WHAT IT'S LIKE TO DO A RISK ASSESSMENT

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REPORT TO THE AQUATIC NUISANCE SPECIES TASK FORCE

Generic Nonindigenous Aquatic Organisms Risk Analysis Review Process

(For Estimating Risk
Associated with the Introduction
of Nonindigenous Aquatic Organisms
and How to Manage for that Risk)

Risk Assessment and Management Committee
Aquatic Nuisance Species Task Force

October 21, 1996

USGS
science for a changing world

Snakeheads (Pisces, Channidae)– A Biological Synopsis and Risk Assessment

U.S. Department of the Interior
U.S. Geological Survey

Circular 1251

Asian Carps of the Genus *Hypophthalmichthys* (Pisces, Cyprinidae) — A Biological Synopsis and Environmental Risk Assessment

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BIOLOGICAL SYNOPSIS

The **CORE** of any and all risk assessments

Why is a Biological Synopsis necessary for a Risk Assessment?

- **What is known about the biology of the species within its native (and introduced) range must be presented before being able to assess risks**
- **Risk assessments must be done by professional biologists who have knowledge of other biologists with expertise, who have the experience plus credentials to provide information, data, and can recommend others to contact for professional peer reviews within and beyond their areas of expertise**
- **It's not always what you know, but who you know!**

ELEMENTS OF A BIOLOGICAL SYNOPSIS

- Taxonomy
- Native (and introduced) ranges
- Life history, including:

  temperature, salinity, and pH tolerances

  reproduction (behavior, fecundity, recruitment, and survival)

  early development

  growth and longevity

  feeding (food preferences, behavior, waste products)

  departures from any of the above where introduced

ELEMENTS OF A BIOLOGICAL SYNOPSIS

(continued)

- **Diseases and parasites**
- **Predators (often little information available)**
- **History of uses in native and introduced ranges**
- **Environmental effects within areas where the organism may have been introduced**

Where is the taxonomic expertise?

- These talents are fast decreasing and not being replaced in academia for several reasons
- Some federal units have the expertise, although this is also declining, largely due to retirements and failures to replace
- Federal and state-supported units (sometimes with public funding) also maintain research collections and the staff needed to do species identification tasks, although their funding is declining as well
- Several major universities that are supported to maintain research collections have taxonomists on their faculty or as researchers
- Some states are hiring taxonomists, a good sign!
- Taxonomic experts need to be identified

Thanks, Ron!

JOINT REGIONAL PANEL RECOMMENDATION TO THE AQUATIC NUISANCE SPECIES TASK FORCE

Background

Each Regional Panel, under the Aquatic Nuisance Species Task Force (ANSTF), has spent considerable time addressing regional rapid response plans in the last 2 years. One of the issues that arose from those discussions is the need for access to taxonomic experts to provide species identification services to state and federal agencies for plants and animals that have been sighted and/or reported as being potentially non-native. This, indeed, is needed for any type of response, whether it is rapid or otherwise, in order to craft an effective response to the sighting or report.

During 2004, after noting wide support for a database as described above, the USGS office in Gainesville, FL began to explore the possibility of acquiring resources to develop the framework for a database of experts on a national scale. The USGS Invasive Species Program in Gainesville, FL has indicated that they have the expertise available to develop the database structure; however, funding to get the work done has not yet been identified.

On July 7, 2005, the Pathways and Prevention Work Group of the Gulf and South Atlantic Regional Panel (GSARP) convened a teleconference to discuss Work Plan tasks for 2005. One of the issues contained in that Work Plan is the need for a taxonomic experts database, as noted above. After some discussion, the Work Group agreed that the GSARP should coordinate with the administrators of the other regional panels to see if it would be possible to provide a joint recommendation to the ANSTF regarding this issue.

Beginning July 18, 2005, the GSARP administrator began contacting the other regional panel administrators, asking about the possibility of crafting a joint recommendation regarding the development of a database of taxonomic (and perhaps other) experts. Each administrator, or other regional panel representative, was contacted individually and asked if they would support such a recommendation. By Monday, July 25, 2005, all panel representatives had been contacted, and all agreed to proceed with crafting a joint regional panel recommendation. It is also important to note that the development of this database is supported by the joint ANSTF/ISAC Pathways and Prevention Task Team.

Recommendation

Locating the data

- Outline the data needed
- Identify the specialists to contact
- Obtain the published literature and “gray literature” as needed, and reference all as necessary
- Your task is about to begin!!

Identifying the specialists

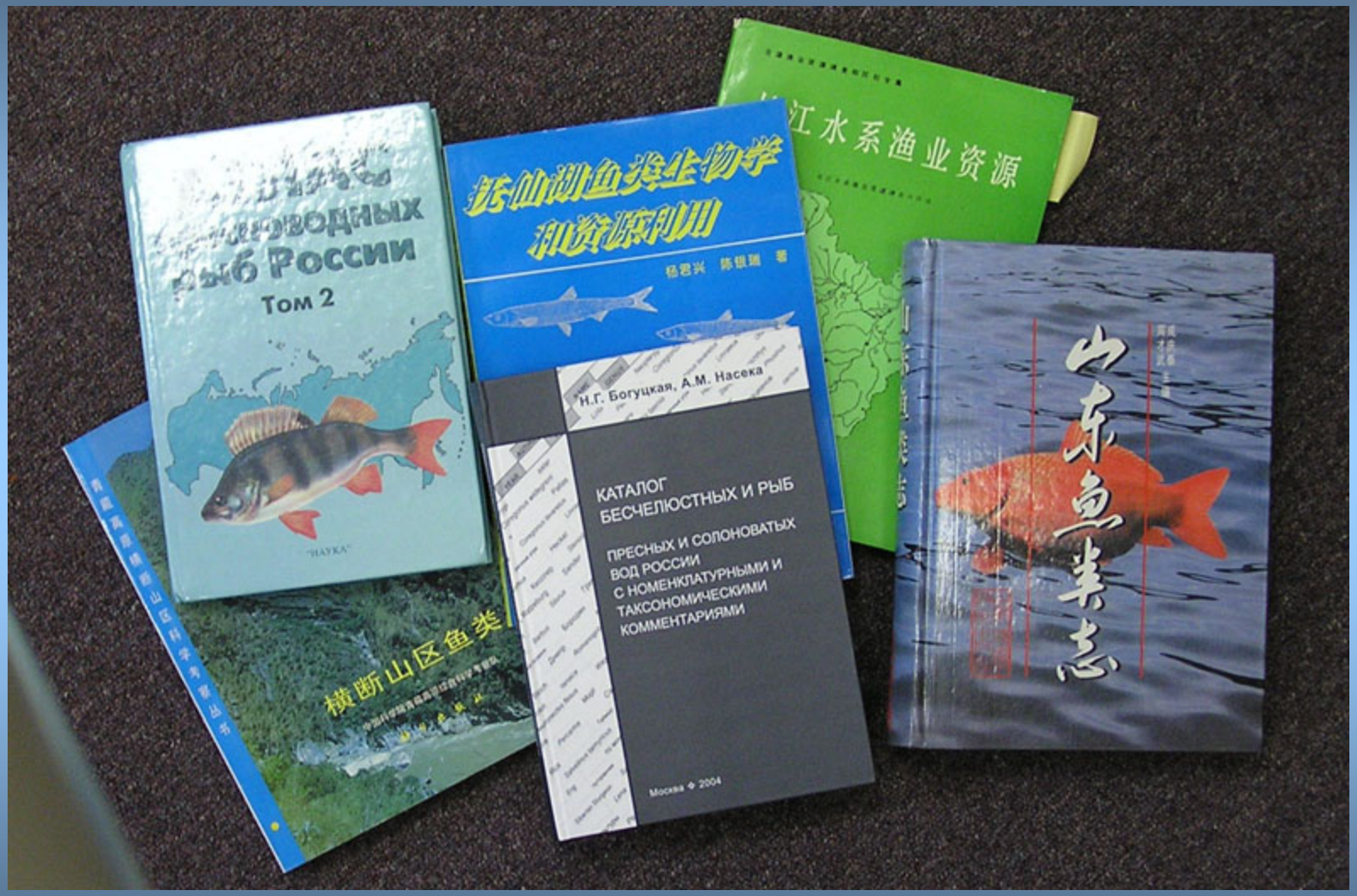
- Contact taxonomists first
- Use the Internet second

Finding the literature

- Again, contact taxonomists first
- Use the Internet second
- University library access
- USGS access is different

The Literature !

- **Sometimes much or very limited**
- **Oftentimes, in foreign languages**


Том 2
"НАУКА"
横断山区鱼类
Н.Г. Богуцкая, А.М. Насека
КАТАЛОГ
БЕСЧЕЛЮСТНЫХ И РЫБ
ПРЕСНЫХ И СОЛОНОВАТЫХ
ВОД РОССИИ
С НОМЕНКЛАТУРНЫМИ И
ТАКСОНОМИЧЕСКИМИ
КОММЕНТАРИЯМИ
Москва ◆ 2004

Translation ?

Where do you find the talents to do the translations?

How much will it cost and how long will it take?

Assembling the synopsis

- Make certain to include all biological information, in order of topics, that must be incorporated
- Make certain to include graphics to support text

THE RISK ASSESSMENT

- Must be based on the biological synopsis and its citations and references, including a summary
- No citations or references needed in the risk assessment segment of the document
- Must include all information on introduction pathways, past pathways (if any), different pathways elsewhere, and projected pathways for the future
- Must contain information on chances of survival in any kind of transport and probabilities of becoming established

RISK ASSESSEMENT
(CONTINUED)

- Must include projection of spread beyond point(s) of introduction
- Under existing Risk Assessment requirements, there is a requirement to estimate economic impacts should the species become established, something beyond the expertise of most biologists
- Environmental impacts must be projected. This is something that can be done and predicted, based on the known biology of the species within its native range or where it has been introduced, but without a guaranteed degree of accuracy
- The real problem is that in novel environments, introduced species often take on characteristics and behaviors that are atypical from their origins, making our predictions "best guesses"

RISK ASSESSEMENT
(CONTINUED)

- The final element is to estimate the impact from social or political influences, again something that most biologists cannot estimate or predict

HOW MUCH TIME IS REQUIRED TO PREPARE A RISK ASSESSMENT?

- About 4 to 6 months (sometimes longer) to gather the required literature and other information, depending on the species or family involved, for preparation of the biological synopsis
- Analysis of that information to begin to prepare a defensible risk assessment requires at least another 4 or more months, depending on volume of information gathered
- In summary, this kind of thing cannot be done with a high degree of accuracy or estimated prediction in a short period of time

HAVE WE GONE WRONG WITH RISK ASSESSMENTS?

Many have been reactive toward already introduced, established, and sometimes very invasive species

WHERE DO WE GO FROM HERE?

- Learning curve is up to par and growing, and well ahead of where we should have been decades ago
- Use new approaches to prevent future introductions of unwanted species (= become PROACTIVE)
- Focus on risk assessments for invasive species introduced elsewhere that might be imported here, even as “contaminants” imported with other species
- Require risk assessments on aquatic species proposed for importation that are not already here, especially targeting temperate species.
- Put the burden of proof and costs for research on the special interest unit or importer requesting importation permits
- Peer reviews of such permit requests by professional biologists will better assure evaluation of risks before imports are allowed
- Better safer now than sorry later!!

What it's REALLY like to prepare a risk assessment

It's often expensive

It's a very educational and often a "fun" experience

Researchers often make new professional contacts with national and foreign colleagues that can last for many years into the future

Researchers also run the risk of making enemies of former professional contacts

At many times, these are truly enjoyable experiences, but …

at times, the stress of the effort seems to be like opening a doorway to Hell