

# National Aquatic Species Risk Analysis

A Call for Improved Implementation

**Jeffrey E. Hill**

University of Florida  
Tropical Aquaculture Laboratory  
Ruskin, Florida

**Paul Zajicek**

Florida Department of Agriculture and Consumer Services  
Division of Aquaculture  
Tallahassee, Florida

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# The (not so exciting) Trailer

- Risk analysis
- Generic Nonindigenous Aquatic Organism Risk Analysis Review Process (1996)
- Implementation
- Public criticism
- Timely guidance from the National Research Council
- Improved implementation
- Results

# Risk Analysis

Three components:

Risk assessment

Risk management

Operational Plan

# Risk Assessment

A rigorous, replicable method conducted under protocols agreed upon by an expert community to arrive at answers to factual questions.

# Risk Management

Identifying and prioritizing strategies to prevent or mitigate defined risks.

# Operational Plan

Implementing risk management strategies and a monitoring system to revise and update risk prevention and mitigation strategies (adaptive management).

# Generic Nonindigenous Aquatic Organisms Risk Analysis Review Process

- Aquatic Nuisance Species Task Force
  - ...coordinate, direct and maximize existing federal capabilities.
- A committee of federal agency and industry representatives developed the process. Published by the Task Force in 1996.

# Generic Analysis

“...a standardized process for evaluating the risk of introducing nonindigenous organisms into a new environment and, if needed, determining the correct risk management steps needed to mitigate risk.”

# Generic Analysis

- Comprehensive
- Logically sound
- Commensurate with available resources
- Open to evaluation

# Generic Analysis

## Organisms and Pathways

Consists of:

Risk assessment

Risk Management

Operational Plan

# Implementation

<b>Species</b>	<b>Experts</b>	<b>Date</b>	<b>RA</b>	<b>RM</b>	<b>OP</b>
Black carp	2, 3, 3	1996/01/05	x	?	
Shrimp viruses	22	1998	x	?	
Sturgeon culture	46	2000	x	x	x
Snakeheads	2	2002	x		
Peacock bass	1	2003	x		
Grass, bighead, silver, largescale silver, and black carps	25	2004	x	?	
Asian carp	FishPro	2004	?		
Bighead, silver, and largescale carps	6	2005	x		

RA = risk assessment   RM = risk management   OP = operational plan

# Risk Management

Species	Experts	Date	RA	RM	OP
Brown tree snake	17	1996		X	X
Ruffe	16	1996		X	X
Giant salvinia	26	2002			X
European green crab	13	2002	*	X	X
Mitten crabs	53	2003	*	X	X
Water chestnut	2	2003	*	X	X
Purple loosestrife	9	2004	*	X	X
<i>Caulerpa spp.</i>	35	2005	*	X	X
Bighead, silver, grass and black carps	67	2006		X	X

\* - recommended risk assessment

Source: <http://www.anstaskforce.gov>

# Criticism

Focused on risk assessment

“...narrowly focused, subjective, often arbitrary and unquantified, and subject to political interference...quantification of risk achieved by this process is largely illusory.”

Simberloff, D. 2005. The politics of assessing risk for biological invasions: The USA as a case study. *Trends in Ecology and Evolution* 20(5):216-222.

# Criticism (continued)

“...can be cumbersome enough that the species under consideration may be released or escape while the assessment is in progress.”

“...forces explicit consideration of many factors and can produce a highly educated qualitative prediction.”

Simberloff, D., I.M. Parker and P.N. Wyndle. 2005. Introduced species policy, management, and future research needs. *Frontiers in Ecology* 3(1):12-20.

# Quantitative vs. Qualitative

“Both qualitative and quantitative approaches to risk assessment are valid and, in practice, every risk assessment is first carried out qualitatively. Only if further insight is required is it necessary to attempt to quantify the risk.”

Arthur, J.R., M.G. Bondad-Reantaso, F.C. Baldcock, C.J. Rodgers and B.F. Edgerton. 2002. Manual on risk analysis for the safe movement of aquatic animals (FWG/01/2002). Asian-Pacific Economic Cooperation Secretariat, Department of Fisheries, Network of Aquaculture Centres in Asia-Pacific, Food and Agricultural Organizations, Singapore.

# Quan vs Qual

“Analysts usually reject quantitative techniques because the problem is too complex or because reliable data are too few.”

Hayes, K.R. 2003. Biosecurity and the role of risk assessment *in* G.M. Ruiz and J.T. Carlton (ed) *Invasive Species: Vectors and Management Strategies*. Island Press, Washington, DC.

# Risk Analysis

“Organizational separation may have the advantage of establishing firmly the distinction between risk assessment and risk management, but it also has some disadvantages. The importance of distinguishing risk assessment and risk management does not imply that they should be isolated from each other; in practice they interact, and communication in both directions is desirable and should not be disrupted.”

National Research Council. 1983. Risk assessment in the federal government: Managing the process. National Academy Press, Washington, DC.

# Risk Analysis

- Getting the science right.
- Getting the right science.
- Getting the right participation.
- Getting the participation right.
- Developing an accurate, balanced, and informative synthesis.

Stern, P.C. and H.V. Fineburg (ed). 1996. Understanding Risk: Informing decisions in a democratic society. National Research Council, Commission on Behavioral and Social Sciences Education, Committee on Risk Characterization. National Academy Press. Washington, DC.

# Improved Implementation

- Integrate risk assessment, risk management and operational planning
- Include stakeholders
- Adaptive management
  - assign responsibility
  - report results (good and bad)
  - implement improvements to the operational plan.

# Results

- Prioritize
- Integrate federal efforts
- Integrate federal, state and local efforts
- Close gaps in authority
- Leverage resources