for each combination of management action and hypothesis	EVPI = 20%, EVPXI = 1-11%
2012	J. L. Moore and M. C. Runge	Combining Structured Decision Making and Value-of-Information Analyses to Identify Robust Management Strategies	Invasive species control	Grey willow (*Salix cinerea*) invasion of alpine bogs of the Bogong High Plains, Australia	120 km²	200yrs	Protect the integrity and function of alpine bogs	Allocate effort to control willows among 4 zones	State-based dynamic model	Probability distributions of model parameters	Monte Carlo simulations	EVPI = 0-10%, EVPXI = 0-3.5%
2014	F. A. Johnson, G. H. Jensen, J. Madsen and B. K. Williams	Uncertainty, robustness, and the value of information in managing an expanding Arctic goose population	Wildlife harvest management	Dynamics of Svalbard population of Pink-footed Goose (*Anser brachyrhynchus*)	450,000 km² (Norway and Denmark)	1yr	Maintain population size around 60,000 minimizing the probability that population collapses or erupts	Choose harvest rate each year	Stochastic population model	Set of 9 structurally different population models	Stochastic dynamic programming	EVPI = 3-6%, EVPXI = 0-2%
2014	F. A. Johnson, G. Hagan, W. E. Palmer, M. Camera	Uncertainty, robustness, and the value of information in managing a population of northern bobwhites	Wildlife harvest management	Dynamics of Webb Wildlife Management Area Population of Northern Bobwhites (Colinus virginianus)	30 km²	1yr	Maximise population growth rate, harvest, feasibility of management while minimizing cost.	10 alternative management strategies with varying combinations of harvest rate, hunting practice, burn scale, food provision and water management	Stochastic population model	4 different hypotheses of what is causing decline in population	Calculation of all terminal utilities for each combination of management action and hypothesis	EVPI = 3.5%, EVPXI = 0-2%
2015	S. Canessa, G. Guillera-Arroita, J. J. Lahoz-Monfort, D. M. Southwell, D. P. Armstrong, I. Chadès, R. C. Lacy and S. J. Converse	When do we need more data? A primer on calculating the value of information for applied ecologists	Threatened species recovery	Survival of captive-bred and released European pond terrapins (*Emys orbicularis*) in Liguria, Italy.	5,500 km²	>3yrs	Maximise the survival of released individuals	Release terrapins at either 3, 4 or 5 years of age	Post release mortality rate that may vary by age.	Post release mortality may increase, decrease with age or is invariant	Calculation of all terminal utilities for each combination of management action and hypothesis	EVPI = 6%
2015	S. L. Maxwell, J. R. Rhodes, M. C. Runge, H. P. Possingham, C. F. Ng and E. McDonald-Madden	How much is new information worth? Evaluating the financial benefit of resolving management uncertainty	Threatened species recovery	Dynamics of southeast Queensland population of Koala (*Phascolarctos cinereus*)	400 km²	>1yrs	Maximise population growth	Allocate budget to preventing vehicle collisions, preventing dog attacks or restoring habitat	Age-structured population model	Structural uncertainty in the form of 8 different model structures. Parametric uncertainty in the form of probability distributions (represented by Monte Carlo simulations) of survival and fecundity	Multidimensional unconstrained nonlinear optimisations.	EVPI = 0-4%
2015	B. K. Williams and F. A. Johnson	Value of information in natural resource management: technical developments and application to pink-footed geese	Wildlife harvest management	Dynamics of Svalbard population of Pink-footed Goose (*Anser brachyrhynchus*)	450,000 km² (Norway and Denmark)	1yr	Maintain population size around 60,000 minimizing the probability that population collapses or erupts	Choose harvest rate each year	Stochastic population model	Set of 9 structurally different population models	Stochastic dynamic programming	-
2016	K. F. Robinson, A. K. Fuller, J. E. Hurst, B. L. Swift, A. Kirsch, J. Farquhar, D. J. Decker and W. F. Siemer	Structured decision making as a framework for large-scale wildlife harvest management decisions	Wildlife harvest management	White-tailed deer (*Odocoileus virginianus*) population dynamics of New York, USA.	140,000 km²	1yr	Maximise hunting and minimize probability that population exceeds desired size	Six management altenatives: status quo, one buck bag limit, mandatory antler restrictions, partial mandatory antler restrictions, shorter seasons, voluntary restraint	Expert elicited predictions and population growth model	Parametric uncertainty for survival rates for different ages and each sex. Structural uncertainty represented by the inclusion or not of density dependent survival.	Calculation of all terminal utilities for each combination of management action and hypothesis across the range of parametric uncertainty	0%

* Some case studies may fit within multiple subfields, in such cases they have been allocated to the subfield with which they share the most features.

** The time scale over which decision making occurs. Where indicated, the approximate amount of time from implementation to performance measuring. In case studies that compare the performance of different sized or different quality datasets the time scale indicates the length of time to collect the data and to implement any decision.

*** By model we mean the method used to convert the uncertain information into a prediction about the value of taking a given action

**** Expressed as the proportional gain in performance when making the decision with new information rather than without